UNIVERSITY OF LIMERICK
IRELAND



International Visiting Students
Module Booklet - Spring 2027

Introduction

The University of Limerick operates a system with continuous assessment.

A Module is a self-contained package of education taught during a single academic semester. Visiting students may choose from a wide range of modules and may cross-register between faculties and departments. Acceptance of these modules is subject to academic pre-requisites timetabling constraints. The module descriptions to follow, present an outline of the subject topics covered in each module.

The normal course load is **FIVE** modules per semester (Which can vary depending on the home university).

Please Note: Module registration will be completed for you by the Study Abroad Team **post-arrival**.



Module	Faculty	Department
AC	BUS	A&F
AR	SEN	AR
BC	SEN	CES
BY	SEN	LSC
CF	SEN	CFM
CG	SEN	CES
CM	SEN/BUS	CES/MMA
CS	SEN	CSI
CU	AHS	MJA
DM	SEN	DMT
EC	BUS	ECO
ED	SEN	ECE
EE	SEN	ECE
EM	AHS	CCO
EN	EHS	EPS
EP	BUS	MMA
EQ	SEN	LSC
ET	SEN	ECE
EV	SEN	LSC
FI	BUS	A&F
FR	AHS	MLA
FT	SEN	LSC
GA	AHS	EIC
GE	AHS	MLA
HI	AHS	HIS
HS	SEN	CES
IN	BUS	A&F
JA	AHS	MLA
JM	AHS	CCO
LA	AHS	LAW
LI	AHS	MLA
LI	AHS	MLA
LU	AHS	MLA
LP	SEN	LSC
MA	SEN	MAS
MB	SEN	MAS
MD	HUM	HUM
ME	SEN	MAB
MF	SEN	DMT
MG	BUS	MMA
MN	BUS	MMA
MS	SEN	MAS
MT	SEN	CEM
MU	HUM	HUM
NS	EHS	NMI
PA	AHS	PPA
PD	SEN	DMT
PH	SEN	PHE
PM	BUS	PER
PO	AHS	PPA
PS	EHS	DMT
PR	SEN	DMT
PY	EHS	PHE
RM	AHS	CCO
SN	EHS	NMI
SO	AHS	SOC
SP	AHS	MLA
SS	EHS	PES
TE	AHS	MLA
TW	AHS	CCO
TX	BUS	ACF
WT	SEN	CEM

Module Code	Academic Area	Department
JA	Japanese	School of Modern Languages and Applied Linguistics
JM	Journalism	School of English, Irish, and Communications
LA	Law	School of Law
LI	Linguistics	School of Modern Languages and Applied Linguistics
Ma	Mathematics	Mathematics and Statistics
MB	Mathematics	School of Education
MD	Music and Dance	Arts, Humanities, and Social Sciences
ME	Mechanical Engineering	School of Engineering
MF	Manufacturing	School of Engineering
MG	Management	Management and Marketing
MI	Management of Information	Management and Marketing
MK	Marketing	Management and Marketing
MS	Mathematics and Statistics	Department of Mathmatics and Statistics
MT	Materials	School of Engineering
MU	Music	Arts, Humanities, and Social Sciences
NS	Nursing	School of Nursing and Midwifery
PA	Public Administration	Department of Politics and Public Admin
PD	Product Design	School of Architecture and Product Design
PH	Physics	Department of Physics
PM	Personell Management	Personell and Employment Relations
PO	Politics	Department of Politics and Public Admin
PS	Psychology	Department of Psychology
PT	Production Tools	School of Engineering
PY	Physical Education	Physical Education and Sport Science
RE	Robotics Engineering	School of Engineering
RM	Research Methods	School of Culture and Communications
SN	Sociology/Nursing	School of Nursing and Midwifery
SP	Spanish	School of Modern Languages and Applied Linguistics
SS	Sport Science	Physical Education and Sport Science
TE	English as a Foreign Language	School of Modern Languages and Applied Linguistics
TW	Technical Writing	School of Modern Languages and Applied Linguistics
TY	Taxation	Management and Marketing
WT	Wood Technology	Wood Science and Technology

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Faculty of Arts, Humanities & Social Sciences



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

HISTORY AND GEOGRAPHY



UNIVERSITY OF LIMERICK
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History and Geography Year 1 Modules

HI4142 - GAMES OF THRONES: GENDER, POWER AND IDENTITY, IRELAND AND THE WIDER WORLD, 1500-1950

ECTS Credits: 6 (Year 1 Module)

History

Rationale and Purpose of the Module: The module examines conflict, power and identity in Ireland, Europe and the wider world in the early modern and modern periods. Its purpose is to examine power and conflict in past societies, and the impact violence and unrest had for men and women, families, localities, states and continents. The module will introduce students to key concepts including gender, representations of power and identity.

Syllabus: representations and realities of power: men and women; exercising power: religions, monarchies, dictatorships and institutions; violence; war and conflict; dynastic rivalry and conflict; local and agrarian unrest; the 'mob'; statecraft; diplomacy; heresy and censorship; ideology; subversion and non-violence; sexual politics and sectarianism.

HI4152 – FROM KINGDOM TO REPUBLIC: IRISH HISTORY, 1660-1960

ECTS Credits: 6 (Year 1 Module)

History

Rationale and Purpose of the Module: This general history module will provide those with little or no prior experience of history with an overview of Irish society and politics from c.1660 to 1960. It is ideal for the general arts student, the international student and those who wish to have a general introduction to Irish history. This is to be offered to students of the new BA Arts.

Syllabus: Defining Ireland; economy, society and class; women and politics; the Three Kingdoms; the Boyne and the emergence of a protestant ascendancy; agrarian society in pre famine Ireland; the Famine: dealing with the catastrophe; patriots, nationalists, republicans, unionists, and others: politics and its followers; origins of independence; constitutional developments and the two states of Ireland; economic development; population and social change; education and language; the evolution of popular culture; the Irish diaspora.

GY4002 - INTRODUCTION TO PHYSICAL GEOGRAPHY

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

(Lab-Based Module)

Geography

Rationale and Purpose of the Module: This module introduces students to the key principles that underline physical geographical processes that shaped the natural environment.

Syllabus: The module introduces students to the Earth's physical features and how natural processes and patterns have shaped the planet. Students will be introduced to geomorphology, hydrology, glaciology, biogeography, climatology, meteorology, pedology, paleogeography, costal geography, quaternary science, and landscape ecology, geomatics, and environmental geography. Themes such as geology and tectonics; oceans; atmospheric processes; Global climate and weather; landform evolution; soils, sediments, and sedimentation; catchment hydrology; fluvial geomorphology; coastal geomorphology; Glacial geomorphology; Ecological processes; Freshwater ecology; the Quaternary; the Holocene; contemporary climate change; vegetation and environmental change will be explored.

GY4012 - MIGRATION, MOBILITY AND PLACE

ECTS Credits: 6 (Year 1 and Year 3 Module)

Limited places available: 5

Geography

Rationale and Purpose of the Module: Migration, the movement of people between places, is an intrinsically geographical process. Across the globe, the number of people moving is rising for increasingly diverse reasons. This includes the movement of highly skilled workers responding to the growth of our globalised economies as well as those displaced by political instability or climate change. This

module considers the reasons for this growth in movement as well as the impacts on places of origin and places of destination. Understanding migrant lives also enhances our understanding of one of the key concepts of geography, place. As a result of their displacement, migrants experience a heightened awareness of the difference of place/s and therefore in studying migration it is possible to gain a better understanding of the significance of place to a sense of identity and belonging.

Syllabus: The module builds on the ideas around migration introduced in GY4001, Introduction to Human Geography and GY4033, Population Dynamics. Through a range of Irish and international examples the module explores the drivers and impacts of migration. In addition, through an exploration of why people move, this module also aims to help students better understand how feelings of identity, belonging and connection to place are shaped by migration.

History and Geography Year 2 Modules

No modules available

History and Geography Year 3 Modules

GY4006 – PRACTICING GEOGRAPHICAL RESEARCH

ECTS Credits: 6 (Year 3 Module)

Limited places available: 5

Geography

Rationale and Purpose of the Module: This module offers an introduction to a range of geographical research skills through lectures, seminars and practical sessions. The module will teach students techniques and methods for undertaking geographical research in varying contexts and scales.

Syllabus: Practicing Geographical Research develops students' ability to undertake geographical research of physical, human and overlapping research agendas. The key principles of research design and methods are introduced through practice-based learning including associated lectures, practical sessions and tutorials. The module will provide students with practical experience and transferable skills in best practices for project design and implementation, fieldwork processes, the use of software, and qualitative and quantitative data collection.

GY4027 – LANDSCAPE EVOLUTION

ECTS Credits: 6 (Year 3 Module)

Limited places available: 5

Geography

Rationale and Purpose of the Module: The surface of the Earth is not static but is constantly changing. Understanding how landscapes form and evolve is fundamental to physical geography. This module explores the landforms that make up the solid surface of the Earth, the processes which form and shape them, and the concepts and techniques used to study landscape evolution through past, present, and future environmental change.

Syllabus: This module will explore how landscapes form, the processes which shape them, and the techniques used to study them. Topics to be covered include plate tectonic processes; weathering and erosion; sediment transport agents and processes; sedimentary deposition and lithification processes; landscapes in a range of settings, including upland, glacial, fluvial, coastal, arid, and karst environments; anthropogenic landscapes, and landscape evolution. Key techniques used to study landscapes and environments past, and present will be introduced, including geospatial analysis, and laboratory examination of sediments and rocks from various settings.

HI4046 - CONTESTING THE PAST: WRITING HISTORY

ECTS Credits: 6 (Year 3 Module)

History

Rationale and Purpose of the Module: This module will aim to provoke students into thinking about history in analytically new and creative ways, through introducing them to alternative historiographical approaches for understanding the past. Issues of objectivity and resources and the archive will be scrutinized from a variety of perspectives, including postmodern and postcolonial interdisciplinarities. By the end of the module students should have built on their use of a broad range of historical

source materials and enhanced the necessary skills to make critical use of them. They will be able to demonstrate detailed knowledge of the most significant historiographical debates and comprehend the reasons why historical interpretations change and are revised. Furthermore, they will have been introduced to the work of important past and contemporary thinkers and philosophers of history such as Leopold Von Ranke, Karl Marx, Herbert Butterfield, Walter Benjamin, Michel Foucault and Hayden White.

Syllabus: The syllabus will be principally designed around discussions on questions of historiography and how past and recent controversies provide insights into interpretative differences for understanding both history and myth; enlightenment and romanticism; thinkers, philosophers and philosophies of history/historicism; empiricism and 'scientific' history; the influence of propaganda and secrecy; Marxism; the Annales school; revisionism; postcolonialism; gender and ethnicity; the peripheries of historical knowledge; the archive; subaltern studies; memory (remembering to forget); public history and commemoration; the end of history?

HI4076 - PATRIOTS TO PARNELL: IRELAND, 1750-1891

ECTS Credits: 6 (Year 3 Module)

History

Rationale and Purpose of the Module: The aim of this survey module is to provide an introduction to Ireland during the period 1750-1891 using three interrelated themes: economies, societies and cultures, political and civil societies.

Syllabus: ENVIRONMENTS AND ECONOMIES: wind, rain, soil; diet: cattle, grain, roots; regional ecologies, economies and cultures; growth and crisis; land, wages, prices, trade; demographic transitions: births, deaths, migrations; infrastructures; Famine and disease SOCIETIES AND CULTURES: rural social structures: landownership, farming, labor; the cult of improvement; household; gender, sexuality and patriarchy; urban society: merchants, trades, mendicants; the languages of Ireland: Anglicization 1750-1891; belief and faith; POLITICAL AND CIVIL LIFE: the constitution: king, lords and commons of Ireland; constituencies and franchises; parties, patriots and politics; 1798 rebellion and Union; the politics of Daniel O'Connell to Charles Stewart Parnell; agrarianism; unionism, nationalism and republicans.

HI4066 - ABSOLUTES AND REVOLUTIONARIES: EUROPE IN THE AGE OF ENLIGHTENMENT, 1688-1815

ECTS Credits: 6 (Year 3 Module)

History

Rationale and Purpose of the Module: The aim of this survey module is to provide an overview of European History in the eighteenth and early nineteenth centuries. The period will be examined from two angles: (1.) chronologically, so that students will attain a grasp of the progression of events from the death of Louis XIV and the partition of the Spanish Monarchy, through the European revolutions of the late eighteenth century to the rise of the modern nation states in the nineteenth century; and (2.) thematically, where we will be examining different aspects that were characteristic of the period in question, such as the Scientific Revolution and the Enlightenment; liberalism and nationalism; industrialization and the emerging role of mass movements.

Syllabus: The decline of belief in witchcraft and the scientific revolution; the emergence of Russia as the leading power in eastern Europe; Europe at peace, 1715-1740; the expansion of Britain as a world power; the Enlightenment and its impact on economy, society and politics; the Enlightened absolutists: Joseph II and Catherine the Great; the rise of Prussia and the diplomatic revolution of 1756; the role of women at the court of Louis XV; the collapse of the Old Regime in the 1780s; the French revolution; European radicalism in Britain, Poland and the Low Countries; Napoleonic Europe; the Congress of Vienna and the balance of power in the early nineteenth century; reaction, conservatism and romanticism.

History and Geography Year 4 Modules

HI4158 - CULTURE AND ANARCHY: IRELAND IN THE TWENTIETH CENTURY

ECTS Credits: 6 (Year 4 Module)

History

Rationale and Purpose of the Module: This module charts the history of Ireland from the Gaelic Revival years, through to the establishment of a Free State within the British Empire, to the emergence of a republic, and up to the signing of the Northern Ireland peace agreements of the 1990s.

Syllabus: The module is divided into lecture themes which address a wide range of topics, including: the Gaelic revival and other cultural movements, home rule and unionism, the impact of the Boer War on Ireland, rise of Sinn Fein, Larkin and the Union Movement, Connolly and Irish Socialism, 1916 Rising, War of Independence, Civil War and Partition, the Northern Ireland state; Ireland during and after the Second World War, the declaration of the Republic, the place of women and children in Irish society, Civil Rights and the origins of the modern 'Troubles'; and to road to the Belfast peace agreements.

GY4028 – ENVIRONMENTAL ISSUES

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Geography

Rationale and Purpose of the Module: Understanding how and why environmental change occurs is essential to growing our awareness of the relationship between man and nature. This module aims to introduce the world's most pressing environmental issues through an examination of the nature, causes and impacts of major types of environmental change, and the economic, legal, cultural and ethical underpinnings of environmental responsibility.

Syllabus: Environmental Change will introduce students to the most pressing large-scale global environmental problems including ecological principles and conservation management, environmental degradation, natural resource security, climate change and the role of human societies. The module will also touch on environmental law, policy, economy and governance and the links with human systems and environmental change.

GY4038 – CULTURAL AND HISTORICAL GEOGRAPHY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Geography

Rationale and Purpose of the Module: This module aims to introduce students to the sub-disciplines of cultural and historical geography. Through an examination of cases studies from a range of spatial and temporal contexts and scales, students will develop a nuanced understanding of the relationship between these two approaches and of their overlapping concepts and concerns.

Syllabus: Students are introduced to some of the core components of study in historical and cultural geography. Through theory and case study, the module includes topics such as Landscape and Representation, Place, Space and Power, Heritage and Memory, Materialism, Poststructuralism and Reading Textual Geographies. It familiarizes students with historical and cultural geographies in practice and introduces a range of visual, aural, documentary and participatory methodologies to improve understanding of how past actions and processes have shaped the present.

LAW



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Law: Year 1 Modules

LA4012 - COMPARATIVE LEGAL SYSTEMS

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: To show the evolution of some of the distinguishing features of the major legal families and to examine some alternatives offered by non-western cultures.

Syllabus: The idea of law. Legal concepts. The historical development of common law. Early Irish law. Roman law. Civil law. Some fundamental concepts. German, French, Spanish and Scottish legal systems - introduction. How a Civil lawyer finds the law. American legal system. Other conceptions of law and social order.

LA4032 - CRIMINAL PROCEDURE

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: This course will consider the procedures to be used in the criminal justice system from the earliest moment of investigation, right through to sentencing. The system as a whole will be evaluated from various value-based positions, encouraging critical reflection among students. Key areas such as policing, trial procedure, and the sentencing process will be considered in depth. The course will involve a mixture of legal detail and sociological theory to give a rounded appreciation of the issues addressed. By the end of the course students should have a strong, and critical, understanding of how the criminal justice system operates.

Syllabus: Criminal Justice Models, Adversarial System, Jury Trials, Due Process, Classifications of Crime, Delay, An Garda Siochana, The Irish Courts/ Prisons, Police Powers, Stop and Search, Arrest & Detention, Questioning and Legal Representation, Bail, Prosecutions & Trial Procedure, Initiating Court Proceedings, Indictments, Arraignments and Pleas, Evidence & the Jury, the Special Criminal Court, Principles of Sentencing, Sentencing Options, Appeals, Miscarriages of Justice.

LA4042 - ADMINISTRATIVE LAW

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: To provide students with the mechanisms to test whether any decisions or actions taken by government or governmental agencies are lawful and examine the redress available for aggrieved citizens.

Syllabus: Historical political and administrative background to administrative law within Ireland; relationship of administrative law with the Constitution of Ireland/ Delegated legislation, decisions, administrative acts, informal rules, circulars. The use of discretion. The principles and procedures of judicial review. Remedies.

LA4082 - LAW OF EVIDENCE

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: To critically examine the rules and general principles governing the admissibility of evidence in criminal trials.

Syllabus: Principles of criminal evidence; burdens and standards of proof; witness testimony; confession evidence and illegally obtained evidence; expert evidence; corroboration; rule against hearsay; identification evidence; similar fact evidence; privilege.

LA4122 - CONTRACT LAW 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: To examine the grounds upon which contracts may be discharged or avoided and the remedies available to ensure performance of contractual obligations.

Syllabus: Vitiating factors: mistake, misrepresentation, fraud, duress, undue influence, unconscionability. Discharge of obligations: by performance, by agreement, by breach, by frustration. Remedies for breach of contract: specific

performance, damages, rectification, rescission. Assignment of contract obligations. Agency. Quasi-contract.

LA4222 - CRIMINAL LAW 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: By building on Criminal Law 1, to examine the principal criminal offences and elements of criminal procedure.

Syllabus: Murder and manslaughter. Non-fatal offences against the person: assault and battery, aggravated assaults, false imprisonment. Sexual offences: rape, unlawful carnal knowledge of minors and others, sexual assault, and aggravated sexual assault. Offences against property: arson, criminal damage, burglary, larceny, aggravated larcenies, robbery, obtaining by false pretenses, embezzlement, fraudulent conversion, handling stolen property. Offences against the administration of justice: perjury, contempt of court. Offences against the public peace; Criminal Justice

(Public Order) Act, 1994; criminal libel. Offences against the State; treason. Sentencing. Elements of criminal procedure: bail, extradition, and police powers.

LA4044 - LAW OF THE EUROPEAN UNION 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: This module will review and identify major developments in the substantive law of the European Union, its interpretation and development, with special reference to the foundations and common rules and policies of the Common Market and the realization of an internal market. The policies dealt with will include i.e., the free movement of goods, persons, services, capital and payments, competition, social policy and animal welfare.

Syllabus: The module covers, in the first instance, background to the single market/common market. The module proceeds to examine in detail the Four Freedoms: free movement of goods, the free movement of persons (including workers, families/dependents, students, retired citizens, the freedom of establishment and the provision of services. Competition Law, including restrictive agreements and abuse of a dominant position will be examined. Social policy, (Equal pay and treatment, same sex couples, transsexuals etc.) will be covered and the module will end with a discussion on the impact of European Law on the animal welfare with specific reference to Treaty developments form the 1960s and the initial connection between animals and agriculture to recognition of the sentience of animals in the Treaty of Amsterdam and Lisbon,

recent developments including the Cat and Dog Fur Regulation and the Cosmetics Directive.

LA4320 - LAW OF TORTS 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: To examine the tortious concepts of trespass, nuisance, defamation and economic torts. To evaluate remedies in the area of Tort Law and the assessment of damages.

Syllabus: Trespass to the person, land and goods. Nuisance. Rylands v Fletcher liability. Damage by fire. Defamation. Economic torts: deceit, passing off, injurious falsehood, inducement to breach of contract, conspiracy. Remedies: general and special, judicial and extrajudicial, assessment of damages. Limitation of actions.

LA4420 - PUBLIC LAW 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: On successful completion of this module, a student will be able to: Demonstrate an understanding of the doctrine of fundamental rights from an international and Irish perspective Identify the various fundamental rights protected by the Constitution Examine the limitations placed on the exercise of rights Appraise the relationship between the various stakeholders in fundamental rights discourse and assess how these interests should be balanced. Reason by analogy and apply the law on fundamental rights to determine the likely outcome of a court action. Critically evaluate the extent to which the experiences and responses

of other jurisdictions, as well as international human rights principles should influence Irish law.

Syllabus: The aim of this course is to examine the fundamental rights provisions of the Irish Constitution, considering always the obligations of the state under international law. Topics to be covered include fundamental rights theories, unenumerated rights and enumerated rights and directive principles of social policy under the Irish Constitution.

LA4440 - CONSTITUTIONAL LAW 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: Currently, the School of Law delivers lectures on the Irish Constitution to all our LLB degrees and to several FAHSS courses. These modules are entitled Public Law 1 and Public Law 2. The term Public Law is outdated and cumbersome. The two new modules being created will keep the content of the Public Law modules but will use the more commonly used name of Constitutional Law. It will be to the advantage of students, and professional bodies and employers with which they deal, as the term Constitutional Law bears the most commonly used term for the study of this area of law.

Syllabus: The aim of this course is to examine the fundamental rights provisions of the Irish Constitution, always considering the obligations of the state under international law. Topics to be covered include fundamental rights theories, unenumerated rights and enumerated rights and directive principles of social policy under the Irish Constitution.

LA4540 - COMPANY LAW 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: Currently, the aim of the course is to familiarize students with the core concepts of Irish company law.

Syllabus: The module covers the administration of companies insofar as topics covered include the appointment, role and duties of Directors, the role and duties of the Company Secretary and the Annual return obligations of companies. The module also covers issues of dividends and the company law limitations on profit distributions. In addition, the module covers the various methods of enforcement of company law. The consequences of a company's secured borrowings are also considered in terms of the secured party enforcing security by appointment of a receiver. The statutory scheme and facility of examinership for a company in financial difficulty is reviewed and the duties of court appointed examiners analyzed. Finally, the module covers the various methods of winding up companies and the roles of different types of liquidators. The duties of liquidators are examined and the connections between those duties and the schemes and bodies of company law enforcement are reviewed.

LA4922 - SPORT AND THE LAW

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: To examine the law relating to the governance and regulation of sport.

Syllabus: Sport and the Law will examine the interaction between the law and sport. The course will examine a number of topics, including what is sport and the law, violence in sport, drug testing, contract and employment issues, administration and judicial review, commercial and competition law, arbitration and alternative dispute resolution.

LA4620 - LAND LAW 2

ECTS Credits: 6 (Year 1 Module)

Law

Rationale and Purpose of the Module: To familiarise the student with a detailed knowledge of the regulatory aspects of the use of real property, including landlord and tenant law and the law of succession.

Syllabus: The laws relating to succession, statutory control of the right to devolve property upon death, wills and intestacies. Landlord and Tenant Law, nature and creation of the relationship, determination of the relationship, statutory

control of tenancies, public welfare codes. Lesser interests in real property including licences and covenants. The distinction between leases and licences. Mortgages.

Law: Year 2 Modules

LA4038 - FAMILY LAW

ECTS Credits: 6 (Year 2 Module)

Law

Rationale and Purpose of the Module: The aim of the course is to familiarize students with the core concepts of Irish family law.

Syllabus: The module will examine the following: nullity; domestic violence; child custody and access disputes; maintenance, separation agreements; judicial separation; divorce; preliminary and ancillary relief in judicial separation and divorce proceedings; and the non-marital family.

Law: Year 3 Modules

LA4006 - MEDICAL LAW

ECTS Credits: 6 (Year 3 Module)

Law

Rationale and Purpose of the Module: The aim of this module is to provide students with an understanding of the legal and ethical issues associated with the of medicine. The interface between law and medicine has become increasingly controversial in recent years. Aside from traditional concerns such as those relating to medical confidentially and access to medical records, an increasing awareness of the need to recognize and respect the autonomy of patients has raised new concerns which the legal system must address. This module seeks to introduce students to the challenges posed in the legal regulation of medical practice by introducing them to the law relating to medical confidentiality, access to medical records, consent to treatment and end-of-life decision-making.

Syllabus: This module covers: legal and ethical issues surrounding medical confidentiality and access to medical records; human rights and ethical perspectives on autonomy in healthcare decision-making; informed consent to medical treatment; capacity to consent in relation to minors and those with mental incapacity; refusal of treatment and end-of-life decision-making.

LA4035 - LABOUR LAW

ECTS Credits: 6 (Year 3 Module)

Law

Rationale and Purpose of the Module: To Familiarize the student with the legal regulation of contracts of and for employment, industrial relations, and remedies thereto.

Syllabus: Nature of Labor law, legal classification of the provision of labor, the role of statute in Labor Law. Protective legislation and conditions of employment, health and safety at work, sex discrimination, equal pay. Termination of employment, redundancy, minimum notice and unfair dismissal. Trade unions, legal regulation thereof, worker participation, EC developments. Courts and tribunals in Labor Law.

LA4036 - INTELLECTUAL PROPERTY LAW

ECTS Credits: 6 (Year 3 Module)

Law

Rationale and Purpose of the Module: Intellectual property (IP) is of great importance in modern society and the provision of legal protection to owners of intellectual property is considered by many to be critical to fostering ideas, rewarding innovation and stimulating economic growth. The significance of IP may be identified across a variety of sectors including the engineering, pharmaceutical, medical, entertainment, fashion, and computer/software industries. The aim of the module is to give students an understanding of the various sources and forms of intellectual property (I.P.) rights including patent, trademark, copyright, and design protection.

Syllabus: This module will explore the various sources and forms of intellectual property (I.P.) rights including:

1) patents 2) trademarks 3) copyrights 4) designs

The source of these rights, their limitations, infringement,

and remedies available for breaches will also be covered. The course will also examine common law protections available to protect intellectual property including the tort of passing off and breach of confidence. The focus will be on Irish IP law but will also examine relevant EU directives and global IP treaties.

Law: Year 4 Modules

LA4002 - JURISPRUDENCE

ECTS Credits: 6 (Year 4 Module)

Law

Rationale and Purpose of the Module: To acquire a variety of theoretical perspectives on law through an examination of its nature and operation and an analysis of key concepts and issues.

Syllabus: Schools of jurisprudence: positivism, classical and modern. Keisens pure theory of law. Natural law theories. Historical and anthropological theories. Sociological jurisprudence. Legal realism. Marxist theories of law. Critical legal studies. Economic analyses. The operation of the law: precedent; statutory and constitutional interpretation. Theories of adjudication; Dworkin's rights thesis. Key legal concepts including theories of justice and Hopfield's analysis. Key issues such as morality and the law and the duty to obey the law.

LA4008 - COMPANY AND PARTNERSHIP LAW

ECTS Credits: 6 (Year 4 Module)

Law

Rationale and Purpose of the Module: To provide students with an understanding of the legal regulation of the primary forms of business organization: the corporate entity and the partnership unit. This module will be offered on the program Higher Diploma in Accounting (title to be changed to Professional Diploma in Accounting)

Syllabus: Corporate formation: types of companies, formalities, advantages and disadvantages of incorporation, corporate personality, piercing the veil, groups of companies; corporate governance; role of shareholders, directors, employees, directors' duties, AGM, accounts and audits; minority shareholder protection; protection of parties dealing with corporations: creditors, voluntary and involuntary, charges over companies; ultra vires contracts; capital integrity; minimum requirements, distributions out of profits, repayments of capital; corporate termination: liquidation, receivership, winding up, examinership, amalgamations and reconstructions. Partnerships; joint and several liability; formation of partnerships; dissolution of partnerships; limited partnerships.

LA4058 - HUMAN RIGHTS LAW

ECTS Credits: 6 (Year 4 Module)

Law

Rationale and Purpose of the Module: The aim of this module is to introduce students to the study of international human rights law.

Syllabus: Upon successful completion of this model students will have a detailed knowledge of the international human rights law framework and will be familiar with the major universal and regional systems of human rights law and the legal value and authority of declarations, decisions, judgments, and other output engendered by them. The syllabus will focus extensively on the Council of Europe structures for human rights protection and the United Nations treaty system with emphasis on the impact that the international system has on Irish law. Students will be expected to critically explore the development and expansion of this emerging field of law.

LA4109 - LAW AND CRIMINOLOGY

ECTS Credits: 6 (Year 4 Module)

Law

Rationale and Purpose of the Module: The objective of this module is to introduce students to the core ideas and theories of criminology, demonstrating how Irish criminal justice laws and policies are, or should be, informed by criminological ideas and research. Students will study key strands of criminological thought such as positivism, labelling, strain theory, control theory, while learning how to apply these theories in an Irish context. The module thus offers both an introduction to the discipline of criminology and a different perspective on Irish criminal law and policy to that which is offered in traditional law modules.

Syllabus: This module covers: An introduction to Criminology; An examination of Irish crime trends and statistics; Gender and criminality; Youth offending; Poverty, social exclusion and crime; Addiction, mental health and criminalization; Crime prevention; Organized crime; Desistance and re-integration of offenders.

LA4828 - EQUITY AND TRUSTS 2

ECTS Credits: 6 (Year 4 Module)

Law

Rationale and Purpose of the Module: To inculcate In the student an understanding of the modern law of trusts, their creation and regulation.

Syllabus: The trust, classification of trusts, express, implied, resulting, constructive and charitable trusts. The requirements of a trust, the constitution of trusts. General principles relating to trustees, their obligations and duties, powers of trustees, variations in a trust, fiduciary responsibilities of trustees. Breach of trust and remedies thereof.

Politics & Public Admin



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Politics and Public Admin: Year 1 Modules

PA4022 - INTRODUCTION TO PUBLIC ADMINISTRATION II

ECTS Credits: 6 (Year 1 Module)

Politics and Public Admin

Rationale and Purpose of the Module: Awareness of different systems is essential for explanation, theory and practice in Public Administration. This module explores how new national and international realities shape administrative practices and systems and draws on examples from throughout the world. It examines public service systems in different contexts, the roles and functions they fulfill and the administrative traditions that shaped them. It explores how common administrative problems are dealt with and the processes used to deal with contemporary challenges. It also identifies trends in public sector reform and the role of international institutions, such as the OECD, in promoting public sector modernization. This module will be offered on the new BA Arts program. Pre-requisite module for this module is Module ID 1548 Introduction to Public Administration I.

Syllabus: • Major functions of the modern democratic state • Postmodern public management • Organizing the civil and public service - different approaches, different roles • Structures, processes and institutions in different contexts • Coordination of public policy and administration - towards joined-up government • Links between administrative and political systems • Decentralization, devolution and the hollowing out of the State • Reform trends • The influence of supranational organizations • Contemporary Issues in public administration e.g., the challenges and potential of technology for public service systems ; accountability; gender; ethics.

Prerequisites: PA4001

PO4052 - INTRODUCTION TO POLITICS AND INTERNATIONAL RELATIONS II

ECTS Credits: 6 (Year 1 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module will further introduce students to the study of Politics and International Relations. It will do so by comparing different regime types; by exploring the concepts of democracy, freedom, and justice; and by exploring issues in international politics, such as war, terrorism, inequality, and development. This module will be offered on the Evening Degree.

Syllabus: Democracy & Democratization Authoritarianism and Totalitarianism Arguments for and against Democracy Freedom and Rights Theories of Justice War and Terrorism Inequality and Development.

Politics and Public Admin: Year 2 Modules

PO4104 - CAPITALISM AND SOCIAL JUSTICE

ECTS Credits: 6 (Year 2 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module introduces students to historical and contemporary debates about capitalism. "Capitalism" is a term commonly heard in political conversations, current events, and social science literature. Many pertinent social justice issues, including those relating to inequality, feminism, racism, democracy, and climate governance are tied to questions about capitalism. Having a working knowledge of what capitalism is, what are its core ideas, and what are the major points of controversy surrounding it is thus an essential part of active and globally engaged citizenship, as well as a prerequisite for further study of politics, society, and social justice. Using the tools and methods of political theory, this module will, first, familiarize students with classic debates about capitalism, and, second, equip students with the means to develop their own informed views on such present-day issues as debt, labor rights, inequality, social reproduction, environmental justice, and basic income.

Syllabus: (1) Theories of Capitalism and Social Justice: What is capitalism, and why do so many people complain about it? The first half of the course will examine classic statements, defenses, and criticisms of capitalism by such figures as John Locke, Adam Smith, Karl Marx, and Friedrich Hayek, as well as major accounts of social justice by thinkers such as John Rawls and Olufemi O. Taiwo. (2) Contemporary Social Justice Issues: The second half of the course will look at a selection of contemporary social justice issues that will be (in part) selected by the students. These may include international debt, employment rights, private debt, wealth inequality, gender relations, basic income, or climate justice.

PA4047 - COMPARATIVE PUBLIC POLICY

ECTS Credits: 6 (Year 2 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module explores a range of concepts, theories and findings in public policy research with a view to understanding similarities and differences across advanced industrial societies. What is public policy? How can policy be conceptualized and measured? How can we distinguish types of policy and is it useful to do so? The module examines existing research that seeks to explain policy outputs and policy outcomes. Why do countries respond differently to similar problems? Which factors influence policy making? Do policy actors like parties and interest groups matter? Which interests and ideas matter, and how? Do policy makers learn from their own experiences and from the experiences of others? We will use discussion of these general questions as a platform to explore substantive policy areas. The module is centered on regular reading and participation in class. It places a strong emphasis on recent research literature that uses a range of methods.

Syllabus: Institutions and policy; ideas and policy; path dependency; advocacy coalitions; policy entrepreneurship; policy agendas; parties and policy; lobbying and interest groups; the civil service; policy advice and policy advisers; policy diffusion.

PO4004 - GLOBAL POLITICAL ECONOMY

ECTS Credits: 6 (Year 2 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module aims to familiarize the student with the basic principles and issues in Global Political Economy (GPE). These include the theories associated with GPE and the institutions that manage it. The module, through the assignments and the tutorials, will also develop writing and oral presentation skills.

Syllabus: This module is divided into two sections. The first will deal with the theories used to explain the GPE (mercantilism, liberalism, and critical theory) and how they interact and contribute towards the changing nature of global politics. The second will look at the institutional and governmental workings of the global economic and discuss the context and impacts such governance has had. By the end of the course students should be able to grasp the linkages between politics and economics at the global level and be able to critically evaluate key concepts such as globalization, the relationship between states and markets, the emergence of multinational economic actors and the role and purpose of institutions such as the World Bank, International Monetary Fund and World Trade Organization

PO4030 - THEORIES OF DISTRIBUTIVE JUSTICE

ECTS Credits: 6 (Year 2 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module will examine the main theories of distributive or social justice in contemporary political theory. Issues of distributive justice are at the forefront of political debates, especially since the onset of the financial crisis that affects many developed countries. In this context, the question of a fair allocation and distribution of costs and benefits in a society is a very important one and is the one that this module will address. It will thus introduce students to the main approaches to this issue, from the liberal egalitarianism of John Rawls to (left and right) libertarianism, luck egalitarianism and contemporary analytical Marxism and socialist approaches. It will essentially ask whether the welfare state is justified and how extensive it should be, whether an unconditional basic income should be guaranteed and what level of inequality and/or poverty is acceptable in a just society. The module is being created as an addition to the elective choice for students in semesters 7 and 8 on BA Politics and International Relations and offered on AHSS programs where Politics is an option.

Syllabus: The module will consist of the following topics: •Justice, rights, and morality •Rawls 1 (the contract method) •Rawls 2 (the difference principle and implementation) •Libertarianism •Left libertarianism •Egalitarianism (the egalitarian idea & egalitarian critique of Rawls) •Luck egalitarianism •The currency of justice •The pattern of (egalitarian) distribution •Critiques of luck egalitarianism/distributive justice •Replies to critics.

PO4102 - METHODS AND RESEARCH IN POLITICAL SCIENCE

ECTS Credits: 6 (Year 2 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module will develop students' knowledge of research and methods by introducing them to theory building, research design, and methods of data collection and analysis.

Syllabus: 1. The Scientific Study of Politics 2. Theory Building 3. Evaluating Causal Relationships 4. Research Design 5. Measurement 6. Descriptive Statistics and Graphs 7. Statistical Inference 8. Bivariate Analysis 9. Bivariate Regression Analysis 10. Multiple Regression Analysis.

Politics and Public Admin: Year 3 Modules

PO4015 - GOVERNMENT AND POLITICS OF THE EU

ECTS Credits: 6 (Year 3 Module)

Politics and Public Admin

Rationale and Purpose of the Module: The module aims to develop students' understanding of the way the European Union works and how its policy output and powers affect their lives as citizens. As a result, the module has two objectives. First, to give students a solid understanding of the history, institutions, decision-making processes, and major policies of the European Union. Second, to equip students with an appreciation of the principal issues and controversies which currently face the European Union.

Syllabus: The course is divided into two main parts: The first part looks at the EU Institutions and introduces the basic theories of European integration. The second part concentrates on policies and current EU issues.

Prerequisites: PO4011

Politics and Public Admin: Year 4 Modules

PA4008 - PUBLIC POLICY AND THE ENVIRONMENT

ECTS Credits: 6 (Year 4 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module focuses on environmental policy and the policy processes, outputs, and outcomes related to it, thus addressing public policy responses to some of today's most significant societal challenges. It focuses on explaining differences in environmental policies across political systems and over time, with particular attention given to Europe and Ireland.

It uses environmental policies as a lens through which broader concepts and theories in comparative public policy can be understood, including the conceptualization and measurement of public policy, the influence of institutions, ideas, interests, and international factors, and the role of key actors in public administration, representative politics, and the broader economy and society. The module is centered on regular reading and participation in class. It places a strong emphasis on recent research literature that uses a range of methods of data collection and analysis.

Syllabus: Environmental policy issues; global, EU, and Irish environmental policy; the social sciences and environmental policy; describing policy processes, outputs, and outcomes; environmental leadership and laggard ship; international factors and environmental policy; institutions; representative politics; individual leadership and environmental policy; environmental NGOs and economic interests; public administration and environmental policy; the courts and environmental policy.

PO4048 - ISSUES IN WORLD POLITICS

ECTS Credits: 6 (Year 4 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This main focus of this module is to study current themes in contemporary global politics and to understand their historical development. Students will be able to locate current global issues and place them in a wider theoretical context.

Syllabus: The module is divided into a number of subsections that engage with an area of study in World Politics and more prominently upon an issue of structural and functional importance in International Relations. The first part of the course looks at the historical development of the international system and introduces questions such as sovereignty and the concept of globalization, whilst the second part will be made up of a collection of developments and issues that have arisen out of the current structures within world politics.

PO4118 - IRELAND AND EU MEMBERSHIP: ADAPTING POLITICS, POLICY, AND POLITY

ECTS Credits: 6 (Year 4 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module aims To examine the nature and impact of Irelands membership of the EU To explore the theoretical interpretations of Europeanisation To systematically investigate the impact Europeanisation has had on selected policy domains in Ireland To identify the domestic and global factors which mediated the Europeanisation process and to assess the learning and adaptation which led to changes in Irelands political and policy processes.

Syllabus: Conceptualizing and theorizing Europeanisation. Historical and contemporary interpretations of the relationship between Ireland and Europe. The Irish public and Europe: attitudes and discourse. The institutional and administrative impact of EU membership. Domestic and global factors which mediate the impact of Europeanisation. The effects of Europeanisation on specific policy domains namely, the economy, fiscal policy, regional development, agricultural and rural policy, environmental policy, foreign policy, language policy and equality issues. Europeanisation as a broker of change between Northern and Southern Ireland. Assessing the impact of Europeanisation and the influence of mediating factors. Reflecting on new patterns of governance. Looking to the future. Module review.

PO4138 - GENDER, SEXUALITY AND POLITICS

ECTS Credits: 6 (Year 4 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module provides a much-needed feminist and queer perspective of international politics, tackling topics including militarisation of societies, gender-based violence, activism and social movements. It introduces students to key concepts such as intersectionality and heteronormativity whilst demonstrating how these concepts can help to explain contemporary political debates including continuing unequal political representation, violence against women and minorities, LGBT+ rights and their infringement, and anti-feminist backlash politics. At a time when gender mainstreaming has become the norm in political institutions whilst deep inequalities remain, an in-depth perspective on gender and sexuality is crucial to the study

of Politics.

PO4168 - THE POLITICS OF MIGRATION AND DIVERSITY

ECTS Credits: 6 (Year 4 Module)

Politics and Public Admin

Rationale and Purpose of the Module: This module will explore the contemporary politics of migration and diversity. As well as being matters of great societal relevance today, both migration and diversity also raise difficult challenges for how we think about basic political categories such as citizenship, community and justice. Students who complete this module will be equipped to understand and navigate these challenges, become familiar with different theories of political borders and diversity management, and able to compare competing views about culture, integration and social cohesion. In addition, the module will help students to develop their own views about ethical and political issues related to migration and diversity, and to better understand and appreciate the views of others.

Syllabus: The syllabus has four main components. First, we explore foundational questions about borders and the movement of people across them, exploring the grounds upon which states have sought to limit admission, the case for open borders, and issues surrounding citizenship acquisition and naturalisation. Second, we compare different state-level approaches to diversity management, including liberalism, multiculturalism and interculturalism. Third, we explore issues related to minority integration within Ireland and Europe, including the accommodation of religious minorities, the recognition of linguistic diversity, and the emergence of transnational modes of political belonging. Fourth, we examine issues related to global cultural inequality, including the ethics of cultural appropriation, the unequal trade in cultural products and Indigenous rights.

PO4178 - THE POLITICS OF UTOPIA

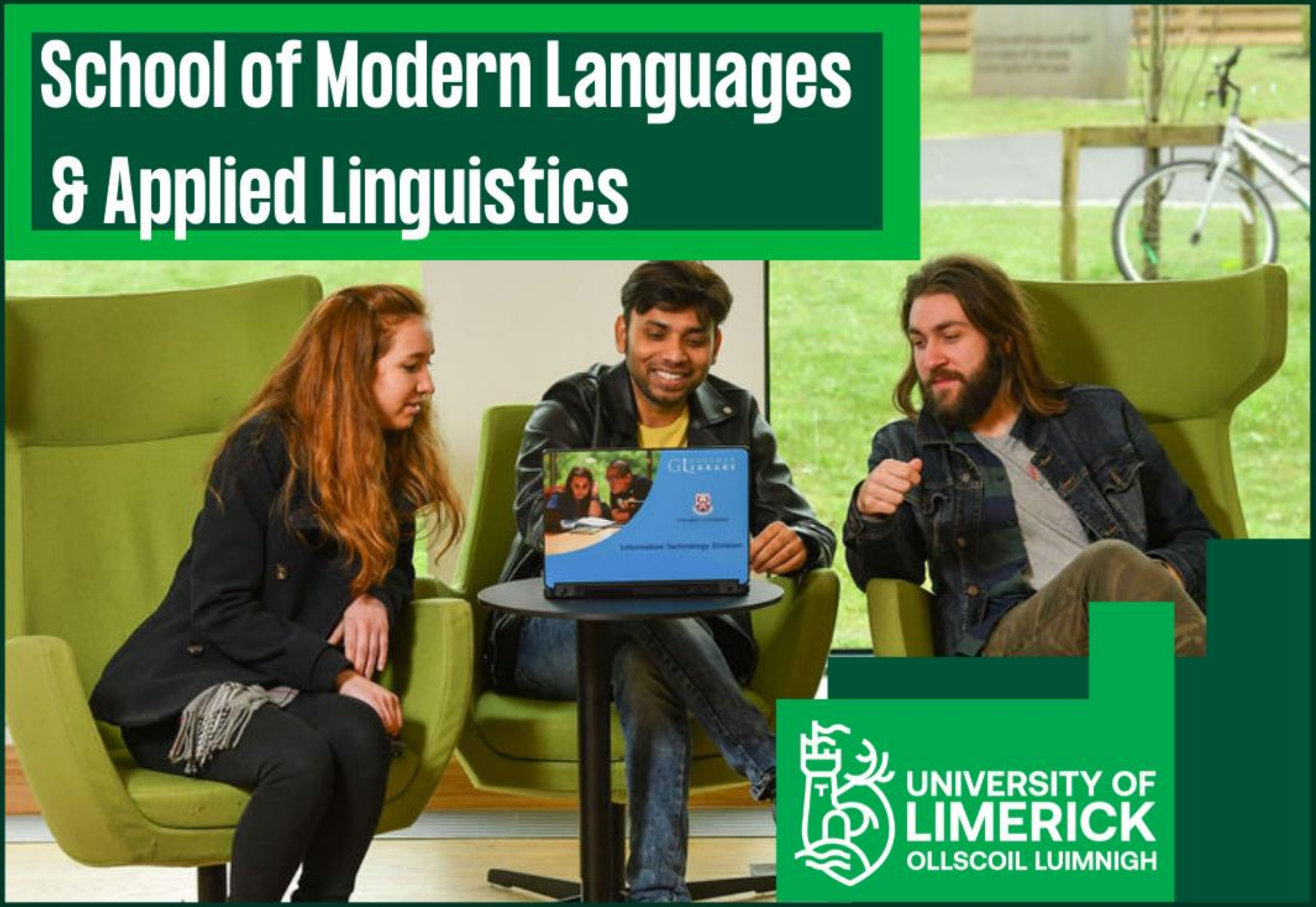
ECTS Credits: 6 (Year 4 Module)

Politics and Public Admin

Rationale and Purpose of the Module: The module provides an urgent introduction to the rich, pluralistic, and influential history of utopian thinking. Utopianism is a diverse body of political, social and economic thought (and action) that has inspired movements, governmental projects, and 'alternative' visions of organising society. The module looks to parse the received wisdom that views utopianism as unrealistic and a project of dreamers. Instead this module introduces students to a tradition that has left its imprint on institutions, movements, and society. The module will draw on a variety of disciplinary perspectives including political science, history, sociology, and literary studies to explore the various expressions of utopianism. Students can also expect to be introduced to innovative research being conducted here at UL through the Ralahine Centre for Utopian Studies.

Syllabus: Students will be exposed to a diverse series of projects that show that humans have repeatedly pursued alternative projects that have succeeded in unexpected ways. Over 12 weeks, students will explore the subject through core themes that include: Key texts and philosophical foundations (weeks 1-3); blueprints and plans (weeks 4-7); practical utopias (weeks 8-10); speculative utopias (weeks 11-12). The following syllabus is indicative and specific topics are subject to change, but this reflects the overall tone of the module. 1. 'More' than this? Foundational texts 2. Waiting for Paradise? Religion as a Utopian Project 3. Looking Backwards: Utopia as nostalgia? 4. Utopian Capitalism 5. Utopian Socialism and Communism 6. Dystopian Nightmares 7. Market Utopias: The free market as a utopian project 8. Building the Co-operative Commonwealth 9. Technology and Utopia: Centring the Human? 10. Finding the Commons: the Social and Solidarity Economy 11. Real Utopias: Realising Alternative Visions 12. (Science) Fictional Utopias

School of Modern Languages & Applied Linguistics



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

School of Modern Languages and Applied Linguistics: Year 1 Modules

FR4102 - FRENCH FOR BEGINNERS 2

ECTS Credits: 6 (Year 1 Module)

School of English, Irish and Communication

Rationale and Purpose of the Module : This module is set at A2 on the Common European Framework of Reference for Languages (CEFR). The continuation beginners' course aims to provide the student with a solid knowledge of French language and Francophone cultures. The course is designed to enable the student to understand, use and consolidate simple structures of French grammar; to expose the student to a wider range of vocabulary and expressions which will allow them to present themselves to, and communicate with speakers of French; to continue fostering autonomous language learning skills; to further explore French and Francophone cultures; to further develop listening and speaking skills in French, and to further equip the student with basic writing skills.Gaeilge (TEG) Beginner A1 Level language themes and an integrated lecture series where the cultural roots of the language are explored. The language topics are: daily life (2), talents and skills, food and drink, holidays and travel, pastimes (2), and making arrangements. Cultural topics are: Irish language lead organisations and networks, the Irish language and education; language policy and planning; the Irish language in business, branding and advertising; the Irish language abroad; indigenous wisdom (proverbs); cultural institutions; Irish language in cultural movements and the arts (2); the Irish language events calendar, and Irish-language films.

Syllabus: This syllabus is set at A2 on the Common European Framework of Reference for Languages (CEFR). Lectures and tutorials will cover the following with particular reference to the historical and socio-cultural backgrounds of contemporary France and other Francophone countries; the concepts, forms and uses of past and future tenses and more complex grammatical syntactic structures in the French language.

ES4002 - EUROPEAN STUDIES WORKSHOP

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: The module takes the form of a workshop with a strong practical focus. It has a four-fold purpose: 1 Consolidating the sense of Course identity among European Studies students. 2 Providing an opportunity for students to discuss the application of their theoretical knowledge about the European Union with practitioners, experts, and politicians in areas where Ireland's EU membership has a vital impact. 3 Providing students with space to explore the complexities of EU decision-making in simulation games. 4 For teaching-staff the module provides a space for experimenting with the innovative ways to teach European (Union) Studies.

Syllabus: The proposed syllabus remains open and flexible but will contain two distinct elements of six weeks each, though not necessarily in separate blocks: 1. Guest-speakers: Three speakers will be invited from fields in which Ireland's membership of the European Union is of central importance. These are also likely to be the areas in which European Studies graduates may find employment. Speakers can be offered to by all disciplines participating in the degree program. They may include staff of the European Parliament Representation or the European Commission Representation in Dublin, MEPs, senior civil servants interested in EU affairs, politicians active in parliamentary committees with a strong EU focus, civil society organizations such as the European Movement, trade unions, EU translators and interpreters, companies with a strong international orientation or trade links with other EU countries, international legal firms, journalists etc. Each visit will be thoroughly prepared beforehand, and the work context of the speaker will be explored. This will allow the students to make more effective use of guest speakers than is normally the case. 2. EU Negotiation Simulation Games: The other half of the module will be dedicated to an EU negotiation simulation exercise which will take account of topical issues. These can take the forms of a European Parliament debate, interactions which occur within and between the European Parliament, the European Commission, and the Council of Ministers during the process of drawing up EU legislation, discussions among representations of regional interests and inter-regional cooperation etc. There are a number of models and guidelines for such exercises available; some are listed in the resources below. In preparatory sessions students will be enabled to formulate the policy stances of different member states, parties, interest/lobby groups etc.

This will require independent research for which students are strongly encouraged to make use of their language skills. Through such simulation exercises, students will gain formal knowledge of the process and techniques of negotiation and decision-making in the EU. In addition, they learn how other factors can affect outcomes, including time pressure, informal discussions that take place on the margins, personalities, negotiating strategies, negotiating languages etc. The module may incorporate a visit to Brussels. The relative openness and flexibility of this workshop module also provides the space for interaction with incoming ERASMUS students who may wish to participate aas well as for joint projects with our ERASMUS partner institutions involved in teaching European Studies. Exploratory discussions about such collaborations are currently under way. Students will have to write a report of the simulation exercise as well as a research essay on a topic of their choice.

Prerequisites: ES4001

FR4142 - FRENCH LANGUAGE AND SOCIETY 2: INTRODUCTION TO FRENCH

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1+ on the Common European Framework of Reference for Languages (CEFR). (i) To review key aspects of contemporary Francophone societies; (ii) to continue to develop students receptive and active language skills; (iii) to consolidate students knowledge of French grammar; (iv) to reinforce students awareness of issues related to the evolution of the French language and in particular regional varieties and la Francophonie; (v) to promote students reading and analytical skills in the study of French literature.

Syllabus: This syllabus is set at B1+ on the Common European Framework of Reference for Languages (CEFR). Students are introduced in lectures to the study of social, historical, linguistic and literary aspects of France and francophone societies. Themes presented this semester are (i) decolonization and the variety of francophone communities; (ii) the search for identity in modern literature; (iii) la Francophonie and regional varieties of language. Tutorials explore these subjects and students reading and writing skills are improved through regular exercises. Particular attention is paid to oral and aural skills in French which are developed through the discussion of a broad selection of contemporary oral and written texts from diverse media. Students continue to review issues related to French grammar.

Prerequisites: FR4141

FR4242 - FRENCH LANGUAGE, CULTURE AND SOCIETY 2A

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1+ on the Common European Framework of Reference for Languages (CEFR). (i) To provide students with an introduction to major aspects of contemporary Francophone societies and cultures; (ii) to familiarize students to issues related to the evolution of the French language particularly its regional varieties and la Francophonie worldwide; (iii) to promote students reading and analytical skills in the study of French literature; (iv) to give a solid grounding to a number of points of French Grammar. (v) to further develop students practical language skills (oral and written).

Syllabus: This syllabus is set at B1+ on the Common European Framework of Reference for Languages (CEFR). Students are introduced in lectures to the study of social, historical, linguistic and literary aspects of France and francophone societies. Themes explored this semester are (i) decolonization and the variety of francophone communities (ii) the search for identity in modern literature (iii) la Francophonie and regional varieties of language. These topics are discussed in depth in the more active setting of weekly tutorials. Oral and aural skills in French are a particular focus, and they are developed through the discussion of a broad selection of oral and written material from diverse media. The study of French grammar in semester 1 is continued.

Prerequisites: FR4241

FR4622 - LITERATURE AND CULTURE 2: TWENTIETH-CENTURY LITERATURE IN FRANCE

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To develop students' knowledge of twentieth-century literature from a variety of critical perspectives. To enable students to apply critical skills to the study of recent literature in French. To develop students' skills in communicating ideas in oral and written French.

Syllabus: A number of literary texts of an appropriate linguistic level and representativity in terms of period and genre will be studied in this module.

FR4922 - FRENCH FOR BUSINESS 2A

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). (i) To consolidate and expand students Business French acquired in Semester one; (ii) to provide students with an understanding of key aspects of contemporary Francophone societies; (iii) to further develop practical language skills (receptive and active); (iv) to develop students appreciation of French literature; (v) to extend students knowledge of French grammar.

Syllabus: This syllabus is set at B1 on the Common European Framework of Reference for Languages (CEFR). Students are introduced to the detailed study of social, historical, linguistic and literary aspects of France and la Francophonie. Themes presented this semester are (i) decolonization and the variety of francophone communities (ii) the search for identity in modern literature and (iii) la Francophonie and regional varieties of language. Oral and aural skills in French are further improved through the discussion of a broad selection of contemporary oral and written texts from diverse media. With the use of authentic material (both written and oral) and with a variety of linguistic activities simulating a business environment students are asked to deal competently with tasks encountered in specific situations. The areas of focus include: finance, accounts, and investments. Students also study a literary text related to one of the lecture themes. The study of French grammar -in semester 1- is continued.

Prerequisites: FR4921

GE4142 - GERMAN LANGUAGE AND SOCIETY 2: INTOD GERMAN STUD II

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). To give an overview over major trends in German culture and society from 1945 to today by means of texts and visual material. To introduce aspects of social and regional variation in the German language. To continue introduction to the analysis of literary texts in German. To conclude the revision of grammatical structures enabling students to use them with a high degree of fluency and correctness.

Syllabus: This syllabus is set at B1 on the Common European Framework of Reference for Languages (CEFR). Lecture: Postwar German-speaking countries: society and institutions; political, economic, cultural and literary trends; contemporary literature and culture in the German-speaking countries of Europe. Tutorials: a) analysis of literary texts to provide further access to the topics discussed in the lecture while at the same time further developing reading techniques, principles of textual analysis and text discussion in oral and written form; b) Contrastive grammar work continued. Language laboratory: exercises in pronunciation, listening comprehension and grammar utilizing CALL facilities.

Prerequisites: GE4141

GE4212 - GERMAN FOR BEGINNERS 2 (APPLIED LANGUAGES)

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at A1/A2 on the Common European Framework of Reference for Languages (CEFR). This module aims to: To give an overview of major trends in German culture and society in the post-war period. To consolidate and develop basic communicative skills acquired in GE4211 To introduce further basic grammatical structures/functions and consolidate those covered in previous module.

Syllabus: This syllabus is set at A1/A2 on the Common

European Framework of Reference for Languages (CEFR). Lecture: Postwar German-speaking countries: society and institutions; political, economic, cultural and literary trends; contemporary literature and culture in the German-speaking countries of Europe. Tutorials: The course builds on GE4211, introducing further grammatical structures, functions and vocabulary. Development of all four language skills in the classroom and laboratories. Transfer of known structures to a variety of communicative contexts. Further guidance will be given to students on how best to develop self-study skills to reinforce material covered during the course. One tutorial provides an introduction to German drama and further short stories. Language Laboratory: One hour per week will be spent in the computer laboratory, consolidating grammar and develop self-study skills to reinforce material covered during the course.

Prerequisites: GE4211

GE4242 - GERMAN LANGUAGE, CULTURE AND SOCIETY 2A

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). To further develop student awareness of political structures and to provide an understanding of German-speaking countries as economic and industrial entities; to continue development and consolidation of communicative skills; to develop autonomous language learning methods. Continued emphasis on establishing a solid foundation in the language; by the end of Year 1 students are expected to use all basic grammatical structures with a high degree of fluency and correctness.

Syllabus: This syllabus is set at B1 on the Common European Framework of Reference for Languages (CEFR). Lecture: Postwar German-speaking countries: society and institutions; political, economic, cultural and literary trends; contemporary literature and culture in the German-speaking countries of Europe. Tutorial work: one hour text work develops skills relating to textual analysis, grammar in use and writing, literary texts relating to lectures will also be discussed in this class and examined in the oral and written exams; one hour grammar/translation consolidates existing grammatical knowledge and introduces more complex structures through contrastive work using English/German translation exercises; German linguistics relates general linguistic course to the German situation, focusing on past and current developments in the German language.

GE4622 - GERMAN LITERATURE AND CULTURE 2: TEXT, WRITER AND READER

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To introduce students to aspects of text theory and reception theory. To show a literary work, its writer and its readers as products of their time and literature as a reaction to social and political developments.

Syllabus: Lecture: What is a text? The process of reading; intertextuality; reception of literature; relationship between work and biography of the writer; literature on stage: theatre; literature and politics. Tutorials: a) continuation of the introductory course to German literature; b) a study of the biography of two writers, their work and their time with a particular focus on dramatic texts.

GE4922 - GERMAN FOR BUSINESS 2A

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). To continue the business German foundation provided in Semester 1. To continue to provide an insight into socio-economic and political structures in Germany and to develop students' familiarity with German culture. To equip students with the linguistic skills necessary to deal with business situations. To familiarize students with organizational structures of German firms.

Syllabus: This syllabus is set at B1 on the Common European Framework of Reference for Languages (CEFR). Lecture: Postwar German-speaking countries: society and institutions; political, economic, cultural and literary trends; contemporary literature and culture in the German-speaking countries of Europe. Tutorials: a) analysis of literary texts to provide further access to the topics discussed in the lecture while at the same time further developing reading techniques, principles of textual analysis and text discussion

in oral and written form; b) introduction to firm structures in Germany; induction in telephone techniques and other work-related interactive skills Language laboratory: exercises in pronunciation, listening comprehension and grammar utilizing CALL facilities.

Prerequisites: GE4921

JA4112 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 2 (ADVANCED)

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To give an overview of Japanese culture and society from 1945 to today by means of texts and visual material. To conclude the revision of grammatical structures and kanji enabling students to use them with a high degree of fluency and correctness.

Syllabus: Lecture: Japanese history, society and institutions; Tutorials: a) analysis of literary and other texts to provide further access to the topics discussed in the lecture while at the same time further developing reading techniques; b) Grammar work continued, listening comprehension. Autonomous Project work utilizing CALL facilities.

JA4212 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 2

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at A2 on the Common European Framework of Reference for Languages (CEFR). To give an overview of Japanese culture and society from 1945 to today by means of texts and visual material. To conclude the revision of grammatical structures and kanji enabling students to use them with a high degree of fluency and correctness.

Syllabus: This syllabus is set at A2 on the Common European Framework of Reference for Languages (CEFR) Lecture: Japanese history, society and institutions; Tutorials: a) analysis of literary and other texts to provide further access to the topics discussed in the lecture while at the same time further developing reading techniques; b) Grammar work continued, listening comprehension. Autonomous Project work utilizing CALL facilities.

JA4222 - JAPANESE READING AND TRANSLATION

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To develop skills in reading longer texts in Japanese: in the areas of culture, current affairs and some short stories. To do initial work in translating various types of short passages from Japanese to English.

Syllabus: Lecture: Work on the structure of kanji as a means of achieving faster acquisition and greater learner autonomy; sources of Japanese texts, particularly on the web; introduction to web-based aids to reading in Japanese; characteristics of Japanese as a Source Language in translation. Tutorial work: One tutorial will deal with reading (particularly techniques for faster reading), the second with English to Japanese translation of a variety of short texts.

JA4912 - JAPANESE FOR BUSINESS 2

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at A2 on the Common European Framework of Reference for Languages (CEFR). To consolidate and increase abilities already gained in understanding, speaking, reading and writing, and further students' understanding of Japanese society, as well as to develop further strategies for autonomous language learning.

Syllabus: This syllabus is set at A2 on the Common European Framework of Reference for Languages (CEFR). Listening exercises dealing with street directions, descriptions of places, abilities, and family. Speaking practice emphasizing talk about one's own and others families in the correct register descriptions of places. Reading descriptions of towns in Ireland and Japan as well as passages about Japanese sport and pastimes. Writing

more complicated passages about family and place, pastimes, likes and dislikes. This will involve the introduction and practice of a further 80 kanji, bringing the total learned to 160. Discussion of aspects of Japanese society e.g. the economic system, education, Japanese literature.

Prerequisites: JA4911

LI4001 - PEER TUTORING FOR LANGUAGES

ECTS Credits: 3 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module aims to provide students who are native speakers of a language other than English which is taught in the School of Languages, Literature, Culture and Communication (hereafter referred to as LOTE students) with the appropriate training, guidance and support to effectively facilitate optional peer-led discussion groups or one-to-one sessions in the target language for UL language learners of French, German, Irish, Japanese and Spanish. It also aims to provide the LOTE students with transferable knowledge and skills which will be of use to them in their future careers and in their own language learning. This module mainstreams a project which has been very successfully running with AHSS Faculty Development Teaching Fund since September 2012. In AY 2012-13, 19 LOTE students were trained as peer tutors and 133 hours of additional language practice were provided. Substantially more hours are being provided in AY 2013-14 (32 peer tutors have enrolled in the Autumn Semester). Practicing the language is paramount in achieving fluency and accuracy, and yet language studies programs within Higher Education are understandably limited in the amount of focused language practice they can offer. This module aims, therefore, also to address this issue by providing multilingual peer tutoring in a systematic manner, parallel to existing language studies modules. Consequently, the module equally provides additional benefit in supporting all UL language students participating in the discussion groups and/or one-to-one sessions.

Syllabus: This module will prepare LOTE students to facilitate peer-led discussion groups and one-to-one sessions in their native language. It will particularly focus on the following aspects: - The role of a facilitator of a discussion group or one-to-one session - The difference between teaching a language class and facilitating a discussion group or one-to-one session - The skills and techniques necessary to break the ice within a group or in a one-to-one session - The feedback which it is appropriate to give to attendees (grammar, vocabulary, pronunciation, register, etc.) - The role of attendees' language-learning background - Relevant topics for the discussion-group sessions and one-to-one sessions - Communication issues which may arise (e.g. cultural differences) - Key communication strategies necessary to encourage participation in a discussion group - The main linguistic pitfalls for language learners - The nature and role of a reflective portfolio.

LI4212 - LINGUISTICS 2

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This course is designed to serve as an introduction to basic concepts and theories in sociolinguistics. The various subfields and branches of sociolinguistics will be introduced and discussed in class lectures. The more specific objectives of this course are: Recognize the fundamental relationship between language and society Use the basic terminology and concepts of sociolinguistic subfields To acquaint you with the basic concepts necessary to pursue sociolinguistic studies further, if you wish to.

Syllabus: The module comprises four distinct but also interrelated themes, each of which will be dealt with in sequential blocks over the twelve-week module: 1. Sociolinguistics: In this first part, students will be introduced to basic concepts in sociolinguistics, including: accent, dialect, speech community. 2. Multilingualism: In this second part, students will learn about key features of multilingual societies. 3. Language and Media. In the third section, students will focus on the relationship between language and how it is used in the media. 4. Language and Gender: The final section of the module will focus on the relationship between language and gender.

SP4002 - INTRODUCTION TO LATIN AMERICAN CULTURE/S

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: First year students majoring in Spanish need to have a general but solid knowledge of the main socio-political processes in Latin American history and their effects on and interaction with literary and film production, as well as other forms of culture, as background for further modules and as part of their overall achievement within this program.

Syllabus: The development of Latin American culture has been marked by its multicultural and multi-ethnic history. The arrival of the Spanish Conquistadors had a massive effect in Latin American cultures and civilizations. From 1492 onwards, the construction of Latin American identities are characterized by the encounter and interaction of indigenous and African cultures and the influence of the Hispanic tradition. In order to explore the development of Latin American culture, the module will pay special attention to a number of themes, from the Amerindian civilizations to the literary boom of the 1960s, Magical Realism, and the importance of women's artistic production.

SP4132 - SPANISH FOR BEGINNERS 2

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at A1/A2 on the Common European Framework of Reference for Languages (CEFR). The beginners course aims to provide the student with a strong basic knowledge of Spanish and of contemporary Spain and Latin America. The course is designed to: Enable the student to understand and use basic structures of Spanish grammar. Expose the student to a range of vocabulary and expressions which will allow her/him to present her/himself to and communicate with native speakers of Spanish. To foster autonomous language learning skills. To introduce the student to Spanish and Latin American cultures. To develop listening and speaking skills in Spanish. To equip the student with basic writing skills.

Syllabus: This syllabus is set at A1/A2 on the Common European Framework of Reference for Languages (CEFR). Lecture: introduction to contemporary Spanish and Latin American cultures and societies. These include transculturation and indigenous cultures in Latin America, contemporary Spanish and Latin American literature, basic concepts of Spanish linguistics. Tutorials and lab: working with set textbook, back-up audio-visual and online materials, students are introduced to past tenses, pronominal verbs and more complex structures in the Spanish language.

Prerequisites: SP4131

SP4142 - SPANISH LANGUAGE AND SOCIETY 2

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). The course is designed to: * Revise and broaden the students' knowledge of the structures of Spanish grammar. * Expand the student's range of Spanish vocabulary. * Improve pronunciation and patterns of intonation in Spanish. * Further develop the students' language skills by exposing them to different situations and registers, both formal and informal. * Facilitate the students understanding of various cultural aspects within the Spanish-speaking world. * Foster autonomous language learning.

Syllabus: This syllabus is set at B1 on the Common European Framework of Reference for Languages (CEFR). The course is designed to: Revise and broaden the students' knowledge of the structures of Spanish grammar. Expand the student's range of Spanish vocabulary. Improve pronunciation and patterns of intonation in Spanish. Further develop the student's language skills by exposing them to different situations and registers, both formal and informal. Facilitate the students understanding of various cultural aspects within the Spanish-speaking world. Foster autonomous language learning.

Prerequisites: SP4141

SP4152 - SPANISH FOR BUSINESS 2 (BEGINNERS)

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at A1/A2 on the Common European Framework of Reference for Languages (CEFR). The beginner's module aims to provide the student with a strong basic knowledge of Spanish and of contemporary Spain and Latin America, particularly as regards the economic and commercial

dimensions. The module is designed to: Enable the student to understand and use basic structures of Spanish grammar. Expose the student to a range of vocabulary and expressions which will allow her/him to present her/himself to, and communicate with native speakers of Spanish. To foster autonomous language learning skills. To introduce the student to Spanish and Latin American cultures. To develop listening and speaking skills in Spanish. To equip the student with basic writing skills.

Syllabus: This module is set at A1/A2 on the Common European Framework of Reference for Languages (CEFR). The main areas of grammar covered are: impersonal hay; hay versus estar; present indicative of ir and saber; o-ue, e-I and e-ie radical changes; basic prepositions of place; comparatives and superlatives; impersonal gustar; further irregular verb patterns; development of ser/estar distinction; con with personal pronouns; indirect object pronouns. The main areas of phonology covered are: reinforcement of the vowel and consonant systems and basic word stress patterns. The above are complemented by communicative, lexical and oral and written skills syllabi included in a textbook which will be chosen according to the range of availability at the relevant point in time. An example of the latter would be units 1-4 of the textbook Socius, the details of which are described at: https://www.difusion.com/uploads/telechargements/catalogue/ele/socios/socios1_LA_muestra.pdf.

Prerequisites: SP4151

SP4162 - SPANISH FOR BUSINESS 2

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). To develop students' understanding of key aspects of contemporary Hispanic societies. To further develop practical language skills (receptive and active). To reinforce and extend students' knowledge of Spanish vocabulary and grammar. To consolidate students' Business Spanish acquired in Semester one. To enhance students' reading and analytical skills in the study of Spanish textual material.

Syllabus: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). The main areas of grammar covered are: discourse markers and other cohesive devices; nature, position and combinations of object pronouns; pluscuamperfecto tense; (non)finite verbs in temporal phrases; The main areas of phonology covered are: reinforcement of the vowel and consonant systems and basic word stress patterns. The above are complemented by communicative, lexical and oral and written skills syllabi included in a textbook which will be chosen according to the range of availability at the relevant point in time. An example of the latter would be units 4-7 of the textbook Expertos. These include areas such as: the lexis of international business; presenting oral reports; marketing materials and the lexis of entrepreneurship; the lexis of the stock exchange; writing summaries; the lexis of work/life balance. The details of these syllabi are described at: https://www.difusion.com/catalogo/metodos/profesional/expertos/expertos-libro-del-profesor

Prerequisites: SP4161

SP4232 - SPANISH LANGUAGE, CULTURE AND SOCIETY 2 (BEGINNERS)

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at A1/A2 on the Common European Framework of Reference for Languages (CEFR). The beginners course aims to provide the student with a strong basic knowledge of Spanish and of contemporary Spain and Latin America. The course is designed to: Enable the student to understand and use basic structures of Spanish grammar. Expose the student to a range of vocabulary and expressions which will allow her/him to present her/himself to, and communicate with native speakers of Spanish. To foster autonomous language learning skills. To introduce the student to Spanish and Latin American cultures. To develop listening and speaking skills in Spanish. To equip the student with basic writing skills.

Syllabus: This syllabus is set at A1/A2 on the Common European Framework of Reference for Languages (CEFR). Lecture: introduction to contemporary Spanish and Latin American cultures and societies. These include: transculturation and indigenous cultures in Latin America; contemporary Spanish and Latin American literature, basic concepts of Spanish linguistics. Tutorials and lab: working with set textbook, back-up audio-visual an online material,

students are introduced to past tenses, pronominal verbs and more complex structures in the Spanish language.

Prerequisites: SP4231

SP4242 - SPANISH LANGUAGE, CULTURE AND SOCIETY 2A

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). The course is designed to: - Revise and broaden the students' knowledge of the structures of Spanish grammar. - Expand the student's range of Spanish vocabulary. - Improve pronunciation and patterns of intonation in Spanish. - Further develop the students' language skills by exposing them to different situation and registers, both formal and informal. - Facilitate the students understanding of various cultural aspects within the Spanish-speaking world. - Foster autonomous language learning.

Syllabus: This syllabus is set at B1 on the Common European Framework of Reference for Languages (CEFR). The advanced course consists of four hours of Spanish per week: - Two language tutorials (grammar, vocabulary, communication skills, writing and reading skills). - One laboratory/oral class (oral communication skills). - One General Lecture

Prerequisites: SP4241

SP4622 - INDIGENISMO AND NEGRISMO IN LATIN AMERICA LITERATURE

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: Aims & Objectives: To analyze Latin American literature from the marginalized perspective of two distinct ethnic groups as a way of examining the authenticity and specificity of Latin American peoples and their literature. To broaden and enrich students' critical thinking by exposing them to issues closely related to the quest for human rights and freedom of marginal groups in Latin America.

Syllabus: Students will analyze poetry, novels and testimonies by/about black and indigenous populations to include some of the following: Alcides Arguedas (Bolivia), Jorge Icaza and Adalberto Ortiz (Ecuador), Miguel Angel Asturias (Guatemala),JosÚ MarÝa Arguedas, Enrique López Alb·jar and NicomÚdes Santa Cruz (Per·), Lydia Cabrera and Manuel Cofi±o (Cuba) among others.

Prerequisites: SP4003

TE4012 - ENGLISH AS A FOREIGN LANGUAGE 2 (INTERMEDIATE)

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1+ on the Common European Framework of Reference for Languages (CEFR). To provide language support to students on the Erasmus exchange programs to enable them to benefit more fully from their Erasmus experience at a social, cultural and academic level. To provide integrated tuition and practice in the four language skills of listening, speaking, reading and writing.

Syllabus: This syllabus is set at B1+ on the Common European Framework of Reference for Languages (CEFR). Students work from a set textbook, back-up audio visual and on-line material. Practice is given in the four language skills, language awareness-raising and with special emphasis on pronunciation at this level. The following grammatical areas are covered: second and third conditionals, passive voice, gerunds and infinitives, reported statements, reported questions and commands, quantifiers, articles lexis e.g phrasal verbs, strong adjectives, ed/ing adjectives, some uses of get, noun formation, compound nouns, frequent collocations, common expressions, conversational responses and idioms, discourse markers (oral and written) e.g. connectives, sequencing, signposting.

TE4022 - ENGLISH AS A FOREIGN LANGUAGE 2 (UPPER INTERMEDIATE)

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2+ on the Common European Framework of Reference

for Languages (CEFR). To provide language support to students on the Erasmus exchange programs to enable them to benefit more fully from their Erasmus experience at a social, cultural and academic level To provide integrated tuition and practice in the four language skills of listening, speaking, reading and writing.

Syllabus: This syllabus is set at B2+ on the Common European Framework of Reference for Languages (CEFR). Students work from a set textbook, back-up audio visual and on-line material. Integrated tuition and practice is given in the four language skills. The following grammatical areas are covered: adjective order, hypothetical time, countability and plural nouns, quantifiers, gerund or infinitive after verbs, clauses of contrast, clauses of purpose and reason, reporting verbs, use of the passive, as/like Lexis: wordbuilding, homonyms, frequent collocations, common expressions, conversational responses and idioms, discourse markers (oral and written) e.g. connectives, sequencing, signposting.

TE4032 - ENGLISH AS A FOREIGN LANGUAGE 2 (ADVANCED)

ECTS Credits: 6 (Year 1 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). To provide language support to students on the Erasmus exchange programs to enable them to benefit more fully from their Erasmus experience at a social, cultural and academic level To provide tuition and practice in the four language skills of listening, speaking, reading and writing.

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). Students work from a set textbook, back-up audio visual and on-line material. Integrated tuition and practice is given in the four language skills. The following areas are covered: grammar; future forms, wishes and regrets, defining and non-defining relative clauses, noun clauses, adverb clauses, perfective v progressive aspect, gerunds, infinitives Lexis: discourse markers, phrasal verbs, collocations, British v American English.

School of Modern Languages and Applied Linguistics: Year 2 Modules

BR4901 - BROADENING: BEGINNERS JAPANESE

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistic

Rationale and Purpose of the Module: In line with the UL strategy to broaden the curriculum, this module will offer students in a range of different disciplines an opportunity to engage in learning Japanese. In our increasingly multicultural and multilingual society, it is crucial that students have opportunities to learn about and appreciate other languages and cultures. To this end, the module aims at developing students' competence in Japanese and is targeted at those who have not studied Japanese previously. The emphasis is on achieving a basic level of communication in all four skills (listening, speaking, reading and writing) while developing confidence and a degree of accuracy when using the language in a limited range of situations. The module also aims to stimulate students' interest in Japan and deepen their knowledge and understanding of Japanese society and culture.

Syllabus: This module aims to introduce students to Japanese and gradually develop their ability to function at beginners' level. Students should develop a basic understanding of everyday vocabulary, understand the rules of pronunciation and have a basic grasp of the relevant grammar for that level. The module will allow students gain sufficient proficiency in Japanese to: • recognize numbers, times, days, dates, where things are, greetings and questions; • speak using greetings, expressions of time, price, number, place, talk about themselves, their likes, dislikes, pastimes and schedules, and ask basic questions; • read words written in the hiragana, katakana and kanji writing systems, grasp information from signs, posters, notices, self-introductions, and descriptions; • write, using the writing systems studied, short passages about themselves, their lives and their pastimes; in particular, passages introducing themselves and their schedules; • be able to read and write using hiragana, katakana and about 50 kanji; • discuss and analyse aspects of Japanese history, culture and society in English.

BR4911 - BROADENING: BEGINNERS FRENCH

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: In line with the UL strategy to broaden the curriculum, this module will offer students in a range of different disciplines an opportunity to engage in learning French. In our increasingly multicultural and multilingual society, it is crucial that students have opportunities to learn about and appreciate other languages and cultures. To this end, the module aims at developing students' competence in French and is targeted at those who have not studied French previously. The module is mapped on to the A1 level of the Common European Framework for Languages where the emphasis is on achieving a basic level of communication in all four skills (listening, speaking, reading and writing). It will also aim at developing confidence and a degree of accuracy when using the language in a limited range of situations. The module also aims to stimulate students' interest in the French-speaking world and deepen their knowledge and understanding of French society and culture.

Syllabus: This module aims to introduce students to French and gradually develop their ability to the level of A1 as outlined by the Common European Framework for Languages. Students should develop a basic understanding of everyday vocabulary, understand the rules of pronunciation, and have a basic grasp of the relevant grammar for that level. The module will allow students gain sufficient proficiency in French to: • manage to pronounce very short, isolated mainly ready-made expressions; • show a limited control of a few simple grammatical structures; • use a very basic repertoire of words related to personal details; • use a limited range of vocabulary to talk about particular concrete situations; • use a small range of ready-made expressions and phrases related to everyday topics (introductions, leave-taking, apologies); • write simple isolated phrases and sentences on everyday topics.

BR4921 - BROADENING: BEGINNERS GERMAN

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: In line with the UL strategy to broaden the curriculum, this module will offer students in a range of different disciplines an opportunity to engage in learning German. In our increasingly multicultural and multilingual society, it is crucial that students have opportunities to learn about and appreciate other languages and cultures. To this end, the module aims at developing students' competence in German and is targeted at those who have not studied German previously. The module is mapped on to the A1 level of the Common European Framework for Languages where the emphasis is on achieving a basic level of communication in all four skills (listening, speaking, reading and writing), It will also aim at developing confidence and a degree of accuracy when using the language in a limited range of situations. The module also aims to stimulate students' interest in the German-speaking world and deepen their knowledge and understanding of German society and culture.

Syllabus: This module aims to introduce students to German and gradually develop their ability to the level of A1 as outlined by the Common European Framework for Languages. Students should develop a basic understanding of everyday vocabulary, understand the rules of pronunciation, and have a basic grasp of the relevant grammar for that level. The module will allow students gain sufficient proficiency in German to: • manage to pronounce very short, isolated mainly ready-made expressions; • show a limited control of a few simple grammatical structures; • use a very basic repertoire of words related to personal details; • use a limited range of vocabulary to talk about particular concrete situations; • use a small range of ready-made expressions and phrases related to everyday topics (introductions, leave-taking, apologies); • write simple isolated phrases and sentences on everyday topics.

FR4924 - FRENCH FOR BUSINESS 4A

Limited places available: 5

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1+ on the Common European Framework of Reference for Languages (CEFR). To extend within a French business context students reading, speaking, writing, and listening skills already practised in the previous terms of university study. This is achieved: by revising and increasing students' knowledge of French vocabulary and grammar by familiarizing them with new aspects of French society and culture by introducing students to Business French relevant to their future professional needs.

Syllabus: This syllabus is set at B1+ on the Common European Framework of Reference for Languages (CEFR). The French for Business 4 module provides students with the space to expand their knowledge and language skills. Using authentic material, students are asked to perform in a simulated business environment a variety of tasks encountered in specific situations -Focus area: Corporate culture (workers and their workplace, internal communication, time management). In addition students make short oral presentations in the target language on selected French social/ cultural issues. Students also study a literary text related to the area of study currently "Les mains sales" by Jean-Paul Sartre.

GE4924 - GERMAN FOR BUSINESS 4A

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1+ on the Common European Framework of Reference for Languages (CEFR). To prepare students for job interviews and applications and to reflect on their professional goals and career aspirations. To enable students to write and communicate successfully in a professional business and/or legal context in a form they are likely to encounter during their work experience and future career.

Syllabus: This syllabus is set at B1+ on the Common European Framework of Reference for Languages (CEFR). Lecture: Focus on job application process in German-speaking countries, future career familiarisation with current affairs with the focus on economic and legal topics; Tutorial: a) production of business and legal correspondence; b) introduction to translation into English and German; text work in form of summaries and descriptions of graphs etc. c) revision of all grammatical structures, emphasis on passive and indirect speech

Prerequisites: GE4924, GE4143

JA4914 - JAPANESE FOR BUSINESS 4

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). To enable students to understand more advanced authentic and near authentic, modern Japanese texts and to produce a greater range of spoken and written texts; to foster in students an understanding and appreciation of modern Japanese writing; to consolidate their knowledge of issues in contemporary Japanese business and society.

Syllabus: This syllabus is set at B1 on the Common European Framework of Reference for Languages (CEFR). Listening practice concentrating on authentic Japanese; speaking exercises using various levels of formal and informal Japanese; using language with the correct nuances of regret etc. Speaking to a group on various topics. Reading authentic and near-authentic material on Japanese business life and culture as well as news stories. Writing memos, faxes, e-mails, descriptions, and summaries. Use of a further 120 kanji to bring the total up to 500 characters. Translating short passages of various levels from Japanese to English.

Prerequisites: JA4913

LI4004 - MEDIA DISCOURSE ANALYSIS

ECTS Credits: 6 (Year 2 Module)

School of English, Irish and Communication

Rationale and Purpose of the Module: Critical awareness of and engagement with language are crucial skills for producing and consuming media in contemporary society. This module is aimed at students who are preparing to be journalists and expert linguists working in a range of roles where they will be producing texts that will be mediated for public consumption. Through lecture material and working in a practical way with texts, the module aims to raise awareness of the role of language used in mediated texts in shaping our society. The module is designed to offer intensive engagement with a range of media texts using methodologies from Critical Discourse Anlaysis and Ethnography of Communication.

Syllabus: Critical awareness of and engagement with language are crucial skills for producing and consuming media in contemporary society. In this module, you will acquire knowledge about the linguistic features of media

texts (texts being understood in the broadest possible sense), and how these relate to and impact on society; You will also acquire skills to enable you to engage critically with a range of media texts and domains (e.g. news, sports, entertainment, talk shows, advertising), both as producers and users of those texts. The module is also designed to provide you with skills for undertaking a media/discourse analysis as part of your final year project.

SP4134 - SPANISH FOR LEGAL STUDIES (BEGINNERS)

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: Students within the BA in Law and European Studies who take Spanish as their foreign language benefit from a module that gives them an overview of the Spanish legal system and basic legal terminology. Students will compare the Irish legal system to the Spanish legal system and will acquire basic knowledge of Spanish legal terminology.

Syllabus: Extracts from newspapers and magazines, dealing with topical issues specifically related to the field of law in the Hispanic world- will be selected for reading comprehension and other related language work, developing a critical view through discussion. A selection of audio and video material will be used for oral and aural skills facilitating integration of all language skills. Practice of new grammatical aspects of Spanish will also be included. A class will be devoted to introducing, practising and improving the use of specific grammatical areas such as the past tenses and the introduction of the subjunctive in Spanish.

Prerequisites: SP4133

SP4156 - SPANISH FOR BUSINESS 4 (BEGINNERS)

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). The module aims to prepare students to communicate with increasing confidence when using Spanish in a Spanish or Latin American working environment and to give them an overview of the organisation of public administration, national firms and related economic issues in Spain and other Spanish-speaking countries, including Latino cultures in the USA.

Syllabus: This module is set at B1 on the Common European Framework of Reference for Languages (CEFR). The main areas of grammar covered are the passive voice; imperative forms which use the subjunctive; the conditional tense; second and third conditionals; present subjunctive with temporal adverbs and to express future time.; The main areas of phonology covered are: reinforcement of the vowel and consonant systems and basic word stress patterns. The above are complemented by communicative, lexical and oral and written skills syllabi included in a textbook which will be chosen according to the range of availability at the relevant point in time. An example of the latter would be units 1-3 of the textbook Expertos. These include areas such as: writing CV and job applications and participating in interviews; the language of business meetings and negotiations; cross-cultural politeness; expressing opinions, conditions and agreement; the lexis of expatriate life; conducting interviews. The details of these syllabi are described at: https://www.difusion.com/catalogo/metodos/profesional/expertos/expertos-libro-del-profesor

Prerequisites: SP4153

SP4166 - SPANISH FOR BUSINESS 4

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1+/B2 on the Common European Framework of Reference for Languages (CEFR). To extend within a Spanish business context students' reading, speaking, writing, and listening skills already practised in the previous semesters. This is achieved principally by revising and increasing students' knowledge of Spanish vocabulary and grammar and discourse and genre characteristics. An increasing emphasis is placed on facilitating students' command of aspects of the language most centrally relevant to their future professional needs.

Syllabus: This module is set at B1+/B2 on the Common European Framework of Reference for Languages (CEFR). There is no syllabus of linguistic items specific to this

module, as the main grammatical structures, etc. of Spanish have been covered in previous modules and are consolidated and developed in this and the other remaining modules of the course. This module provides students with the space to expand their knowledge and language skills. Using authentic material, students are asked to perform in a simulated business environment a variety of tasks encountered in specific situations. A particular focus area is corporate culture (workers and their workplace, internal communication, time management). In addition, students make short oral presentations in the target language on selected Spanish social/ cultural issues.

Prerequisites: SP4163

SP4934 - SPANISH FOR LAW STUDENTS (ADVANCED)

ECTS Credits: 6 (Year 2 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: Students within the BA in Law and European Studies who take Spanish as their foreign language benefit from a module that gives them an overview of the Spanish legal system and basic legal terminology. This module will help students: - To consolidate and further develop productive and receptive language skills at an advanced level. - To facilitate students understanding of legal terminology used within the Spanish legal world. - To develop basic translation skills of legal documentation from Spanish into English: contracts, wills, powers of attorney, etc. Students will compare the Irish legal system to the Spanish legal system and will acquire certain knowledge of Spanish legal terminology.

Syllabus: A series of articles from newspapers, magazines, journals, textbooks and the Internet dealing with topical issues specifically related to the field of law in the Hispanic world- will be selected for text analysis and as source material for essay writing. - A selection of audio and material recorded on DVD will be used for oral and aural skills. A debate class in groups will facilitate integration of all related language skills. A variety of topics relating to issues in legal ethics, i.e. human rights, euthanasia, death penalty and terrorism will be discussed. - A class will be devoted to practise and improve the students command of Spanish concentrating on difficult grammatical areas and the pragmatics of the language. - Basic translation of legal documentation from Spanish into English.

Prerequisites: SP4143

School of Modern Languages and Applied Linguistics: Year 3 Modules

CU4026 - HOW TO READ A FILM: INTRODUCTION TO FILM STUDIES

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: * To introduce students to the field of film studies. * To give students the theoretical tools to analyse film. * To give a European perspective on the film industry.

Syllabus: This module will make the distinction between knowing a lot about films and being able to address the question what cinema is. To this end the module will examine the techniques of film, critical approaches and how major theoretical movements have been applied to this field.

Prerequisites: CU4025

FR4146 - FRENCH LANGUAGE AND SOCIETY 4 MODERN CONTEMPORARY

Limited places available: 5

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2+ on the Common European Framework of Reference for Languages (CEFR). This module is an introduction to contemporary social, economic and political life in France. This is achieved: by developing studentsÆ knowledge of French culture and society by focusing on the country's cultural, social and political aspects by encouraging team-work and intercultural understanding.

Syllabus: This syllabus is set at B2+ on the Common European Framework of Reference for Languages (CEFR). The module provides students with a platform to broaden

and advance their experience of language learning. Language and culture are interwoven through the four distinct parts of the module. In the lectures, students are introduced to analytic tools to study particular social political and cultures aspects. In the tutorials, analysis work of newspaper articles is undertaken making students aware of the vital link between culture and language learning. In short, The module is centered on a series of lectures analyzing the major issues in French politics, economics and society from 1945 to the present. Language tutorials review some of the points raised in the lectures through close reading and discussion of authentic texts related to the lectures. Language tutorials also endeavor to develop written skills in the French language through translation and/ or essay writing. Tutorials are also devoted to the study of a literary text closely related to the subject matter.

Prerequisites: FR4143

FR4246 - FRENCH LANGUAGE CULTURE AND SOCIETY 4

ECTS Credits: 6 (Year 3 Module)

Limited places available: 5

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2+ on the Common European Framework of Reference for Languages (CEFR). This module aims: - To improve oral and written language skills through activities such as textual analysis, translation, essay writing, oral presentations, discussion and debate; - To provide an in-depth study of aspects of post-war France in political, social and economic contexts; - To enable students to understand the ideological and cultural background to modern France through a reading of selected eighteenth-century texts; - To practice translation from and into French of texts relating to post-war France, and to become familiar with the theories relevant to the translation of such texts and the strategies available to the translator when translating them.

Syllabus: This syllabus is set at B2+ on the Common European Framework of Reference for Languages (CEFR). Development of active and receptive language skills, both written and oral; key moments in the history of post-war France; revolutionary ideals in eighteenth-century France; introduction to the theory and practice of translation, focusing on the area of post-war France.

Prerequisites: FR4243

FR4626 - FRENCH LITERATURE AND CULTURE 4 19TH CENTURY ART

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To provide students with the means to recognize and evaluate the links between art and society in 19th century France. This is achieved by: - giving an overview of the political, economic and cultural development of France from the revolution to circa 1880 - studying selected poems from mid-century onwards - analyzing French painting ,particularly the realist/impressionist tradition - reading and studying a selected realist/naturalist novel

Syllabus: The module is structured around a lecture and tutorials. The lecture will cover aspects of the development of France as well as introducing students to the study and appreciation of painting in the period. The tutorials will concentrate on textual analysis of the poetry and the novels.

GE4146 - GERMAN LANGUAGE AND SOCIETY 4: GERMANY PAST AND PRESENT

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2 on the Common European Framework of Reference for Languages (CEFR). To enhance students' knowledge about present day Germany by exploring the historical background of cultural life in Germany today. To further develop writing skills and reading comprehension at advanced level. To further develop students' skills in the analysis of more complex literary texts in German. To consolidate grammatical structures at an appropriate level.

Syllabus: This syllabus is set at B2 on the Common European Framework of Reference for Languages (CEFR). Lecture: German revolutions, democracy, fascism; cultural institutions, cultural life; the cultural and literary heritage. Tutorials: a) reading and discussion texts supporting the lecture; conversation class b) literature class: exploration of

the myths and their significance in German literary, cultural and political history and in Germany today; c) advanced grammar work.

Prerequisites: GE4143

GE4246 - GERMAN LANGUAGE CULTURE AND SOCIETY 4

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2 on the Common European Framework of Reference for Languages (CEFR). To develop students' understanding of contemporary Germany by analyzing central issues/concepts from 18th century to the present day; to consolidate and improve text analysis and oral, reading and writing skills, to revise problem areas in German grammar and introduce selected new or more complex grammatical and syntactic structures. To introduce the systematic study of translation theory and practice, to introduce students to a range of text-types and registers.

Syllabus: This syllabus is set at B2 on the Common European Framework of Reference for Languages (CEFR). Lecture: German revolutions, democracy, fascism; cultural institutions, cultural life; the cultural and literary heritage. Tutorial work: Oral presentation & discussion class: drawing on text and audio-visual materials to develop formal oral skills (note-taking, structuring presentations, summarizing and reporting content); Literary text analysis & production; Translation theory and practice: historical and socio-political texts.

GE4626 - GERMAN LITERATURE AND CULTURE 4

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To examine major literary and cultural movements of the 19th century through a study of representative authors and various genres. To give students an understanding of the intellectual, artistic and philosophical milieu in 19th century German culture.

Syllabus: A study of classicism in drama and poetry and its relationship to preceding movements: 'Enlightenment and Sturm und Drang; poetic realism (1850-1890) in its social context - industrialisation, urbanisation, growth of the middle classes; and impressionism as an expression of the mood of pessimism at the turn of the century and its role in the Wilhelminische Zeit prior to World War I.

JA4246 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 4

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B1+ on the Common European Framework of Reference for Languages (CEFR). To enable students to understand more advanced authentic and near authentic, modern Japanese texts and to produce a greater range of spoken and written texts; to foster in students an understanding and appreciation of modern Japanese writing; to consolidate their knowledge of issues in contemporary Japanese society.

Syllabus: This syllabus is set at B1+ on the Common European Framework of Reference for Languages (CEFR). Listening practice concentrating on authentic Japanese; speaking exercises using various levels of formal and informal Japanese; using language with the correct nuances of regret etc. Speaking to a group on various topics. Reading authentic and near-authentic material on Japanese life and culture as well as news stories. Writing memos, faxes, e-mails, descriptions and summaries. Use of a further 120 kanji to bring the total up to 500 characters. Translating short passages of various levels from Japanese to English.

Prerequisites: JA4213

JA4626 - JAPANESE LITERATURE AND CULTURE SINCE THE LATE 20TH CENTURY

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is an introduction to contemporary culture in Japan in the late 20th century. It provides students with the means to evaluate changes in Japanese popular genres, prose and poetry in the late 20th century. Students become familiar with developments in contemporary Japanese culture and literature through focusing on significant developments in

Japanese literature, animation and film during these periods: The end of the Showa Era The Heisei Boom The Lost Decade Japan in the New Century

Syllabus: This module allows students to improve their ability to speak and write Japanese by analyzing changes in late 20th century Japanese literature and culture through reading, watching and analyzing a range of texts from literature as well as texts from popular culture (film, animation) in the target language. The module will further develop students' written skills through translation and essay writing as well as developing spoken skills through in-class discussion.

SP4146 - MODERN AND CONTEMPORARY SPAIN

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2 on the Common European Framework of Reference for Languages (CEFR). Consolidation of the structures, functions and vocabulary taught in the first and second years and expands grammatical competence to include complex use of the subjunctive. Further development of knowledge of contemporary Spain and Latin American cultures and societies, with a particular focus on the interaction between Spain, Europe and the wider world.

Syllabus: This syllabus is set at B2 on the Common European Framework of Reference for Languages (CEFR). Tutorials: Working with set textbook, complementary audio-visual material, as well as advanced literary texts.

Prerequisites: SP4133 , SP4143 , SP4134 , SP4934

SP4246 - SPANISH LANGUAGE, CULTURE AND SOCIETY 4

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2 on the Common European Framework of Reference for Languages (CEFR). Consolidation of the structures, functions and vocabulary taught in the first and second years and expands grammatical competence to include complex use of the subjunctive. Further development of knowledge of contemporary Spain and Latin American cultures and societies, with a particular focus on the interaction between Spain, Europe and the wider world.

Syllabus: This syllabus is set at B2 on the Common European Framework of Reference for Languages (CEFR). Tutorials: Working with set textbook, complementary audio-visual material, as well as advanced literary texts.

Prerequisites: SP4243 , SP4233

TE4106 - TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES (TESOL) 1

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To provide students with an introduction to the Teaching of English to Speakers of Other Languages (TESOL). This is the first of a three-module suite, and starts with an overview of the main approaches and methods in language teaching and learning, the different theories of language and language learning and the concept of learning styles. To enable students to comprehend theoretical aspects of the grammatical and phonological aspects of the English language relevant for teaching purposes. To enable students to develop an understanding of the different levels of language competency of English language learners. This is the first of a three-module suite, students also complete TE4107 (TESOL 2) and TE4108 (TESOL 3). This suite of modules is intended to give students a foundation in Teaching English to Speakers of Other Languages which is validated by TESOL certification from the University of Limerick. TE4106 (TESOL 1) and TE4108 (TESOL 3) are offered in the Spring semester; TE4107 (TESOL 2) is offered in the Autumn semester. Note: This suite of modules replaces TE4025 (TEFL 1), TE4026 (TEFL 2) and TE4028 (TEFL 3). The roll out of this new stream of TESOL modules will not affect students currently completing the TEFL suite of modules, and they will exit with a TEFL certificate. New entrants in the academic year 2014/15 will start the new TESOL suite of modules.

Syllabus: The module integrates three independent but related components: 1. Methods and approaches: Grammar Translation Method, the Direct method, Situational Language Teaching, Audiolingualism, Total Physical Response, the Silent Way, Suggestopedia, Community Language Learning, The Natural Method, Communicative

Language Teaching, Task Based Learning, the Lexical Approach, Eclecticism. The Theory of Multiple Intelligences. 2. Grammatical concepts: Word classes: Lexical words (nouns, verbs, adjectives, adverbs); Function words (determiners, pronouns, prepositions, coordinators); Phrase, clause and sentence structure: The Verb Phrase (time, tense, aspect, mood); The English Tense System. 3. English Phonetics and Phonology: individual vowel and consonant sounds, basic transcription. Suprasegmental aspects of speech: intonation, stress, rhythm. Pronunciation differences between Received Pronunciation and Irish English.

School of Modern Languages and Applied Linguistics: Year 4 Modules

CU4006 - TRAVEL LITERATURE

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To introduce students to the genre of travel writing. To analyse different forms of travel writing from fictional to non-fictional, from historical sources to postcolonial approaches.

Syllabus: This module will cover the genre of travel literature, giving a background to the origins and following developments up to the present day and by examining different forms of travel literature. After an introduction to the history of travel literature, utopian literature as well as colonial representation of the æNew WorldÆ will be examined in the period dating from the late fifteenth century through to the final decades of the seventeenth century. Comparing and contrasting the representations of America found in the reports of the earliest Spanish explorers with that found in later Puritan accounts, this element of the course will analyze the European æinventionÆ of America as a pre-lapsarian utopia. The main part of the module will then concentrate on Ireland as a travel destination, seen from an outsiderÆs perspective through the eyes of European visitors from the Middle Ages up to the twentieth century and compared with travel accounts of Irish writers. Questions of identity, cross-cultural awareness and language as a communication tool will be analyzed.

CU4018 - EUROPEAN CINEMA FROM THE 1960s TO THE PRESENT

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To give students a comprehensive overview of the major currents and trends in European cinema in the post Second World War period with the advent of the French Nouvelle Vague being considered as a watershed event. To build on students prior knowledge and exposure to film studies and enhance their ability to analyse and critique films.

Syllabus: This module will build on students prior experience of film studies and will involve a comprehensive overview of the major cinematic movements in contemporary Europe over the last fifty years with an introduction to some of the major directors of this period and their oeuvre. The module will also examine the techniques of film as employed by these directors, their critical approaches and how major theoretical movements have been influential in their work. It will lastly consider the impact of the digital revolution on film making and the film industry.

FR4148 - FRENCH LANGUAGE AND SOCIETY 6 MEDIA/CURRENT ISSUES

FR4148 and FR4248 should NOT be taken together, as they have similar module contents

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). The purpose of this module is to give students an overview of the French media industries and the ability to evaluate their functions. This is achieved by: - the study of the relationship between the media and the state - in depth analysis of different branches of the media -

practice in using the language of the media and in analysis particular media artefacts.

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). This module has three parts, each dedicated to particular aim of the module. A general lecture will cover topics on the role of the media, the role of the state, the particularity of the French press, the development of French cinema from its beginnings to the present day. There will be a translation class and a two hour seminar in which three films will be studied as set texts and in which students will be prepared for their final oral examination.

Prerequisites: FR4147

FR4248 - FRENCH LANGUAGE CULTURE AND SOCIETY 6

FR4148 and FR4248 should NOT be taken together, as they have similar module contents

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). The purpose of this module is: (i) to give students an overview of the French media industries and the ability to critically evaluate their functions; (ii) to enable students to improve written and oral language skills; (iii) to provide an understanding of the principles of bilateral interpreting and introductory practice; (iv) to give students practice in translating a variety of texts and to familiarise them with the appropriate translation strategies.

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). (i) Communication and the media in France - the study of the relationship between the media and the state; analysis of different branches of the media; practice in using the language of the media and in analysing particular media artefacts. (ii) Work on video documents on current issues in francophone countries to improve comprehension and oral skills. (iii) Translation of journalistic texts from French to English in the light of translation theory in order to foster the development of transferable translation strategies. (iv) Principles and practice in bi-lateral interpreting.

Prerequisites: FR4247

FR4628 - FRENCH LITERATURE AND CULTURE 6: MODERNITY AND GENRE; THE NOVEL IN FRENCH

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module offers a thorough discussion of the question of literary genre and cultural modernity û with particular reference to the novel genre in French over a period of four centuries. In so doing, it builds upon the pre-existing knowledge of students who have been exposed to a number of examples of the genre in preceding modules, while synthesising across the historical scope of their prior exposure to French literary and cultural artefacts. It consolidates the linguistic work done in earlier modules through a challenging exposure to works of a certain difficulty and length, deepening students practices of both reading and responding to major cultural artefacts in the target (French) language.

Syllabus: The module seeks to foster a sense of the long-term in cultural and literary developments. Hence the inclusion of texts spanning four centuries (17th, 18th, 19th and 20th). Elements of context will be provided, through the inclusion of reference to wider historical development, social and cultural theory, and to the parallel and related development of other literary genres. Secondary reading will be duly circumscribed with emphasis being placed on thorough and close readings of the individual works. This emphasis will be replicated in the forms of assessment adopted. Students will be required to give an analytical presentation in the target language of an agreed extract (close reading and linguistic skills). Assessment will also include an extended synthetic essay in the target language (argumentational and linguistic skills).

FR4928 - FRENCH FOR BUSINESS 8A

ECTS Credits: (Year 4 Module)

Limited places available: 5

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). While building on previously acquired

reading, speaking, writing and listening skills, the course aims to enhance students / ability to engage with and express effectively ideas and concepts through the means of the target language relating to contemporary French - society and issues. - by working with authentic documents (press articles, one literary text, websites) - by providing students with opportunities to practice their oral and written skills - by encouraging intercultural understanding via tandem learning with French students.

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). The French for Business 8 module provides students with a language rich environment to further their knowledge and increase their confidence. In the lecture, students gain an insight into contemporary French society. The political situation and recent cultural, economic, and social developments in France are examined. In the tutorials, students conduct research and complete a task-based Internet project on a French city ûa city that they know from their Erasmus/Coop placement experience- identifying and analysing a number of political, economic, social, or cultural issues. Finally, students study a literary text related to the module title, currently, ôJournal du dehorsö by Annie Ernaux.

Prerequisites: FR4927

GE4148 - GERMAN LANGUAGE AND SOCIETY 6: ISSUES AND DEBATES

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). To explore current issues of particular relevance in the German speaking countries today with a particular focus on literary/cultural controversies to heighten students' awareness of the importance of registers in the German language. To continue the study of more complex literary texts in German in a wider context. To consolidate grammatical structures at advanced level. To further develop writing and oral skills as well as reading comprehension at advanced level.

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). Lecture: cultural, economic and political issues in unified Germany, Austria and Switzerland; dealing with the past; nationalism and national identity; economic, cultural and social debates (also with regard to the EU): equality, environmentalism, cultural politics, social reforms, migration. Tutorials: a) discussions of literary texts, newspaper, magazine articles and TV programmes on topical issues focusing on the characteristics of different text types and language registers; b) issues in Austria and Switzerland including presentations in the foreign language; c) translation class English/German with a particular focus on the problem of registers.

Prerequisites: GE4147

GE4248 - GERMAN LANGUAGE CULTURE AND SOCIETY 6

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). To examine Germany's role within Europe and beyond and explore points of contact between Ireland and Germany; to continue improvement of text analysis and oral, reading and writing skills, to revise further problem areas in German grammar and increase students' confidence in using more complex grammatical and syntactic structures. To continue the systematic study of translation theory and practice, introducing students to a range of text-types and registers.

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). Lecture: cultural, economic and political issues in unified Germany, Austria and Switzerland; dealing with the past; nationalism and national identity; economic, cultural and social debates (also with regard to the EU): equality, environmentalism, cultural politics, social reforms, migration. Tutorial work: Oral presentation & discussion class: drawing on text and audio-visual materials to develop formal oral skills (presentations, talks, interviews). Text analysis & production: analysis & writing of project proposals, evaluations, etc.; Translation theory and practice: advertising, commercial and literary texts. This hour will be combined with a class providing an introduction to interpreting.

GE4628 - CURRENT TRENDS IN GERMAN LITERATURE AND CULTURE

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To develop an understanding of current trends and developments in literature, cinema and other forms of cultural practice in post-unification Germany, in Switzerland and in Austria by studying individual works in their social and political context. To engage critically with contemporary literary and cultural production in the German-speaking countries and to analyse a variety of literary texts and films in German.

Syllabus: An examination of most recent developments in literature and cinema in the German-speaking countries. Analysis of literary texts, films and other cultural products (TV, music, visual arts etc) in their social and political context and discuss how they engage with issues that feature strongly in current debate, such as multiculturalism, experiences of migrants, new women's writing, postcolonial aspects, questions of identity and changing memory discourses. Recent debates on colonialism and post-colonialism in a German context; Postmodernism and Pop Literature; Changing Constructions of Identity in Germany, Switzerland and Austria.

GE4928 - GERMAN FOR BUSINESS 8A

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). To develop the skill of precise writing in German. To provide an insight into the workings of the European Union (EU) and to examine the role of Ireland and Germany and current challenges and chances. To cover current topics and debates in the German-speaking countries. To prepare students to sit, on an optional basis, international examinations in Business German such as "Pr³fung Wirtschaftsdeutsch international".

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). Lecture: cultural, economic and political issues in unified Germany, Austria and Switzerland; dealing with the past; nationalism and national identity; economic, cultural and social debates (also with regard to the EU): equality, environmentalism, cultural politics, social reforms and migration. Tutorials: a) discussions of literary texts, newspaper, magazine articles and TV programmes on topical issues connected with the lecture, focusing on the characteristics of different text types and language registers; b) examination of the institutions and policies of the EU with particular reference to Germany's and Ireland's role within the EU; c) revision of business material in general.

Prerequisites: GE4927

JA4248 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 6

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2+ on the Common European Framework of Reference for Languages (CEFR). To consolidate students' previous acquisition of Japanese and to bring them to an upper intermediate level of language use in listening comprehension, speaking, reading, and writing; to continue the study of Japanese culture and society.

Syllabus: This module is set at B2+ on the Common European Framework of Reference for Languages (CEFR). Listening practice using authentic materials. Further practice in the use of polite language. Vocabulary consolidation; presentations, practice for interviews. Reading practice of authentic news stories, and authentic passages relating to Japanese society and modern literature. Translation of authentic passages, literary or business-related. Writing of summaries, descriptions, letters, and passages expressing opinions. Study of a further 200 kanji, to bring the total up to 750 characters.

Prerequisites: JA4247

JA4628 - JAPANESE LANGUAGE AND LITERATURE 2: MINORITY LITERATURE

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: To develop students' knowledge of the cultural and literary influence of Japanese ethnic minorities through studying the work of authors from these minorities writing in Japanese today; to

develop students' skills in communicating in oral and written Japanese.

Syllabus: Students are introduced to issues of ethnicity in contemporary Japan through the study of representative literary texts by authors from the minorities concerned, notably the Japanese Korean and the Okinawan minorities.

JA4918 - JAPANESE FOR BUSINESS 8

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at B2+ on the Common European Framework of Reference for Languages (CEFR). To consolidate students' previous acquisition of Japanese and to bring them to an upper intermediate level of language use in listening comprehension, speaking, reading, and writing; to continue the study of Japanese culture and society.

Syllabus: This syllabus is set at B2+ on the Common European Framework of Reference for Languages (CEFR). Listening practice using authentic materials. Further practice in the use of polite language. Vocabulary consolidation; presentations, practice for interviews. Reading practice of authentic news stories, and authentic passages relating to Japanese society and modern literature. Translation of authentic passages, literary or business-related. Writing of summaries, descriptions, letters, and passages expressing opinions. Study of a further 200 kanji, to bring the total up to 750 characters.

Prerequisites: JA4917

SP4148 - MEDIA AND CURRENT ISSUES IN THE SPANISH SPEAKING WORLD

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). By the end of this module students should: * have developed further their understanding and command of Spanish grammar, vocabulary and usage. * have improved their ability to use Spanish fluently and accurately and to make brief presentations in the language. * have the ability to identify some of the characteristics of a variety of styles and genres, particularly in the area of media language. * have a greater awareness of issues in translation and an enhanced ability to translate a variety of text types from Spanish to English and vice versa, particularly in the area of media language. * understand more about a variety of issues of central importance to Spain and/or Latin America, with particular reference to the media and to other key aspects of language and society. * have developed a critical understanding of an extended example of modern Hispanic fiction.

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). The programme is centered around a variety of topics of relevance to students of Spain and Latin America. The intention is to provide variety but a theme running through a substantial part of the module is that of the media and communication. Additionally, there will be attention given to questions of democracy, violence and the rule of law, as well as issues of gender in contemporary society, particularly with reference to the media.

Prerequisites: SP4147

SP4248 - SPANISH LANGUAGE, CULTURE AND SOCIETY 6

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). By the end of this module students should: - have developed further their understanding and command of Spanish grammar, vocabulary and usage. - have improved their ability to use Spanish fluently and accurately and to make brief presentations in the language. - have the ability to identify some of the characteristics of a variety of styles and genres, particularly in the area of media language. - have a greater awareness of issues in translation and an enhanced ability to translate a variety of text types from Spanish to English and vice versa, particularly in the area of media language. - have a developing awareness of issues in liaison interpreting and an ability to interpret a variety of text types from Spanish to English and vice versa, particularly in the area of media language. - understand more about a variety of issues of central importance to Spain

and/or Latin America, with particular reference to the media and to other k.

Syllabus: This module is set at C1 on the Common European Framework of Reference for Languages (CEFR). The programme is centered around a variety of topics of relevance to students of Spain and Latin America. The intention is to provide variety but a theme running through a substantial part of the module is that of the media and communication. Additionally, there will be attention given to questions of democracy, violence and the rule of law, as well as issues of gender in contemporary society, particularly with reference to the media.

Prerequisites: SP4247

SP4628 - WOMEN'S NARRATIVES OF RESISTANCE IN THE HISPANIC WORLD

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: Aims & Objectives: To develop the students knowledge of different literary modes in 20th-century Hispanic culture. To introduce students to political and testimonial women's writing in the Hispanic World. To develop the students understanding of different literary and political discourses. To further develop students' analytical skills, with a special focus on political women's writing.

Syllabus: The module will concentrate on the exploration of women's narratives of resistance to power in different textual modes, from testimony to literature, in order to study the different ways in which women have experienced and represented the oppression/repression of dissidence in colonial, neo-colonial and authoritarian regimes in Latin America and Spain.

TE4108 - TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES (TESOL) 3

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module covers aspects of the theory and practice of language teaching and language systems. This is the last of a three-module suite, preceded by TE4106 (TESOL 1) and TE4107 (TESOL 2). This suite of modules is intended to give students a foundation in Teaching English to Speakers of Other Languages which is validated by TESOL certification from the University of Limerick. TE4106 (TESOL 1) and TE4108 (TESOL 3) are offered in the Spring semester; TE4107 (TESOL 2) is offered in the Autumn semester. Note: This suite of modules replaces TE4025 (TEFL 1), TE4026 (TEFL 2) and TE4028 (TEFL 3). The roll out of this new stream of TESOL modules will not affect students currently completing the TEFL suite of modules, and they will exit with a TEFL certificate. New entrants in the academic year 2014/15 will start the new TESOL suite of modules.

Syllabus: The module covers two main areas: (a) the theory and practice of language teaching and (b) language systems. The areas covered in theory and practice include: Questioning and elicitation techniques, instruction techniques, interaction patterns, teaching young learners, teaching grammar (continued from previous modules), error analysis and contrastive analysis, using ICT (Information and Communications Technologies), types of Assessment, English language examinations (e.g. Cambridge examinations, TOEFL), coursebook evaluation. The areas covered in language systems include: Conditionality, modality, multi-word verbs, morphology, collocation and the lexical approach, language awareness-raising practice.

Prerequisites: TE4025, TE4026

LI4018 - LINGUISTICS 6: LANGUAGE POLICY, POLITICS AND POWER

Limited places available: 5

ECTS Credits: 6 (Year 4 Module)

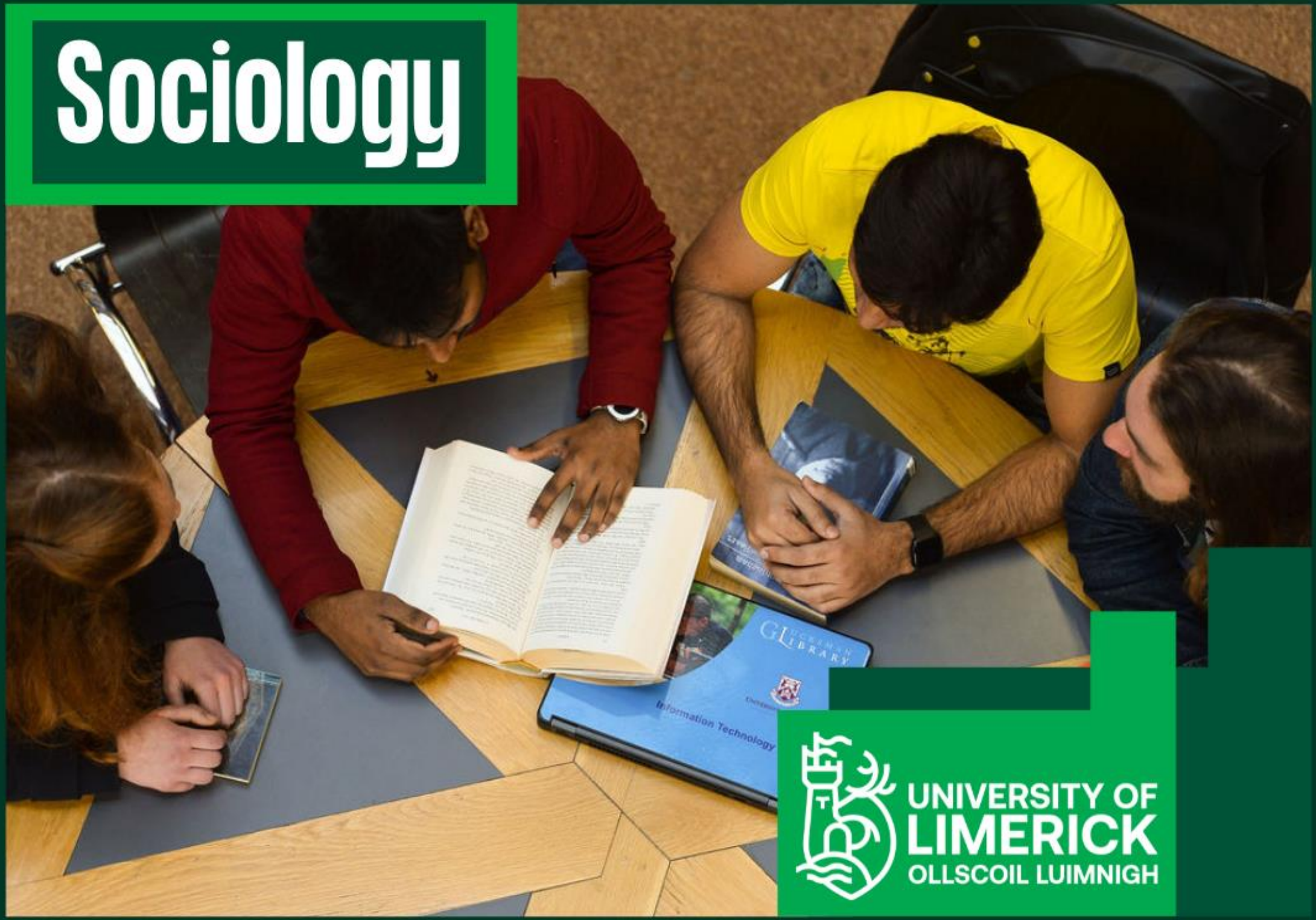
School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module will

be offered on the new BA Arts programme. As part of the new programme, a pathway in Linguistics with TESOL is being created and this module is part of that pathway. Linguistics modules are very popular electives and attract large numbers of registrations. A high number of students opt for a linguistics focussed final year project. As the modules are taught in English they are very popular choices also with Erasmus and study abroad students. These modules will all be made available as options on the current BA in Applied Languages, thus increasing student choice. The introduction of these new LI modules is therefore designed to meet the institutional strategic objectives of increased student choice and increased opportunities for internationalisation. Language policy is the study of how languages are managed at macro, meso and micro levels in society and how this management interacts with issues of power and equality. The study of language policy is a key component of understanding sociolinguistics, the study of language in society.

Syllabus: The module will be organised around the following components: Language and empire Language and the nation state Language policy and planning in post-colonial contexts Language policy and planning in supra-national contexts Language rights, policy and planning for minority languages Language management in companies and institutions Family language policies

Sociology



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Sociology Year 1 Modules

SO4002 - GENDER: SOCIOLOGICAL PERSPECTIVES

ECTS Credits: 6 (Year 1 Module)

Sociology

Rationale and Purpose of the Module: The aim of this module is to introduce the students to sociological approaches to gender including the main theoretical frameworks in the study of gender and society.

Syllabus: This module equips students with a critical understanding of key concepts in gender studies and feminist thought and how these are informed by, and inform, sociological enquiry. It offers in introduction to the main sociological perspectives on gender; key debates in feminist theory; debates in the study of masculinity; and perspectives on substantive topics such as work and care in the context of these frameworks. The module also examines the operation of gender divisions across national and transnational social contexts and their articulation with other major social divisions such as class, sexuality, ethnicity and race.

SO4032 - INTRODUCTION TO SOCIOLOGY

ECTS Credits: 6 (Year 1 Module)

Sociology

Rationale and Purpose of the Module: This module aims to better acquaint students with the discipline and field of sociology, including the work of contemporary sociologists, and to provide them with strong foundation of knowledge in preparation for further sociology modules. In addition to enhancing students awareness and understanding of key sociological theories, concepts and issues, this module is oriented to developing students ability to use sociology as an analytical tool. Finally, this module also seeks to promote valuable skills in critical thinking, writing, referencing, and research.

Syllabus: An introduction to deviance, crime and control. Crime Statistics, Sociological approaches to explaining crime, Sanctions Prison, Concepts of race and ethnicity, Manifestations of diversity, Representations of race and ethnicity in the media. Racism and public attitudes towards cultural diversity, minorities and immigrants, An introduction to the sociology of religion, Secularization, Civil Religion and Invisible religion, Social class, The continuing relevance of class, Class, consumption and identity, Class, cultural capital and consumption.

Sociology Year 3 Modules

SO4006 - THE SOCIOLOGY OF CRIME DEVIANCE

AND SOCIAL CONTROL

ECTS Credits: 6 (Year 3 Module)

Sociology

Rationale and Purpose of the Module: The purpose of this module is to explore the manner in which society seeks to control particular ways of behaving, being and thinking. The broad framework of both informal and formal sanctions will be adopted, but the module will focus in particular on the latter. A critical approach to the ideas which underpin the criminal justice system, its remit and functioning, will be encouraged. Questioning will be facilitated through introducing students to sociological theories of crime and deviance, through their application to contemporary case studies and through comparison to other cultural and historical contexts. Particular attention will be given to inequitable experiences of criminal justice including on the basis of social class, gender, ethnicity and racialized identities, sexuality and legal status.

Syllabus: The social construction of deviance and crime; Theories of deviance; Informal social control; Formal social control; The law and social change; Social hierarchies of victims and offenders; Hate crime; Social stratification and the Criminal Justice System - Policing, Sentencing, Incarceration, White collar crime; Sociological perspectives on restorative justice; Victimization as social control.

SO4036 - CONTEMPORARY SOCIOLOGICAL THEORY

ECTS Credits: 6 (Year 3 Module)

Sociology

Rationale and Purpose of the Module: a) Introduce students to a selection of modern and contemporary theories following on the classical tradition. b) Develop students understanding of the discipline of sociology in the

contemporary context, taking account of changing intellectual and social contexts. c) Demonstrate how these theories have been influenced by classical social theories in terms of how they - challenge key classical presuppositions about the nature and scope of sociology in understanding the social world; - their level of indebtedness to or departure from classical theoretical antecedents. d) Enable students to differentiate between different theoretical approaches in relation to key sociological concepts such as structure and agency, rationality and reflexivity, objectivism and subjectivism, micro-analysis and macro-analysis, realism and constructivism, modernity and postmodernity.

Syllabus: This module aims to broaden and deepen students engagement with and understanding of the development of sociology as a discipline following on from their introduction to the sociological classics. It introduces students to a selection of modern and contemporary theories as a way of understanding how sociological theory has developed to reflect changing social and intellectual contexts. The course will identify the extent to which the selected theories build on key classical presuppositions or offer more radical departures in terms of the key analytical debates within sociology. As a way of elucidating these issues, substantive topics will be discussed in relation to the different theoretical perspectives. The range of theoretical perspectives will encompass the following: social constructionism (Berger and Luckmann); the sociology of the everyday (e.g. Goffman, Blumer); critical theory (e.g. Foucault, Habermas, Feminist Theory and theories of late/post- modernity; theories of rationality (Rational Choice/Rational Action theory); and the theory of social practice (Bourdieu).

SO4046 - QUANTITATIVE METHODS FOR SOCIOLOGICAL RESEARCH

ECTS Credits: 6 (Year 3 Module)

Sociology

Rationale and Purpose of the Module: This module considers quantitative research in relation to sociology. This module aims to develop students knowledge gained in SO4053 to increase and deepen their understanding of and facility with quantitative research methods; particularly to develop their facility in the analysis of quantitative data. The primary objective of the course is to ensure that students are able to understand and use basic quantitative methods. The course begins by reviewing the role of quantitative methods in sociology, with consideration of the theoretical implications of the method and of the sorts of research it permits. It then moves on to a practical core, introducing basic techniques for data collection, processing, presentation and statistical analysis. The lectures run in parallel with lab sessions, in which students use SPSS and other relevant software.

Syllabus: This course introduces students to the basic statistical analysis of social data, including simple descriptive statistics and presentations, samples, surveys and elementary probability theory, inferential statistics, bivariate measures of association and multivariate techniques including an introduction to linear regression and correlation. The class will provide the practical skills to analyze and draw conclusions from quantitative social science data. Emphasis will be placed on understanding, computing and interpreting basic statistics; interpreting and evaluating survey research findings; and analyzing quantitative data with statistical software programs such as SPSS.

SO4066 - SOCIOLOGY OF INDIGENOUS MINCéIRì/PAVEE (IRISH TRAVELLERS)

ECTS Credits: 6 (Year 3 Module)

Sociology

Rationale and Purpose of the Module: Mincéirí /Pavee (Irish Travellers) are a people indigenous to the island of Ireland who are traditionally nomadic and distinct from the dominant majority Irish population (settled community). According to MacLaughlin (1995), the first mention of Irish Travellers was in the 5th century where they were referred to as 'whitesmiths' due to their association with the occupation of tin-smithing. Although documented as part of Irish society for centuries as a distinct population with unique cultural traditions, Irish Travellers have largely been denied in political and social terms of their ethnicity until in 2017 when a symbolic statement was made by the former Taoiseach Edna Kenny (2017). Recent genetic studies have also confirmed the indigenous origin of Ireland's Traveller community. Numerous studies confirm the intense virulent racism, discrimination, marginalisation and injustices that

have perpetrated the experiences of Travellers in Ireland essentially affecting health, education, accommodation, and employment. This module explores the political and social structure of the representation of Travellers in Irish society by using a critical theoretical lens. The module will also examine how nomadic, Indigenous, minority and ethnic communities are subjected to racism by analysing contemporary debates on racism and injustice and how it impacts upon life chances, health, and social policy.

Syllabus: Irish Travellers have been identified in numerous studies as those that experience the most racism and discrimination, impacting on access to fundamental human rights and life chances. Using a critical sociological, theoretical and transformative lens, the aim of this module is: a) to analyse the uniqueness of Ireland's indigenous minority; b) to examine the injustices and discriminations that they experience across different social institutions, c) to explore how their rights could be enhanced and protected in areas such as education, housing, health care, employment and the legal system. The module will also examine other indigenous and nomadic groups who are subjected to prolonged intense racism across the globe with a particular focus on Europe in the context of contemporary sociological debates on racism and indigenous peoples.

SO4076 - PERCEPTIONS OF ECONOMIC AND GENDER INEQUALITY

ECTS Credits: 6 (Year 3 Module)

Sociology

Rationale and Purpose of the Module: How do we measure gender inequality and by what metric do we define progress? An important area of research in contemporary sociology is the exploration of questions that bring gender to the fore, such as Why do more men earn more money than most women worldwide? as well as those that illustrate the complexities in social trends towards greater gender equality, such as Why do households with greater gender parity in paid work often employ migrant labour?. In this module, students will be asked to critically evaluate a varied set of recent empirical readings in terms of their theoretical/conceptual frameworks, the methodologies and data used, and fundamental arguments contained in each. This evaluation will consist of students learning to frame and posit their own questions in relation to contemporary debates in sociology on the topic of economic and gender inequality. A particular focus of the module will be in examining divisions of men and women in educational and work domains, across occupations, organisations, work in the home and in the labour market. Students will explore different ways of perceiving and balancing hierarchies of inequality, from gender gaps in high-end labour to concerns of global wealth stratification.

Syllabus: Gender, work, and inequalities - an introduction Education and educational institutions Income, wealth and poverty Access to employment Families, time use, and life satisfaction The EU, equality, and social policy Gender and social policy - global dimensions Economic and gender inequality - a new agenda for research and public policy

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Sociology Year 4 Modules

SO4078 - INEQUALITY AND SOCIAL EXCLUSION

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: The aim of the module was to introduce the students to the dynamics and processes implicit to inequality and social exclusion. Further, to make them aware of the complexity of the conceptualization and operationalization of equality and social exclusion. At the end of the module students will be able to apply their understanding of both concepts to key substantive areas in Irish society.

Syllabus: The key focus and aim of the module is to provide students with a conceptual and operational understanding of the dynamics of inequality and social exclusion. Students will be familiarized with debates, definitions and theoretical frameworks pertaining to both inequality and social exclusion. Specifically the module will focus on the Irish context as it seeks to examine the structural, cultural and ideological dynamics underpinning inequality and social exclusion and their implications for individuals and groups. It will introduce students to the central approaches to

measuring inequality and social exclusion. Key will be a focus on the relationship between poverty, inequality and social exclusion. A central theme across the substantive areas covered will be the exploration of the continued significance of class, gender, sexuality, ethnicity, disability, and racial divisions as bases for both social exclusion and inequality. Additionally, the module will examine the impact of media texts with particular reference to media discourses about those who are excluded. Finally, the module will refer to institutions and agencies engaging with the above themes.

SO4088 - SOCIOLOGY OF GLOBALISATION

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: a. To provide an opportunity for the student to examine of key theoretical perspectives and central debates relevant to the study of globalization b. To offer ways of evaluating the work of major

sociological schools/theorists in the study of economic, cultural and political globalization. c. To develop the ability to analyze and evaluate various outcomes of globalization through a critical framework.

Syllabus: The aim of this course is to provide a comprehensive introduction to the various discourses of globalization. It will explore some of the key meanings, history and differing theoretical perspectives and interpretations of globalization in contemporary research, and will identify main policy issues related to economic, cultural and political globalization. The focus will be the development of transnational communities and cultures including emergent new forms of worldwide political protest; the challenge for trade unions; culture and the `global and `local divide; the possibilities for a future global society or culture; the inter-meshing of local-global interests and identities; the inequalities and social exclusion generated by economic globalization; and the extent to which sociology like other disciplines needs tore-think many of its central concepts, debates and theoretical approaches in the light of globalization processes. The analysis and discussion will be illustrated with international and Irish case studies.

SO4108 - SOCIOLOGICAL APPROACHES TO GENDER AND MULTICULTURALISM

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: To provide students with a theoretical framework for understanding the social, political and intellectual meanings of gender and multiculturalism in the Global North; to present feminist critiques of different approaches to multiculturalism; to familiarise students with the development of multiculturalism and its gendered effects within particular national and transnational contexts.

Syllabus: The syllabus will include theories that account for multiculturalism as a top-down response to cultural difference which produces a reification of 'culture' and gender. It will also examine theories that identify multiculturalism as a new way forward to a 'politics of recognition' and progressive gender politics. Examples of gendered cultural practices that raise critical questions for the effectiveness of multiculturalism, such as polygamy, forced marriage, female genital mutilation, unequal access to health care, education and rights of ownership will be examined. The course will consider how multiculturalism is reshaping the public spheres and civil societies of the West with particular implications for women and for gender relations. The module will be driven by questions relating to the relationships between gender, cultural diversity and global capitalism; how multicultural approaches to social cohesiveness reconceive belonging in gendered ways; and how gender relations affect and are affected by multicultural strategies for negotiating difference

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SO4128 - SOCIOLOGY OF THE INTERNET

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: To develop students' appreciation of the value of a sociological perspective on the Internet. To familiarize the student with macro and micro-sociological theories applied in and emerging from Internet research. To introduce the student to contemporary debates regarding both the impact of the Internet on society and social influences on the Internet. To familiarize the student with new methods emerging from Internet research.

Syllabus: The aim of this module is to develop students'

understanding of the manner in which sociology can illuminate the social impact of and social influences on the Internet. Students will engage with different conceptualizations of the Internet, for example, as a techno-social system. In examining the relationship between the Internet and society, technological determinist perspectives will be contrasted with constructivist explanations. In addition to addressing macro-sociological perspectives on the Internet, this module will also acquaint students with micro-sociological research on such phenomena as identity and community online. Such discussions will incorporate familiarization with new methods emerging from Internet research. Students will also be introduced to debates regarding e-participation and digital exclusion. This module aims to develop students' appreciation of and ability to employ sociological concepts, theories and methods as key tools for investigating the Internet.

SO4132 - COMPARATIVE EUROPEAN MIGRATION, THEORY, PRACTICE AND POLICY

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: The global movement of people underpins the creation of States, the drawing up of borders and development of legal frameworks which distinguish people of the nation from those considered simply in it. The politicisation of migration has driven policy and legal framework developments in Europe and internationally at an astonishing rate. This module will ground students in the sociological literature on migration. Introduce them to the racializing narratives at play in migration policy and equip them with an understanding of European policy and the differences between European states and global policy trends. This module considers the theoretical, policy and legislative aspects of international migration within Europe. Taking a comparative approach, migration policy and legislative development at European level and between nation states is examined. The wider theoretical underpinnings of global movement, nation building, and border creation is deconstructed. The lived reality of migration is examined through analysis of the experiences of children of migration, processes of acculturation and transnational families. Students will also contextualize migration legislation and policy in relation to labour market integration and climate change.

Syllabus: The indicative content will be: • European migration - history, context and change. Grounding the development of Europe as an intelligible entity through the history of global population flows. Understanding the European global economy as historically and presently based on colonialism, unequal power relations and capitalism. • Nationalism and the Nation State. Drawing on Goldberg's Racial State, Bauman's Gardening state and Hage's White nationalism to consider how nations construct belonging and justify nationalist legislation and policy. • Assimilation, Multiculturalism and Integration. Historical analysis of public policy measures based on notions of Assimilation, Multiculturalism and Integration, definition of terms, problematic policies and implementation and comparative analysis nationally and internationally. • Asylum, Family Re-unification and Unaccompanied Minors. European history of asylum and family reunification grounded in post war UN mandates. Politicisation of asylum and legislative restriction of family reunification. • Acculturation. The psychological processes of adaptation will be considered and compared to national, European and international policies and procedures mandating the behaviour and perspectives of immigrant groups. • Children of Migration. The literature on 1.5 generation and 2nd generation migrant will be explored drawing on research on education, health and housing outcomes in Ireland, Europe and North America. • Transnational Families. The concepts of migration and national belonging will be troubled by considering transnationalism and globalized families. The literature on globalization, technology change and global labour demands will challenge students to consider if policies at a national and European level are fit for purpose, for a present and future defined by technology. • Migration and the Labour Market. The labour demands of global economies and late stage capitalism will be considered in relation to migration. The legislation and policies governing migration and labour markets will be analysed. Empirical research on labour market integration of migrants across Ireland, Europe and globally will be explored. • Climate Migration. The driving force of climate change and environmental racism will be

considered. European policy on global movement, asylum and sanctuary is evaluated in relation to the growing climate change threat.

SO4248 - URBAN SOCIOLOGY - CRITICALLY REFLECTING ON THE CITY

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: This module offers an introduction to the central themes of urban sociology. It examines the distinctiveness of the city as a form of social organization, highlighting how urban space shapes and is simultaneously shaped by social processes. It emphasizes the significance of the city as a strategic research site for sociology, showing how the study of the modern city offers a lens into key social processes such as social inequality, segregation, spatial division, consumption, and social conflict.

Syllabus: This course is intended to introduce graduate students to a set of core writings in the field of urban sociology. Topics include the changing nature of community, social inequality, political power, socio-spatial change, technological change, and the relationship between the built environment and human behaviour. Specific attention will focus on topics including street life, the relationship between spatial and social segregation, the place of consumption in urban life, the importance of public space, and challenges facing cities today. The course will equip students to reflect critically on everyday urban life.

SO4077 - SOCIOLOGY OF YOUTH

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: To understand and to explore key theoretical perspectives on youth and the youth experience within contemporary contexts To critically engage with key examples of empirical research conducted with young people in a variety of social contexts To encourage and to enable critical and analytical thinking about the diverse ways in which young people are constructed and represented via media, policy and academic discourses To examine the relationship between social theory, methodological approaches, research methods and ethical considerations

Syllabus: This module is focused on the study of young people (middle to late adolescence) in Irish society and addresses a number of critical questions which are rooted in traditional sociological concerns about power, inequality and representation. In addressing these questions, students will be asked to analytically engage with theoretical perspectives on youth as it intersects with material categories of social class, gender, sexuality, race and ethnicity. Young people's experiences and interactions with the key social structures of education, the community, the family and work; as well as issues around time and space; young people's life styles and the existence of gender differentiated cultures will be explored through classic and contemporary empirical research. Public media and policy representations of youth will also be addressed in the context of contemporary media discourse which constructs young people as a wide ranging social problem.

SO4218 - SOCIOLOGICAL PERSPECTIVES SEMINAR SERIES

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: The aim of this core module is to provide students with a conceptual understanding of the role of Sociology in contemporary society. Speakers will be drawn from local, national and international organisations and academic departments / institutions in order to share their experience and expertise on the many issues that students will engage with during their degree programme. For those students intending to pursue post-graduate study the module will inform them of the need for and type of sociological research that can best inform the field. The module will provide the opportunity for students to critically engage in targeted discussion and analysis of key areas of contemporary interest for sociology and their real world applications through presentations and discussions delivered and directed by academics and practitioners. The module will be supported by an assessment in the form of presentation reviews.

Syllabus: This module will provide students with a critical insight into the operationalization of the key concepts / theories that they have engaged with in their degree program. The seminars will inform them of key state of the art research findings and methodologies in the discipline.

National and international invited speakers will cover targeted topics, including the positive and negative impacts of key policy decisions affecting the field and the central role of sociological research in influencing policy and informing understandings about inequality, social exclusion, social policy, gender, education, globalization, urban regeneration, youth and community.

SO4238 – SOCIOLOGICAL PERSPECTIVES ON CRIMINAL JUSTICE

ECTS Credits: 6 (Year 4 Module)

Sociology

Rationale and Purpose of the Module: This module is designed to introduce students to sociological understandings of the criminal justice system and of the criminal legal process. The module will provide the student with the conceptual tools to critically reflect upon the manner in which the criminal legal process interacts with and impacts upon social inequalities. The module will attend in particular to the institutions of the police, the courts, and prison, and to the manner in which access to, experiences in, and outcomes of the criminal justice system are shaped by race, class and gender.

Syllabus: Students will address such issues as: Sociological approaches to crime; models of criminal justice; policing strategies; differential policing; access to justice; inequalities in criminal justice outcomes; alternatives to prison; intersectionality; trust and legitimacy; victims in the criminal justice process, diversity among criminal justice professionals

School of English, Irish, & Communications



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

School of English, Irish, and Communication: Year 1 Modules

GA4171 - IRISH LANGUAGE AND CULTURE 1

ECTS Credits: 6 (Year 1 Module)

School of English, Irish and Communication

Rationale and Purpose of the Module : This module aims to develop the linguistic and cultural competence of students acquired in the module Irish Language and Culture 2. The approach aligns with that of the foundation module, and the focus in the lecture series is again on the Irish language in its contemporary context and the interplay between traditional and contemporary culture and society. The course is organised thematically around the Teastas Eorpach na Gaeilge (TEG) Beginner A1 Level language themes and an integrated lecture series where the cultural roots of the language are explored. The language topics are: daily life (2), talents and skills, food and drink, holidays and travel, pastimes (2), and making arrangements. Cultural topics are: Irish language lead organisations and networks, the Irish language and education; language policy and planning; the Irish language in business, branding and advertising; the Irish language abroad; indigenous wisdom (proverbs); cultural institutions; Irish language in cultural movements and the arts (2); the Irish language events calendar, and Irish-language films.

Syllabus: The course is organised thematically around the Teastas Eorpach na Gaeilge (TEG) Beginner A1 Level language themes and an integrated lecture series where the cultural roots of the language are explored. The language topics are: daily life (2), talents and skills, food and drink, holidays and travel, pastimes (2), and making arrangements. Cultural topics are: Irish language lead organisations and networks, the Irish language and education; language policy and planning; the Irish language in business, branding and advertising; the Irish language abroad; indigenous wisdom (proverbs); cultural institutions; Irish language in cultural movements and the arts (2); the Irish language events calendar, and Irish-language films. The focus in the lecture series is on the Irish language in its contemporary context and the interplay between traditional and contemporary culture and society.

GA4172 - IRISH LANGUAGE AND CULTURE 2

ECTS Credits: 6 (Year 1 Module)

Note this is continuation module for UL Global students who stay for the full year and who studied GA4171 in the Autumn semester. The module will run subject to a minimum of 10 students registering.

School of English, Irish and Communication

Rationale and Purpose of the Module : This is an updated version of GA4116. The module title has changed] This module aims to develop the linguistic and cultural competence of students acquired in the module Irish Language and Culture 2. The approach aligns with that of the foundation module, and the focus in the lecture series is again on the Irish language in its contemporary context and the interplay between traditional and contemporary culture and society. The course is organised thematically around the Teastas Eorpach na Gaeilge (TEG) Beginner A1 Level language themes and an integrated lecture series where the cultural roots of the language are explored. The language topics are: daily life (2), talents and skills, food and drink, holidays and travel, pastimes (2), and making arrangements. Cultural topics are: Irish language lead organisations and networks, the Irish language and education; language policy and planning; the Irish language in business, branding and advertising; the Irish language abroad; indigenous wisdom (proverbs); cultural institutions; Irish language in cultural movements and the arts (2); the Irish language events calendar, and Irish-language films.

Syllabus: The course is organised thematically around the Teastas Eorpach na Gaeilge (TEG) Beginner A1 Level language themes and an integrated lecture series where the cultural roots of the language are explored. The language topics are: daily life (2), talents and skills, food and drink, holidays and travel, pastimes (2), and making arrangements. Cultural topics are: Irish language lead organisations and networks, the Irish language and education; language policy and planning; the Irish language in business, branding and advertising; the Irish language abroad; indigenous wisdom (proverbs); cultural institutions; Irish language in cultural movements and the arts (2); the Irish language events calendar, and Irish-language films. The focus in the lecture series is on the Irish language in its contemporary context and the interplay between traditional and contemporary culture and society.

JM4072 - MULTIPLATFORM JOURNALISM

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Limited places available: 5

School of English, Irish and Communication

Rationale and Purpose of the Module: Multi-platform journalism is vital for all journalists to develop the conceptual and production skills in digital storytelling and multiplatform production, such as for online, mobile and social media. In recent years, many media organisations have responded to digital convergence and to growth of the internet by migrating towards a multi-platform approach to production and distribution of content. A multi-platform approach means that new ideas for content are considered in the context of a wide range of distribution possibilities. The reporting, writing and packaging of news for online audiences requires an evaluation and understating of the online media world.

Syllabus: This module is designed to develop the practical, technical, and intellectual skills required in contemporary multiplatform journalism. On successful completion of the module, you will demonstrate a knowledge of the importance of news values and techniques, learn how to target your work to a particular audience platform and develop an understanding of the commercial challenges journalism faces. A core feature of the module is an e-portfolio where students produce stories to be presented across multiple media platforms. An emphasis will be placed not just on creating text-based stories but will also include instruction in audio outputs.

GA4012 – CELTIC CIVILISATION: CONTINUITY AND CHANGE

ECTS Credits: 6 (Year 1 Module)

School of English, Irish and Communication

Rationale and Purpose of the Module: To offer an introductory module in Celtic Civilization for the Spring Semester encompassing Celtic Mythology, Religion, Customs and Literature

Syllabus: This module will give an overview of the socio-cultural context of Early Irish literature and culture, as well as Celtic Mythology and Customs, including the following:

•Representations of Celtic Deities in the Classical commentaries and in vernacular sources

•Celtic Mythology in early written sources

•An overview of Early Irish festivals and customs and the survival of same in modern Irish folklore

•Celtic Cosmology - including representations of the otherworld(s) in Early Irish literature and in Modern Folklore.

•Interpretation of historical, literary and folklore sources pertaining to the social, cultural, and religious customs and worldview of the Celts

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School of English, Irish, and Communication: Year 2 Modules

JM4044 - MAGAZINE JOURNALISM AND ADVANCED LAYOUT DESIGN

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited places available: 5

School of English, Irish and Communication

Rationale and Purpose of the Module: To give students a thorough understanding of the magazine market, from lifestyle magazines to Business-to-Business publications, including contract and customer publishing. To enable students to think creatively and develop their ideas to help them understand how magazines work and to create a pitch for a new magazine. Secondly this module aims to further develop students' abilities in sub-editing and design for print and internet by reinforcing learning of the fundamentals of sub-editing practices including grammar, punctuation and syntax for magazine journalism, for both print and online, and basic principles of magazine design using text and images for print and online.

Syllabus: Students will learn how the magazine market works, the differences between the various kinds of magazine, readership markets and revenue streams.

Students will select a magazine and research it, from circulation to readership, advertising, and other revenues. They will obtain interviews to clarify any points, and produce a profile of the magazine, which will form the basis of a presentation to the class. In the second half of the semester students will work on a project Oscarö: in groups of about five, they will generate an idea for a new magazine, research the market, produce reader profiles, produce details of features, design dummy pages and pitch their projected magazine to the class, tutors, and a magazine professional. Assessment will be by coursework: production of a portfolio of work completed during the course, and contributions to class discussions. They will further develop their desktop publishing techniques, analysing the elements of type; writing headlines and stand firsts; editing and handling pictures and developing their skills in layout and proof reading. Students will design pages in a wide variety of styles for magazines and newspapers, using news and feature copy, and using their own photographs and other illustrations.

JM4006 - SOCIAL MEDIA AND SOCIETY

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited places available: 20

School of English, Irish and Communication

Rationale and Purpose of the Module: This module was previously titled Introduction to social media but to better reflect the course content the name change is required. This module aims to equip students with the web-based research, organisational and value judgement skills necessary to examine and understand critically the power of social media in a globalised world. It aims to enable students to become better critical thinkers and researchers by giving them the skills to understand social media, to question its relevance, its accuracy and its legitimacy; and to construct news in a social media format. It will equip students with communication skills, which will enable them to participate effectively in their university degree.

Syllabus: This module introduces student to thinking critically about social media and its impact on society. Taught elements will include concepts drawn from theoretical communications, social and media studies, as well as practical approaches including hierarchical news writing and information construction. The module will examine the changing nature of how news is disseminated through social media and investigate citizen engagement with news. It will give a practical introduction to the use of social media for the purposes of information gathering, as a source for news and as a potential agent of democratisation of media and society. Practical cases will be understood through recent theoretical perspectives on human collaboration and communication. The changing dynamic of news from the traditional (linear) model to the new media (circular) model will be explored. The course has a strong focus on both the use of social media for practical exercises and on evidence-based critical thinking.

JM4013 - RADIO JOURNALISM

Limited places available: 5

ECTS Credits: 6 (Year 2 Module)

School of English, Irish and Communication

Rationale and Purpose of the Module: This module is being created to introduce radio journalism to the BA Journalism and New Media degree program, following recommendations by the external examiner and feedback from industry.

Syllabus: The module will examine historical perspectives on the medium of radio and the current organisational structures of radio in Ireland and internationally. The impact of broadcast journalism on democracy will be examined. Areas such as podcasting and on-line streaming, and their impact on news media and on democracy will also be explored. Lectures will also examine radio research techniques, interviewing for audio and on scriptwriting for the ear. Practical classes will focus on the development of skills for professional journalism practice for audio-based outputs and will take place in studio and in a dedicated newsroom. Writing and presentation skills for radio, microphone technique, voice training, audio mixer operation, telephone recording procedures, the operation of portable recording devices and computer-based editing of audio reportage will be examined.

JM4024 - SPORTS JOURNALISM

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

School of English, Irish and Communication

Rationale and Purpose of the Module: This module will provide students with the opportunity to develop their reporting, writing and broadcast skills in sports journalism. It will explore the principles and practice of good sports journalism and develop students' analytical skills and critical awareness of the role of sport in newspapers, online, magazines and broadcast organisations.

Syllabus: This module will give students practical experience in producing sports journalism for print and broadcast. Students will develop a rounded understanding of the processes involved in producing journalism content for sport. The significance of sports journalism within the overall newspaper, online and broadcast bulletin will be set in context. Additionally, students will conduct weekly field reports and work in their own time to attend sports events and write and/or record journalistic output to a professional standard for print, online and broadcast. Students will produce a range of material including reports, interviews, and feature articles. Assessment will be through the practical production of sport reports for print, online and broadcast, sports interviewing and feature assignments and reflections on learning.

JM4034 - JOURNALISM AND WRITING 2: BREAKING NEWS AND FEATURES

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited places available: 10

School of English, Irish and Communication

Rationale and Purpose of the Module: Journalism and Writing 2 follows on from Introduction to Journalism from semester one. The course aims to delve deeper into journalistic theory while in the laboratory classes the course aims to develop students' writing skills in producing a variety of news articles including breaking news, short features, long form journalism and reviews for a variety of publications - print and online.

Syllabus: In the lectures students will discuss theories of journalism including journalism and ethics, normative theories of journalism, journalism in the digital age, citizen journalism, mass communication theory and political economy. In the labs students will extend their knowledge of different journalistic forms, including breaking news, short features, long form journalism, profiles, vox pops, and reviews. Regular news writing workshops will continue, including one on a breaking news exercise and a wrap story exercise. They will be helped to begin writing for student publications and will be encouraged to write their own blogs. Assessment will be by the production of a portfolio of work completed during the course, and a final timed examination.

School of English, Irish, and Communication: Year 3 Modules

EH4006 - VICTORIAN TEXTS AND CONTEXTS

ECTS Credits: 6 (Year 3 Module)

Limited capacity

School of English, Irish and Communication

Rationale and Purpose of the Module: This module aims to introduce students to key elements of nineteenth century literatures in English with a specific focus on Victorian and Edwardian texts and contexts. Students will examine a range of literary texts produced in the period and relate them to the political, social, and historical circumstances in which they were written.

Syllabus: Addressing developments in literary practice and form, we will focus initially on the rise of the novel, and will also consider changes in the nature of author and audience during the second half of the nineteenth century. Nineteenth century aesthetic, political and social contexts for the literature will be central to our work and a range of theoretical approaches will be tested in relation to these categories. As part of this endeavour, students taking the module will be asked to participate in a group-based research project.

EH4036 - IRISH LITERATURE 1930 - 1990

ECTS Credits: 6 (Year 3 Module)

Limited capacity

School of English, Irish and Communication

Rationale and Purpose of the Module: The module revises and updates a module (EH4126 -- Imagined Spaces: Irish Cultural Texts) in ways which better reflect the broad range of faculty interests in twentieth-century Irish literature. It will introduce students to a range of Irish literary work and cultural movements in the period 1930-1990. This was a period in which literary censorship was a controversial topic, and the threat posed by literary radicals to the stability of the new state(s) widely debated. Taking this as a starting point, the module will encourage students to interrogate the ways in which Irish literary culture challenged state censorship, how it evolved over the century, and what the impact of literary writing has been on dominant social and cultural formations on the island. Attending to innovations in style, structure, and genre in the period, the module will concentrate on formal as well as cultural experimentation.

Syllabus: The module will introduce students to a range of twentieth-century Irish literary work, focusing on literary realism, avant garde experimentation, autobiography and memoir, radio writing, and film adaptation, to give just some examples. Topics covered may include urban/rural representations, the "Irish city" (which will include transnational examples), "the Troubles" in Irish culture, changing gender representations, sexualities, language questions, migration, and the representation of minority communities in the culture. While the main focus will be on literary material, the module will also consider the broadcast media and film work of some authors involved, such as Kate O'Brien and Sam Hanna Bell, to give two well-known examples.

GA4105 - IRISH FOLKLORE 1

ECTS Credits: 6 (Year 3 Module)

School of English, Irish and Communication

Rationale and Purpose of the Module: To introduce students from various disciplines (e.g. anthropology, comparative religion, ethnology, history, literature, sociology, etc.) to the area of folkloristics and to the study of Irish folklore.

Syllabus: An introduction to Irish folklore with special reference to the following areas: definitions of folklore, folklore collection and classification; verbal arts and minor genres; story-telling and narrative genres; indigenous and international tale-types in Ireland; and traditional custom and belief, including calendar customs.

Prerequisites: GA4105

TW4006 - WRITING FOR NEW MEDIA

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Limited places available: 10

School of English, Irish and Communication

Rationale and Purpose of the Module: This module is designed to replace TW4116: Workplace Issues in Technical and Professional Communication. This module is being developed to fully de-couple undergraduate and postgraduate modules which were historically taught together but are now fully separate. The new title is also clearer. The module's purpose is: to develop an awareness of the social context in which technical and professional communicators work, and the responsibilities associated with the provision of content, considered from ethical and legal perspectives; to develop students' writing skills especially in the area of writing for online media; to develop students' online information design skills; to develop students' ability to design and write for online media, especially blogs and web sites.

Syllabus: Ethical issues in professional communication; codes of practice; legal issues (consumer protection, patent, copyright, trademarks, trade secrets). Writing for new media; blogging; web design; information design for special needs; trends in technical communication. Web design: Dreamweaver and other web design tools.

EH4046 - OLD AND MIDDLE ENGLISH LITERATURE: TEXTS AND CONTEXTS

ECTS Credits: 6 (Year 3 Module)

Limited capacity

School of English, Irish and Communication

Rationale and Purpose of the Module: This module introduces students to literature written in Old and Middle English, specifically from the period c. 700-1500. Students will learn not just about the different genres of literature of the Middle Ages but will also be introduced to linguistic history and the political, social and cultural influences impacting and texturing written culture at this time. It will especially focus on literary contexts and reception, making full use of local archival collections and online databases and resources to allow students to experience literature in its manuscript form, building in research skills as a key component of assessment.

Syllabus: This module is a survey offered to students in year 3 and year 4 as an elective. Its focus is insular works of literature in English, beginning with Old English texts such as the epic poem Beowulf and moving through the main literary genres that were popular in this period: romance, elegy, lay, devotional, drama and lyric, to c. 1500. The module will introduce students to textual traditions, such as the corpus of Arthurian literature and protest literature; works that circulated anonymously; and literature by well-known authors such Geoffrey Chaucer, John Lydgate, Margery Kempe, and Thomas Malory. Close readings and critical analysis will be combined with considerations of manuscript and performance for these works, encouraging attention to how textual materiality can contribute to the interpretation of early literature.

EH4016 – STATE OF THE UNION: AMERICAN LITERATURE SINCE 1890

ECTS Credits: 6 (Year 3 Module)

Limited capacity

School of English, Irish and Communication

Rationale and Purpose of the Module: This module follows on chronologically from EH4145 American Literature, covering the period from the closing of the frontier to the present day. Through a selection of texts reflecting the diverse voices of the literature, students explore the physical, cultural and sociopolitical geographies of America. Reading accounts of the city and town, the urban and suburban, the road, the land, the reservation, or the South, students engage with questions of self and society, class and race, national identity, marginalization, counter culturalism and globalization, as expressed within differing literary movements.

Syllabus: This module covers American fiction, poetry and drama from 1890 to the present day, including works by, for example, Chopin, Wharton, Crane, Stein, Frost, Stevens, Pound, Eliot, O Neill, Cummings, Fitzgerald, Faulkner, Hemingway, Welty, Williams, Salinger, Kerouac, Heller, O Connor, Ginsberg, Plath, DeLillo, and Pynchon; African-American writing by Du Bois, Hurston, Hughes, Wright, Ellison, Baldwin, Morrison and Baraka; Asian-American writing by Mukherjee, Tan and Lahiri; Jewish-American writing by Singer, Malamud, Bellow, Miller, and Roth; Native American writing by Silko and Erdrich; literature after 9/11. In defining the themes and interpreting the literature of the period, attention is paid to political, social and cultural contexts (for example, the Great Depression, the World Wards, the Civil Rights Movement, the Vietnam War), to significant concepts and philosophies (for example, realism, naturalism, modernism, postmodernism), and to literary movements (for example, regional writing, the Lost Generation, the Harlem Renaissance, the Beat Generation).

School of English, Irish, and Communication: Year 4 Modules

EH4125 - FEMINIST LITERARY THEORY

ECTS Credits: 6 (Year 4 Module)

Limited capacity

School of English, Irish and Communication

Rationale and Purpose of the Module: To introduce students to a range of writing by women and to demonstrate how understandings of literature are marked by gender. To explore critical views of the institution of literature and to produce models of the reading and writing processes from a feminist perspective.

Syllabus: This course will combine feminist theory and the analysis of literary texts. We will consider five main areas of feminist theory and criticism: the concept of a 'feminine aesthetic'; the contribution of psychoanalytic theory to understandings of gender, identity, and writing; the relationship between race, ethnicity and gender in literature; questions of 'gender trouble' and sexuality; and postmodern feminist perspectives as they apply to literary

texts. Throughout the course, theoretical approaches will be tested in relation to a range of women's writing. Primary texts will be drawn from English language traditions in the first instance, although writings from other language traditions may be included depending on staff expertise.

JM4052 - MEDIA CHALLENGES IN THE DIGITAL AGE

ECTS Credits: 6 (Year 4 Module)

School of English, Irish and Communication

Rationale and Purpose of the Module: * To familiarise students with the key contemporary issues in media. * To give students an overview of the diversity of media contexts. * To introduce students to a range of media professionals from a range of different contexts and media. * To enable students to produce an in-depth study of a chosen media context.

Syllabus: * The course is a seminar module. Each week a practising media professional will come to the University to talk to students about their particular working environment and the key issues facing them as media professionals and their particular organisations in contemporary Ireland. * The range of seminar speakers will be as wide as possible, representing different media, different contexts (local, regional, national, public, private, voluntary) and different linguistic (Irish language and new allochthonous languages) and cultural environments. * Students will write a brief synopsis of each of the seminars and will also choose to study one of the media contexts presented in the seminar series in depth in an extended essay.

EH4008 - BRITISH LITERATURE SINCE 1945

ECTS Credits: 6 (Year 4 Module)

Limited capacity

School of English, Irish and Communication

Rationale and Purpose of the Module: This module studies British literature from the end of the Second World War to the present day. Students will read a range of literary texts produced in the period and will contextualise them politically, socially and historically. Topics will include the impact of the Second World War and the concomitant erosion of the British Empire; the enduring legacy of modernist literary experimentalism in post-Second World War literature; the rise of various liberation movements, including women's and gay liberation and post-colonial challenges to notions of Britishness; the impact of literary theory and the emergence of postmodernism.

Syllabus: This module covers British literature from 1945-present. Writers will include major novelists of the period such as Jean Rhys, Doris Lessing, Margaret Drabble, A. S. Byatt, Salman Rushdie, Jeanette Winterson, Kazuo Ishiguro and Zadie Smith; poets such as Philip Larkin, Dylan Thomas, Derek Walcott, Geoffrey Hill and ted Hughes; and playwrights such as John Osborne, Joe Orton, Harold Pinter, Tom Stoppard, Caryl Churchill and Sarah Kane. To define the themes and interpret this literature, students will become familiar with political, social, and historical contexts (the Second World War, various liberation movements, the rise and fall of the welfare state), wit

h significant concepts and philosophies (Thatcherism, postmodernism), and with literary movements (Angry Young Men, Kitchen Sink Realism, New Brutalists).

EH4038 - STUDY OF A MAJOR AUTHOR

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

Limited capacity

School of English, Irish and Communication

Rationale and Purpose of the Module: This module offers students the opportunity to engage in intensive study of an author whose work has significantly affected the traditions of literature written in English. Students will read an extensive selection of the authors works in order to understand fully his/her individual development and his/her important contributions to literary history. On successful completion of this module, students will have gained An understanding of the author in his/her political, historical, and cultural contexts; Familiarity with a range of the authors works and with a range of his/her thematic, stylistic, aesthetic, and formal concerns; An understanding of the authors importance in the literary canon; An understanding of different theoretical and methodological ways of interpreting the major author.

Syllabus: This module will function as a critical survey of the work of a major author. Students will study the authors development from early efforts to mature output and will be

able to analyze and discuss the authors overall impact on literary history. Students will be able to position the author historically and politically and will understand the authors role as a contributor to intellectual history. Students will be able to position the author in different theoretical and methodological frameworks and will be able to assess and interpret a wide range of the authors work Example One: Virginia Woolf This module will trace the development of the modernist novelist Virginia Woolf from early work to mature output. Students will read most of her major fictions as well. as a selection of her essays and autobiographical pieces. Students will study Woolf as a theorist and practitioner of modernist narrative form, as a woman writer deeply interested in questions of female creativity and a significant contributor to feminist literary theory, and as a figure increasingly relevant to studies of memory and trauma. Students will also consider Woolf as a cultural icon by considering her work in relation to recent films and novels that deploy her work and life.

TW4118 - CONTENT DEVELOPMENT AND INFORMATION MANAGEMENT

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

School of English, Irish and Communication

Rationale and Purpose of the Module: To provide students with information on the project management and quality issues in a content development environment, along with practical issues concerning indexing and editing. To give students an introduction to theory and practice of instructional design and e-learning. To give students an opportunity to put their learning into practice through a project which incorporates e-learning and project management. To introduce students to multimedia tools used in content development.

Syllabus: This module has two strands: documentation management and instructional design. The documentation management strand covers: managing complex documentation projects, tools for project management, quality, developing a style guide, editing and indexing, the review process. The instructional design strand covers: learning theories, needs assessment, audience analysis, objective analysis, media specifications, course design, performance assessment, and delivery systems.

EH4018 - CONTEMPORARY IRISH LITERATURE

ECTS Credits: 6 (Year 4 Module)

Limited capacity - open to English Majors and Final Year Students only

School of English, Irish and Communication

Rationale and Purpose of the Module: This module aims to introduce students to a range of Irish narrative texts written in English since 1980 and in doing so: Explore the engagement of these texts with contemporary historical, social and political contexts. Consider the contemporary writing of cultural and social identities in, and about, Ireland. Evaluate literary responses to the Northern Troubles and consider the ways in which literary/cultural constructions of Northern Ireland are reproduced at home and abroad. Examine the representation of community and political activism in Irish writing. Address the construction of gender and sexuality in contemporary Irish writing. Explore the writing of the Irish diaspora as well as that of its immigrant communities. Evaluate a range of theoretical approaches which have been, or might be, applied to this literature.

Syllabus: The period since 1980 has seen profound changes throughout the island of Ireland, particularly in the post-Robinson period. Drawing on the work of writers north and south, as well as those working within both the diaspora and immigrant communities in Ireland, students will consider how these texts have constructed and deconstructed the cultural, social and political landscape of contemporary Ireland.

Irish World Academy of Music & Dance



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Irish World Academy of Music & Dance: Year 1 Modules

MU4002 - CRITICAL ENCOUNTERS WITH POPULAR

MUSIC AND DANCE

ECTS Credits: 6 (Year 1 Module)

Irish World Academy

Rationale and Purpose of the Module: This module is an introduction to the growing field of popular music and dance studies and will give the student an overview of some of the important features of these contemporary practices as well as current areas and modes of research in this context. The investigations presented in these modules will be particularly informed by the international disciplines of Arts practice research. Students here will also be introduced to responsible and accountable academic and research practices.

Syllabus: In this module students will be introduced to the academic field of popular music and dance studies, examining popular music and dance movements, particularly those relevant to Irish contexts. Here students will seek to develop a vocabulary to think, talk, and write about the world of popular music/song/dance in order that we might better understand the purpose, meaning, and values associated with its forms. By examining case studies and key writings about popular music, song, and dance, students are introduced to the theoretical models developed within the field to account for the development of popular music and dance (and the very concept of 'popular' itself), the role of commodification in popular arts and how that shapes its aesthetics, and the meaning of popular forms in identity politics and in our everyday lives. Students will be develop writing and presentation skills associated with such academic engagement and be introduced to concepts of research as a creative, scholarly practice.

MU4012 - CRITICAL ENCOUNTERS WITH WESTERN

ART MUSIC AND DANCE

ECTS Credits: 6 (Year 1 Module)

Irish World Academy

Rationale and Purpose of the Module: This module is an introduction to the field of classical music dance studies, with a particular focus on contemporary practices. Students will be exposed to a selection of classical music and dance practices in an academic and performative context, providing them with an insight into some of the diversity of music and dance practices within these traditions. The investigations presented in this module will be particularly informed by the international disciplines of Arts practice research. Students here will also be introduced to responsible and accountable.

academic and research practices.

Syllabus: This module will act as an introduction to the historical development of Western Art Music from its roots in medieval church and secular music to its contemporary forms. Its historical relationship to traditional music's in Europe and beyond will be discussed. Dance traditions will also be explored, referencing classical, neo-classical, contemporary, and post-modern dance artists and practices. The course will include aspects of the history of dance performance in other locations and environments, for example site specific works, choreography for camera and the influence of new technologies on the development of choreography and performance. Students will be develop writing and presentation skills associated with such academic engagement and be introduced to concepts of research as a creative, scholarly practice.

MD4111 – IRISH WORLD ACADEMY PRACTICUM C2

ECTS Credits: 6 (Year 1 Module)

Audition required for entry to this module

Irish World Academy

Rationale and Purpose of the Module: This module will continue to focus on students developing their artistic practice in an collaborative context while gaining embodied experience of other arts practices outside of their own genre and disciplinary specialties. The rationale for including a defined space for the engagement with performance practices unfamiliar to the student is to show the student different creativities structured by unfamiliar aesthetics, cultural context and modes of embodiment. Students will

have the option to build on cross-genre skills acquired in Practicum C1 in certain contexts. The title of the module reflects the Irish World Academy tradition of presenting modules with an wide performance skills focus as 'practicum'. Such an approach is enabled by an embodied methodology that is critically engaged. The 'C' of the title reflects the cross-genre content of the module.

academic and research practices.

Syllabus: This module is split into two parts. In the first the student will engage other students in a laboratory pace within their own discipline, mentored by faculty and tutors, to develop creative, collaborative work within and extending from their own disciplines and genre practices. The second half of this module is designed to facilitate 'cross-arts' exploration of creative practice as a core dimension of every Academy undergraduate's educational experience. Each student will choose a performance course, from a genre or approach outside of their disciplinary and genre focused stream, selecting from a pool of courses covering instrumental / dance tuition, music/dance ensemble, dance/music ensemble, dance/music composition and other available performing arts practices. Students will have the option to build on cross-genre skills acquired in Practicum C1 in certain contexts.

MD4044 – TRAVELLER MUSIC STUDIES

ECTS Credits: 6 (Year 1-4 Module)

Note: students can take this module from Year 1 – Year 4

Irish World Academy

Rationale and Purpose of the Module: This module will examine the music traditions of nomadic communities immediate to the Irish experience (ie. Irish, Scottish travelers and Romany Gypsys) but in a wider European context. Students will engage these music cultures in a wide cultural and physical context and develop an understanding of the contribution of these music cultures to those of the so-called settled community. The inclusion of this module will contribute to the mainstreaming off this area to the curricular activities of the Irish World Academy of Performing Arts.

Syllabus: Students will study the music traditions of Irish, Scottish travelers and Romany Gypsys. For these communities issues such as Ethnicity, origin, language and Nomadism will be addressed especially as they are manifest through the musical traditions of these communities. The module will also address the historical treatment of these traditions by collectors and musicologists. Case studies will be presented to contextualize these issues addressing the role of the Irish travelling community in the piping, song and fiddle traditions of this island, the song tradition of the Scottish traveler community and its appearance in Ireland and the fusion of Gypsy music with other music cultures across Europe.

MD4142 – IRISH DANCE PERFORMANCE SKILLS 2

ECTS Credits: 6 (Year 1-4 Module)

Note: students can take this module from Year 1 – Year 4

Audition required for entry to this module

Irish World Academy

Rationale and Purpose of the Module: This module To enable students whose first area of practice is not Irish dance to continue to develop their Irish dance skill set.

Syllabus: Continued development of Irish dance skills to include travel steps, foot work, rhythm, and an understanding of interpreting the music. Basic posture, footwork and musicality will be addressed relevant to the students' ability.

MD4132 – HIP-HOP DANCE ELECTIVE 2

ECTS Credits: 6 (Year 1-4 Module)

Note: students can take this module from Year 1 – Year 4

Audition required for entry to this module

Irish World Academy

Rationale and Purpose of the Module: To provide students with the opportunity to become competent in hip hop dance so that they can develop the skills and confidence to work towards the creation of Hip-Hop compositions in a range of performance contexts, which will broaden their career options in Dance.

Syllabus: Over this elective, students will learn, in studio, the roots of Hip-Hop and its evolution from the streets of New York city in the 1970s. Emphasis will be placed on

learning about roots of Hip-Hop through class participation and learning the choreography of these dances and origins. By utilizing contemporary chorographic techniques, dancers will create new works for performance. This elective will lead on from Hip-Hop dance elective 1 and will require a greater complexity of choreography and of choreographic tasks.

Irish World Academy of Music & Dance: Year 2 Modules

MD4114 - CRITICAL ENCOUNTERS WITH GLOBAL POP

ECTS Credits: 6 (Year 2 Module)

Irish World Academy

Rationale and Purpose of the Module: This module is a further engagement with the study of popular music, emphasising its internationality as a domain for the circulation of many varied genres with origins around the world. "Irish trad," as it is commonly called, is a significant idiom within this field and here is placed in its international context as but one example of local-global-local, sometimes called glocal (or occasionally Lobal), interaction. Global Pop is a field of musical production with which our students are likely to interact as musicians and dancers; this module prepares them to act as critical thinkers about its practices and their engagement with these.

Syllabus: The module content focuses on understanding the volatile dynamics of this field of cultural production through the study of particular examples. Some of the most important, and well documented, in this regard have been music from Black America, South America, the Caribbean, North Africa, Sub-Saharan Africa, South Africa, Southeast Asia, Native North America, and the Northern Circumpolar regions. Particular issues and concepts key for an understanding of this phenomenon will be addressed in the context of these examples. Using an arts practice research perspective students will be asked to reflect on their own experience, most often in Irish music, in this domain.

MU4022 - INTRODUCTION TO SONGWRITING 2

ECTS Credits: 6 (Year 2 Module)

Irish World Academy

Rationale and Purpose of the Module: Students will build on skills and experiences, composing within a group as well as developing their individual practice as songwriters.

Syllabus: Through weekly workshops, students will experiment with different methods of developing original songs, considering simple elements of melody, lyrics and structure of song. Through weekly lectures and engagement with post-graduate students of MA Songwriting, students will be exposed to a range of different songwriters of varying genres and styles. They will be encouraged to locate their own creative practice within the wider experience of songwriting, engaging in reflective practice through group discussion, and individual journaling and self-evaluation. Moving on from Introduction to Songwriting 1, students will now be expected to produce individual as well as group compositions for performance.

MU4043 - VOCAL PEDAGOGY

ECTS Credits: 6 (Year 2 Module)

Irish World Academy

Rationale and Purpose of the Module: This module is an introduction to the expanding, interdisciplinary field of vocal pedagogy and will provide the student with an overview of arts based and scientific approaches to vocal pedagogy. The student will critically engage with key pedagogical texts and discuss current research in the field.

Syllabus: This module will offer an introduction to contemporary, arts based and scientific perspectives on vocal pedagogy, surveying key Western pedagogical approaches and presenting recent research in the field. The module content will provide the student with an opportunity to critically engage with the interdisciplinary perspectives that enrich discourse in this area on an ongoing basis, offering an informed foundation in care of the professional voice.

MU4054 - MUSIC COMPOSITION 2

ECTS Credits: 6 (Year 2 Module)

Audition required for entry to this module

Irish World Academy

Rationale and Purpose of the Module: Music Composition 2 develops students' engagement with a range of contemporary acoustic and electronic music composition practices, with the aim of deepening each student's individual composition practice. Composition practices from within and outside of oral traditions, both score-based and non-score-based, are explored.

Syllabus: Students expand their engagement with a range of approaches to music composition, broadening their experience of diverse compositional concepts, methods, and techniques, towards the development of their own distinctive creative practice. Students also develop their skills in peer learning.

MD4093 - CLASSICAL MUSIC STUDIES

ECTS Credits: 6 (Year 2 Module)

Irish World Academy

Rationale and Purpose of the Module: This module will provide the student with methods for the analysis of musical works, styles, and key composers within Western classical music, taking into account the social and cultural contexts of the time periods studied.

Syllabus: This module will offer a critical engagement with historical and contemporary perspectives on classical music, introducing the student to compositional form and style in both vocal and instrumental music.

MD4094 - MUSIC, LANGUAGE, SIGN AND TEXT

ECTS Credits: 6 (Year 2 Module)

Irish World Academy

Rationale and Purpose of the Module: To develop the student's critical understanding of the relationship of language, signs and symbols to music. This will allow students to engage their academic studies in the field of performing arts in a more critical and informed manner.

Syllabus: In this module students will be introduced to the broad twentieth-century traditions of structuralism, post-structuralism, post-modernism, and cognitive linguistics. They will examine the application of theoretical structures from these traditions, in particular those promoted by Saussure, Barthes, Fauconnier, Bahktin, Kristeva, Lakoff, Turner and Foucault, in the contexts of understanding roles of meaning and the interaction of sign, text and language in musical and musicological contexts. Students will be encouraged to examine these theoretical constructs in the constructs of their own performance practices. Students will be provided with written feedback according to BA Irish Music and Dance policy.

Irish World Academy of Music & Dance: Year 3 Modules

MU4013 - RESEARCH SKILLS: ETHNOMUSICOLOGY /ETHNOCHOREOLOGY/ARTS PRACTICE

ECTS Credits: 6 (Year 3 Module)

Irish World Academy

Rationale and Purpose of the Module: To introduce students to the important contextualising disciplines of ethnomusicology and ethnochoreology and their main principles and orientations as well as the practical application of fieldwork and the production of ethnographic representations. To introduce students to work primarily in an analytical writing mode to explore conditions, concepts, and practices of performing arts in the 21st century.

Syllabus: To introduce students to the important contextualising disciplines of ethnomusicology and ethnochoreology and their main principles and orientations as well as the practical application of fieldwork and the production of ethnographic representations. An emphasis is given to the performance of fieldwork and the representation of experiences and findings that can be utilised in, for example, FYP work. To introduce students to work primarily in an analytical writing mode to explore conditions, concepts, and practices of performing arts in the 21st century including the generation of meaning and value(s) through performance; the domain of artistic practice as

reflexive activity; the challenges of representation, translation and archiving of artistic practice.

MU4106 - ARTS AND HEALTH

ECTS Credits: 6 (Year 3 Module)

Irish World Academy

Rationale and Purpose of the Module: This module is designed to enable music and dance students to develop awareness and understanding of the impact of the arts on health and well-being. The module aims to develop well-rounded music and dance graduates who are aware of the role of the arts in various contexts (such as hospital, community healthcare and mental health) and the impact of their own health and well-being on their own arts performance. The role of arts in society will be examined as well as the wide variety of approaches to creative engagement and the value of art.

Syllabus: In this module students will develop their knowledge of the interaction of arts, health and well-being. Students will discuss, describe and critically reflect on the ways theorists and researchers have considered social, psychological, physical and behavioural aspects of the arts and to discuss the role of the arts in society and the value of art. By the end of the module students will be able to describe aspects of physiological responses to music; the social and cultural context of music and dance; the importance of listening skills, arts and health practice.

MU4136 - IRISH TRADITIONAL MUSIC 2

ECTS Credits: 6 (Year 3 Module)

Irish World Academy

Rationale and Purpose of the Module: To introduce the students to the history and structures (musical and in a wider cultural sense) of traditional Irish music and dance.

Syllabus: Issues addressed in this module will be instrumental and dance style, Irish language song tradition, nineteenth-century collections, contemporary issues, sean-nos and set dancing.

Irish World Academy of Music & Dance: Year 4 Modules

MU4004 - MATERIALS AND CONTEXT FOR VOCAL PERFORMANCE

ECTS Credits: 6 (Year 4 Module)

Irish World Academy

Rationale and Purpose of the Module: Students will be introduced to the tools and approaches of choral music analysis and arrangement. They will also learn to access, assess, and transcribe original and edited sources of vocal music (solo and ensemble), and will be introduced to the principles and practices of vocal performance and staging.

Syllabus: Students will attend lectures that will cover the theoretical aspects of choral music analysis and arrangement for two, three and four parts. Another set of lectures will be dedicated to the introduction and study of original and edited sources of vocal music. Students will also attend a laboratory where principles and practices of vocal performance in relation to staging (including stage presence, lighting and spacing) will be introduced.

MU4008 - SPECIAL TOPICS IN ETHNOMUSICOLOGY

ECTS Credits: 6 (Year 4 Module)

Irish World Academy

Rationale and Purpose of the Module: This module is designed to give advanced undergraduate students the opportunity to explore a particular topic in an in-depth way not possible in introductory or survey modules. Specific topics will be chosen by the faculty member coordinating the module and will generally be research based. It is intended to serve as a recruitment steppingstone taking 4th year undergraduates into considering post-graduate studies in the international field of ethnomusicology.

Syllabus: Students will work primarily in a tutorial and collaborative setting developing and implementing current, higher-level research led by individual faculty members. Students will support primary investigators as collaborators in making research and its dissemination at a professional

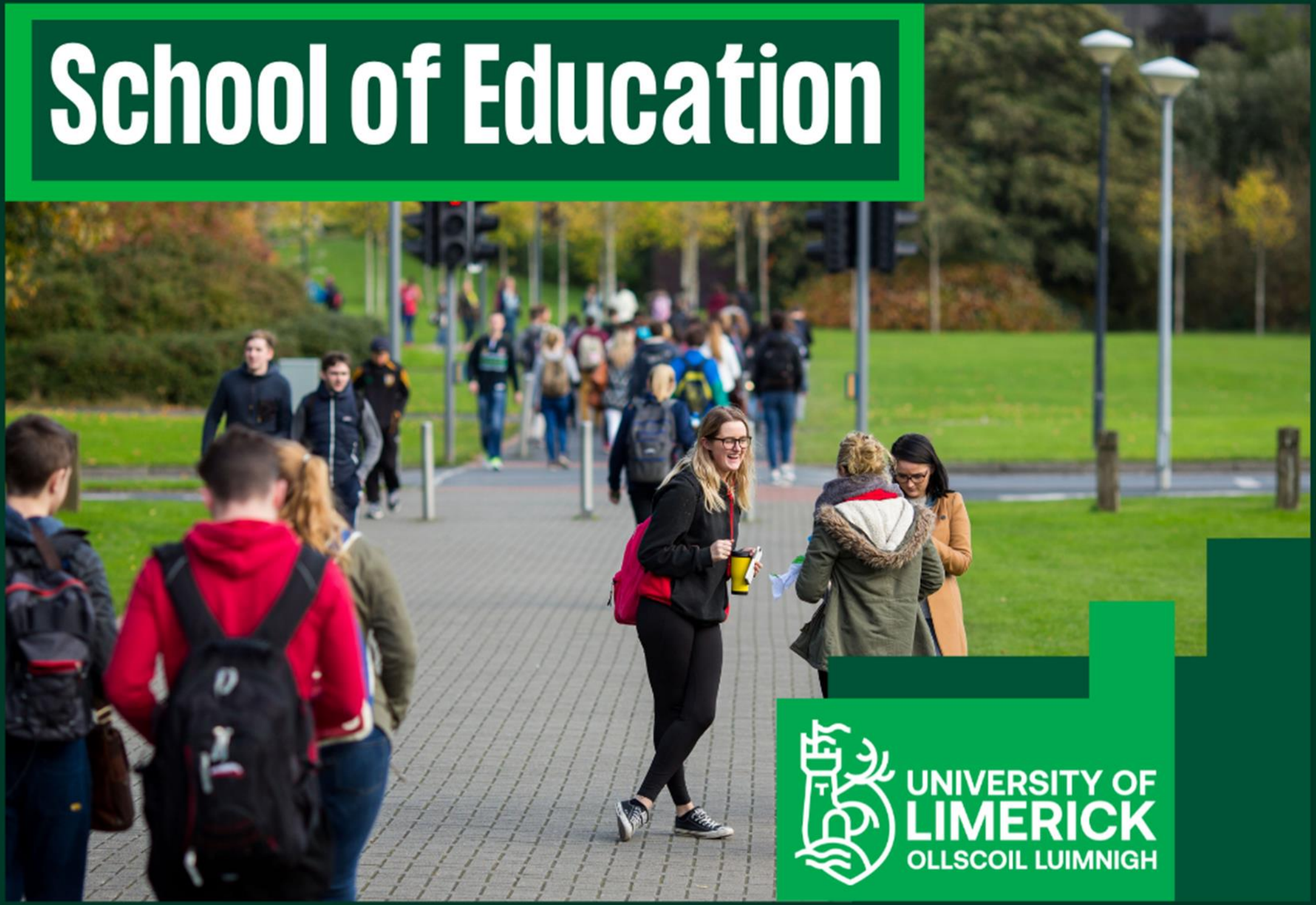
level. Students will engage individual, departmental, and institutional research strategies and gain an insight into best practices in ethnomusicological research in a wider, collaborative context.

Faculty of Education & Health Sciences



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

School of Education



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

School of Education: Year 1 Modules

EN4052 - UNDERSTANDING YOUNG PEOPLE AND

HOW THEY LEARN – PSYCHOLOGICAL PERSPECTIVES

Limited Capacity

ECTS Credits: 6 (Year 1 Module)

School of Education

Rationale and Purpose of the Module: The purpose of this module is to introduce students to key concepts in educational and developmental psychology focusing on how young people learn and develop. The module will provide students with a critical understanding of key learning theories, examining behavioural, cognitive and socio-cultural perspectives and their implications for teaching, learning, motivation and assessment. Special education needs and inclusion will be addressed in terms of assessment, learning strategies and teaching (differentiation and UDL). Students will gain a critical understanding of relevant aspects of adolescent development including identity in context, peer networks, social-emotional learning, media usage and the construction of adolescence. As part of this module the students will also contribute to their teaching portfolio by submitting a reflection on their understanding of learning drawing on their own personal experiences and the key theorists explored as part of the module

Syllabus: Seminal and contemporary learning theories including behavioural, cognitive and socio-cultural accounts of learning and their implications for teaching, assessment and motivation; Adolescent Development (physical, cognitive, social/emotional) bio-ecological and cultural theories; Factors to be considered in understanding student learning: identity; self-concept, self-esteem and self-efficacy; ability, intelligence, neurodiversity, fixed/growth mindsets and achievement; thinking, problem solving and adaptive expertise; adolescent development including peer networks, media usage and social emotional learning; language, literacy and numeracy development; self-regulation and metacognition; motivation; principles and modes of assessment; assessment and communication of student learning to students, school system and families; Reflecting on learning.

School of Education: Year 3 Modules

EN4066 - SUBJECT PEDAGOGY 2 (MATHEMATICS)

ECTS Credits: 3 (Year 3 Module)

Limited places available: 3

School of Education

Rationale and Purpose of the Module: This is the second of two subject pedagogics modules in mathematics and is devoted to applying the student teacher's general pedagogical knowledge to the mathematics classroom while simultaneously developing mathematics-specific pedagogical knowledge. In this module there will be a very strong emphasis on teaching mathematics for understanding; incorporating a variety of assessment modes into the mathematics classroom; catering for mixed ability in the mathematics classroom and problem solving and modelling in mathematics - all core ideas underpinning the Project Maths curriculum currently being taught in Irish second level schools. The module integrates (a) subject knowledge in mathematics, and (b) subject pedagogical knowledge in mathematics and (c) knowledge of the mathematics curriculum and learners. These inter-related domains of knowledge are critical in order to prepare the student teachers for their second school based teaching experience and for their future careers as mathematics teachers.

Syllabus: LECTURE TOPICS: During this module there will be a number of student presentations focusing on key issues in mathematics education. Prior to these lectures being delivered students will be required to independently investigate some of these key issues and submit a "research guide for teachers" which provides some background information on the topic from the literature and key take away messages for teachers. The key take away messages designed by students will be shared as well as relevant findings included in the article will be shared with the wider class during the lecture by both lecturer and students. The lecture series in this module will predominantly focus on issues facing mathematics education in Ireland and internationally. SEMINARS: The following seminars will run over the course of the twelve week and will provide students with practical advice in relation to teaching mathematics and

give them the opportunity to explore different methodologies, resources, approaches to assessment etc. The workshops will be designed around the five strands of the Project Maths curriculum. 1. Teaching Statistics at Second Level 2. Teaching Probability at Second Level 3. Teaching Functions and Calculus at Second Level 4. Teaching Algebra and Number at Second Level 5. Teaching Geometry at Second Level WORKSHOPS: As part of the lecture series students will be introduced to the idea of teaching mathematics for understanding and models for teaching mathematics for understanding. In these workshops students will have the opportunity to develop their own understanding of key mathematical concepts and look at ways that they could use the aforementioned models to develop students conceptual understanding of these key mathematical concepts. In total there will be six workshops during which students will work in groups to explore a range of different mathematical concepts. The workshops will focus on the Project Maths strands, as shown below. 1. Teaching Fractions for Understanding 2. Teaching Statistics and Probability for Understanding 3. Teaching Functions and Calculus for Understanding 4. Teaching Number for Understanding 5. Teaching Algebra for Understanding 6. Teaching Geometry and Trigonometry for Understanding

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EN4076 - SUBJECT PEDAGOGICS 2 (ENGLISH)

ECTS Credits: 3 (Year 3 Module)

Limited places available: 5. Suitable for students studying English or the teaching of English at primary or post-primary levels

School of Education

Rationale and Purpose of the Module: Students will continue explore the principles and practices of teaching English in second level schools, particularly in the Irish context. Students will be introduced to the concepts and methodologies outlined in Senior Cycle English curriculum documents, particularly in the Irish context. Students will be supported in their preparation to teach English to second level learners on School Placement including preparing, implementing and assessing learning experiences. Students will be encouraged to value the subject of English and link it to their understanding of self, others and the world around us.

Syllabus: The syllabus will build on English Pedagogics 1. The syllabus will be structured around the key concepts of teaching English in Senior Cycle curriculum documents in Ireland, that is, the development of comprehending and composing in the language categories of information, argument, persuasion, narrative and the aesthetic use of language. It will be premised on the concepts of critical literacy and language awareness.

EY4076 - SUBJECT PEDAGOGICS 2 (ENGINEERING TECHNOLOGY AND GRAPHICS)

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Limited places available: 3. Experience in designing and manufacturing small projects required

School of Education

Rationale and Purpose of the Module: Building on the attitudes, skills and knowledge associated with technology education and consolidating the experience from School Placement 1, the focus of this module shifts from that of a teacher-centred planning model to an orientation phased focus of pedagogical development. This module takes a more flexible and inclusive approach to pedagogical design and implementation. The emphasis is to develop both proactive and responsive techniques in an attempt to develop dynamic thinking capacities appropriate to the complex and iterative nature of technology teaching and learning. With particular emphasis on cognitive architecture, primarily memory systems, this module explores the design, intent, and efficacy of learning tasks and activities. Methods for qualifying efficacy are developed through statistical and

self/peer audit techniques so as to support reflection and improvement. Special consideration is given to planning for differentiation and alternative educational needs.

Syllabus: Analysis of the leaving certificate Technology, Engineering, and Design and Communication Graphics syllabi, Task Design: learning curves, progressive planning, task design, memory systems, cognitive load theory, mixed ability, planning for differentiation, Personal Development: personal construct of capability, exercising professional judgement, identification of cognitive and meta-cognitive actions, formative and diagnostic assessment, principles of evidence based practice, Strategies: managing permeable and non- permeable task design, divergent outcomes, learner support, quality assurance and improvement

Assessment strategies: definition of capability, design of assessment instrument, evaluating competencies.

Please note: Experience with designing and building electronic and mechanical systems is necessary.

SE4016 – ADVANCED SCIENCE PEDAGOGY

Limited Capacity. Entrants require substantial background in two of agricultural science, biology, chemistry or physics (at least 15ECTs in each subject)

ECTS Credits: 6 (Year 3 Module)

School of Education

Rationale and Purpose of the Module: To make the students proficient in planning, teaching post-primary Senior Cycle Science syllabi (Biology, Agricultural Science, Chemistry, Physics), with an emphasis on learning sciences-informed approaches to effective pedagogy in various classroom, field and laboratory settings, attentive to safe working practices and risk assessment in the science classroom. New developments in the senior cycle curriculum will be incorporated and emphasis will be placed on emerging trends in pedagogy.

Syllabus: Nature of Science (NOS); Review of the post-primary syllabi with a focus on Senior Cycle Science (Biology, Agricultural Science, Chemistry, Physics, as appropriate); structure and rationale for the syllabus. Structures of subject knowledge; investigative and inquiry-based approaches in the classroom/laboratory and workshop; Theory and practice of curriculum and syllabus design and development including 'teachers as designers'; Rationale for inclusion of science subjects on the curriculum; Mixed ability teaching; varied approaches to assessment to include formative, summative and diagnostic strategies; fostering a community of learning (FCL) and self-directed learning in science programmes; classroom/workshop/ laboratory organisation; international achievement testing and scientific literacy (i.e. TIMMS-R and PISA); Literacy and numeracy in science teaching; Cross-curricular integration.

Prerequisites: EN4015, EN4025

EN4046 - DIVERSITY OF LEARNERS: INCLUSION AND SPECIAL EDUCATIONAL NEEDS

Limited places available: 5. Suitable for students who want to explore inclusive education/educational psychology. A previous knowledge of education or psychology is preferable. Needs to be checked each year to ensure tutorial spaces available

ECTS Credits: 6 (Year 3 Module)

School of Education

Rationale and Purpose of the Module: Successful inclusion of students with special educational needs is underpinned by an understanding of the diversity of learning from theories and frameworks of disability and inclusion and a capacity to differentiate appropriately. This module aims to enhance students' understanding of inclusion and to develop their capacity to teach inclusively within their classes and within a whole school framework. As part of this module, the students will contribute to their professional portfolio by reflecting and revising their previously written teaching philosophy in light of their newly acquired knowledge of inclusion and diversity and their second-year school placement experience.

Syllabus: Knowledge of key national and international policy and legislative documents that pertain to special educational needs in Ireland including the Resource Allocation Model and the continuum of support (post-primary); knowledge of the full continuum of SEN such as the exceptionally able; learning about identification, assessment and intervention approaches; understandings of key theories and frameworks of disability including incorporating a Capability Approach; knowledge of inclusive practice to support neurodiverse learners with a focus on UDL approaches; knowledge and application of evidence-based strategies in the area of SEN; understanding and support of SEN within a whole-school framework; collaboration with key stakeholders (e.g. parents/students).

School of Education: Year 4 Modules

EN4018 - TEACHER AS PROFESSIONAL

Suitable for all students studying education

ECTS Credits: 6 (Year 4 Module)

School of Education

Syllabus: 1. Critically examine the professional role of the teacher in a changing society 2. Analyse the meaning of teacher professionalism in the light of the current literature and research and the changing socio-economic context 3. Consider recent policy developments of relevance to the professional role of the teacher in Ireland today 4. Reflect critically on their experiences of school placement and develop their research capacity as lifelong learners 5. Critically consider the influence of contextual factors on teaching, leaning and assessment with particular reference to schools as organisations 1. Appreciate the multifaceted roles and responsibilities of members of the teaching profession 2. Develop capacities for critical reflection in appreciation of the impact of assumptions on teaching values and practice 3. Realise the importance of professional collaboration through cooperative learning experiences that promote positive mutual interdependence 4. Consider the role of teachers as civic agents.

Rationale and Purpose of the Module: This module follows School Placement and affords students the opportunity to critically reflect on their experiences to identify and question assumptions they hold about the nature of teaching, learning and schooling in cooperative groups that model collegial learning and cultivate research capacity. This context is explored in a conceptual framework of teacher professionalism that emphasises action, change and lifelong learning.

MB4008 - GROUPS AND ALGEBRAIC STRUCTURES

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5. Suitable for students studying a degree in mathematics or post primary mathematics teacher education

School of Education

Rationale and Purpose of the Module: To develop a broad understanding of algebraic structures especially group structure. To study realizations of group structure in geometry. To study selected applications in Science and

Engineering.

Syllabus: Sets and operations: review of sets, operations; Groupoids and semi-groups: equality, commutativity, associativity, inverses, order; Groups: axioms, properties, sub-groups, cyclic groups, p-groups, permutation groups; Lagrange's theorem: applications to number theory, kernel, isomorphisms, normal subgroups, quotient groups; Sylow's theorems; Group of isometries; group of transformations, enlargements; Group of similarities; Rings: definition; integral domain, fields.

Prerequisites: MB4001, MB4002

PN4038 - DESIGN AND COMMUNICATION GRAPHICS 6

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

Limited places available: 3

School of Education

Rationale and Purpose of the Module: The importance of graphicacy in developing well-balanced citizens stimulates significant debate and discussion within education. Exploring and learning through the medium of graphics begins in early childhood and continues throughout adult life. The role of the education system in developing and nurturing graphical skills is sometimes understated. This module will broaden and develop students' capacity to critically think about their discipline while bringing their knowledge and understanding of graphics to bear on real world problems and challenges. Invited speakers from a range of disciplines (including medicine, humanities, sciences, engineering, etc.) will present their real-world graphical experiences and observations through a series of short presentations. In addressing the issues raised in these presentations, students will be expected to be proactive and creative in identifying and driving improvement and positive change to enhance the competencies of these professions through graphicacy. Through a needs analysis, students will autonomously develop, create and innovate towards realising new possibilities and opportunities that enhance graphical capability and professional performance. On completion of this module, students will be expected to convey ideas relating professionally and effectively to the development of graphical capability. As future educators and agents for change, students will also be expected to debate and support the role of graphical education in making substantial and positive contributions to society and active citizenship.

Syllabus: Design and Communication Graphics: Graphicacy, creative problem solving, spatial abilities/visualization, design capabilities, decision-making capabilities, graphical encoding and decoding, cognitive

modelling skills, Research methods in Technology Education: classroom case studies, repertory grid technique, expertise development, observational techniques, visual and verbal protocol analysis, capturing knowledge and heuristics, examining graphical thinking.

Please note: Modules related to engineering graphics/technical graphics a requirement.

Physical Education & Sports Sciences



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Physical Education & Sport Sciences: Year 1 Modules

SS4042 - EXERCISE AND FITNESS INSTRUCTIONAL SKILLS APPLICATION

ECTS Credits: 15 (Year 1 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The purpose of this module is to prepare students to work as an exercise health fitness instructor within the industry. Students will demonstrate the knowledge to health screen and programme for individuals with a variety needs and goals. They will also teach a safe and effective exercise for health fitness class in a number of exercise modes and intensities to the general population.

Syllabus: Exercise & fitness planning, preparation and implementation; class plans; class management and instructional skills: screening; teaching and safety skills, personal technique; choreography and music selection; intensity monitoring; adaptations and progressions; care of beginner; care of post injury client; cueing (visual & verbal); class education; motivation; communication skills voice projection; use of space; sequencing and transitions; positioning; protocol for teaching resistance training one to one basis; self-evaluation. Synoptic writing skills: assimilation; understanding; application of concepts.

SS4032 - APPLIED EXERCISE, IN STEP & FLEXIBILITY IN HEALTH FITNESS INSTRUCTION

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The purpose of the module is to provide the student with the knowledge and competencies to design and teach a safe and effective, motivating step and flexibility training classes. The module will also provide students with the skills to observe and correct poor technique and manage the safety of all participants in the class.

Syllabus: Benefits of step training & body conditioning; personal technique; instructional skills in step training & body conditioning; principles of step training & body conditioning class design; stretching for step training & body conditioning; physiological and biomechanical considerations for instruction, exercise selection, movement sequences and programme design in step training & body conditioning; adaptations and progressions for varying intensity; music selection; class management, safety and injury prevention; characteristics of different types of step training flexibility training

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SS4022 - APPLIED FULL BODY CIRCUIT TRAINING IN HEALTH AND FITNESS INSTRUCTION

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The purpose of this module is to provide students with the knowledge and competencies to teach circuit training and body conditioning classes to the general population. The module will prepare students to observe and correct poor technique and adapt and progress exercises to vary the intensity of the class.

Syllabus: Benefits of circuit training; free movement warm up; types of circuits, LME, aerobic, anaerobic and mixed; instructional skills; observation and correction; music selection and BPM; adaptations and progressions to vary intensity; class management; client care; safety and injury prevention.

PY4132 – FOUNDATIONS IN HEALTH AND PERFORMNCE FITNESS

ECTS Credits: 3 (Year 1 Module)

(Lab-Based Module)

Limited places available: 2

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The rationale for this module is to provide students with an understanding of the key concepts that underpin health and performance related fitness. Specifically these key concepts include functional anatomy, the study of human movement, physiology, nutrition, and the teaching of Health-Related and Performance-Related fitness (HRF/ PRF) in Physical Education (PE). Furthermore, students will explore and critically examine the pedagogies used in the teaching of HRF/PRF and how health-related learning is situated in educational contexts, in Ireland and internationally. In addition, the module will develop students' ability to apply relevant technological knowledge of health-related physical activities in an applied context. The centre focus of this module is to prepare students to teach strands, topics and learning outcomes related to HRF and PRF in the wellbeing, junior cycle PE, senior cycle PE and LCPE currciula.

Syllabus: Anatomy/ Kinesiology: Anatomical terms and definitions. Identification and functions of the musculo-skeletal system. Structure and type of bones and muscles. Kinesiological analysis of simple joint movements and analysis of posture. Forms of motion. Introduction to injury prevention and analysis. Physiology: Detail of the function of key human physiological systems that support and adapt to physical activity and exercise to maintain health and wellbeing. The nervous system, the brain and their role in control of movement. Musculoskeletal structure and function to enable muscle contraction in support of movement. The structure and function of the cardiovascular system to deliver gases and nutrients to the working muscle in support of movement. The structure and function of the respiratory system to enable gas exchange in support of movement. Nutrition: Nutritional considerations for before, during and after performance. Importance of hydration. Nutrition and energy systems. Design of dietary plan for selected physical activity. HRF/ PRF: Role and value of HRF / health-related learning in educational contexts. Components of HRF and PRF. Principles of Training, Warm-up and cool-down design. Principles of effective measurement and assessment of HRF and PRF. Health appraisals and screening. Resistance Training with focus on weight training modalities. Pedagogies and curriculum models to support health-related learning, specifically the Health-related Physical Activity curricular model. Development of specific HRF and PRF components, such as cardiorespiratory endurance, muscular endurance, strength, power and speed. Development of a personal health-related and/or performance-related fitness profile and plan. Students will be introduced to the concept of a personal profile and all related issues that combine to create such a synopsis of an individual's physical status (needs analysis, assessment results, change over time, training log, etc.). Design of HRF/ PRF fitness battery and plan for fitness demands of a selected activity.

SS4142 – SCIENTIFIC PERSPECTIVES OF SPORT AND EXERCISE PSYCHOLOGY

ECTS Credits: 3 (Year 1 Module)

(Lab-Based Module)

Limited places available: 2

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The module aims to introduce key theoretical and applied concepts in sport and exercise psychology. In addition, the module will provide a foundation in the methods, issues and application in sport and exercise psychology.

Syllabus: Psychology as a scientific discipline and mode of enquiry to investigate the mind and behaviour. Major concepts studied in psychology (e.g., personality, motivation, stress, attention, perception, memory, learning, nervous system). Methodologies employed in psychology and the changing scientific paradigms. Evolution of sport and exercise psychology. Psychological skills training, Psychology of physical activity and health. Relevance of psychology to sport coaching and participation in physical activity. Psychology and skill acquisition. Professionalisation of the discipline and applications.

SS4552 - SPORT AND EXERCISE SCIENCES – IMMERSION

ECTS Credits: 9 (Year 1 Module)

(Lab-Based Module)

Limited places available: 3

Physical Education & Sport Sciences

Rationale and Purpose of the Module: This module introduces students to the application of a multidisciplinary approach to understanding activity in sport and exercise contexts through the provision of examples of human performance and endeavour. It provides an introduction to sports biomechanics, exercise and health fitness and the application of psychology. It explores a multi-disciplinary approach to thematic issues within the scope of exercise, biomechanics and psychology.

Syllabus: Key concepts in sport and exercise psychology and basic concepts in skill acquisition. Revision of basic mechanical concepts but with special reference to sports examples: forms of motion, linear and angular kinematics and kinetics. Differentiation of video data by finite differences. Projectiles: importance of angle, speed and height of release/projection and distance travelled and applications in sport. Construction of generalised link segment models for digitising video. Process raw data and perform basic kinematic calculations, Effective use of movement analysis software Terms and key concepts in exercise science and physical activity

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SS4332 – INTRODUCTION TO BIOMECHANICS FOR SPORT AND EXERCISE

ECTS Credits: 3 (Year 1 Module)

(Lab-Based Module)

Limited places available: 3

Physical Education & Sport Sciences

Rationale and Purpose of the Module: Module created due to restructure of Year 1 of the BSc Sport and Exercise Sciences programme. Originally this module (SS4304) was a week 1-15 6 ECTS module and is now being changed to a week 7-12 3 ECTS module to suit the restructure.

Syllabus: Introduction to segmental modelling techniques including cadaver dissection data. Centre of mass centre of pressure, centre of gravity and radii of gyration. Fluid mechanics and air flow effects with applications to cycling, skiing, and aquatics. Friction. Angular momentum. Stability & balance. Analysis of specific movements; including Walking and running, diving, throwing and striking skills, jumping and throwing and sprint start.

Physical Education & Sport Sciences: Year 2 Modules

SS4034 - STRENGTH AND CONDITIONING 1

ECTS Credits: 15 (Year 2 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The purpose of this module is to introduce students to the role of the strength and conditioning coach in both team sports and individual sports and to examine that role as it relates to interacting with athletes, coaches, physiotherapists and other members of sports teams. The module also provides a theoretical framework for analysing the demands of the sport, the needs of the athletes, the capabilities both functionally and in terms of energy systems and capacities. The module encourages an athlete- first; sport-second approach as well as solutions-based approach to working with athletes. And stresses the importance of appropriate and progressive training to prevent burnout. The module examines a range of fitness tests for strength, stamina, and flexibility, and the protocols for implementing the tests, the selection of suitable tests and the use of tests results for developing suitable training programmes. The module also examines the role and value of current performance analysis software in improving the movement mechanics of athletes.

Syllabus: The role of strength and conditioning in sport; relationships between athletes, coaches, and physiotherapists; energy systems and capacities; athlete burnout; athlete first, sport second approach; testing for strength, stamina and flexibility; test evaluation and programme design; performance analysis software.

SS4044 - STRENGTH AND CONDITIONING 2

ECTS Credits: 15 (Year 2 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The purpose of this module is to provide the student with the necessary skills to plan and periodise an annual training plan for a specific sport and to set appropriate parameters for the training of each capacity in each cycle of training. The student will learn how to manipulate the volume and intensity of training at different periods of the annual training plan. The module examines a range of fitness tests for speed, agility and power, and the protocols for implementing the tests, the selection of suitable tests and the use of tests results for developing suitable training programmes. The module also examines the importance of performance profiling and its use in assisting the athlete to progress. The role and value of correct hydration and nutrition is an important feature of the module, the assessment method requires full engagement by the student in an applied and practical sport training environment.

Syllabus: Annual training plans; cycles of training; volume and intensity; fitness testing for speed, agility and power; performance profiling; hydration and nutrition; selection and implementation of suitable fitness tests; designing programmes for performance.

SS4204 - SUPPORT SYSTEMS TO MUSCLECONTRACTION

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited places available: 2

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The energy requirements of exercising muscle are carefully regulated and supported by fuel and oxygen delivery and the removal of waste products including heat. The purpose of this course is to provide an understanding of the regulation and adaptation of cardiovascular and pulmonary function in response to exercise. An experimental laboratory component provides an opportunity to challenge theoretical concepts by empirical analysis and to competence in measurement techniques.

Syllabus: The challenge to cardiovascular and pulmonary function induced by physical activity. Cardiac and vasomotor regulation at rest and during exercise. Adaptation of the cardiovascular system to acute and chronic exercise. Pulmonary and ventilatory control at rest and during exercise. Adaptation of the cardiopulmonary system to chronic exercise (training). Respiratory buffering. Altitude-induced hypoxia and cardiopulmonary function. Altitude training as an ergogenic aid. Validity and sensitivity of cardiopulmonary measures of exercise performance.

Prerequisites: SS4202

PY4043 – APPLIED STUDIES IN ATHLETICS / AQUATICS

ECTS Credits: 6 (Year 2 Module)

(Lab & lecture Based Module)

Limited places available: 3

Physical Education & Sport Sciences

Rationale and Purpose of the Module: This module introduces the students to track and field athletics through participation in 'athletics related' activities and later on through participation in Olympic events. Students will become aware of how to ensure personal safety and safety for others in Aquatics activities. A variety of teaching methods and equipment will be used. Students will learn how to plan athletics lessons which are safe challenging appropriate and for all abilities. They will also learn how to provide a safe environment for teaching and learning Aquatics.

Syllabus: The material on this module will be presented in a differentiated way which takes account of individual differences, and which is progressively developed to ensure individuals are challenged appropriately.

PY4063 – APPLIED STUDIES IN DANCE / GYM

ECTS Credits: 6 (Year 2 Module)

(Lab & lecture Based Module)

Limited places available: 3

Physical Education & Sport Sciences

Rationale and Purpose of the Module: This element of the module is designed to introduce you to creative dance work both at your own level and for use in the Junior Cycle. You will be assisted in acquiring knowledge skills and understanding of how to create structure and form movement ideas into dance. The practical sessions will combine the development of choreographic, performance and appreciation skills with the ability to create and write up a scheme of work and lessons plans for dance using a range of dance analysis and dance education frameworks. The theory element will address the socio historical development of dance within physical education and the current debate about the nature of dance education in the 21st century.

Syllabus: This element of the module is designed to introduce you to creative dance work both at your own level and for use in the Junior Cycle. You will be assisted in acquiring knowledge skills and understanding of how to create structure and form movement ideas into dance. The practical sessions will combine the development of choreographic, performance and appreciation skills with the ability to create and write up a scheme of work and lessons plans for dance using a range of dance analysis and dance education frameworks. The theory element will address the socio historical development of dance within physical education and the current debate about the nature of dance education in the 21st century.

SS4404 - COACHING AND SCIENCE PERFORMANCE3

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited places available: 2

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To give students a theoretical and practical learning experience in the areas of sport administration and organisation and sport coaching.

Syllabus: Administration and organisation: Structure and function of Irish NGB's. National coaching development programmes. The module includes an introduction to the management issues related to sports administration and allows students gain practical experiences in the organization of a sports event. Students explore how to operate within an organization. minutes, meetings and time management, planning, budgeting, promoting, sponsorship, safety and legal aspects, running the event, media, legal and ethical aspects and evaluation. Coaching: Planning, delivery, and evaluation of phases of a single session, and of a number of sessions. Coaching, experience gained by placement of students with mentors' coaches or exercise leaders in an ongoing practical setting. Maintenance of a coaching and reflective log. Exercise Prescription: Specific case studies of asymptomatic participants for health-related activity and sports specific training. Health appraisal, knowledge of participants goals, selection of appropriate field tests, assessment and evaluation of field tests, programme design for six weeks, delivery of programme, ongoing monitoring of participant and programme, post programme evaluation, guidelines for future work.

Prerequisites: SS4403

Physical Education & Sport Sciences: Year 3 Modules

PY4096 - PEDAGOGY OF STRIKING, FIELDING, NET GAMES

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Limited places available: 3

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The aim of this course is to help students develop a practical knowledge, inclusive of theoretical aspects of striking, fielding and net games through a pedagogical context. It will introduce the students to the basics of each strand through participation in and later on through the application of pedagogical principles. They will identify and discuss cultural the cultural diversity of each A variety of teaching methods and

equipment will be used. Students will learn how to plan lessons in order for them to be safe, challenging and appropriate for all abilities.

Syllabus: Theory: Overview of striking, fielding and net games from a variety of perspectives (bio-mechanical, physiological, educational, pedagogical). Striking, Fielding and Net Games in schools - limitations and possibilities. Striking, Fielding and Net Games lessons - planning for mixed ability. Cultural aspects of Striking, Fielding and Net Games Applying Striking, Fielding and Net Games to Junior and Senior Cycle Syllabus Practical: Fundamentals skills of Striking, Fielding and Net Games Involvement in and creation of 'Striking, Fielding and Net Games related activities' (indoors & out) Teaching second level students the fundamentals of Striking, Fielding and Net Games

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PY4055 - SOCIOLOGICAL CONCEPTS OF TEACHING AND LEARNING IN PHYSICAL EDUCATION

ECTS Credits: 3 (Year 3 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sports Science

Rationale and Purpose of the Module: This module introduces socialisation into and through physical education and the role of the physical educator. Students are encouraged to reflect on their own socialisation into the role of physical education student and how this, impacts on their understanding of physical education. This module also focuses on issues of social development (e.g., gender, social class, ethnicity, technology use). These topics are examined in light of how they have affected and are currently affecting the teaching of school physical education.

Syllabus: Content Areas: Block 1: Gender and ethnicity as sociological topics affecting teaching and learning in PE Block 2: Identity and personal biography as sociological topics affecting teaching and learning in PE Block 3: Ethnicity and extracurricular PE as sociological topics affecting teaching and learning in PE Block 4: Debates

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PY4106 - MOTOR LEARNING AND CHILD DEVELOPMENT WITH A FOCUS ON ATHLETICS

ECTS Credits: 9 (Year 3 Module)

(Lab-Based Module)

Limited places available: 2

Physical Education & Sports Science

Rationale and Purpose of the Module: Effective teaching integrates knowledge of the learner, knowledge of the content to be learned, and knowledge of the process of learning, to create an optimal experience for the young person. To better understand the learner, you will explore the interaction of biological, psychological, and sociological factors that change as children grow and mature. To more fully understand the content to be learned, you will study the diverse disciplines and competition structure within the sport of athletics. To better understand the learning process, you will apply research and theory from the domain of motor learning to guide your design and delivery of lessons. Effective analysis of human movement draws upon both an understanding the sport and an understanding of the learner, and is a prerequisite for planning and evaluating an intervention. Consequently, you will gain an understanding of how forces act on joints and how joint structure influences movement, to develop effective skills in qualitative biomechanical analysis. In so doing, the module will further develop your ability to apply technological knowledge to sport.

Syllabus: Characteristics of skilled performance; the difference between skill and ability; classification of movement; relating to planes, axes and levers; applications of the laws of motion with examples from athletics; qualitative biomechanical analysis; economy of movement; stages of learning; motor learning theories; effective practice design. Content relating physical activity, exercise and sport and the determinants of these behaviours in children and adolescents, stages of development and their implications for teachers, models of behaviour change, intervention design and issues pertaining to dropout as children age and mature will be explored. Athletics within post primary school lessons, particularly in the context of the Sport Education

curriculum model; planning for mixed ability; the logistics of running a school athletics event; fundamentals of running, jumping and throwing progressing to basic, event specific technique in traditional track & field athletics events (e.g. sprints, hurdles, long jump, high jump, shot, discus etc.). Applying knowledge of Motor Learning, Psychosocial Development and Biomechanics to enhance teaching of athletic activities.

PY4116 - SUBJECT PEDAGOGY 2 – PHYSICAL EDUCATION

ECTS Credits: 3 (Year 3 Module)

(Lab-Based Module)

Limited places available: 2

Rationale and Purpose of the Module: The aim of this module is to introduce students to the principles and practices of teaching physical education in the Senior Cycle Physical Education and Leaving Certificate Physical Education curricula. Building on Subject Pedagogy 1, the module provides students with continued opportunities to consider the meaning and purpose of post-primary physical education, examine teaching, learning and assessment in physical education, and develop a range of lesson design and delivery skills needed for 4th year school placement. The module will continue to reinforce previously introduced teaching and managerial strategies which are linked to student learning and the design of an inclusive physical education learning environment. Students will become familiar with various ways of looking at curricula which encourage critical monitoring and evaluation of the (Irish) post-primary physical education curriculum. Furthermore the module will examine the concepts of assessment of learning and assessment for learning and their potential to document student learning in a physical education environment.

Syllabus: The module will continue to examine selected aspects of pedagogy in teaching physical education and relevant Céim core elements including: • Effective managerial skills and behaviours including safety concerns, specific to physical education. • Instructional skills and behaviours for physical education. • Teaching strategies to foster an inclusive learning environment together with the use of different learning platforms appropriate for physical education. • Teaching strategies to foster literacy and numeracy within the physical education setting. • Assessment 'for' and 'of' learning in Senior Cycle Physical Education as well as Leaving Certificate Physical Education. • Continued planning for and assessment of literacy and numeracy in physical education. • The continued use of digital technologies and resources to plan and deliver physical education units of learning and lesson plans. The preparation of units of learning and lesson plans for subsequent school placement will be a consistent focus of the module. Building on the content covered in Pedagogy 1 regarding CBAs and SLARs, students will also consider how to best evidence student learning in physical education at senior cycle, for example through the use of pupil portfolios.

Physical Education & Sports Sciences: Year 4 Modules

SS4088 - DIVERSE POPULATIONS IN EXERCISE AND HEALTH FITNESS

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To provide module participants with the knowledge, skills and competencies to provide effective planning, management and teaching strategies for diverse and populations within the Exercise & Health Fitness sector

Syllabus: The purpose of this module is to introduce students to diversity, inclusion and integration issues as they relate to exercise, health fitness, and Adapted Physical Activity (APA). Students will engage in the

following topic areas: person-first terminology, definition of disability, historic perspective of the APA and inclusive movement, and key legislation as it relates to inclusion and disability in Ireland. Categories of disability will also be explored with particular emphasis on the aetiology and incidence of neuromuscular disorders, physical impairments, cognitive/sensory impairments, metabolic disorders, aging disorders and psycho-social disorders. Other content areas to be covered will include: adapted physical activity programming principles, content and implementation as well as exercise adherence and tolerance of individuals with disability, disability sport, and lastly, public/private fitness facility adaptations for individuals with disabilities.

EN4027 - HEALTH PROMOTION IN EXERCISE AND HEALTH FITNESS

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: Health promotion has a key role to play in the promotion of exercise and fitness. Exercise and physical activity are key priorities in health promotion practice. This module will give students a broad understanding of the theories and models of health promotion that are effective in the promotion of exercise and healthy lifestyles.

Syllabus: The principles involved in the practice of health promotion in areas such as community development, adult education, health education, medicine, community mental health, application of health promotion models and principles to the exercise & health fitness sector, attitudes towards health education, health promotion and wellness; stages of change theory; theory of reasoned action; theories of health belief; the role of health promotion in exercise and fitness promotion; empowerment, community development, effective multi-agency and multi-professional partnership, needs assessment; programme development; process evaluation; outcome evaluation, personal and professional development; participative and experiential learning.

SS4092 - ADVANCED PRACTICES IN STRENGTH AND CONDITIONING

ECTS Credits: 9 (Year 4 Module)

(Lab-Based Module)

Limited places available: 2

Physical Education & Sport Sciences

Rationale and Purpose of the Module: This module will provide the opportunity to attain a professional qualification in strength and conditioning through lectures, lab / practical workshops and student centred learning including problem-based learning. Students will draw on foundation knowledge attained in years 1 & 2 to develop more specialist knowledge and understanding of advanced practices in strength and conditioning. The module will emphasise the practical application of knowledge in areas related to exercise science, nutrition, exercise technique, program design, organisation and administration and testing and evaluation. The module will also examine strength and conditioning practices applied to both specific sporting scenarios and special populations (e.g. youth, elderly, and populations with musculoskeletal, metabolic, cardiovascular, neuromuscular & psychological disorders or conditions). Students will have the opportunity to apply for and attain the NSCA Certified Strength & Conditioning Specialist Qualification following completion of this module.

Syllabus: Exercise Science: Anatomy and physiology (muscular, neuromuscular, bone and connective tissue, cardiopulmonary); Biomechanics; Bioenergetics and metabolism, Neuroendocrine physiology; Physiological adaptations; Anatomical, physiological and biomechanical differences of athletes & Psychological techniques applied to advanced practices in strength and conditioning. • Nutrition: Nutritional factors applied to strength and conditioning practices, health and performance; Food choices and training methods to maximize performance; Signs, symptoms and behaviors associated with eating

disorders; Effects, risks and alternatives of common performance-enhancing substances. • Exercise Technique: Resistance training; Plyometric exercise; Sprint/speed technique; Agility; metabolic conditioning/energy systems development; Flexibility; Spotting procedures and techniques applied to various populations. • Program Design: Training methods and modes; Exercise selection; Exercise order; Exercise intensities; Training volumes; Work/rest periods, recovery and unloading; Exercise progression; Periodization; Reconditioning applied to various populations. • Organization and Administration: Design, layout, and organization; Duties and responsibilities; Policies and procedures; Safe training environment. • Testing and Evaluation: Selecting and administering tests; Testing protocols and procedures; Evaluate and interpret test results applied to various populations.

PY4118 - PHYSICAL ACTIVITY BEHAVIOUR,

PROMOTION AND HEALTH

ECTS Credits: 3 (Year 4 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To create awareness and to motivate individuals to become involve in physical activity is a complex process and is interdisciplinary in nature. Students will have the opportunity to critically examine current concepts, issues and outcomes related to participation in physical activity. The physical education profession plays a key role in the promotion of physical activity within schools and society. A key focus of the module is that students will be able to evaluate and incorporate into their professional practice the relationship between physical activity participation and promotion, physical education provision and individual and national health status.

Syllabus: Definitions relating to physical activity, health, and health promotion. Overview of benefits of participation. Recommended amounts of physical activity, latest guidelines, rationale. Assessment and levels of Physical Activity. Determinants of participation in physical activity/sedentary. Multidisciplinary model of determinants. Inactivity related disorders; obesity/overweight, coronary heart disease, chronic obstructive pulmonary diseases, physical fitness, neuromuscular disorders, osteoporosis, diabetes. Lifestyle and risk factors for disease and premature mortality/morbidity. Exercise Prescription. Physical Activity Strategy. Examination of the role of the physical education teacher and curriculum in activity and health promotion. Whole school approach to health and physical activity promotion. Examples of good practice. Models of health-related physical activity teaching. Structure and content of health-related physical activity programmes for schools and community.

SS4062 – SPORTS BIOMECHANICS INNOVATION

ECTS Credits: 9 (Year 4 Module)

(Lab-Based Module)

Limited places available: 2

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To give students an understanding of new and developing methodologies in the biomechanics of sport and exercise. To give students an understanding of the applications of existing methods using novel and developing techniques of data analysis. To give students an understanding of industry use of biomechanical methods of analysis. To provide students an understanding of the merits of mathematics for biomechanics research.

Syllabus: Methods to examine variability in human movement: single subject analysis, considerations of movement variability. Methods to examine coordination and stability in human movement: Applied Dynamics systems theory for analysis of movement, measures of coordination and variability in gait patterns. New and developing methods for data analysis of human movement: applications power spectrum analysis, wavelet analysis in biomechanics of kinematic, kinetic and EMG data.

SS4072 – EXERCISE IS MEDICINE – EXERCISE PSYCHOLOGY

ECTS Credits: 3 (Year 4 Module)

(Lab-Based Module)

Limited places available: 8

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The primary purpose of this module is to provide students with a sound understanding of the brain and behaviour in physical activity and exercise settings, particularly the psychological antecedents, concomitants, and consequences of physical activity and exercise. Physical inactivity is associated with impaired mental health and diminished quality of life, whereas the salutary benefits of exercise are well established. However, compared to the available literature of exercise effects on physiological outcomes, psychological responses to exercise are less well-studied, and we continue to be challenged with increasing levels of physical inactivity in the population.

Syllabus: This module first surveys the mental health-related aspects of exercise, the biopsychology of stress, physical activity, and disease. Next, the behavioural determinants of physical activity and interventions for increasing activity are reviewed. In addition, lecture materials, associated readings, and applied activities (i.e., tutorials devoted to cultivating literature review, synthesis, and presentation skills) will be designed to develop the student's ability to critically appraise the extant exercise psychology literature. An applied laboratory-based research project is designed to develop student proficiency with relevant laboratory measures used in exercise psychology research and the application of fundamentals of exercise psychology in applied research.

SS4082 – EXERCISE IN MEDICINE – CLINICAL APPLICATIONS

ECTS Credits: 9 (Year 4 Module)

(Lab-Based Module)

Limited places available: 4

Physical Education & Sport Sciences

Rationale and Purpose of the Module: This module is designed to provide students with an appreciation of the techniques and approaches used in designing and applying exercise interventions in specific clinical conditions. The aim is to allow students to apply aspects of physiology and applied exercise science to understanding the treatment / prevention of disease.

Syllabus: The course begins with an overview of the evidence for benefits of exercise and health. Practical aspects of exercise prescription, including pre-participant screening, components of exercise prescription, outcome measures and progression will be outlined. The course covers the application of exercise in the following conditions: people with neuromuscular disorders (with a focus on multiple sclerosis), cardiovascular disorders, obesity, rheumatoid arthritis, anxiety, depression, cancer, and pregnancy. Since this is a visiting speaker module, the conditions covered may vary from year to year.

PM4088 - HUMAN RESOURCE MANAGEMENT IN EXERCISE AND HEALTH FITNESS

ECTS Credits: 6 (Year 4 Module)

Limited capacity

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To provide module participants with the knowledge, skills and competencies to provide comprehensive Human Resource Management in the Exercise & Health Fitness sector.

Syllabus: Human Resource Management including planning, recruitment and selection processes applied to the Exercise & Health Fitness Sector, relevant employment legislation, case studies on health and safety in the workplace, staff reviews, performance appraisals and reward management schemes, organizational, planning, and management skills necessary to to support the continuing professional development of management in the Exercise & Health Fitness Sector, facilitating reflection on learning and personal development planning for staff, development of the attitudes and values necessary in utilizing

appropriate communication skills which will include conflict

resolution strategies in the Execise & Health Fitness Sector.

School of Allied Health



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

School of Allied Health: Year 1 Modules

BR4071 - BROADENING: EXPLORING THE BRAIN AND UNDERSTANDING BEHAVIOUR

ECTS Credits: 6 (Year 1 Module)

School of Allied Health

Rationale and Purpose of the Module: In line with the UL strategy to broaden the curriculum, this module will offer students in a range of different disciplines an opportunity to

engage in learning about the brain and how it influences a range of common human behaviors in daily life. The brain is central to human behavior in everyday life, and this module seeks to bring this concept to life in a way that is both engaging and allows students to critically evaluate key types of evidence in current cognitive and social neuroscience. Diverse learning strategies will be employed that include practical learning, online lab experiments as well as the more traditional lecture and tutorial formats. Students will engage and experience how the brain works and what role it has in core functions such as vision, learning, language, and memory.

Syllabus: Understanding the brain; history and methods.

The seeing brain: visual processing and impairments, visual cognition, visuomotor planning and action The spatial brain: spatial cognition, attentional control, inattentional blindness, the trouble with intuition The acting or doing brain: motor cognition, development of skills and expertise, movement behavior, mirror neuron hypothesis. The feeling brain: effects of psychoactive drugs, understanding anxiety and

Depression The remembering brain: working memory, remembering, and forgetting, false memories, amnesia, and metacognition. The interacting brain: ape talk, language, non-verbal interaction, theory of mind, The social and emotional brain: social cognition, facial expression of emotion, processing emotions. The developing brain: sensitive periods, innate knowledge, nature versus nurture

Psychology



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Psychology: Year 1 Modules

PS4032 - PSYCHOLOGY AND SOCIAL ISSUES

ECTS Credits: 6 (Year 1 Module)

Psychology

Rationale and Purpose of the Module: This module will explore a range of contemporary social issues bringing to bear upon them the methods and theoretical perspectives of psychology in an attempt to better understand their causes and consequences. Using The social issue as a focus, students will gain insight into the discipline of psychology and engage in debating and evaluating the theory and method of psychology. Through a psychological analysis of the causes and consequences of social issues students will gain insight into how these issues might be resolved. .

Syllabus: Issues covered will include; the media and human behaviour; social conflict; the use and abuse of power; sex and sexuality; society and mental health; social inclusion and exclusion; bullying at work; equality and advocacy; parenting and childcare; the environment.

PS4042 - PSYCHOLOGY: THEORY AND METHOD 2

ECTS Credits: 6 (Year 1 Module)

Limited places available: 6

Psychology

Rationale and Purpose of the Module: To cover the main paradigms, concepts, issues, and debates in the core areas of cognitive psychology and developmental psychology. To develop students' research and data analysis skills, specifically through the use of experimental methods and inferential statistics.

Syllabus: This module is the second of two which provide coverage of the main paradigms, concepts, issues, and debates within the core areas of psychology. The section detailing developmental psychology will cover the main theoretical approaches to the study of human development from prenatal and childhood biological development to theories of socio-emotional development across the lifespan. The section on cognitive psychology will cover the basic cognitive models of memory and thinking. The key debate of the utility and limitations of the metaphor of 'the brain as information processor' will be common to both areas. In the laboratory classes, students will be required to employ basic principles of experimental design; data entry and analysis using SPSS; probability testing and inferential statistics.

PS4062 - INTRODUCTION TO PSYCHOLOGY APPLIED TO NURSING AND MIDWIFERY

ECTS Credits: 6 (Year 1 Module)

Limited places available: 2

Psychology

Rationale and Purpose of the Module: The aim of this module is to provide students with an understanding of

psychological concepts and explore how these concepts relate to health within nursing and midwifery practice.

Syllabus: An introduction to psychological theory, which includes developmental psychology throughout the life span, behavioural psychology, principles of sensation, perception, cognition, consciousness, emotion, motivation and personality, health psychology, stress management, coping and foundations of biological psychology, psychological impact of illness and hospitalisation and an introduction to the main categories of abnormal behaviour.

Psychology: Year 2 Modules

PS4012 - HUMAN DEVELOPMENT AND THE

LIFESPAN 1

ECTS Credits: 6 (Year 2 Module)

Limited places available: 30

Psychology

Rationale and Purpose of the Module: For students to extend and deepen their knowledge of human development through the lifespan within the field of psychology. To develop skills in identifying and critically examining major tenets of psychological theory in relation to development through childhood, adolescence and adulthood.

Syllabus: This module provides students with foundation information about how psychologists have studied human development from prenatal life through childhood, adolescence and the stages of adult life including older adulthood. The course will require students to reflect critically on recent empirical studies examining human development through these life stages. The course will focus on the topics of cognitive,biological, social and moral development, from the field of psychology. These topics are studied from a lifespan perspective.

Prerequisites: PS4032, PS4031

Psychology: Year 4 Modules

PS4087 - POLITICAL PSYCHOLOGY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 20

Psychology

Rationale and Purpose of the Module: To extend students knowledge of psychology into the area of political psychology and to improve students understanding of the role that social and political structures can have on human behaviour

Syllabus: The specific focus of this module is political psychology. Political psychology is an interdisciplinary area of psychology. The course provides an introduction to the psychological foundations of political life. Psychological theories are applied to particular political problems including the formation of belief systems, moral reasoning and ideology, colonialism, political socialization, political culture, mass hysteria, psychohistory. In doing so, it is demonstrated how psychology informs political behaviours and actions, the behaviour of politicians and the effects of social and political structures on behaviour.

PS4037 - COGNITION 1

ECTS Credits: 6 (Year 4 Module)

Limited places available: 30

Psychology

Rationale and Purpose of the Module: To provide core area coverage of the field of cognitive psychology - a sub-discipline of psychology concerned with the study of the mental processes that underlie human behaviour.

Syllabus: Cognitive processes cover a broad range of research domains including; memory, attention, perception, knowledge representation, reasoning and problem solving. In this module, through an empirical (including practical demonstrations) and theoretical examination of cognitive processes, students will develop their knowledge of central aspects of cognition including perception, memory and attention.

Prerequisites: PS4042 , PS4021

PS4047 - SOCIAL PSYCHOLOGY 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 20

Psychology

Rationale and Purpose of the Module: To build upon previous introductory modules in social psychology by providing comprehensive in-depth coverage of the core areas of the subdiscipline as well as alternative critical perspectives To introduce students to more advanced epistemological and methodological debates in the subdiscipline as well as to historical and cultural variations in social psychological research

Syllabus: Social psychology is a 'broad church' in terms of the values, theories and methods applied across the subdiscipline. More than other areas of psychology it also reflects the contemporary concerns and values of the societies in which it occurs. The purpose of this module is to provide students with a more in depth knowledge of the core topics of social psychology, but also to put these topics in their socio-political and historical context and to critically evaluate psychological research from different epistemological and methodological grounds. Topics will include: advanced group processes; intergroup conflict; discursive social psychology; measurement in social psychology; critical perspectives in social psychology.

Prerequisites: PS4011

PS4108 - APPROACHES TO SOCIAL IDENTITY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 15

Psychology

Rationale and Purpose of the Module: For students to develop an understanding of the different theoretical approaches to the study of social identities in psychology as compared to those in other disciplines To introduce students to the range of epistemologies and methodologies employed in social psychological research and to outline the implications of these for the discipline of psychology more generally.

Syllabus: The Social Identity approach in social psychology originated in an interdisciplinary effort to explain large-scale intergroup conflict. Drawing upon sociology, social anthropology and social cognition it aimed to provide a comprehensive account of intergroup relations from the individual perspective to the group level. However, in the four decades since its inception the Social Identity approach has become overwhelmingly cognitive and experimental in focus and lost links with other disciplines and methodologies. This module places the Social Identity perspective in its historical context and introduces students to cognate theories and methods elsewhere in social psychology and in other disciplines with a view to enriching their understanding of social psychology. Topics include: evolution of the Social Identity approach; advances in Self Categorisation Theory; discursive approaches to social identities; ethnography and displays of identity; approaches to national identity.

Prerequisites: PS4011

Nursing & Midwifery



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Nursing & Midwifery Year Modules

Note For All Nursing & Midwifery Modules:

- *The nursing modules are limited solely for students who are taking nursing specific programmes at your home institution with an agreed UL partnership in this faculty.*

- *If you require further information on the nursing modules available, please contact your home university to discuss if you have approval to study nursing modules in UL or email study.abroad@ul.ie*

- *In order to take nursing modules, there are considerations around the content and year of programme for the student. The Department International Coordinator will liaise with potential students in this regard prior to arrival in UL.*


Kemmy Business School
UNIVERSITY OF
LIMERICK
OLLSCOIL LUIMNIGH

Accounting & Finance



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Accounting & Finance: Year 1 Modules

AC4002 - MANAGERIAL ACCOUNTING

ECTS Credits: 6 (Year 1 Module)

Accounting & Finance

Rationale and Purpose of the Module: The aim of the module is to introduce students to the basic techniques, language and principles of management accounting. The module provides students with an insight into the role of management accounting as a provider of information supporting the financial decision-making process of an organisation.

Syllabus: The syllabus covers fundamental issues including basic cost terms, concepts, and definitions before introducing costing systems such as full costing and Activity Based Costing. In addition to preparing basic budgets, the difficulties that are inherent within any budgeting system are presented. Students learn to analyse and explain the major causes of differences between budget and actual performance, including basic standard costs and variances. The relationship between accounting information and managers decisions in a competitive environment is demonstrated. Students learn to conduct a financial analysis to support a range of business decisions such as pricing, make v buy, limiting factor of production, discontinuation of product line, customer or market etc. Strategic management accounting is introduced. Techniques such as target costing, value chain analysis and total life-cycle costing are discussed in addition to tools for measuring performance such as the balanced scorecard.

Accounting & Finance: Year 2 Modules

AC4024 - FINANCIAL ACCOUNTING AND REPORTING

ECTS Credits: 6 (Year 2 Module)

Accounting & Finance

Rationale and Purpose of the Module: The aim of this module is to develop a students understanding of the theoretical framework of accounting. It introduces the student to the translation of accounting theory, concepts and principles into accounting regulation and practice. It encourages the student to evaluate selected international accounting standards.

Syllabus: The module will consider the theory and practice of selected international accounting standards and issues. Focus will be on the preparation and reporting to external users of financial information, especially, but not exclusively, equity investors. The accounting standards and issues are examined in light of their historical development and discussions will not be solely around the actual content but what the regulation sought to be or might be.

AC4034- AUDITING AND ACCOUNTING FRAMEWORKS

ECTS Credits: 6 (Year 2 Module)

Accounting & Finance

Rationale and Purpose of the Module: The purpose of this module is to present the regulatory, legislative and governance requirements for financial reporting. The assertions contained in the resulting financial statements are challenged by the student availing of the principles of auditing to determine the adequacy of accompanying disclosures. In this way, the student comprehends the audit process led by a accounting professional as underpinning the credibility of the financial reporting process. As business transactions, be it local or global, rely hugely on this credibility, the role of the accountant as a responsible and ethical professional is emphasised.

Syllabus: Knowledge is imparted through lectures and tutorials and the completion of a case study requiring an analysis of the annual report of an assigned publicly traded company. The first series of lectures covers accounting regulation and its conceptual underpinning of accrual basis, going concern and accounting policies relating to revenue recognition and fair value. This is followed by lectures covering auditing principles and concepts, the internal control system (ICS) and auditing procedures that examine the ICS and finally the auditor's opinion. A third series of lectures introduces corporate governance, its key functions of accountability, responsibility and transparency and the governance mechanisms that deliver corporate transparency. Study of the audit-performance expectations gap with an emphasis on professional and ethical responsibilities of the auditor completes the module.

Prerequisites: AC4001, AC4002

FI4012 - FOUNDATIONS OF AIRCRAFT LEASING

ECTS Credits: 6 (Year 2 Module)

Accounting & Finance

Rationale and Purpose of the Module: Ireland has emerged as a leading centre in the aircraft leasing industry. At present, over half of all operating commercial aircraft are leased and over fifty percent of the world's leased aircraft are managed from Ireland. This module aims to provide students with a systematic coverage of the important aspects of aircraft leasing and explains why this financing mechanism has become a core competency when acquiring and managing aircraft. Students will be introduced to the key concepts and processes involved in the efficient management of aircraft leasing. The module present the framework for best practices from an aircraft lessee's perspective while appreciating the fundamental requirements for an aircraft lessor. The module will provide students with the tools to analyse the key constituent paths from selection of the asset, acquisition, securing, managing and finally divesting of the asset. The major objectives of the module are: 1. Outline the different mechanisms that are available to finance aircraft 2. Provide a thorough examination of the aircraft and engine leasing market 3. Provide a comprehensive analysis of the content of an operating and financial lease and the factors to be considered when negotiating these leases. 4. Explain how aircraft are financially valued and the dynamics of aircraft valuation throughout their economic life.

Syllabus: Development of the aircraft and engine leasing industry; Different ways to finance aircraft; Characteristics of the different types of Aircraft Leases; Selecting and acquiring the asset; An in-depth analysis of an Operating Lease; Analysis of a Financial Lease; Engine Leasing; Financial and technical issues arising in the context of lease negotiations; Legal status of aircraft, jurisdiction, nationality, registration and securing the asset; Maintenance reserves; Return conditions of aircraft; Formulation and negotiation of lease contracts and letters of intent; Managing the asset; Aircraft Repossession; Divesting the asset from lessor and lessee perspectives; Aircraft valuation - factors affecting aircraft residual value through the economic cycle and residual value forecasting.

IN4004 - INSURANCE LAW AND CLAIMS

ECTS Credits: 6 (Year 2 Module)

Accounting & Finance

Rationale and Purpose of the Module: 1. Developing the student an understanding of and insight into the insurance law and claims processes2. To examine the nature of the interface between insurance organisations and regulators.3. To introduce students to the practice of insurance claims departments. Stress will be given to the achievement of appreciation of recent developments in the field.

Syllabus: Provide the student with an understanding of the claims process and the law of insurance applying to Ireland. Additionally, effective investigation and negotiation techniques are taught to implement the complexities of law to give practical application scenarios. Personality and behaviour are analysed so that a negotiator or investigator can formulate optimum tactics in their vocation.

Prerequisites: IN4003

IN4014 - LIFE INSURANCE

ECTS Credits: 6 (Year 2 Module)

Accounting & Finance

Rationale and Purpose of the Module: The module provided the student with an understanding of the principles of life insurance and the history and importance of life insurance in both the Irish market and on a global level.

Syllabus: The module includes an analysis of term insurance, whole of life insurance and endowment insurance. The health insurance market in Ireland is studied, as is the Irish social insurance system with specific focus on the retirement and pensions market. The module covers the nature and purpose of a variety of life insurance contracts and students gain knowledge of life insurance underwriting. With regard to life insurance underwriting, particular attention is paid to underwriting of a variety of diseases that affect human anatomy, theories of mortality and morbidity risk, formulation of mortality tables, and the calculation of premium for term, whole life, endowment and annuity.

Prerequisites: IN4003

Accounting & Finance: Year 4 Modules

AC4018 - CORPORATE TRANSPARENCY AND BUSINESS ETHICS

ECTS Credits: 6 (Year 4 Module)

Accounting & Finance

Rationale and Purpose of the Module: 1. Understand the control mechanisms of governance and financial transparency that infer the credibility of financial reporting. 2. Acquire an overview of ethical theories and their potential for engagement with business. 3. Explore the elements of a professional judgement as an approach to making ethical decisions in business. 4. Understand that corporate compliance is fundamental to corporate social responsibility.

Syllabus: Corporate governance functions of responsibility, accountability and transparency. The role of the corporate board. Corporate architecture and mechanisms for governance and financial transparency. Understanding transparency mechanisms as instrumental in providing credibility to corporate reporting. Framing business ethics: Corporate responsibility, ethical decision-making. Normative ethical theories: utilitarianism, ethics of duty, rights and justice, virtue ethics, feminist ethics, discourse ethics and post-modernism. Professional independence and professional judgement and the distinction between the terms truth and truthful. Governance role of financial accounting information: impact on economic performance: project selection, information asymmetry. Threat of moral hazard: Agency theory, resource dependence, stakeholder theory. International and cultural dimensions to business ethical behaviour. Recognise business ethics as an element of corporate citizenship and sustainability; appreciating that corporate compliance is a cornerstone for corporate social responsibility. Bushman on corporate transparency, Bentham and Kant on utilitarianism, Lonergan on professional judgement. Roarty on language, Blackburn on truth.

Prerequisites: AC4001, AC4004 , AC4305

AC4418 - MANAGEMENT ACCOUNTING 2

ECTS Credits: 6 (Year 4 Module)

Accounting & Finance

Rationale and Purpose of the Module: This module further enhances students understanding of the role and purposes of management accounting in the management process. It deals with the applications and systems of management accounting that serve the information needs of contemporary organisations. It aims to give students an appreciation of the frontiers of management accounting and the associated theoretical and empirical research activity.

Syllabus: This module will cover inventory costing; information and the decision process; cost accumulation information for decision-making; relevant costs and revenues for decision-making; Process costing; Cost allocation and customer profitability analysis; Performance measurement; Transfer pricing and multinational considerations; Pricing; Balanced scorecard.

Prerequisites: AC4417

FI4008 - EMPIRICAL FINANCE

ECTS Credits: 6 (Year 4 Module)

Accounting & Finance

Rationale and Purpose of the Module: The course provides students with a thorough grounding in the empirical study of international financial markets to prepare them for potential careers as traders, risk-managers, quantitative analysts, stockbrokers, fund managers, etc in the financial services industry. The learning experience is enhanced through the learning-by-doing experiences of course participants through a mix of computer workshop-oriented tutorials and labs, and interactive web-based simulations.

Syllabus: Introduction to Financial Statistics: measures of location and spread, common probability distributions, understanding probability density functions, importance of higher-order moments in financial modelling. Application of probability distributions in financial modelling. The linear regression model and parameter estimation. Fundamentals of model specification testing. Financial modelling in volatile markets. Introduction to lattices (binomial/trinomial trees), their use in the representation of stochastic processes and their applications in basic derivative security valuation. Real options theory. Hedge funds.

IN4008 - REINSURANCE / ART

ECTS Credits: 6 (Year 4 Module)

Accounting & Finance

Rationale and Purpose of the Module: To meet the specialist skills requirements of the re/insurance industry by equipping students with a thorough grounding in reinsurance contracts, innovations in product design and the process and structure of insurance linked securitisation (ILS).

Syllabus: The secondary risk transfer device of reinsurance is an essential functional discipline in an insurance organisation. The discipline involves the design and implementation of a reinsurance structure that meets pre-determined criteria of cost economy and effectiveness consistent with solvency assurance. Alternative risk transfer is an evolving set of methodologies that essentially incorporate capital market instruments as an alternative to orthodox corporate insurance programs. (a) Principles and functions of reinsurance/alternative risk transfer. Technical analysis of major product types - quota share: surplus; spread loss; loss stabilisation; operational features of managing the reinsurance/alternative risk transfer function - reinsurance accounting; accumulation control. (b) Statistical analysis of pure risk exposures, including computer-based simulations of possible loss scenarios; selection of relevant risk transfer measures; underwriting techniques; exercises in reinsurance/alternative risk transfer programming.

Prerequisites: IN4003, IN4015

IN4418 - RISK CONTROL AND UNDERWRITING

ECTS Credits: 6 (Year 4 Module)

Accounting & Finance

Rationale and Purpose of the Module: 1. To develop in the student an understanding of and insight into underwriting. 2. To examine the nature of the interface between the corporate risk management function and the underwriting function within the insurance sector. 3. To introduce students to the theory and practice of underwriting and to acquaint students with the complex and rapidly changing environment within which risk managers operate.

Syllabus: Acquire a comprehensive understanding of the underwriting process within the context of risk management. Material damage insurance and risk control Loss of Profits Pecuniary insurance Liability insurances Loss reserve management Principles of insurance pricing

Prerequisites: IN4015

TX4008 - INTERNATIONAL TAX

ECTS Credits: 6 (Year 4 Module)

Accounting & Finance

Rationale and Purpose of the Module: The aim of the module is to give students an understanding of the principles underpinning, and the risks inherent in, double taxation relief and other international tax issues including EU tax harmonisation, the implications of the single market, the impact of offshore business, transfer pricing and trends in world tax systems.

Syllabus: Explanation of the Irish domestic legislative provisions which govern the territorial rules for assessing individuals and companies to income tax /corporate tax and capital gains tax; Concept of double taxation and foreign tax credit relief including both bilateral and unilateral reliefs; Interpreting the OECD Model Double Taxation Convention and explaining how companies can interpret domestic laws in different jurisdictions and relevant conventions to create tax planning opportunities; Explaining the concept of Transfer pricing and the rationale behind the CCCTB; Explaining the different territorial rules in other countries explaining residence , source and territorial concepts ; Considering other countries anti deferral tax rules including Controlled Foreign Company legislation; Evaluation of the types of business models used by multinational companies to reduce their global effective rate of tax; Explain the rationale for changes in both domestic and International Tax legislation and policy in relation to corporates and individuals.

TX4407 - CORPORATE TAXATION

ECTS Credits: 6 (Year 4 Module)

Accounting & Finance

Rationale and Purpose of the Module: This module aims to provide a detailed understanding of the principles

underpinning the computation of the liabilities of companies to Corporation Tax, VAT and Capital Gains Tax. To compute corporate tax liabilities, including the utilisation of available reliefs such as Research and Development and relief for losses. To understand Close Company legislation and related liabilities. To understand the residency rules for corporates, including relevant international tax planning. To understand the tax implications of business incorporation and related planning.

Syllabus: This module covers: The advantages and disadvantages of incorporation of a business; the principles underpinning the taxation of Irish companies, computing tax liabilities on trading income, non-trading income and capital profits. Payment of tax and filing of returns. Tax relief for investment in Research and Development (R&D). Relief for losses, including terminal loss and Group relief. Close company legislation and the consequences of Close Company status. An introduction to Capital Gains Tax, both for individuals and companies. Computation of gains and use of losses. An introduction to Value Added Taxation (VAT). Overseas aspects of Company taxation. A review of selected case law and topical issues of relevance to company taxation in Ireland.

Prerequisites: TX4305

Economics



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Economics: Year 1 Modules

EC4102 - MACROECONOMICS

ECTS Credits: 6 (Year 1 Module)

Economics

Rationale and Purpose of the Module: The purpose of this course is to introduce the student to the principles underlying the Macroeconomy. This is the study of how aggregate economic variables (such as the real growth rate, inflation and unemployment) inter-act and how the policy-maker (Government and Central Bank) can influence their behaviour. Following an introduction to the key macroeconomic variables and globalisation, a model of how the macroeconomy operates (the theory of income determination) is developed. This model is then expanded at various stages to include the money market and the foreign exchange market. The expanded model is used to discuss issues in macroeconomic theory and policy such as the role and operations of the European Central Bank (ECB) and the relative importance of fiscal, monetary and exchange rate policies. The course concludes by discussing recent trends and economic issues relating to the Irish economy.

Syllabus: Topic 1. Introduction To Macroeconomics Irish macroeconomy, political economy, macroeconomic constraints, globalisation, macroeconomic models and the time horizon, a brief history. Topic 2. National Income and Economic Performance Aggregate production function, measuring the output of nations, the national income accounts, adjusting for inflation, the business cycle, the long-run performance of the Irish economy. Topic 3. Inflation Measuring inflation, the Irish inflation record, the effects of inflation, deflation. Topic 4. The Labour Market and Unemployment: The labour market, the natural rate of unemployment, frictional and structural unemployment, cyclical unemployment, why isn't the labour market clear? the costs of unemployment, reducing unemployment, unemployment in Ireland, unemployment in the Euro area. Topic 5. Introduction to the Theory of Income Determination. Macroeconomic models, Keynes's General Theory, equilibrium in the goods and services market, aggregate demand, aggregate supply, equilibrium, adjusting to demand-side shocks, adjusting to supply- side shocks, real GNP and unemployment. Topic 6. Consumer Theory and the Income Determination Income, consumption and savings, personal income, consumption and savings in Ireland, the Keynesian multiplier. Topic 7. Introduction to the Theory of Fiscal Policy Fiscal policy, assessing the stance of fiscal policy, problems in implementing stabilisation policy, taxation and the supply-side of the economy, the dynamics of debt stabilisation. Topic 8. Fiscal Policy and Economic Planning in Practice: The Irish Record Economic planning, Irish fiscal policy in historical perspective, is there such a thing as Expansionary Fiscal Contraction? the end of history. Topic 9. Money and Banking: What is money? types of money, functions of money, creation of money, the role and functions of a Central Bank, control of money, the credit-fuelled property bubble, and the crash. Topic 10. Money and Interest Rates in a Closed Economy. The demand for money, money market equilibrium, nominal and real interest rates, aggregate demand and interest rates, monetary policy in a closed economy, crowding-out, government monetary financing. Topic 11. The Balance of Payments and the Exchange Rate Balance of payments, the significance of the current account balance, the foreign exchange market, the exchange rate of the Irish pound and the euro, the determinants of exchange rates, factors influencing exchange rates in the medium term, exchange rate regimes. Topic 12. Inflation and Interest Rates in Open Economies. Purchasing power parity (PPP), PPP and the real exchange rate, harmonised competitiveness indicators, relative PPP, uncovered interest rate parity theory. Topic 13. The Long-Run Performance of the Irish economy. The growth of population, the standard of living , interpreting the record 1922-'61, the 1960s, the record since 1971, the property and construction bubble 2001- '07, the great recession and its aftermath.

EC4112 - MACROECONOMICS (FOR NON-BUSINESS)

ECTS Credits: 6 (Year 1 Module)

Economics

Rationale and Purpose of the Module: The purpose of this module is to introduce the student to the principles underlying the macroeconomy. This is the study of how aggregate economic variables such as, the real growth rate, inflation, and unemployment, behave and how the government and central bank can influence their behaviour. The first part of the course deals with key topics such as the theory of income determination, the consumption function and fiscal policy as well as the foreign exchange market. The latter part examines monetary policy instrument including how interest rates are determined and how monetary policy is conducted by the European Central Bank. The benefits and costs of economic and monetary union are also addressed in this introductory macroeconomics module.

Syllabus: 1. GNP, business cycle, unemployment, inflation. Policy constraints; 2. The Theory of Income Determination: Basic Model, The aggregate supply and demand model: Three issues: including demand and supply-side shocks, Okuns law, Natural real GNP and automatic adjustment mechanisms. 3. The Consumption Function and Income Determination including disposable income, consumption and saving; Keynesian multiplier; average and marginal propensity to consume. 4. Fiscal Policy and the Business Cycle Stabilisation policy, fiscal policy in Ireland 5. Money and Banking Definitions; types of money; modern banking systems; money creation, money multiplier; instruments of monetary policy. 6. The Price Level and Money Supply and the quantity. theory of money and implications. 7. Interest Rate Determination. Monetary policy; demand for money; money market equilibrium, monetary policy and the Keynesian, Classical debate. 8. The Balance of Payments and Exchange Rate Theory. Foreign exchange market, flexible exchange rates, real exchange rates, trade-weighted exchange rate index, Central Bank intervention, external reserves, fixed exchange rates. 9. Purchasing power parity including absolute and relative PPP. 10. Fixed Exchange Rate Systems including the operation of fixed exchange rate systems; monetary adjustment mechanism; sterilisation; fixed exchange rate systems in the past; benefits and costs 11. European Monetary Union including economic benefits and costs to Ireland; adjusting to economic shocks The European Central Bank The design of the ECB; price stability; central bank independence; monetary policy in EMU.

Prerequisites: EC4102

Economics: Year 2 Modules

EC4014 - INTERNATIONAL ECONOMICS

ECTS Credits: 6 (Year 2 Module)

Economics

Rationale and Purpose of the Module: The world economy is becoming increasingly integrated and interdependent in terms of the economics ties linking countries and regions. Three ways in which countries are linked are through the exchange of goods and services (trade), investment flows (capital mobility) and migration (labour mobility). This module builds on introductory micro and macro-economic principles in order to provide students with the tools of analysis necessary to examine the international economy and to explore the key issues that are shaping our global economy. The emphasis is on current issues in international economics. In this module we examine why international trade and factor mobility, as well as concentrating on how economics and politics interact to understand the existence, or absence, of certain policies at an international level.

Syllabus: The module is divided into six sections set out below. Each topic will have a corresponding problem sheet which students should work through as an aid to understanding the material presented in lectures. Further detailed references and readings for each topic, where relevant, will be given in lectures. Section Introduction and Context Topic 1 Introduction and Context Section II International Trade Theory Topic 2 Comparative Advantage Topic 3 The Standard Trade Model Topic 4 The Heckscher-Ohlin Trade Model. Section III International Trade, Policy Topic 5 Tariffs Topic 6 Nontariff Trade Barriers Section IV Integration and Investment Relations Topic 7 Economic Integration Topic 8 International Resource Movements Section V Balance of Payments and Exchange Rates Markets Topic 9 Balance of Payments Topic 10 Foreign Exchange Markets and Exchange Rates Section VI The International Economy in Operation Topic 11 Exchange Rate Regimes

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EC4044 - APPLIED ECONOMIC ANALYSIS

ECTS Credits: 6 (Year 2 Module)

Economics

Rationale and Purpose of the Module: This module broadens and deepens the knowledge of intermediate micro and macroeconomics gained from EC4004, Economics for Business, as well as introducing key tools for applied analysis of economic data.

Syllabus: The objective of this module is to deepen and broaden students' knowledge from the intermediate micro and macroeconomics learned in EC4004. Lectures: Week 1 Consumer Theory Week 2 Producer Theory Week 3. Markets, exchange Week 4. General Equilibrium, Computable General Equilibrium Week 5. Game theory and Policy Week 6. Asymmetric Information Week 7. Long Run 1: The "Solow Model" with Human Capital Week 8. Long Run 2: The Ramsey Problem Week 9: Medium and Short Run: IS/MP/PC Model with uncertainty Week 10: Policy Application: Open economies in monetary unions Week 11: Policy Application:

funding pension systems in ageing societies Week 12: Policy Application: Hyperinflations, deflations. Labs: Weeks 3-6, mathematical prerequisites, 7-9, Data- based labs, 9-11, writing workshops.

Prerequisites: EC4101, EC4102, EC4004

Economics: Year 3 Modules

EC4018 - MONETARY ECONOMICS

ECTS Credits: 6 (Year 3 Module)

Economics

Rationale and Purpose of the Module: This course in Monetary Economics covers topics in Financial Markets, Financial Institutions, Central Banking, International Finance and Monetary Theory. These topics are discussed at various stages in the course. The central theme is to develop a dynamic monetary model of a small, open economy. The Course Outline (see below) explains how this is achieved and at what point the other topics are examined. Among the policy issues discussed are: economic adjustment to asymmetric shocks given the constraints of monetary union; the operations and policies of the European Central Bank; the transmission of monetary policy in the Euro-area; and the determination of interest rates.

Syllabus: 1. Introduction to the Theory of Income Determination • Equilibrium in the Goods and Services Market • Deriving the SRAS model • Adjusting to Demand-side Shocks • Adjusting to a Supply-side Shock 2 Money and Banking • Money Creation in a Modern Economy • The money multiplier • The Role of a Central Bank • Seigniorage • Lender of last resort • High-powered Money and the Money Multiplier • Instruments of Monetary Policy 3 Money and Interest Rates in a Closed Economy • The Demand for Money • Money Market Equilibrium • Aggregate Demand and Interest Rates • Monetary Policy and the Keynesian, Classical Debate • Monetary Financing 4 The IS-LM Model • Equilibrium in the Goods Market: The IS Curve • Equilibrium in the Money Market: The LM Curve • Equilibrium in the Goods and Money Markets • The Relative Effectiveness of Fiscal and Monetary Policy in the IS-LM Model • The IS-LM Model and Aggregate Demand 5 The Phillips Curve and the Inflation-Unemployment Trade-off • The expectations-augmented Phillips curve • Deflation, Expectations and Credibility • The sacrifice ratio • The Augmented Phillips Curve: Evidence from the Euro-area • Estimates of the natural rate of unemployment • Recent Developments Relating to the Phillips Curve • The Phillips Curve and the AD-AS Model 6 The Mundell-Fleming Model • Internal and External Balance • Introduction to the Mundell-Fleming Model • The Model Under Fixed Exchange Rates • The Model Under Floating Exchange Rates • Exchange Rate and Country Risk • Economic Policy, Output and the Current Account • The Aggregate Demand Curve Guest Lecture Dr Alan Ahearne NUI, Galway • How has the ECB responded to the financial crisis? Long term refinancing operations (LTRO) and Outright Monetary Transactions (OMT). • How has the Federal Reserve responded to the financial crisis? Quantitative easing (QE). Guest Lecture John Rowe Financial Markets Division, Central Bank of Ireland • Monetary Policy Framework • National Central Bank's and the Liquidity Position of Commercial banks. • Forecasting Liquidity Facilities. • Reaction of Central Bank's to the Financial Crisis. 7 European Monetary Union and the European Central Bank • The Political Benefits of EMU to Ireland • The Economic Benefits of EMU to Ireland • The Economic Costs of EMU • The European Central Bank • ECB Independence • How Interest Rates Are Set in the Euro Area • Monetary Policy in EMU The Euro Area Inflation Record One Monetary Policy Fits All? 8 A Dynamic Monetary Model of Aggregate Demand and Aggregate Supply • The Dynamic Model of Aggregate Demand and Aggregate Supply • The Dynamic Aggregate Supply (DAS) Curve • The Dynamic Aggregate Demand (DAD) Curve • Deflationary Demand-side Shock • The Central Bank's Inflation Target • An Expansionary Demand-side Shock • The Labour Market and the Adjustment Process 9 Savings, Investment and the Balance of Payments • Savings and Investment in a Closed Economy • Saving, Investment and the Balance of Payments • The Interest Rate and Capital Flows • The Real Exchange Rate and Net Exports • Savings and Investment in the Small, Open Economy • The Effects of Fiscal Policy • The Effects of a Change in the World Interest Rate • Applying the Model to the Irish Economy in EMU 10 The Economic Crash of 2008 and Its Aftermath • The Property Boom • Displacement • Credit expansion • Euphoria • Financial Distress • Revulsion • Coping With the Fiscal Crisis • Coping With the Banking Crisis • The Troika Agreement • Is the Irish National Debt Sustainable? • No-one Shouted 'Stop' • Specific Policy Failures.

Prerequisites: EC4102, EC4004

Economics: Year 4 Modules

EC4108 - CONTEMPORARY ISSUES IN THE GLOBAL

ECONOMY

ECTS Credits: 6 (Year 4 Module)

Economics

Rationale and Purpose of the Module: An understanding of the main issues confronting the international economy is a pre-requisite to finding solutions to global problems. The recent financial and banking crisis and the attendant severe budgetary and fiscal problems facing many countries (especially Ireland and the peripheral EU countries) has led to some significant re-appraisal of what had become mainstream thinking in relation to economic policy and indeed in some circles market capitalism. Increasingly, much debate in the international economy is polarised between two camps: those who see globalisation as the panacea for solving economic and social problems and the anti- globalisation movement that views the process of globalisation as the main cause of problems. This module seeks to provide the student with a balanced and objective analysis of the main issues confronting the world economy and through the use of economic theory, empirical evidence and objective analysis seeks to distinguish between fact and fiction.

Syllabus: The module will have as its main objective an exploration of the main issues that confront the world economy. While it would be unreasonable to expect one module to cover all the issues in depth the following will be analysed and discussed: Topic 1: (i) The identification of the causes of the financial crisis and fiscal crises in the world economy and in Ireland. (ii) The current state of the world economy; an overview of the current and future economic challenges facing the globalised economy. (iii) Review of history of the global economy. Topic 2: (i) Foreign trade and protectionism: stylised facts about trade and review of gains from trade. (ii) Trade policy rules and evolution of international trade regime; the Doha Round and the role of the World Trade Organisation (WTO). Topic 3: (i) The evolution of international monetary a financial system. The role of the multilateral institutions such as the International Monetary Fund (IFM) and the World Bank. (ii) Changing hegemonic role of the US economy in the international political economy and the rise of the BRIC economies. (iii) European integration; why many EU countries formed a monetary union; macroeconomics in the Eurozone. Topic 4: The economic performance and problems confronting less developed countries; The development prerequisites, the development history: 1945-1980 and the development policy since 1980; The importance of aid from rich countries. Topic 5: (i) The policy role, challenges and opportunities of international migration; recent trends and the EU single labour market. (ii) Changing facets of international production; analysis and policy implications of outsourcing; trends in the patterns of offshoring and outsourcing.

Prerequisites : EC4102, EC4101

EC4408 - PUBLIC FINANCE

ECTS Credits: 6 (Year 4 Module)

Economics

Rationale and Purpose of the Module: This course covers the theory and practice of public finance. It examines the theoretical rationale for government intervention in modern increasingly globalised economies. More specifically it examines the theory and practice of the allocative, stabilisation and re-distributive roles of government. This involves analysis of theory and practice in relation to taxation and expenditure decisions.

Syllabus: 1. Pareto Optimality, General Equilibrium, Social Welfare Functions, 2. Allocative Role of Government - Market Failures: Public Goods, Externalities, Natural Monopolies, 3. Cost Benefit Analysis, 4. Taxation: Incidence and Partial Equilibrium, Taxes on Labour, Taxation and the incentive to work. 5. The Welfare State: Tax and Social Welfare Systems, Fiscal Measures to Reduce Poverty and Inequality. 6. Economics of Regulation.

Prerequisites: EC4101, EC4102, EC4004

Management & Marketing



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Management & Marketing: Year 1 Modules

BR4031 - BROADENING BY UNDERSTANDING AND CONFRONTING CRISIS AND RISK

ECTS Credits: 6 (Year 1 Module)

Management and Marketing

Rationale and Purpose of the Module: The topics of risk and crisis are very much intertwined, and have a profound impact on individuals, institutions and society as a whole. Crisis is risk realised, and both are central factors affecting decision making. In addition, how a crisis is managed and portrayed in the media affects risk perceptions. This module gives a background of risk and crisis from multiple interdisciplinary perspectives including; economics, communications, journalism, history, neurology, and risk management. Students will understand the magnitude of risk and crisis within society, and how it transcends multiple contexts, and disciplines. This can only be achieved by an holistic examination of risk and crisis through multiple lenses. The students will learn how risk is portrayed, quantified, and processed. After this module, students will have an awareness of risk and risk information processing, how crises impact risk assessments, how risk is communicated in the popular media, and understand crisis response strategies. This course will have potential appeal and interest across the university, as it transcends disciplines. In the majority of courses, students have to debate and consider the issues of risk/crisis in their own primary discipline (e.g. engineering, politics, public health & medicine, psychology, business, law, sociology, maths, life sciences, etc.).

Syllabus: Risk and crises are powerful forces that affect and shape human behaviour, and society, defining the lives of people and institutions in the 21st century. Crisis is risk realised, and both are central factors affecting decision making. Students will understand the magnitude of risk and crisis within society, and how it transcends multiple contexts, and disciplines, analysing the topic from several different perspectives. Students will gain knowledge of how individuals and organisations quantify and perceive risk, broadening their understanding of risk and crisis portrayal from a physiological, historical, economic, scientific, and communications perspective. The module comprises of six learning units; Risk in Society; Historical Perspectives of Risk & Crisis; Economic Perspectives of Risk & Crisis; The Neurobiology of Risk; Portrayal of Risk & Crisis in the Media; Risk and Crisis Communications. This module brings together insights from the fields of business, economics, communications, history, journalism, and medicine.

MK4002 - MARKETING

Please note that International students can enrol in either MK4002 or MK4006, but not in both modules

ECTS Credits: 6 (Year 1 Module)

Management and Marketing

Rationale and Purpose of the Module: This module is designed to introduce students to the philosophy and historical underpinnings of marketing. As such, it will help students to position marketing both as an organisational discipline and as a societal force. The module will trace the development of marketing as a business philosophy and will assess the role of marketing within the international business organisation. Students will also explore what it means for organisations to be market-led. Finally, the module will delineate the rights and responsibilities of marketers and customers, and identify the role and impact of marketing in society.

Syllabus: The syllabus provides coverage of the nature of marketing and, in particular, offers an historical backdrop to the development of the discipline. Next, students are introduced to the cornerstones of the discipline in the guise of the marketing concept and the marketing mix. Issues relating to marketing as organisational culture are considered with specific reference to marketing orientation and the barriers to developing such an orientation. The process of marketing in different contexts (service, industrial, international etc.) is discussed and differences highlighted. The consumer is introduced as the core target of marketing activity and relevant issues such as consumer sovereignty; consumer rights and the consumer movement are debated. On a macro level, issues relating to social responsibility and ethics are delineated. Finally, the module addresses the thorny issue of how marketing adds value and what its contribution might be.

MK4006 - MARKETING MANAGEMENT (NON-BUSINESS)

Please note that international students can enrol in either MK4002 or MK4006, but not in both modules

ECTS Credits: 6 (Year 1 Module)

Management and Marketing

Rationale and Purpose of the Module: This module will provide non business students with an understanding of the key knowledge and skills involved in marketing management. The module will examine the strategic importance of marketing and explore the key challenges and contemporary issues surrounding the management of marketing. The key objectives are: 1. To explore the role of marketing management in the contemporary environment and investigate how marketers can manage environmental changes 2. To evaluate marketings contribution in the creation of sustainable competitive advantage for different business contexts 3. To investigate the importance of marketing within the firm and the challenges surrounding the management of the marketing function 4. To provide students with an understanding of the role of marketing planning and implementation.

Syllabus: Building upon the foundations of marketing, this module takes a strategic approach to the theory and practice of marketing. The module introduces the concept of the marketing vision and explores the process of strategic analysis based on an assessment of key external and internal forces affecting the firm. An exploration of marketing strategy and the sources of competitive advantage follow with key competitive positioning strategies presented. The module focuses on understanding the management of the marketing function, the development of the marketing mix and the practice of marketing in terms of maximising value to customers and other stakeholders. Core areas to marketing management such as customer behaviour, brand management, services management and relationship marketing are examined. Key models and theories related to marketing planning and implementation are explored.

Prerequisites: MK4603

MI4408 - STRATEGY AND KNOWLEDGE MANAGEMENT

ECTS Credits: 6 (Year 1 Module)

Management and Marketing

Rationale and Purpose of the Module: To provide a strategic perspective on the role of knowledge, information, and technology in organisations. Develop the role played by technology in market and organisational transformation. Develop planning processes for the strategic use of the information resource. Provide students with an appreciation of the need to manage knowledge as an organisational resource and the infrastructural requirements to facilitate this.

Syllabus: The role of technology, information and knowledge in a strategic context; technological change and the transformation of organisations and markets in the networked economy; techniques and frameworks for strategic planning of the information resource; the nature of knowledge as an organisational capability; models and conceptual frameworks for knowledge management; knowledge management systems; knowledge codification; the transfer of knowledge at an individual, group, organisational and inter-organizational level; cross cultural knowledge management; changing use of systems due to knowledge intensity; communities of knowing; implications for knowledge systems in support of non-traditional/emerging organisational structures. The above concepts will be reinforced and developed through the use of various software packages including web, intranet and knowledge portal software systems.

Prerequisites: MI4407

Management & Marketing: Year 2 Modules

EP4003 - ENTREPRENEURSHIP AND INNOVATION

ECTS Credits: 6 (Year 2 Module)

Management and Marketing

Rationale and Purpose of the Module: The aim of the module is to help students to develop an entrepreneurial mindset that includes creativity, innovation, and diagnostic abilities. The course focuses on entrepreneurship and innovation for new start-up businesses as well as entrepreneurial behaviour within larger organisations. Key objectives are to introduce students to the theory and practice of entrepreneurial creativity and innovation and to provide an understanding of the nature of entrepreneurship, the characteristics of the entrepreneur, the intrapreneur and the role of the socio-cultural and economic environment in

fashioning innovative entrepreneurship. In addition the module examines the process of managing innovation.

Syllabus: This module commences with an introduction to the nature and development of entrepreneurship and emphasises the strong link between entrepreneurship and innovation. This leads to an overview of the schools of thought on entrepreneurship and an understanding of the entrepreneur and the entrepreneurial process. Creativity and innovation are examined with contextual emphasis on innovation in products, services and processes; product strategy, and new product/service development. Corporate entrepreneurship is explored and creative thinking is applied to identify venture opportunities, business planning, networking and technology transfer.

MG4604 - AIR TRANSPORTATION

ECTS Credits: 6 (Year 2 Module)

Management and Marketing

Rationale and Purpose of the Module: To provide students with an appreciation and analysis of the air transport industry structure, competition, technical and commercial issues facing companies involved in the sector, complimenting existing knowledge of aeronautical engineering:

Syllabus: Overview of the international aviation industry including air transport, airports, aerospace manufacturing, maintenance and other aviation services. History of aviation including the development of national and international regulations of civil aviation. The advent of deregulation and liberalisation of air transport markets to produce open skies. The characteristics of airline operations, airline costs, passenger demand, marketing strategies and pricing fare policies. The use of Gantt charts, bills of material (BOM) and the principles of FIFO within the air transport sector. Air transport in Ireland and the current international air transport industry structure, competition, emerging trends and future prospects.

MK4004 - CONSUMPTION AND CONSUMER CULTURE

ECTS Credits: 6 (Year 2 Module)

Management and Marketing

Rationale and Purpose of the Module: This course aims to provide coverage of the nature of consumer culture. * To reflect the general shift within consumer culture in the basic emphasis of economic systems from exchange or production to consumption. * To define the domain of consumer behaviour, including some areas of interest to consumer behaviour researchers, policymakers, and marketers. * To provide coverage of the circle of consumption and how consumption relates to other technological and economic processes. * To explore contemporary theories of consumption. * To encourage students to critically reflect upon their own consumption.

Syllabus: The Circle of Consumption; Motivational Dynamics; Culture; Cultural Values; Myths & Symbols; Cultural Rituals; Types of Meanings; Meaning Transfer; Strategic Analysis of Consumers; Self Concept; Subcultures of Consumption; Lifestyles; Embodiment & Consumption; Classic Theories of Motivation; Consumer Motives in Cultural Perspective; Involvement; Consumer Experience; Consumer Learning; Purchasing; Gift Exchange; Organisational Consumption; Family & Household Consumption; The Social Context of Personal Consumption; Tools of Influence; Reference Groups; Innovation; Adoption and Diffusion; Resistance; Compulsive Consumption; The Disposition Process; Profiles of Disposition Behaviours; Factors Affecting Disposal Choices.

Prerequisites: MK4002

Management & Marketing: Year 3 Modules

MK4025 - MARKETING COMMUNICATIONS

ECTS Credits: 6 (Year 3 Module)

Management and Marketing

Rationale and Purpose of the Module: To introduce students to communications theory. To establish the fundamentals of marketing communications. To explore the nature and influence of the institutions of consumer culture To consider different marketing communications techniques and be cognisant of contemporary trends in the field. To investigate alternative understandings of advertising. To demonstrate how different communications techniques can be combined and interrelated to form the basis of positive international marketing communication strategies. To

appreciate the impact which marketing communications, have on our lives.

Syllabus: Role of communications, communications theory, audiences, how advertising works, the management of marketing communications, the advertising industry, creative aspects of advertising, media aspects of advertising, ethics and advertising standards, communication vehicles- (sponsorship, public relations, direct marketing, consumer sales promotions, trade shows and exhibitions, internet marketing communications tool, internal marketing communications), integrated marketing communications, the planning and management of an integrated marketing communications plan, the effects and effectiveness of marketing communications, future developments in marketing communication.

***Prerequisite**: MK4002 or equivalent.*

Management & Marketing: Year 4 Modules

EP4008 - BUSINESS CONSULTING

ECTS Credits: 6 (Year 4 Module)

Management and Marketing

Rationale and Purpose of the Module: Small and medium sized enterprises are constantly evolving and seeking new opportunities to expand and develop their existing businesses which requires external expertise and advice. This advice can range from guidance on new market and product development to overall strategy development, implementation, and evaluation; how to develop growth strategies; and to gain objective and expert advice on how they can implement change in their firm successfully. This module will introduce students to the principles and processes of management consultancy and provide them with the opportunity to adopt the role of a professional management consultant, to apply experiential knowledge and concepts learned in the classroom to real-life business situations.

Syllabus: The aim of this module is to provide students with an understanding of the business consulting process and gain knowledge and expertise in how to manage a business consulting project efficiently and effectively. The module will address the following topics: the nature of business consulting; the skills of an effective consultant; developing a research consultancy contract ; managing the client-consultant relationship; the stages of consulting process; problem diagnosis and solution development; Project planning; Identifying and evaluating recommendations and their implementation; the ethics of conducting business consulting.

EP4408 - SMALL BUSINESS CONSULTING

ECTS Credits: 6 (Year 4 Module)

Management and Marketing

Rationale and Purpose of the Module: The aim of the module is to provide participants with an understanding of both the business planning and consultancy process. Students will act as consultants for existing SMEs. In undertaking the consultancy project, students benefit enormously from this experience as they have the opportunity to apply experiential knowledge and concepts learned in the classroom to real-life business situations.

Syllabus: Knowledge is structured in two main sections, Theory and Application of Consultancy. Initially major consulting concepts and models are imparted, following which students work together in groups engaging in experiential learning acting as consultants for an external SME.

MG4037 - STRATEGIC MANAGEMENT

ECTS Credits: 6 (Year 4 Module)

Management and Marketing

Rationale and Purpose of the Module: To provide students with a significant understanding of the role and importance of strategic management in contemporary organisations. To enable students to integrate functional specialism into an appreciation and application of strategy processes in both the private and public sector.

Syllabus: Multi-perspective nature of strategy, strategic dimensions, strategy processes, theories of business level competitive advantage - market positioning, resource-based and the dynamic capabilities approach. Strategic options and decision making, implementation issues: resource allocation, stakeholder management, strategic control, and

change management. Strategic cultures and paradigms, the role of the strategist. Corporate-level strategy, multi-business structures and coherence, Organisational and Environmental Turbulence, Scenario Planning and future thinking.

MK4017 - MARKETING LEADERSHIP

ECTS Credits: 6 (Year 4 Module)

Management and Marketing

Rationale and Purpose of the Module: This module aims to underline the strategic importance of marketing. To this end, it aims to investigate the relationship between marketing and the other functional areas within the business. Further, it seeks to delineate the nature of the marketing management process and to explore the role of marketing planning. Finally, the module attempts to critically evaluate the marketing vision.

Syllabus: The module addresses the marketing vision and suggests how the marketing planning and management process contribute to and deliver upon such a vision. Next the module addresses the relationship between marketing and the other functional areas and assesses the role of marketing in the boardroom. The module also considers value-based marketing and the application of marketing techniques internally within the organisation's marketing. As such the module will critically consider the potential for organisational renewal through marketing.

Prerequisites: MK4002

MK4038 - MARKETING RELATIONSHIPS AND NETWORKS

ECTS Credits: 6 (Year 4 Module)

Management and Marketing

Rationale and Purpose of the Module: 1. To introduce relational approaches to marketing. 2. To understand the nature and importance of interaction in service, intra-organisational and mass marketing contexts. 3. To understand the process of relationships development and to appreciate relationship success variables and how they might be fostered. To consider approaches to relationship management including CRM. 4. To understand competitive and collaborative networks and the strategic implications for individual organisations. 5. To appreciate the implications of marketing when viewed as relationships and networks.

Syllabus: Service Logic in Marketing. Relationships and Networks as a source of innovation. Relationship Development. Relational capabilities. Intra- organisational and inter-organisational interaction and relationships. Relationship success variables including trust, commitment and shared values. Cultural dimensions to relationships. Collaborative and competitive networks. Relationship marketing strategy and Customer Relationship Management. Comparing B2B, B2C and C2C interaction in networks.

Prerequisites: MK4002

Work & Employment Studies



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Work & Employment Studies: Year 1 Modules

PM4022 - PRINCIPLES OF ORGANISATIONAL BEHAVIOUR

ECTS Credits: 6 (Year 1 Module)

Work & Employment Studies

Rationale and Purpose of the Module: This module is designed to give students an understanding of key concepts in Organisational Behaviour. It seeks to describe the complex work organisation from a behavioural perspective, and it evaluates the methodologies available for analysing organisational behaviour. In an attempt to provide some answers to the why of human behaviour in the workplace, selected individual, group and organisational processes are introduced and explored.

Syllabus: Organisational Behaviour in perspective: Introduction to the field and paradigms of study; Defining the concept; disciplinary and interdisciplinary nature of the field; dominant methodologies for understanding the social world. Personality: Defining personality; sources of personality difference; the nature/nurture debate. Perception and Cognition: The nature of perception; perception and perceptual influences; the process of perception. Motivation; theories of motivation; Learning & the Individual: Defining learning and theories of learning. Stress & Psychological Wellbeing: stress at work; stress and performances; psychological well-being and self-esteem. Groups & Team Roles: What is a group in psychological terms; function of groups; Hawthorne studies; the group formation process. Power, Politics and ethics: Interrelated concepts; sources of power; the use of power; political tactics and their use and legitimacy in organisational life. Leadership: theories of leadership; Organisational culture; diagnosing organisational culture; Schein's typology; formation and maintenance

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Work & Employment Studies: Year 2 Modules

PM4054 - APPLIED ORGANISATIONAL BEHAVIOUR

ECTS Credits: 6 (Year 2 Module)

Work & Employment Studies

Rationale and Purpose of the Module: The purpose of this module is to enhance students' understanding of key concepts and issues associated with behaviour in organisations. The specific objectives are to focus on the role of individual behaviour, specifically on personality, perception and motivation, and to increase students' understanding of group dynamics in the international workplace, paying particular attention to the dynamics of communication, groups, conflict, and leadership. Participants will become acquainted with theories, concepts and methods through both didactic and experiential learning techniques.

Syllabus: The syllabus allows for the treatment of a small number of critical dimensions of organisational behaviour. Building on material covered in an earlier organisational behaviour module, the module explores a number of processes and issues associated with individual and group behaviour in organisations. It explores the following areas: the development of the individual: personality and individual difference, perception, attitudes, the psychological contract and individual motivation. Group development: structures and roles, the dynamics of groups and teams, communication processes particularly in an intercultural context. Organisational leadership and organisational citizenship behaviour are also examined.

PM4014 - HUMAN RESOURCE DEVELOPMENT

ECTS Credits: 6 (Year 2 Module)

Work & Employment Studies

Rationale and Purpose of the Module: This module is designed to provide students with a conceptual appreciation and practical understanding of Human Resource Development in organisations. There is a focus on integrating HRD activities with the range of HR policies and systems enacted by organisations and on perceiving HRD as a strategic organisational activity.

Syllabus: This module is designed to provide students with a conceptual appreciation and practical understanding of Human Resource Development (HRD) in organisations. There is a strong focus on integrating HRD activities with the range of HR policies and systems enacted by organisations and on perceiving HRD as a strategic organisational activity. The lectures are designed to provide students with a framework for evaluating the contribution that HRD can

make to organisational functioning and for reflecting on the role that the HR practitioner plays in this scenario.

Prerequisites: PM4013

PM4064 - EMPLOYMENT RELATIONS

ECTS Credits: 6 (Year 2 Module)

Work & Employment Studies

Rationale and Purpose of the Module: To outline the role of the State, Trade Unions and Employers in industrial relations. To enable students to understand the various theoretical perspectives on employee relations and develop the ability to think critically about the subject. This module will demonstrate to students that conceptual analysis has practical outcomes and consequences. It will also show the historical and economic context in which these perspectives arise and how they are made operational. Students will be able to evaluate the practical consequences of such approaches and the demands they may place on management.

Syllabus: The role and function of trade unions and employer organisations in a societal and comparative context. The role and operation of state institutions. Voluntarism and legalism in Irish employment relations. The practical operation of dismissals and equality legislation in the workplace. Public sector employment relations. The nature of conflict in employment relations, including strikes. National and workplace partnership, including the role and performance of national pay agreements. Recent legislation on trade disputes and trade unions. The impact of the 1937 Constitution. Contemporary national and international developments in employment relations.

Work & Employment Studies: Year 4 Modules

PM4008 - EMPLOYMENT RELATIONS PRACTICE

ECTS Credits: 6 (Year 4 Module)

Work & Employment Studies

Rationale and Purpose of the Module: Explore the key operational practices in the conduct of employee relations. Examine the issue of conflict in the context of the employment relationship. Expose students to theory and practice of negotiation and conflict handling. Appreciate the role of negotiation in the conflict resolution process. Allow for a knowledge of the key 3rd party institutions in the context of workplace conflict resolution.

Syllabus: Understanding of sources of conflict in the workplace and possibilities for resolution; managing collective and individual issues; applying the regulatory framework to conflict issues; the nature of negotiation; integrative and distributive bargaining; strategy and tactics of distributive bargaining; negotiation planning and strategy; negotiation breakdown; communication and persuasion processes in negotiation; power in negotiation; third party intervention; analysing a moot labour court hearing; negotiation exercise and case study.

PM4098 - CONTEMPORARY HUMAN RESOURCE MANAGEMENT: CONTEXT AND STRATEGY

ECTS Credits: 6 (Year 4 Module)

Work & Employment Studies

Rationale and Purpose of the Module: This module seeks to develop analytical and conceptual capabilities in the domain of human resource management (HRM). The purpose of the module is to integrate knowledge and competence from previous modules (both within and beyond HR, e.g. strategic management, financial planning, etc.) and from work experience and to integrate them in a way that enhances students' capacity to analyse key HR issues in a wider national and international context. Students are required to critically evaluate key contemporary issues in HRM literature and to examine recent research on trends and developments in HRM/employment relations within both an Irish and international context. The module is strongly focused on strategic aspects of HRM, its application in practice and critical evaluation thereof, using an evidence-based perspective.

Syllabus: Introduction & course overview; Introduction to key concepts of HRM The changing context of work and HRM; Contemporary influences on HRM; Strategy and strategic HRM; Models of strategic HRM; HRM and industry dynamics; Changing labour markets; International HRM; Annual Lovett lecture; diversity; strategic HR planning; rewards; performance management; talent management; guest lectures addressing recent research findings and evidence-based HRM.

PM4108 - THE PSYCHOLOGY OF CAREER SUCCESS

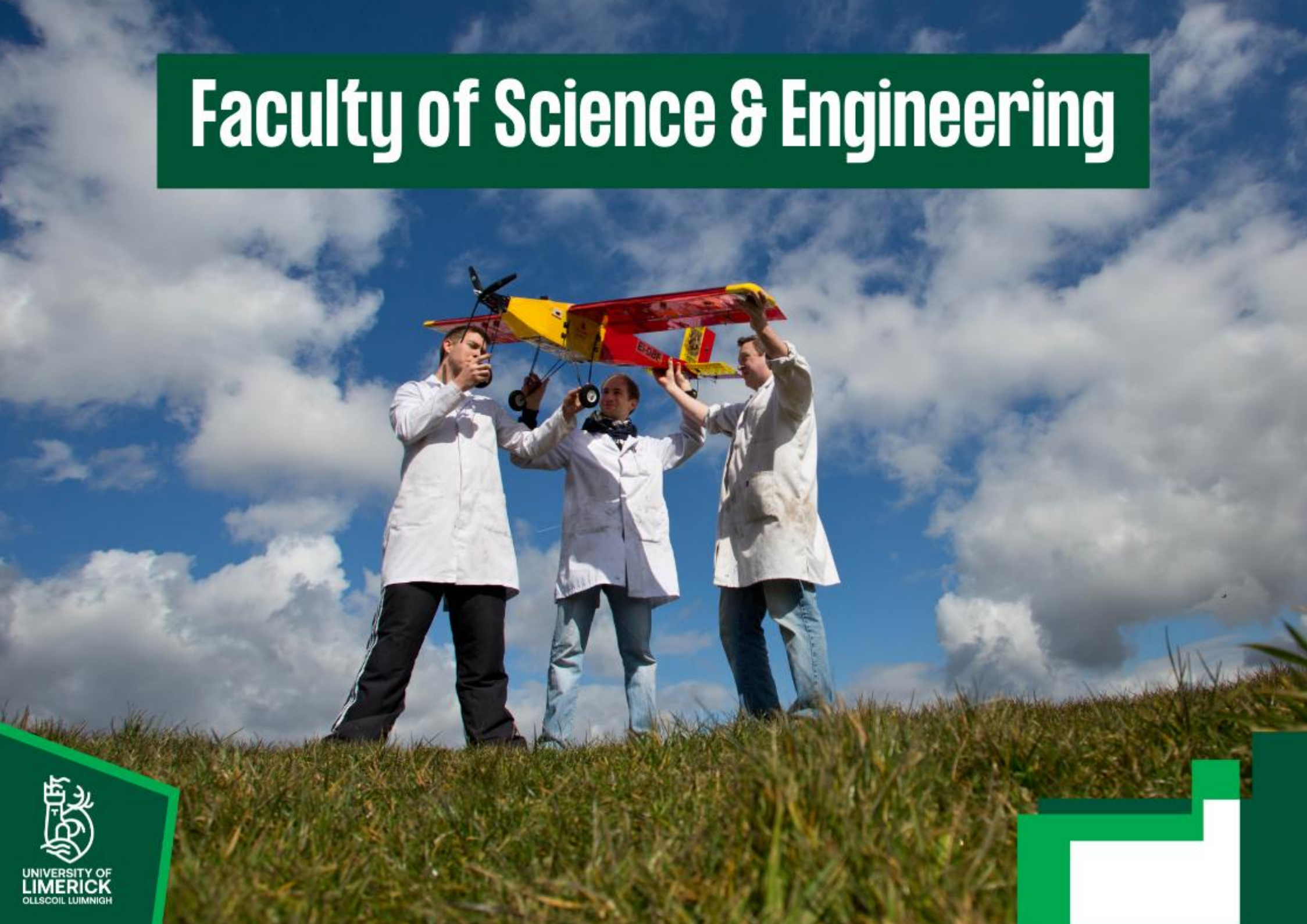
ECTS Credits: 6 (Year 4 Module)

Work & Employment Studies

Rationale and Purpose of the Module: The purpose of this module is to introduce students to a range of theoretical concepts within the field of career theory. It is also intended to give students an understanding of the tension between active career self-management and contextual constraints and opportunities within the world of work. Students will use theoretical concepts and explanations to evaluate factors influencing subjective and objective career success at various life stages, in various local and international contexts, and within and outside of organisations. They will consider careers from their own perspective as well as from the perspective of an external career coach and an internal HR manager.

Syllabus: Career concepts and definitions; changing landscape of careers including traditional versus protean/boundaryless perspectives; careers from individual and organisational perspectives; entrepreneurial careers, fast-track careers and expatriate careers across international borders; different meanings of career success; occupational and organisational choice including psychometric assessment; stage based theories of career development; career development model; individual and organisation-sponsored approaches to career exploration; career goals, career indecision and career competence, career strategies and their implications for individuals and organisations; career appraisal; career and life stage challenges and concerns; contemporary issues in career management including stress, work-family interaction and diversity; role of strategic human resource management systems in career management; role of career coaches and consultants.

Faculty of Science & Engineering



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Biological Sciences



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Biological Sciences: Year 1 Modules

BY4201 - FOUNDATIONS IN BIOLOGICAL SCIENCES 1

Limited Capacity

ECTS Credits: 6 (Year 1 Module)

Biological Sciences

Rationale and Purpose of the Module: This module addresses the structures and biochemical properties of key biological molecules such as nucleic acids, lipids, carbohydrates and proteins. Students will discover how enzymes work and look at their importance in the catalysis of biological reactions. The module also considers the origin of cells and examines their main components.

Syllabus: Introduction to Cell Biology to include; - Cell structure and organelles - Mechanism of cell division - Introduction to DNA - Chromosome structure - RNA and transcription and translation - Protein structure and amino acids - Differences between eukaryotic and prokaryotic cells - Introduction to key families of microorganisms including prions, viruses, bacteria, fungi and yeasts.

BY4002 - BIOLOGY 2

Limited Capacity

ECTS Credits: 6 (Year 1 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of this module is to introduce students to fundamental concepts in cellular reproduction and genetics; diversity of life, introductory plant physiology, evolution and ecological principles.

Syllabus: Cellular reproduction; binary fission, mitosis and meiosis. Introduction to genetics; Mendelian inheritance, chromosomes and genes, mutations. DNA; structure, replication and organisation in cells. Gene activity; the genetic code, transcription, translation and expression. Plant structure and function; transport in plants, reproduction, seed structure, germination, growth and development, plant adaptations. Introduction to taxonomy and classification. Introduction to animal kingdom (Protozoa, Porifera, Cnidaria, Platyhelminthes, Nematoda, Annelida, Mollusca, Echinodermata, Arthropoda, Chordata). Introduction to fungi, algae and plants (Bryophyta Pterophyta, Coniferophyta, Anthophyta). Evolutionary theories, evidence for evolution, evolutionary process, origins of life. Principles and scope of ecology; ecosystems; cycles in nature; energy flows; population and community dynamics; limiting factors; food chains: succession, environmental concerns.

Prerequisites: BY4001

BY4214 - PRINCIPLES OF HUMAN NUTRITION

Limited Capacity

ECTS Credits: 6 (Year 1 Module)

Biological Sciences

Rationale and Purpose of the Module: To introduce students to the basic concepts and principles of Human Nutrition

Syllabus: This module will examine nutrients, their function, metabolism and food sources as well as discuss the latest research in the role of nutrition for the promotion of optimal health and prevention of disease. The absorption, digestion and essential functions of the macronutrients (carbohydrate, protein and lipids) and the micronutrients (vitamins and minerals) will be explored. Changes in nutritional requirements at different stages of the life cycle will discussed as well as special needs during pregnancy, lactation and aging. The impact of nutrition and food on the promotion of health and the prevention of disease will be fully explored. Topics covered include: energy requirements, carbohydrates, protein, lipids, absorption, digestion and metabolism of nutrients, vitamins, minerals, water, dietary standards, heart disease, cancer, obesity, maternal nutrition/lactation, infant/childhood/teenage nutrition.

Prerequisites: BY4001, BY4002, CH4102

EV4024 - EQUINE REPRODUCTION

Limited Capacity

ECTS Credits: 6 (Year 1 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of this module is to provide students with an understanding of the scientific principles of Equine Reproduction and how these relate to the practical applications of equine breeding.

Syllabus: The syllabus is comprised of the following: reproductive anatomy of the mare and stallion, reproductive endocrinology of the mare and stallion, oestrous cycle, fertilization, pregnancy, parturition; neonatal physiology; male reproductive physiology and practical aspects of equine breeding management. The management of brood mares and stallions are presented from a physiological and husbandry perspective. The events at parturition are presented and discussed in the context of the management of the neonatal foal and the early return of the mare to reproductive activity.

EV4032 - THE HORSE INDUSTRY

Limited Capacity

ECTS Credits: 6 (Year 1 Module)

Biological Sciences

Rationale and Purpose of the Module: This module provides the student with an understanding of the nature and scope of the horse industry, both national and international.

Syllabus: Topics covered on this course include aspects related to: The Irish Horse Industry, the UK Horse Industry, The Horse Industry in Europe, US and Australia; comparative analysis of nature, size, economic importance, policies, supports, regulations, organisations, education and training of personnel. Safety, health and welfare within the horse industry; legislation. Horse welfare; issues and legislation. The statutory and regulatory organisations that operate, control and administer the horse industry. Ancillary industries; horse feed industry, transportation, tourism. Racecourse management. Aspects of breeding and training

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EV4042 - EQUINE REPRODUCTION

Limited Capacity

ECTS Credits: 6 (Year 1 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of this module is to provide students with an understanding of the scientific principles of Equine Reproduction and how these relate to the practical applications of equine breeding.

Syllabus: The syllabus is comprised of the following: reproductive anatomy of the mare and stallion, reproductive endocrinology of the mare and stallion, oestrous cycle, fertilization, pregnancy, parturition; neonatal physiology; male reproductive physiology and practical aspects of equine breeding management. The management of brood mares and stallions are presented from a physiological and husbandry perspective. The events at parturition are presented and discussed in the context of the management of the neonatal foal and the early return of the mare to reproductive activity.

EQ4032 - EQUESTRIAN SKILL ANALYSIS

Contact Module Leader

ECTS Credits: 6 (Year 1 Module)

Biological Sciences

Rationale and Purpose of the Module: This module provides important foundation skills for students of equitation in movement and technique analysis, necessary for evaluating equines as athletes. Students are provided with the knowledge and skills to evaluate the physical interactions between the horse and rider.

Syllabus: Common misconceptions in rider skill requirements. Rider movement: the role of nervous, skeletal and muscular systems in proprioception and movement, use of body segments for balance and to influence the horse, core stability, skill related components of fitness, physiology and psychology of motor learning, limiting factors - joint range of movement, mental fitness and physical fitness. Qualitative analysis of rider movement, variations by sports discipline. Analysis of technique, strategies and rules of the 3 main Olympic equestrian disciplines and horse racing. Use of video analysis of, and feedback on rider performance. Analysis of efficient technique and it's role in influencing the horse and avoiding injury. Simple methods for developing rider and horse skills; use of simple off and on horse techniques on the flat, over ground poles and jumping to promote efficiency, rhythm, balance, coordination and accuracy in rider and horse movement. Developing skills and knowledge on bandaging, bitting, early handling of horses and corrective and surgical shoeing. Factors affecting rider movement; tack and equipment, horse and rider

conformation, rider gender, length of stirrup and saddle design.

Biological Sciences: Year 2 Modules

BY4012 - MICROBES AS METABOLIC FACTORIES

Limited Capacity

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Rationale and Purpose of the Module: This module is designed to leverage the knowledge of students that have already been introduced to basic concepts of microbiology, principles, and aseptic techniques. This module will introduce microbe metabolism, in terms of requirements and end products, and will encompass biotechnological applications in hands-on activities.

Syllabus: The syllabus is comprised of the following topics: Introduction to metabolism - nutritional requirements of microbes; primary metabolism of carbohydrates, nitrogen and lipids; primary and secondary metabolite production including aspects of pathogens and pathogenicity; mechanism of formation, induction over microbial growth cycle and mode of action of antibiotics, bacteriocins, and biotransformation of intermediates into antibiotics; bioinformatical tools to predict functions and metabolic products Lactic acid bacteria (LAB) as metabolic factories - Species and strain characteristics, and their application in industrial food production; metabolic end-products and their contribution to flavour formation/quality in fermented foods. Yeast as metabolic factories - Species and strain characteristics, and their application in industrial production; end products in industrial fermentations. Moulds as metabolic factories - Species and strain characteristics, and their application in industrial production; end products in industrial fermentations, cheese, industrial enzyme production, waste degradation; Moulds in biofuel and pharmaceutical processes Microbiome based therapeutics (MBT)

BY4014 - MICROBIOLOGY AND IMMUNOLOGY

Limited Capacity

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Rationale and Purpose of the Module: This module provides an introduction to Microbiology and Immunology. Students are introduced to the concepts of microbes as mutualists, commensals and pathogens. The module serves to introduce students to the nature of the host pathogen relationship and how the innate and adaptive immune system maintain host defences.

Syllabus: Microbiology: introduction to micro- organisms; major structural components of bacteria; mutualism, indigenous microbiota; determinants of virulence; Pathogen-associated molecular pattens; Virology: virus structure and classification; viral pathogenesis, viral interactions and immune evasion. Immunity: introduction to immunity; innate defences against infection; pattern recognition receptors; cell biology of the specific immune system; humoral specific immunity; cell mediated specific immunity; generation of immunological diversity

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BY4104 - ECOLOGY 1

Limited Capacity

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Syllabus: Freshwater ecosystems: lentic and lotic habitats, plant and animal life; physico chemical and other abiotic influences in freshwater ecosystems Marine ecosystems, concentrating on the ecology of rocky shores; brief consideration of sandy, muddy and estuarine ecosystems; plant and animal life and the influence of physico chemical and other abiotic factors intrinsic to these ecosystems. General introduction to plant and vegetation ecology, plant communities in Ireland. Woodland ecosystems: structure, composition, succession. Adaptations of woodland plants and animals. Population dynamics and ecological strategies of woodland plants. Food webs, primary and secondary productivity in these ecosystems. Detritus and grazing food chains. Detritivores in woodlands; fungi and their role in woodlands. Introduction to vegetation sampling.

Prerequisites: BY4001, BY4002

EV4013 - EQUINE PHYSIOLOGY

Limited Capacity

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Rationale and Purpose of the Module: This module builds on the previous modules BY4001, BY4002, BC4902 and EV4012 and forms a core module on the Equine Science Degree programme.

Syllabus: Integrating the students prior knowledge, and valuing a quantitative approach, this module leads to an advanced understanding of mammalian body systems, exemplified by equine performance and dysfunction. The systems to be studied include: Blood circulation and the cardiovascular system. Respiration Water balance and excretion including renal function and urine formation. Gastrointestinal function. The nervous system: central, autonomic. Special senses. Temperature regulation. Skeletal muscle. Endocrinology and metabolism. Reproduction and lactation.

Prerequisites: BY4002, EV4012, BC4902, BY4001

EV4014 - EQUINE NUTRITION

Limited Capacity

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of this module is to provide students with an understanding of the scientific principles of Equine Nutrition and how these relate to the practical applications of feeding.

Syllabus: Classification, digestion, absorption and metabolism of carbohydrates, protein and lipids; Amylose and amylopectin; Utilisation of the products of dietary energy and protein, Glycemic response, insulin production, insulin resistance and hyperinsulinaemia; microbial fermentation, manipulation of fermentation; VFA absorption; VFA efficiency, lactic acid production, Feed digestibility including aspects on apparent and true digestibility; Transit and retention times, Protein degradation and amino acid absorption; NPN and N utilisation, FFAs; NEFAs; Water; water requirements; Appetite; Feeding standards, Metabolic body size and intake; Feed energy systems, Partition of dietary energy for horses, an evaluation DE and NE systems; energy and protein requirements based on UFC and MADC; heat increment; Efficiency of utilisation of ME; A critical review and evaluation of feeding experiments, and nutrient balance studies; Dietary electrolyte balance; Feeding for performance and metabolism of nutrients during exercise, Applied equine nutrition including aspects on nutrient requirements and utilisation during periods of for growth and production (lactation, gestation). An overview of dietary related problems; Application of current equine nutritional research;

EV4015 - EQUINE HEALTH AND DISEASE

Limited Capacity

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Rationale and Purpose of the Module: To acquant students with the physical appearance and behaviour ofthe healthy horse so that signs of ill health and disease are recognised at an early stage, thus enabling them tomake informed decisions about the necessity for veterinary intervention. To acquaint students with disease conditions of toxicologic origin and with the causes, management and prevention of infectious diseases.

Syllabus: To acquaint students with the physical appearance and behaviour of the healthy horse so that signs of ill health and disease are recognised at an early stage, thus enabling students to make informed decisions about the necessity for veterinary intervention. To acquaint students with disease conditions of toxicological origin and with the causes, management and prevention of infectious diseases. Topics covered include parasitic, bacterial and viral diseases of the horse. Diseases of metabolic and degenerative origin are also discussed, including degenerative orthopaedic diseases and osteoarthritis. Disease conditions of the airways and their impact on athletic performance of the horse are discussed from the perspectives of contributing environmental factors and prevention.

EQ4014 - FOUNDATIONS OF EQUINE PERFORMANCE

Contact Module Leader

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Syllabus: Horse handling and management; methods of control and restraint, protocols for assessing and monitoring

horse health, welfare status and fitness for use, use of lungeing on hard and soft surfaces and as an evaluation tool for lameness and respiratory assessment. Measuring physiological indicators; respiration, temperature, heart rate, hydration. Assessment and selection for performance; genotypic and phenotypic considerations, environmental and training contributions, cloning the sports horse, sales evaluation. Training; identification of efficient athletic technique, exercises to improve athletic performance, improving accuracy and power in athletic technique in the horse, use of jumping exercises to improve power and agility, establishing independent balance in the horse and rider.

FT4204 - FOOD CHEMISTRY

Limited Capacity

ECTS Credits: 6 (Year 2 Module)

Biological Sciences

Rationale and Purpose of the Module: To introduce students to the utilisation of raw materials by the food industry To provide a general course on the chemistry of raw materials and of foods

Syllabus: Overview of utilisation of plant and animal raw materials by agri-industries. Biochemistry of raw materials - amounts and types of proteins, lipids, carbohydrates and secondary metabolites of economic importance. Anatomical and structural aspects of raw materials. Food Analysis. Relationship between raw material composition and biochemical and physical properties.

Biological Sciences: Year 3 Modules

BY4085 - CELL AND MOLECULAR BIOLOGY OF THE IMMUNE SYSTEM

Limited Capacity

ECTS Credits: 6 (Year 3 Module)

Biological Sciences

Rationale and Purpose of the Module: This course provides a detailed understaning of immunology at the cellular and molecular level. Students will develop a comprehensive understanding of the principles of self and non self recognition and how these mechanisms are involved in immunity and how aberrant self-regulation contributes to allergy and autoimmunity. The concepts will also serve to provide a foundation for the concepts of molecular and regenerative medicine, and cancer therapeutics. Note: Section 12 Prerequisite module: Microbiology and Immunology 2147 will be prerequisite for this module.

Syllabus: Cellular Immunology: the cell types involved in immune responses, the interactions between these cells during immune and inflammatory responses, and the mechanisms of host response against infectious pathogens.The molecular basis of immune recognition,mechanisms underlying T and B cell recognition of antigens and antigen processing, in transplantation, viral immunity and in various immune diseases. Mechanisms of host response against infectious pathogenic agents, transplantation, vaccine design, immunodeficiency and other immune disorders. Immune dysfunction and chronic inflammatory diseases such as rheumatoid arthritis and asthma, cancer immunology, immunogenetics and immune deficiency. Applied Immunology, vaccine technology and immunotherapeutics

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BY4023 - ANIMAL DIVERSITY

Limited Capacity

ECTS Credits: 6 (Year 3 Module)

Biological Sciences

Rationale and Purpose of the Module:

Syllabus: Evolution of animal diversity; Animal architecture; Environmental considerations; Invertebrate

classification and relationships - the Protozoans, the Poriferans and Placozoans, Introduction to the hydrostatic skeleton, the Cnidarians, the Platyhelminthes, the Nemertines, the Molluscs, the Annelids and Sipunculans, the Arthropods, the Nematodes, the Echinoderms; An overview of invertebrate reproduction and development. Comparative vertebrate morphology; Historical predecessors-evolution; Definition of the phylum Chordata; Chordate characteristics; Protochordates; Vertebrate classification - Agnathans, Gnathostomes, Teleostomi, Tetrapods, Amniotes; Biological design - size and shape, structural analysis, functional analysis, ecological analysis; Introduction to animal behaviour and the influences of environment on such behaviour; Comparison of the processes of homeostasis and control in vertebrate and invertebrate body systems; Assessment of the importance of animal diversity to biological sciences and the environment.

BY4016 - ANIMAL PRODUCTION SYSTEMS

Limited Capacity

ECTS Credits: 6 (Year 3 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of the module is to educate the students in animal production, health and welfare so that they are able to teach it as part of agricultural science at leaving certificate level.

Syllabus: - Animal Welfare - Five freedoms of animal welfare, Animal Welfare Law; principles of animal welfare; body condition scoring of cattle, sheep and pigs; major categories of animal diseases; zoonotic and notifiable diseases. - Sheep Flock Managemen oSheep production systems; sheep breeds; sheep breeding; rearing and feeding of sheep and lambs; shee diseases; building and handling facilities for sheep. - Beef Herd Management - Breeds of beef cattle; rearing and production of steer, heifer and bull beef; feeding of beef cattle; carcass grading systems for beef cattle; diseases of beef cattle; housing and handling facilities for beef cattle. - Dairy Herd Management - Breeds of dairy cattle; spring and autumn calving dairy herds; life cycle of a dairy cow; the lactation curve; diseases of dairy cows; rearing of dairy calves; feeding of dairy cows; milking machine and milking parlour operation; housing and handling facilities for dairy cows. - Pig Production oBreeds of pigs; the pig production cycle; diseases of pigs; feeding of pigs. - Poultry Production - Poultry management of production of meat and eggs; poultry housing.

Prerequisites: BY4025

BY4026 - HORTICULTURE

Limited Capacity

ECTS Credits: 6 (Year 3 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of the module is to familiarize students of the Biological Sciences (LM092) who are taking the Agricultural Science elective, with the principles and practices of Horticultural science.

Syllabus: Composts, growing media and substrates in horticulture, seed propagation, vegetative propagation, seedbed preparation, horticultural crop rotation, vegetable crop production & fertilising, fruit crop production, protected crop structures, climatic factors associated with plant growth, micropropagation & genetic modification of plants. Sustainability of Horticulture

Prerequisites: BY4015

Biological Sciences: Year 4 Modules

BY4038 - CANCER MECHANISMS, THERAPEUTICS AND MOLECULAR MEDICINE

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: There have been considerable developments in our knowledge of the cellular and molecular basis of cancer and other diseases. These

developments have hastened the advent of the new discipline of molecular medicine. This module presents recent developments in our understanding of cell cycle controls in relation to cancer biology as well as new developments in Bioscience which allow the targeting of cellular and molecular pathways involved in disease. The module will present the theoretical and practical aspects of modern molecular technologies as applied to cancer and other human diseases.

Syllabus: Molecular pathology of cancer and some inherited human diseases; molecular changes during the transformation of normal cells to malignant cells; control of the cell cycle and alterations in cell cycle checkpoints in cancer cells; oncogenes and tumour suppressor genes; the process of tumour initiation and progression, apoptosis, angiogenesis and metastasis; genomic alterations in molecular genetic disease and describe the identification of specific disease related genes; molecular drug targets in cancer; cancer vaccines; signal transduction as a therapeutic target; Anti-cancer drug target discovery; monolconal antibodies and chimeric antigen receptors as therapeutic agents; tissue engineering and nanomedicine.

BY4048 - ADVANCED CELL AND MOLECULAR BIOLOGY

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: The module will examine cellular structures including the organelles, cytoskeleton, molecular motors and key cellular processes including trafficking, cell cycle, apoptosis events and motility. The module will present the genetics of model systems and how they are used to study development, differentiation and disease. The module will present new technologies in studying systems biology of organisms and how to extract meaningful data from large data sets. These technologies will include those used for the analysis of cell responses by confocal microscopy, flow cytometry, transcriptomics, metabolomics and proteomics. The module will use extensive reading of primary literature and reviews to embed the knowledge of techniques, capabilities and challenges in the area.

Syllabus: The syllabus will include Cell structure; Cytoskeleton, Molecular motors and trafficking systems in cells, Cell motility, Cell cycle, Cell differentiation and development, Apoptosis Examining cellular structures, Profiling cells at a molecular level

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BY4505 - POLLUTION BIOLOGY

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: To familiarise students with the main types of environmental pollutants, their origins exposure routes and impacts. To equip students with skills in the methodology monitoring the impacts of selected pollutants.

Syllabus: Categories of freshwater pollution. Organic pollution of surface and ground water - sources, effects and impacts. Indicators - biological and chemical monitoring; use of biotic indices. Methods for determination of nitrates, phosphorus , chlorophyll a, Ca, Mg, D.O., B.O.D., C.O.D., T.O.C., etc. Microbial pollution - methods. Toxic pollutants in air, water, soil and food. Introduction to toxicological principles: acute toxicity; LD50; chronic toxicity (types of). Uses of lab and epidemiological studies. Introduction to structure activity relationships in toxic chemicals. Risk assessment. Analytical methods. Review of toxic effects of heavy metals, chlorinated hydrocarbons and other organics and inorganics, mycotoxins, radioactive elements. Air pollution: major air pollutants, sources and impacts, i.e. smoke SO2, NOx, PAHS CO2 Ozone, volatile organics CFC's. Global warming causes, models and scenarios; biological impacts.

EQ4038 - TRAINING THE PERFORMANCE HORSE

Contact Module Leader

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Syllabus: Developmental exercises; leg yield, shoulder in, travers, renvers, half pass, sequence bounces, stride

adjustment and distance tests, show jumping and dressage exercises for the racehorse, maintaining willingness in the horse in high level training. Analysis of performance requirements; rules of sports and racing disciplines, test definitions and influence on training and outcome, development, implementation and evaluation of training plans for technique and fitness, long term equine development models, comparison of Irish and international horse development and assessment models. Equipment and technology; use of pressure measurement devices to evaluate saddle fitting, use of 2D motion analysis of technique and movement on the flat and over fences.

EQ4048 - MANAGING THE PERFORMANCE HORSE

Contact Module Leader

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Syllabus: Performance environments; heat and humidity, acclimatisation, replication, aggressive cooling, rehydration and pre-hydration. Ethics; use in competition, safety, rules and regulations, fence and course design. Holistic management; roles and values of the contributing practitioners. Competition planning; periodisation, setting long, medium- and short-term goals, training schedules, licences and qualifications, entries, travel, quarantine, management at competitions, recovery from competition. Profiling; conformation, back templating, weighing, limb examination, routine health observations, value of veterinary imaging techniques. Procedures; travel documentation, routine health care, vaccinations, licences, entries, competition analysis and planning

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BY4058 - HOST MICROBE INTERACTIONS

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: The module will present the key strategies microbes use to establish an interaction with the host. This will be developed in the context of both infection and commensalism. State-of-the-art concepts on the impact of commensal communities on the host will be explored. The module will set out the molecular basis of the interactions where known. The module will also present the tools used to examine the interactions. The module will present new technologies in studying communities of organisms and how to extract meaningful data from large data sets. The course will use extensive reading of primary literature and reviews to embed the knowledge of techniques, capabilities and challenges in the area.

Syllabus: The syllabus will include Host-pathogen interactions; Mechanisms of pathogenesis; Avoiding the host immune system; Host-commensal interactions; Development of tolerance; The role of microbes in programming the host immune response; Microbial communities of humans; The role of gut microbiota in health and disease; The brain gut axis; Analysis of complex microbial communities

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EQ4068 - ADVANCED EQUINE PHYSIOLOGY

Contact Module Leader

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: This module is focused on the core principles and recent developments in Exercise and Reproductive Physiology. It aims to provide students with an understanding of both of these facets of physiology so as to equip students to work in the equine industry.

Syllabus: Effect of exercise and training on the cardiovascular, respiratory, nervous, and musculoskeletal systems. Sources of energy and the causes of fatigue in horses undertaking different types of work. Modern training methods relating the principles of exercise physiology with current training and management regimes. Laboratory and field methods for monitoring equine fitness based on heart rate, respiratory rate, oxygen consumption and blood lactate production. Examination of fitness training programmes for horses competing in specific disciplines. Interval training, continuous training. Recent developments is assisted reproductive technologies in horses including manipulation of the mares reproductive cycle. Assessment of follicular dynamics using ultrasonography, Multiple ovulation and embryo transfer, Semen collection, processing and freezing,

Sperm assessment techniques, Artificial insemination, Cloning.

Prerequisites: EV4013

EV4017 - EQUINE PHARMACOLOGY

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: To acquaint students with the classes of drugs which are of relevance to equine medicine and to provide an insight to the factors that determine species differences in drug response.

Syllabus: To acquaint students with the classes of drugs which are of relevance to equine medicine and to provide an insight to the factors that determine species differences in drug response. Classification of drugs and sources of information on drugs. Drug dosage forms and routes of administration. Processes of drug absorption, distribution, metabolism and excretion. Basic principles of pharmacokinetics. Pharmacological effects, mechanism of action and fate of therapeutic agents that affect various systems of the body (equine), with particular emphasis on drugs affecting the musculo- skeletal and respiratory systems; Antimicrobial drugs; Non-steroidal anti-inflammatory drugs; Anthelmintic medication; Applied toxicology; Drug assay methodology; Drug licensing, registration and legislation. Performance enhancing drugs, mechanism of action and current legislation; Doping, current doping problems in the equine industry; international trends; diagnostic assays and their sensitivities.

FT4428 - ADVANCED FOOD CHEMISTRY

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: To provide an advanced course in Food Chemistry To develop a comprehensive understanding of the relationships between food characteristics and their molecular basis.

Syllabus: Detailed treatment of the chemistry of lipids, carbohydrates and proteins in food systems. Analytical techniques. Relationships between structure and function. Industrial modification of lipids; oxidative rancidity and its control. Emulsification. Non-enzymatic browning and caramelisation reactions. Natural and chemically modified polysaccharides. Roles of proteins in gelation, dough formation, foaming, texture formation, etc. Effects of processing and storage.

FT4438 - FOOD MICROBIOLOGY

Limited Capacity

ECTS Credits: 3 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: To provide a specialised course on the microbiology of foods.

Syllabus: Roles of major families of microorganisms in food preservation/spoilage, food fermentations and public health. Isolation and characterisation. Physiological characteristics of selected food microbes. Microbial testing and control in food products. Advanced detection methods. Hygiene, cleaning and disinfection in the food factory. HACCP and Quality Systems. Foodborne pathogens of current concern including Listeria monocytogenes, psychrophilic C. botulinum, Aeromonas, Yersinia, Bacillus cereus, Salmonella etc

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FT4458 - FOOD PRODUCTION SYSTEMS

Limited Capacity

ECTS Credits: 3 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: To give students a general understanding of agricultural production in Ireland. To give students an appreciation of the factors influencing the production of novel crops and their subsequent utilisation.

Syllabus: [Soils and plant nutrition]; soil composition, physical chemical and biological properties. [Fertiliser use]. [Production of conventional and novel crops including crops for biomass use]. [Grassland and grazing], grazing systems, grass conservation. [Milk and meat production], rearing and management of cattle, sheep and pigs, production systems.

[Effects of production methods on post-harvest and processing quality].

FT4468 - FOOD BIOTECHNOLOGY

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: To introduce students to the basic concepts of Food Biotechnology. To develop an understanding of the enabling technologies used to manipulate micro-organisms, plants and animals for the production of food. To develop a critical awareness of the impact of Food Biotechnology on the production and processing of food. To develop a critical awareness of the impact of Food Biotechnology on the ethics, labelling and regulatory issues related to the consumer and the environment.

Syllabus: Introduction to Food Biotechnology, Outline of basis of traditional and novel food biotechnology processes; principles of fermentation, separations, recovery systems; Introduction to novel platform technologies; Genomics, Proteomics, Bioinformatics. Biotechnology and the food industry: Enzyme and bacterial mediated bio-transformations; Flavour Ingredients, Brewing, Winemaking, Enzyme technology. Food applications of microbial biotechnology; Lactic acid bacteria and Yeast; metabolic and protein engineering, overexpression of enzymes and metabolic end products; Probiotics and nutrigenetics. Plant Biotechnology; Plant transformations, genetic strategies for improvements of characteristics, pesticide resistance, yield improvement, metabolite production. Animal Biotechnology; Genetic strategies for improvements of animal characteristics, disease resistance, yield and performance improvement, Transgenic animals, Quantitative trait loci (QTLÆs) Related issues; Regulations and Legal declarations, Ethics, Consumer concerns, biotechnology and the environment, Future trends

Prerequisites: BC4904, BC4803

BY4008 - GENETICS AND MOLECULAR BIOLOGY

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of this module is to give students an understanding of the mechanisms underlying genetic inheritance at organism, gene and molecular levels in the light of current knowledge. It is also designed to equip the students, most of whom will be aspiring second -level teachers of biology, the necessary skill and knowledge to able to teach genetics confidently, competently and imaginatively at second level.

Syllabus: Extensions of Mendelian genetics - incomplete dominance and codominance, pleiotropy. Linkage; multiple alleles, multiple genes and epistasis. Quantitative characters, genetic variance and heritability. Basic laws of probability and inheritance of characters. Basic principles of plant and animal breeding. Human genetics. Introduction to population genetics. Speciation and evolution. DNA and chromosome structure and packaging. DNA replication, transcription, translation and the genetic code. Mutation causes and effects at the gene chromosome and organism levels. Recombinant DNA/RNA technology. Genomics. Proteomics. Regulation of gene expression in prokaryotes and eukaryotes; genes and cancer, cell differentiation. Bacterial and viral genetics.

Prerequisites: BY4002

BY4036 - AGRICULTURAL BIOTECHNOLOGY

Limited Capacity

ECTS Credits: 6 (Year 4 Module)

Biological Sciences

Rationale and Purpose of the Module: The purpose of the module is to introduce the students to the principles and modern technological developments and applications in the area of farm animal reproduction in current agricultural practice.

Syllabus: Physiology of reproduction, parturition and lactation, animal breeding, genomics, DNA technology, oestrus synchronisation, oestrus detection systems, artificial insemination, use of sex-sorted sperm, in vivo and in vitro embryo production, cloning, transgenesis and use of hormones in animal production.

Chemical Sciences



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Chemical Sciences: Year 1 Modules

BC4002 - INTRODUCTORY BIOCHEMISTRY

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To Provide an understanding of the structure and function of the major biological molecules. To provide an understanding of the principles of metabolism. To provide an understanding of the biochemistry of blood and basic immunology

Syllabus: The structure and biological function of proteins: Amino acids, peptides and the peptide bond. Polypeptides. Overview of protein function; catalysis, transport, structural, regulatory and defence functions. Case study; structure and function of muscle proteins; myosin, actin and muscle contraction. The structure and biological functions of carbohydrates: Monosaccharides, disaccharides, polysaccharides. Storage and structural functions.

The structure and biological functions of lipids: Fatty acids. Storage and structural lipids. Biological membranes. Nucleic acids: DNA and RNA. Genome structure. Transcription and gene regulation. Translation. Basic metabolic principles; metabolic pathways, catabolism versus anabolism. Overview of stage I, II and III catabolic pathways. Summary overview of carbohydrate catabolism; glycolysis and the TCA cycle. The generation and uses of ATP; oxidative phosphorylation and electron transport. The biochemistry of blood: Blood; composition and major functions. Haemoglobin and gas transport. Blood and pH regulation. Introductory immunology: Humoral immunity; antigens and antibodies. Cellular immunity. Cytokine based regulation of immune function.

CH4002 - PHYSICAL CHEMISTRY 1

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To facilitate the student in understanding of the fundamental thermodynamic laws and its qualitative and quantitative applications to chemical systems To familiarise the students with the energy terms and relations that applicable to chemical thermodynamic systems To introduce the students to the basic chemical kinetics including the quantitative expressing of the rate of chemical reactions and key kinetic parameters in the chemical kinetics

Syllabus: [Introduction to Chemical Thermodynamics; Heat; Work; Reversible and Irreversible Systems; State functions.] [First Law of Thermodynamics; Internal Energy; Enthalpy; Standard Enthalpies.] [Second and Third Laws of Thermodynamics; Entropy, Clausius Inequality; Gibbs and Helmholtz Free Energies.][Chemical Equilibrium; variations with temperature and pressure.] Introduction to Chemical kinetics; Zero, First and Second Order Rate Laws. Activation Energy and the Arrhenius Equation; Accounting for the Rate Laws; Reaction Mechanisms; Steady State Approximation. Michaelis-Menten equation]

CH4102 - ORGANIC CHEMISTRY 1

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To impart to the student an understanding of, an enthusiasm for, and a basic working knowledge of

organic functional group chemistry.

Syllabus: Alkanes, cycloalkanes, alkenes, alkynes: structural formulae; shape and bonding; nomenclature; isomerism; conformational analysis; free radical and ionic reactions; mechanism of reactions; electrophilic addition; primary, secondary and tertiary carbonium ions. Haloalkanes: nomenclature; substitution and elimination reactions; mechanism of reactions û SN1, S2, E1, E2. Alcohols, ethers and epoxides: methods of preparation; typical reactions. Aldehydes and ketones (part 1): methods of preparation; typical reactions - nucleophilic addition, Grignard reaction as a carbon-based nucleophile; keto- enol tautomerism and reaction (bromination) at the a- position.

CH4252 - INORGANIC CHEMISTRY 1B

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To introduce students to the importance of structure and bonding in determining the properties of substances, and to consider the bonding in molecules and in solids, particularly ionic solids.

Syllabus: Binding in simple covalent molecules: Lewis structures, molecular shape using VSEPR theory; polarity in molecules. Atomic and molecular orbitals; energy level diagrams and molecular orbitals diagrams for diatomic molecules. Bonding in transition metal complexes: crystal field theory and the colour, magnetism and thermodynamic properties of transition metal compounds. Bonding in solids: types of bonding and factors affecting the strength of bonding. Unit cells. Close packing in metals. Close packing in understanding ionic structures; radius ratio; lattice energy.

Prerequisites: CH4701

Chemical Sciences: Year 2 Modules

BC4904 - PROTEINS AND DNA

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To develop themes in protein chemistry and enzymology. To develop a fundamental understanding of enzyme kinetics, catalysis and purification. To understand the relationship between nucleic acids and proteins leading to gene structure and expression. To back these concepts up with practical skills.

Syllabus: The structure of DNA and other nucleic acids. The molecular concept of a gene.. DNA sequencing. The central dogma - DNA makes RNA makes Protein. Processing of DNA -Replication, transcription and translation. The relationship between DNA and Protein with genetic code. Eukaryotic and prokaryotic systems. Control sites and elements within DNA. Gene expression the lac operon. Review of Protein structure, amino acids peptides primary, secondary and tertiary structure of proteins. 3D structures and their representation. Functionality of proteins, Strategies of protein purification and assay. Protein sequencing and analysis. Enzymology, the nature of enzymes, their classification and activities. Enzyme kinetics and catalysis, enzyme inhibitors. Mode of action of enzymes -lysozyme on peptidoglycan.

Prerequisites: BC4903

CH4004 - PHYSICAL CHEMISTRY 3

ECTS Credits: 6 (Year 2 Module)

Chemical Sciences

Rationale and Purpose of the Module: To develop themes in protein chemistry and enzymology. To develop a fundamental understanding of enzyme kinetics, catalysis and purification. To understand the relationship between nucleic acids and proteins leading to gene structure and expression. To back these concepts up with practical skills.

Syllabus: 1st **Law** of Thermodynamics; Enthalpy - Entropy; 2nd and 3rd **Law**s of Thermodynamics; Clausius Inequality - Helmholtz and Gibbs Energies - Chemical Potential; Fundamental Equation of Chemical Thermodynamics - Physical Transformations of Pure Substances: Phase Diagrams; Phase Stability and Phase Transitions; The Physics of Liquid Surface - Simple Mixtures: Gibbs-Duhem equation; RaoultÆs and HenryÆs **Law**s - Phase Diagrams: Phase Rule; Two-Component Systems - Equilibrium Electrochemistry: Thermodynamic Properties of Ions in Solution; Electrochemical Cells; Nernst Equation.

Prerequisites: CH4003 , CH4002

CH4104 - ORGANIC CHEMISTRY 3

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

Chemical Science

Rationale and Purpose of the Module: To build on and extend the foundation chemistry covered in CH4102 and CH4103; to highlight heterocyclic chemistry as a key part of this extension; to develop the associated chemistry, reactions, biological importance of various heterocyclic

compounds; to give the student a basic working knowledge and comprehension of the biomolecules û amino acids, peptides and carbohydrates; to carry out practical work to support and reinforce some of the theoretical aspects encountered.

Syllabus: Protein Chemistry: Amino Acids: structure; synthesis and resolution; stereochemistry; isoelectric point; preparation from a- halimococcids; Gabriel Synthesis; Strecker Synthesis. Peptides: Sequence determination: N and C terminal analysis; strategy for synthesis, use of protecting groups and activating agents, solid state synthesis using Merrifield resin. Carbohydrate Chemistry: Monosaccharides: aldoses and ketoses; structure and stereochemistry; hemiacetal and hemiketal formation; Fischer Projections, Haworth representation, chair conformation; oxidation and reduction reactions. Disaccharides: Glycosides (sugars as acetals and ketals); structure; reducing and non-reducing disaccharides. Polysaccharides: structure and occurrence. Heterocyclic Chemistry: 5- Membered ring aromatic heterocycles: structure, aromaticity; electrophilic aromatic substitution reactions- reactivity and orientation; 5-membered ring non-aromatic heterocycles: structure and synthesis. Basicity of aromatic /non-aromatic N-heterocycles. 6- membered ring aromatic and non-aromatic N- heterocycles: Structure, properties; electrophilic and nucleophilic aromatic substitution reactions of pyridine; reactivity and orientation; basicity. Azoles and Fused 5- membered ring aromatic heterocycles; Structure, basicity (where relevant); Azines. Nucleic acids. Occurrence/application of all types of heterocycles encountered above. Current trends.

Prerequisites: CH4103, CH4102

CH4304 - ANALYTICAL CHEMISTRY 2

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To provide students with an understanding of some key elements of the theory of separation science and their application to analytical techniques.

Syllabus: Introduction to separation science Solvent extraction. Counter current extraction. Introduction to chromatography, modes of separation. Gas Chromatography. Liquid Chromatography. HPLC, Ion Chromatography, Size exclusion chromatography Mass Spectrometry Hyphenated techniques, GC-MS HPLC-MS

Prerequisites: CH4303

CH4354 - ANALYTICAL CHEMISTRY FOR THE ENVIRONMENT

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To convey that spectroscopy (the interaction of light with matter) provides both a qualitative and quantitative method to determine molecular/atomic structure and concentration * To introduce analytic instruments and instrumental techniques.

Syllabus: SPECTROSCOPIC METHODS: AAS ATOMIC ABSORPTION SPECTROSCOPY ATOMIC EMISSION SPECTROSCOPY UV/VIS ULTRAVIOLET/VISIBLE SPECTROSCOPY IR INFRARED SPECTROSCOPY (& FTIR) CHROMATOGRAPHIC METHODS: PARTITION (GLC, HPLC, TLC) ABSORPTION (GC) ION-EXCHANGE SIZE EXCLUSION (GEL PERMEATION) ELECTROMETRIC METHODS: POTENTIOMETRIC (PH, ISE) CONDUCTOMETRIC

CH4404 - PROCESS TECHNOLOGY 1

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To introduce students to important aspects of safety, process control, and process modelling in chemical and biochemical processing systems.

Syllabus: Health and safety at work: types of factory environment and their physiological and psychological risks. Current legislation in the area of employer and employee liability. Codes of practice. The role of management and unions in safety. Introduction to process control: basic control modese.g.P, PI, PID; control system architecture and dynamic behaviour for SISO processes; controller tuning; control system hierarchies for chemical/biochemical

processing plants. Equipment and instrumentation used in chemical and biochemical processing operations: sensing and measurement signal transmission; controllers final control elements. Process modelling; application of material and energy balances in the formulation of quantitative process models; process characteristics and dynamic response behaviour of first and second order systems.

CH4554 - ENVIRONMENTAL CHEMISTRY

ECTS Credits: 6 (Year 2 Module)

Chemical Sciences

Rationale and Purpose of the Module: To provide a basis of understanding the chemical processes occurring in the environment, with reference to biogeochemical cycles and the chemical ideas underlying environmental problems.

Syllabus: Chemistry of the earth: overall structure, composition, energy flow, inter-relation of the different spheres. Definitions. Concentrations. The hydrosphere: composition; the water cycle; equilibria in aqueous systems, distribution diagrams; water pollution. The lithosphere: composition and structure; weathering; leaching and soil chemistry; mineral resources and pollution; geochemistry; solubility, pH; E-pH diagrams. The atmosphere: composition, chemical processes in the atmosphere, solubility in water; chemistry of acid deposition, greenhouse effect, ozone depletion, photochemical smog. The biosphere: composition, major and minor elements; sources, utilisation and disposal; toxicology of heavy metals and organics, bioaccumulation. Biogeochemical cycles for nitrogen, carbon, sulphur, phosphorus, etc

Prerequisites: CH4253, CH4252, CH4701

Chemical Sciences: Year 4 Modules

BC4008 - IMMUNO AND DNA DIAGNOSTIC

TECHNIQUES

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To provide an overview of the immune system, structure and function of antibodies and usage of Immune and DNA diagnostics.

Syllabus: Overview of the immune system. Development and diversity of the system. Cellular and humoral responses. Passive vs. active immunity, vaccination. Complement system. T cell structure and differentiation. Memory. Antibody structure and function. Polyclonal vs. Monoclonal Bacterial, insect and eukaryotic expression system used for protein production, especially those applied for antibodies production. Crystallisation of proteins. Usage of monoclonal antibodies for membrane proteins crystallisation. Introduction to crystal structure determination. Interpretation of 3D structure of antibodies. Immuno- and nucleic acids diagnostics (diagnosis for infectious and genetic diseases), for instance PCR and PCR variants, Real-time PCR, RAPDs, RFLPs, DNA profiling and DNA fingerprinting.

BC4718 - INDUSTRIAL BIOCHEMISTRY 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To present an overview of (a) animal cell culture and (b) pharmaceutical biotechnology in the context of underlining science and industrial/medical applications. To present an overview of patenting as applied to biotechnology. To provide the scope for a measure of student self- directed learning and problem-based learning.

Syllabus: Animal cell culture; Overview and introduction to animal cell culture. Animal cell culture, media, methods and apparatus. Animal cell culture; production of industrially useful products. The drug development process; Regulatory route for new drugs in USA & EU. Biopharmaceutical manufacture; Patenting and biotechnology. Principles of patentability. The patent application process. Sources of biopharmaceuticals. Upstream processing. Downstream processing. Post translational modifications and their significance. Product QC and the range and significance of potential product impurities. Nucleic acid-based biopharmaceuticals; The theory underpinning gene therapy,

antisense based products and aptamers. Specific biopharmaceuticals; Students will be provided with 2-3 specific biopharmaceutical products/product families, along with bibliographic details of at least 1 reference source material for each. Students will be expected to source the references, along with any additional pertinent references and undertake self- directed study of the biochemistry and biotechnology of the representative biopharmaceuticals.

Prerequisites: BC4904, BC4905, BC4903

BC4907 - CELL BIOCHEMISTRY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To introduce current advanced topics in cell and molecular biology and utilise these to probe modes of intervention in developing targeted approached to future diagnoses, pharmaceuticals and biopharmaceuticals. To show how an in-depth understanding of molecular biochemistry can aid this.

Syllabus: Review of cell structure, organisation and the concept of signalling and trafficking. Signal transduction and cell communication. Cell signalling pathways. Receptor biochemistry in cell signalling- Oncogenes and the molecular basis of cancer and its relationship to cell signalling. Apoptosis and programmed cell death. The eukaryotic chromosome- structure and the nature of eukaryotic DNA. Repetitive DNA. Control of transcription in eukaryotes. The transcription machinery and role of eukaryotic transcription factors. Splicing in eukaryotes. Microarrays to examine gene expression. Post translational modification of proteins. Protein folding, protein targeting via glycosylation, protein transport and destruction. Pharmacological interventions in cell signalling. RNA interference.

Prerequisites: BC4905, BC4905

CH4008 - ORGANIC PHARMACEUTICAL CHEMISTRY 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To build on the functional group chemistry covered in CH4102, CH4103, CE4702

and CH4007. To extend the students comprehension and working knowledge of functional group chemistry; to expand the range of reagents, reactions and associated mechanisms; to detail how structure and reactivity can be quantitatively correlated; to detail quantitative aspects of acid and base catalysis.

Syllabus: Section A: Regiochemical control: addition of HBr by ionic and radical mechanisms, alcohol formation by acid catalysed hydration and via hydroboration; Chemoselective control: Lindlars catalyst and dissolving metal reduction; hydride reducing reagents, Reformatsky reaction; use of protecting groups. Stereochemical control: asymmetric induction, diastereomeric selectivity, Felkin-Anh model; enantiomeric selectivity, chiral hydride reagents (Alpine Borane and Alpine Borohyrdides), chiral catalysts -Monsanto catalyst for L-Dopa production. Section B: Quantitative structure activity relationships: development and use of the Hammett equation; definition of general and specific acid and base catalysis, use of buffers and kinetic data to distinguish between general and specific catalysis, quantitative analysis of data. Named (and other) Reactions: Oral presentation by students on reactions such as Hydroboration, Reformatsky, Dihydroxylation, Mannich Reaction, Reductive Amination, Birch Reduction, Michael Addition, Allylic bromination, Sharpless Epoxidation, Mitsunobu Reaction, Suzuki Coupling, Heck Reaction, Benzyne chemistry.

Prerequisites: CH4008

CH4017 - CHEMICAL NANOTECHNOLOGY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: The Chemical Nanotechnology module will • Provide the student with a broad understanding of the principles that underpin nanoscience and nanotechnology. • To acquaint the student with synthetic methods for formation of nanostructures and new physical properties that arise. • To enable the student to solve problems relating to

size dependent physical, optical and electrical properties at the nanoscale.

Syllabus: Course will cover: (1) Chemical and physical properties as length scales vary from the macroscale through microscale to the nanoscale. (2) Chemical synthesis and modification including 0D, 1D and 3D incorporating II-VI colloidal nanocrystals. Study of carbon nanotubes, wrapping vectors, tensile strength and electronic properties (3) Kinetics of nanocrystal growth and the organic/inorganic interface. (4) Chemical functionalisation of inorganic nanostuctructures with organic molecules and the bio/nano interface (5) Industrial applications of nanochemistry, nanosizing of pharmaceuticals etc.(7). Introduction to crystal engineering with emphasis upon the following subjects: Supramolecular chemistry, especially hydrogen bonding Types of crystalline solids and their characterization (8) Pharmaceutical materials especially multi-component crystals (cocrystals) -(9) Coordination polymers especially porous metal-organic materials.

CH4027 - NANOTECHNOLOGY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To provide a specialist module in nanotechnology. The Nanotechnology module will • Provide the student with a broad understanding of the physical and chemical principles that underpin nanoscience and nanotechnology. • Acquaint the student with synthetic methods for formation of nanostructures and new physical properties that arise. • Enable the student to solve problems relating to size dependent physical, optical and electrical properties at the nanoscale.

Syllabus: Course will cover: (1) Chemical and physical properties as length scales vary from the macroscale through microscale to the nanoscale. (2) Study of fundamental properties of nanomaterials such as carbon nanotubes and nanoparticles in terms of geometries, tensile strength, and electronic properties (3) Functionalisation of inorganic nanostuctures with organic molecules and the bio/nano interface (4) Molecular driving forces including quantum interactions and molecular dynamics (5) Application to design and synthesis of advanced materials for renewable energy, medical diagnostics, and food production.

Prerequisites: CH4701, BY4001, CH4252, PH4131, PH4102

CH4306 – ANALYTICAL CHEMISTRY 4

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To review and extend the students existing knowledge and comprehension of fundamental spectroscopic techniques encountered in CH4303, CH4304 and CH4305; to provide the student with an-indepth working knowledge and comprehension of various advanced spectroscopic techniques; to emphasise the interpretation of spectral data in an integrated manner through the use of combined spectroscopic techniques; to highlight various applications of the techniques encountered; to encourage self-directed learning through the use of some recommended websites and software.

Syllabus: Mass Spectrometry: Brief review of some basic principles; Fragmentation Patterns; Rearrangements; Interpretation of spectra; Hyphenated techniques. NMR Spectroscopy: 1-D 1HNMR: Review of some basic principles; Relaxation Processes; Homotopic, enantiotopic and diastereotopic systems; Nuclear Overhauser Effect (NOE); Second-Order Spectral Interpretation. 13C NMR: Theory; DEPT 13Cnmr; NOE, Quantitative13Cnmr; Interpretation of spectra. Solid State 13C nmr (brief). 2-D 1HNMR: COSY (1H-1H connectivity); NOESY, ROESY (through space 1H-1H proximity), HOSEY; HECTOR (1H - 13C connectivity); INADEQUATE (13C - 13C connectivity); TOCSY (1D and 2D); Interpretation of spectra. Structure elucidation using combined spectroscopic techniques (of those above). Laser Raman Spectroscopy: Theory; Comparison with FT-IR spectroscopy; Spectral interpretation of simple organic molecules and carbon allotropes (diamond, graphite and carbon nanotubes). Problem Sessions/Lab.

Prerequisites: CH4305, CH4304, CH4303

CH4608 - PLANT AND PROCESS MANAGEMENT 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To provide the student with an understanding of a number of key topics in the management of chemical and biochemical processing operations.

Syllabus: Methodologies for the identification, assessment, and control of risks and hazards associated with processing operations, including HAZOP analysis. Costing of chemical & biochemical plants; stages of costing, methods of cost prediction, exponential, factorial etc. Cost updating. Economic evaluation of chemical and biochemical processing projects; pay-back, ROI, NPV, etc. Sensitivity analysis. Plant location and layout: principles and application. Environmental impact assessment of chemical and biochemical production facilities. Industrial sustainability: concepts and practice. Case study of the application of sustainability metrics to chemical and biochemical processing plants

Prerequisites: CH4305, CH4304, CH4303

ER4508 - POLLUTION CONTROL 2 (WASTE MANAGEMENT)

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To provide an understanding of current waste management options, their benefits and associated problems, and their place in the hierarchy of waste management. To provide an understanding of the science and technology underlying solid waste management including the problems encountered. To provide an understanding of the locational issues for different types of waste processing plants, including the NIMBY Syndrome. To provide an understanding of the technology of waste to energy systems.

Syllabus: [Waste Minimisation]. [Hazardous Waste Management]. [Waste to energy systems]: Incineration, landfill; composting. Dust collection devices (cyclones, ESP, baghouses, scrubbers). Leachate control and gas capture. [Waste recycling] techniques and economics. [Re-use] of waste materials.

ER4606 - CLEAN TECHNOLOGY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To provide an introduction to the concept of clean technology. To survey methods of recycling, reducing or removing gaseous or aqueous waste from industrial processes using a clean technology approach.

Syllabus: Introduction to clean technology. Examples of Clean Technology in the agricultural industry, agrochemical, fine chemical and pharmaceutical industry. Role of catalysts, reactor configuration and design, Elimination of emissions from material handling and storage, Control of fugitive emissions, Use of biotechnology

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HS4208 - SAFETY TECHNOLOGY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: To develop the students' appreciation and awareness of fire safety management, emergency planning, machine safety and electrical hazards in the workplace.

Syllabus: [Fire safety management]: current legal requirements, fire hazard identification, and risk assessment; fire & explosion indices, active and passive fire protection, safe operating procedures, fire training, information and communication, [Emergency planning]: life safety management and asset protection, evacuation management. [Electricity]: Legislation and guidance, the nature of electricity and units of measurement, the principles of electrical safety; electrical installations (fixed and temporary); electrical transformers; electrical equipment; electric shock. [Construction site health and safety] [Machine safety]: pressure systems and lifting equipment.

ER4458 - INDUSTRIAL ECOLOGY IN THE CIRCULAR ECONOMY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Chemical Sciences

Rationale and Purpose of the Module: 1. To develop students' knowledge and understanding of industrial ecology and resource flows in the circular economy by drawing from and applying the knowledge and skillsets acquired across a range of topics covered earlier on the BSc in Environmental Science programme, including geographical information systems (GIS), industrial emissions licensing, effluent control, and analytical chemistry for the environment. 2. To provide students with industrial ecology related strategies relevant to waste management and critical raw materials conservation, thus affording them opportunities to respond to the types of environmental crises learned about in earlier modules such as Pollution Biology, Energy and the Environment, and Environmental Impact Assessment (EIA). 3. To apply the students' previously acquired competencies in assessing the environmental and sustainability metrics generated via EIA tools and techniques to critically evaluate and respond to demand for a circular economy.

Syllabus: The module is designed to allow students to apply previously acquired skills, knowledge and competencies developed in such topics as GIS, EIA, environmental chemistry, analytical methods, and environmental and waste management to engage critically with the circular economy through an understanding of industrial ecology principles. Topics covered include: Industrial ecology concepts and principles. Relationship between circular economy and industrial ecology. Interpretation of EIA tools and techniques, and output data from life cycle analysis (LCA) and material flow analysis in the specific context of product life cycles and industrial processes. Systems and feedback loops. Case studies illustrating systems analysis in circular economy projects. Industrial Emissions Licensing as an enabler and inhibitor of Industrial Symbiosis (IS). Circular design principles, biomimicry, bioinspiration and bioutilisation. Integration of renewable energy into circular economy systems. Risk management in circularity projects, e.g. rebound effect, co-dependency, and redundancies. Circular bioeconomy and circular techno-economy. Circularity in effluent control. Applications of environmental fate modelling and GIS to decision-making in design for circular economy. Product lifetime extension techniques including remanufacturing and design for disassembly. Industry specific case studies within, for example, the pharmaceutical, electronic, buildings and construction sectors. Processes, supply chains and the impact of current and emergent regulations such as Eco Design for Sustainable Products, Digital Product Passport system, etc. Development of circular business models and economic perspectives. Societal impacts of the circular economy. Fundamentals of urban mining, end-of-waste classifications, and re-mining strategies. Novel methods in resource management artificial intelligence, blockchain and internet-of-things solutions for the circular economy.

Prerequisites: ER4707, ER4507, ER4407, CH4055, ER4405, ER4417, ER4627, ER4101, ER4001, HS4003, ER4002, CH4354, CH4554, BY4505, ER4003, CH4308

CG4007 - SUSTAINABLE ENERGY PROCESSES

ECTS Credits: 6 (Year 4 Module)

Chemical Sciences

Rationale and Purpose of the Module: • To give a deeper and wider knowledge in various energy resources (fossil and renewable) and processes. • To develop understanding of basic energy conversion/generation processes emphasising their sustainability. • To develop understanding and skills for evaluating different energy systems with reference to sustainability and energy security. • To develop an awareness of the importance of process safety in process design and management. • To apply the hazard and operability study (HAZOP) technique to sustainable energy processes.

Syllabus: • Introduction to sustainable energy processes/ systems • Order of magnitude analysis/ back of the envelop calculations • Overview of energy conversion/generation process fundamentals • Combustion of fossil fuels • Energy balances/ efficiency • Energy sources • Natural gas, Biomass, Wind • Oil, Coal, Nuclear, Solar, Ocean, Geothermal • Energy carriers & storage • Newer energy conversion and generation ideas • Procedures for sustainability assessment of industrial processes including the sustainability metrix as prescribed

by the professional organisation IChemE. Energy conservation and environment protection. Health, safety and security issues; preventive measures. Industrial process simulation and sensitivity analysis of chosen design process. Graphical presentation. • Inherently safer design principles. • The application and use of HAZOP. • Principles of inherently safer design • Process safety management model • Hazard & operability (HAZOP) study, including a HAZOP workshop on a continuous sustainable energy process.

Computer Science



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Computer Science: Year 1 Modules

CS4072 - MEDIA PROGRAMMING 2

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: This module is intended to familiarise media students with computer programming. Students will learn how to write their own programs to manipulate images, sound files, movies and text.

Syllabus: - Vector and bitmapped image formats; - Drawing simple shapes and drawing text on existing images; - How we digitize/encode sounds; Nyquist theorem; manipulating samples; Using iteration and selection constructs to increase/decrease sound, normalizing sound; - Creating sound clips, splicing sound, reversing and mirroring sound; - Composing and blending sounds; - Encoding, manipulating and creating movies; - Reading from and writing to text files; string manipulation;

Prerequisites: CS4061

CS4082 - INTRODUCTION TO WEB DEVELOPMENT

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: This module will introduce students to the concepts and techniques underlying the World Wide Web, such that they will gain a working knowledge of how to structure and build websites. Students will be introduced to databases and SQL in order to create dynamic, data-driven web applications. Examples and project work will be relevant to each group of students in so far as possible.

Syllabus: Introduction to the world wide web: web browsers, web servers and clients, uniform resource locators, the hypertext transfer protocol (HTTP), processing HTTP requests and responses, world wide web consortium (W3C), static and dynamic content. Document content and structure, mark-up languages, elements and attributes, document type definition (DTD), hypertext and hypermedia. Hypertext Mark0up Language (HTML); standard HTML document structure, HTML syntax, tags, text formatting, colours, images, hypertext links, absolute and relative referencing, list, tables, frames and forms. Considerations when including audio, video and graphics; differentiating between file formats. Embedding PHP in HTML; assigning and using variable values, saving form input in variables, simple data types, detecting the data type of a variable, using operators: arithmetic, relational, logical; string operators, auto increment/decrement operators, operator precedence; selection and looping constructs. Sessions and cookies: creating a session and registering session variables, destroying a session; setting cookies, retrieving cookie data, deleting cookies. File manipulation: reading data from and writing data to files. Introduction to relational databases: tables, records, fields, primary keys and foreign keys. Introduction to Structured Query Language (SQL); creating tables: specifying field data types, retrieving, inserting, editing and deleting records. Connecting to a database in PHP and executing SQLcommands.

CS4232 - MUSIC AND COMPUTERS

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: Students will develop their knowledge and competence of digital media systems through the use of specialised software. (Existing module CS4021 "Digital Media Software & Systems 1" is part of a suite of module core to LM114 (Music, Media & Performance Technology). The course board has decided that the titles of this suite of DMSS modules do not adequately describe the course content and therefore wish to change the titles to better communicate the content. The content itself of these modules remains the same - only the title itself is changed.

Syllabus: Audio Controlling the timeline. Introduction to sequencing. Implementation of trackers, sequence layering & looping. The MIDI protocol, interface and its implications. Approaches in sequencing software (trackers, workstations, notation software, live sequencing). Approaches to software and hardware interface design.

Computer Science: Year 2 Modules

CS4084 - MOBILE APPLICATION DEVELOPMENT

ECTS Credits: 6 (Year 2 Module)

Limited places available: 4

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: The module will focus on the tools and environments that exist to help developers create real world applications that run on wireless and mobile devices. A strong emphasis will be placed on providing students with hands on experience inthe programming and testing of applications for mobile devices. Throughout this module students will use an object-oriented programming language, basic APIs and specialised APIs to develop applications for mobile devices.

Syllabus: Challenges to be faced when developing applications for mobile devices. Platform specific mobile applications and/or mobile web applications; mobile application lifecycles. Mobile applications and their architectures. Overview of operating systems (OSs) and Application Programming Interfaces (APIs) to choose from when developing applications for mobile devices. Comparison of native development environment options; software development kits (SDKs) and emulators. Installing and configuring the development environment. Managing application resources; designing user interfaces; data storage and retrieval options; synchronization and replication of mobile data. Communications via network and the web; networking and web services; wireless connectivity and mobile applications. Performance consideration: performance and memory management; performance and threading; graphics and user interface performance; use various facilities for concurrency. Security considerations: encryptions, authentication, protection against rogue applications. Location based application; location API. Packaging and deploying applications for mobile devices.

CS4174 - PERFORMANCE TECHNOLOGY 1

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited places available: 3

Computer Science & Information Systems

Rationale and Purpose of the Module: Students will develop their knowledge of performance technology in the context of digital musical instruments through a combination of laboratory based small group project work and lecture-based learning.

Syllabus: This module will focus on the design and the creation of digital musical instruments. Students will design and build a musical instrument - a complete system encompassing musical controller, algorithm for mapping input to sound, and the sound output itself. Students will focus on improvisation techniques as they prepare their prototypes for live performance. The module will culminate in a musical performance where students will demonstrate their instruments. Key topics will include Sensor system implementation for live music performance. Software implementation of real time performance systems. Aesthetic issues in digital musical instrument performance

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CS4115 - DATA STRUCTURES AND ALGORITHMS

ECTS Credits: 6 (Year 2 Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: To provide a uniform theoretical treatment of the data structures and algorithms used in systems and applications programming. This module includes a practical component to reinforce learning and to encourage students in the practical use of theoretical material.

Syllabus: - Mathematics Review; - Review of the ADTs, internals and usage of simple data structures and associated algorithms, in particular recursive algorithms; - Linked Lists and Networks; - Recursion, and the elimination of recursion from algorithms; - Study of sorting algorithms: quicksort, heapsort, mergesort and bucket and radix sorting; - Analysis of general divide-and-conquer algorithms; - Searching: tree searching, AVL trees, splay trees; - Graph algorithms: graph traversal and spanning forests, depth and breadth first search of graphs; connectivity; minimal spanning trees for weighted graphs; shortest path algorithms; networks.

CS4815 - COMPUTER GRAPHICS

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: Given the role of graphical user interfaces in the computing devices today this programme should include at least one module relating to computer graphics.

Syllabus: Physical devices for graphics systems: Input and Output devices, Raster Scan devices, RGB colour systems, Video Memory Models; Implications of these for interactive graphics systems. General structure of Interactive Graphics systems: Issues involved in digitising analogue information: antialiasing techniques; Design and implementation of drawing algorithms for basic shapes: Issues and techniques; Establishing Device, Language and Application Independence: Conceptual levels in graphics systems; Frames of reference and Viewing systems; Control and manipulation of graphics elements: Input and Output primitives, Clipping functions, Transformation (rotation, scaling, translation, reflection, shears) and Segmentation functions; Transformations in 3-D; Projections; Viewing in 3D; Drawing Curves: Techniques, Properties of different types of curves; Basic Modelling: Representation of surfaces via polygons; Realism; Hidden surface removal; Surface generation via bi-cubic curves; Rendering.

CS4826 - HUMAN-COMPUTER INTERACTION

ECTS Credits: 6 (Year 2 Module)

Limited places available: 30

Computer Science & Information Systems

Rationale and Purpose of the Module: The objective of this module is to develop an understanding of the issues involved in the increasingly important area of human-computer interaction. The module will provide a broad introduction to a variety of topics concerning user requirements, user interface design, usability studies, integrating human factors in software development, and social and organizational factors involved in implementing systems. It will examine guidelines and standards, as well as emerging interaction paradigms. The widespread adoption of graphical user interfaces (GUIs), and the potential afforded by new developments such as groupware, multimedia, hypertext, and virtual reality systems all require that even greater attention be paid to how these technical developments can be packaged and presented suitably to the "user".

Syllabus: The module addresses the nature of HCI. Specifically, it covers the topics of: understanding the user, human information processing, perception, interfaces and interaction, input and output devices, use & design, the design process, requirements, evaluation, usability methods and tools, empirical and analytical methods, standards & guidelines, mobile technology, information appliances, social and organizational constraints, intelligent agents, and future trends.

CS4076 - EVENT DRIVEN PROGRAMMING

ECTS Credits: 6 (Year 3 Module)

Limited places available: 4

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: This module will provide students with a comprehensive introduction to event driven programming where a strong emphasis will be placed on practical application in at least two high level development environments. In addition, students will be introduced to multiprocessor support for event driven programs and shown how to improve event processing performance through parallel event transformation.

Syllabus: Imperative versus event driven paradigms. Introduction to GUI creation; graphical structures: frames, boxes, layout managers, menus, windows. Event handling process, event handling mechanisms: event classes, event sources, event listeners. The Delegation Model of event handling. Avoiding deadlocks in GUI code. Limits of message passing libraries and thread libraries. Event processing performance. Introduction to multiprocessor support for event driven programs. Techniques to improve event processing performance through parallel event transformation.

Computer Science: Year 3 Modules

CS4040 - ADVANCED VIDEO PRODUCTION

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Limited places available: 4

Computer Science & Information Systems

Rationale and Purpose of the Module: This module explores the key roles technological innovation has played in the development of moving image aesthetics, including visual music, experimental film, music video, and contemporary live visuals. Practical instruction in animation techniques, visual effects, and advanced compositing are provided.

Syllabus: 1. Early film as visual music 2. Animation chronology and techniques 3. Aesthetics and techniques of experimental film and signal art 4. History of the music video and the VJ 5. Digital video techniques: compositing and masking, chromakey and green screen, motion tracking.

CS4029 - ADVANCED AUDIO PRODUCTION

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Limited places available: 4

Computer Science & Information Systems

Rationale and Purpose of the Module: To give the student an in-depth understanding of the techniques for recording, processing and dissemination of audio; To give the student an understanding of audio processing on both the temporal, spatial and spectral domain.

Syllabus: 1. Advanced Microphone Techniques (Binaural, MS pair, XY, ORTF) 2. Principles of audio reinforcement systems. Advanced use of Compressor, Multiband, Compressors and audio effects in general. 3. Analysis of PA systems for public events 4. Surround sound mixing techniques and implementation. 5. Time code and synchronization (SMPTE, MTM) with video software and/or hardware.

Prerequisites: CS4025

CS4005 - PERCEPTUAL SYSTEMS AND MULTIMEDIA

ECTS Credits: 6 (Year 3 Module)

Limited places available: 4

Computer Science & Information Systems

Rationale and Purpose of the Module: Creating an awareness and understand how our senses work to perceive the world around us.

Syllabus: Fundamentals of physical dimensions used by human sensation and perception - light, sound, heat, pressure; Fundamentals of the senses of hearing, seeing and touch: physiology and function; Psychophysical measures and correlates of perception; Introduction to Signal Detection Theory; Theories of perception, perceptual organisation, attention, object recognition, depth perception and motion perception; Navigation and Spatial Cognition; Multimodal integration; Memory and training; introduction to theories of mind and their relationship to theories of mediation, communication and perception.

CS4006 - INTELLIGENT SYSTEMS

ECTS Credits: 6 (Year 3 Module)

Limited places available: 4

Computer Science & Information Systems

Rationale and Purpose of the Module: The purpose of this module is to familiarise students with a targeted subset of the principles and methods of Artificial Intelligence and Intelligent Systems. Given that students from a number of programmes will be taking this module, examples and projects work will be relevant to each group of students in so far as possible.

Syllabus: To provide students with an understanding of the basic principles, methods, and application domains for Artificial Intelligence. To introduce students to the development of Intelligent Systems, Knowledge Representation, and Machine Learning. This module introduces the history and development of Intelligent system concepts. It includes discussions on AI and Expert Systems, Heuristic Search, Evolutionary Algorithms,

Artificial Neural Networks, Cognitive Science, and issues in representation, reasoning, and machine learning, together with a set of design principles for intelligent autonomous agents. Real world applications of the course topics are also presented in areas such as robotics and financial prediction.

CS4056 - MOBILE APPLICATION DESIGN

ECTS Credits: 6 (Year 3 Module)

Limited places available: 4

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: To introduce students on digital media and music technology programmes to the creation of content and the development of applications for mobile devices.

Syllabus: - Challenges of designing applications for mobile devices. - Design dimensions for mobile applications: scenario- related dimensions, interaction-related dimensions, user- related dimensions, data/content related dimensions and communication-related dimensions. - Designing for multiple mobile platforms and multiple displays: practical guidelines, techniques, standards and best practices. - Content optimization and design skills for mobile application development. - Creation of raster and vector visual assets for mobile applications using a variety software products. - Creation of applications for mobile devices using a development environment suited to the programming skills and abilities of the students that will take this module. - Applications will work with images and sound; the creation of animated applications; list manipulation; parsing comma-delimited files and XML files; work with databases; text-to-speech and speech-to-text; read and respond to sensors, communicate with web APIs

Prerequisites: CS4061, CS4082, CS6221

CS4106 - MACHINE LEARNING: METHODS AND APPLICATIONS

ECTS Credits: 6 (Year 3 Module)

Limited places available: 4

Computer Science & Information Systems

Rationale and Purpose of the Module: The purpose of this module is to familiarise students with a targeted subset of the principles and methods involved in machine learning, focusing mainly on the field of evolutionary computation and associated paradigms.

Syllabus: Following an overview of general machine learning methods and applications, the goal is to provide students with an understanding of the basic principles, methods and application domains for evolutionary computation. Students will be introduced to a broad range of evolutionary computation techniques including genetic algorithms, genetic programming, and grammatical evolution. Different representational mechanisms including binary, Gray, real-valued and e-code will be discussed. Different approaches to the mutation and recombination operators will be presented. Fitness function types and interactive evolutionary computation will be introduced. Depending on the particular expertise of the lecture involved in delivery of the module particular emphasis may be placed on application to areas such as neuroevolution, evolutionary robotics (including evolutionary humanoid robotics), automatic program synthesis, the parallelisation of sequential programs, and financial modelling and prediction. Potential societal, ethical and philosophical implications of advanced AI/ML technologies will be outlined.

Prerequisites: CS4006

CS4116 - SOFTWARE DEVELOPMENT PROJECT

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: This module is intended to provide the student with an opportunity to undertake a semester long software development project. A student will gain experience of working in a team and the confidence to tackle a large software system.

Syllabus: A substantial semester-long software project is set. Students, working in teams, produce a complete implementation. A partially specified project is presented. Students complete the requirements and then take the project through the design, coding and testing stages. Students will use a version control system to maintain their

software and manage commits and conflicts. A relational database design will be created that notions such as full normalisation and stored procedures. Students will need to understand how to generate fully responsive websites and the interaction of CSS, JavaScript and HTML. The language and technology of implementation depends on the type of project specified but will generally allow students as much free choice as possible. (Lectures and labs will run from weeks 1 to 5 inclusive). These along with tutorials during this period will build on existing modelling, design and programming skills required to achieve the proposed system. During the remainder of the semester students will meet will their assigned supervisor to discuss their work to date in a tutorial setting on a regular basis.)

CS4126 - 3D MODELLING AND DIGITAL

FABRICATION

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: The main objective of this module is to promote a good understanding of the 3D modelling and digital fabrication process, as well as to develop a range of skills on digital fabrication to be applied in different interaction design areas. The module aims to inform and facilitate the development of specific skills, which will be utilised in the design process. The knowledge and skills acquired will potentially be applied to Final Year Projects and portfolio development and will improve graduates' employability prospects in multiple sectors.

Syllabus: · Introduction to digital fabrication: overview, evolution, technological developments · Forms of digital fabrication: additive vs subtractive, technologies: 3D printing, laser cutting, milling · Modelling: 2D, 3D. CAD systems. 3D scanning. · Free CAD drawing and modelling software. · Creating 2D drawings and models in CAD systems · Fabrication of physical objects from 2D models by laser cutting · Creating 3D drawings and models in CAD systems · 3D printing technologies, materials, workflow. · Fabrication of physical objects from 3D models by 3D printing · Prototyping using digital fabrication. Evaluating physical prototypes. · Applications of digital fabrication: art, design, architecture, medicine, manufacturing

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CS4358 - INTERACTIVE MULTIMEDIA

ECTS Credits: 6 (Year 3 Module)

Limited places available: 5

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: To understand the principles and techniques of Interactive Media. Content creation, processing, and management. High-level authoring. Distribution methods. Intellectual Property Rights.

Syllabus: - Introduction to Digital Media: overview; communication theory; mediation. - Cognitive Models: representation of aspects of mind; acquisition of knowledge. - Interaction Design: linking media and support objects in temporal structures. - Metaphors: describing concepts in accessible form; interface metaphors; domain metaphors. - Image, Video and Sound Processing: introduction to high-end processing tools such as Adobe Photoshop, Adobe Premiere, Sound Forge, etc.; media asset management. - Authoring: introduction to high-end authoring tools such as Macromedia Director, Author ware, Flash, etc.; synchronisation. - Interfacing high-end authoring systems: extending the functionality of authoring systems through plugins; design of plugins. - Distribution: CD, DVD, Web, DAB, DVB; quality and bandwidth considerations; compression; streaming. - Intellectual Property Rights, Copyright.

CS4457 - PROJECT MANAGEMENT AND PRACTICE

ECTS Credits: 6 (Year 3 Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: To examine the processes by which the development of computer-based information systems are managed, and the considerations needed for successful implementation of such systems.

Syllabus: Why management of IS projects can be the deciding factor for success or failure; responsibilities for managing medium to large-scale information systems development projects; from project initiation to systems

implementation; the tools and techniques applicable to planning, monitoring, and controlling a project.

CS4458 - COMPUTER SUPPORTED COOPERATIVE WORK

ECTS Credits: 6 (Year 3 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: This module will introduce students to the CSCW and groupware field. It will cover basic concepts in the field and include an examination of software systems designed to support cooperative work - their design, use and evaluation. Issues such as peripheral awareness, ownership of information, common information spaces, media spaces, group support systems, coordination mechanisms and contextual factors in the workplace will be studied. Students will use some groupware technologies and undertake a project.

Syllabus: The limitations of traditional HCI; Understanding the work context; Cooperative work; Methods for observing work - field studies and ethnography; Coordination mechanisms; Examination of variety of commercial and research collaborative systems; Constructing common information spaces; Examining collaborative learning in the workplace; Evaluation methods for CSCW; Open issues in the field.

Computer Science: Year 4 Modules

CS4047 - MULTIMEDIA INDUSTRY PERSPECTIVES

ECTS Credits: 6 (Year 4 Module)

Limited places available: 20

Computer Science & Information Systems

Rationale and Purpose of the Module: The purpose of the Multimedia Industry Perspectives module is to develop student understanding and knowledge about various digital media industry processes, and to encourage students to examine digital media as a number of varying career options. It will provide the opportunity to introduce a number of external experts from a variety of multimedia industry related areas within a flexible framework.

Syllabus: This module introduces the students to a number of external experts from a variety of multimedia industry related areas, within a flexible framework. The set of topics that will be discussed as part of this module will include: Exploring the job market and applying for a job (CV and portfolio preparation, cover letter writing, maintaining an online presence). Identifying professional communities, information resources and networking opportunities. Job profiles and frequently required skills. Recent development in the digital media domain. Basic entrepreneurial skills: developing a business idea, drafting and presenting a business plan. Each unit is assessed by coursework and/or class test; there is usually no formal examination at the end of the semester.

CS4049 - VISUAL CODING

ECTS Credits: 6 (Year 4 Module)

Limited places available: 6

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: To introduce students to the principles behind algorithmic visuals and the practice of creating visuals through programmed, procedural approaches Syllabus: 1. Procedural Visuals 2. Low-Resolution Displays 3. Matrix Displays 4. Networked Data & Visuals 5. Real-time Data Visualization 6. Audio-visual Installations 7. Sensors & triggered audio-visuals

Prerequisites: CS4061, CS4072, CS4815

CS4067 - WRITING GAMES ANALYSIS

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: The primary objective of this module is to define the art and practice of

writing computer games. Students discover how to analyse Games Discourse and are introduced to Wittgensteinian definitions of language-games as a tool for understanding and critiquing formal descriptions of language, thought and the process of story creation and revelation. Students are given a heuristic for investigation that results in their discovery of a complicated network of similarities, overlapping and cross-crossings within the structure of an essentially hypertextualized story. The final objective is that students learn how a game may resemble a simulation that tries to model a phenomenon by isolating the essential features of that phenomenon and plays them out in a way that does not affect the phenomenon and ultimately the students are required to produce their own written phenomenon.

Syllabus: - history and development of games' story development; - character development; - discourse analysis; - hypertextual narratology; - gaming as hermeneutical play; - game-states and rule definitions; - iteration, repetition and rapture; - Derrida's "Structure, Sign and Play"; - game criticism, speculation and theory; - rules and metarules; winning conditions; - interactive fiction.

CS4078 - APPLIED INTERACTION DESIGN

ECTS Credits: 6 (Year 4 Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: This module will provide the student with knowledge of and practical experience in using techniques for the design of engaging interaction. Building on the design knowledge and technical skills the students have acquired at this stage of their course, applied interaction design problems will be presented to the students for analysis, reflection, and intervention. Adaptation of Interaction Design methods will be discussed, and the particular perspective of Participatory Design will be examined in detail.

Syllabus: This module deals with topics and methodologies for Interaction Design work. The topics include Overview of the latest literature and current practical projects in interaction design Exploration and evaluation of practical approaches to interaction design as a discipline in a variety of current settings, and particularly of Participatory Design methods. Exploration of novel interaction modalities around tangible, ubiquitous and wearable devices. Application and adaptation of interaction design methodologies to specific design settings. Discussion and review of sensitive design settings such as healthcare, safety-critical environments, education, etc the role of high-fidelity prototypes in developing the interaction design process the discussion and analysis of these topics will be based around practical interaction design assignments.

CS4088 - USER EXPERIENCE IN PRACTICE

ECTS Credits: 6 (Year 4 Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: In this module students will acquire skills commensurate with the commercial aspects of the professional User Experience Designer (UX) role from a business perspective.

Syllabus: Methods, tools, and standards will be covered to allow students to follow the lifecycle of a project from answering the project brief to final client proposal and approval. Practical elements achieved: the students will be presenting their interactive wireframes / stories for assessment.

Prerequisites: CS4052, CS4826, CS4056

CS4158 - PROGRAMMING LANGUAGE TECHNOLOGY

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: To provide students with an understanding of production systems, phrase structure generative grammars, the languages generated by these grammars, and the abstract state machines that elucidate the parsing process. To provide students with an understanding of how recognition/parsing programs can be systematically derived from grammars, especially by means of parser generators. To provide an understanding of the notion of syntax directed translation, and how it can be implemented in parser-based tools, especially applied to code-generation, and documentation of programs.

Syllabus: - Notion of Phrase Structure; - Notion of Post's Production Systems; - Chomsky's definition of Phrase structure Generative Grammars, and Hierarchy of Grammars. Sentential Forms and Languages generated by Context Free Grammars; - Regular expressions, Regular sets, and Regular Grammars; - Classification of Abstract State Machines, Configurations, Transitions; - Construction of Recognising Finite State machines from Regular Grammars and Conversely Program Design based on Regular Expressions; - Construction of Lexical Analysers including use of Generators such as LEX/FLEX; - Leftmost and Rightmost derivation of sentences from Context Free Grammars, Parse trees, and ambiguity of Grammars; - Top Down Parsing (Recursive Descent) Techniques; - Bottom Up (LR) Parsing Techniques; - Notion of an Item, Closure of a set of Items, Transitions between sets of items, and canonical collections of valid items; - Parser Generators such as YACC/BISON and their use in syntax directed translation.

Prerequisites : CS4111, CS4112, CS4411, CS4512, CS4013.

CS4168 - DATA MINING

ECTS Credits: 6 (Year 4 Module)

(Lab-Based Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: Introduce students to the main components of the data mining process, such as data preparation, feature extraction and feature selection, machine learning algorithms for building predictive and descriptive analytics models, evaluation of data analytics models.

Syllabus: 1. What is data mining; what is the relation between data mining, data analytics, data science; why data mining; cross-industry standard process (CRISP- DM); data mining workflows. 2. Data pre-processing: feature extraction, data cleaning, handling missing data, methods for identifying outliers, data transformation. 3. Methods for feature selection: filter, wrapper and embedded methods. 4. Styles of machine learning for data mining: supervised vs. unsupervised learning, classification, numeric prediction, clustering, association learning. 5. Algorithms for building predictive and descriptive analytics models: a. Predictive modelling algorithms for classification and numeric prediction, such as OneR, ID3, C4.5, Naïve Bayes, k-NN, Prism, SVM, linear regression, logistic regression, Perceptron, Winnow. b. Descriptive modelling algorithms for clustering and association learning, such as k-means, apriori, max- miner. 6. Evaluation of predictive and descriptive analytics models: Holdout and cross-validation, cost-benefit analysis, user feedback. 7. Visual analytics: methodology and workflow. 8. Case studies in subdomains, such as sentiment analysis, item/service ranking recommendation, image classification, etc. 9. Practical use of data mining platforms for building data mining workflows and training predictive and descriptive analytics models

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CS4187 - PROFESSIONAL ISSUES IN COMPUTING

ECTS Credits: 6 (Year 4 Module)

Computer Science & Information Systems

Rationale and Purpose of the Module: Information and Communication Technology (ICT) industries employ large numbers of people who create technologies affecting a wide range of different types of communities within society as a whole. It is very important that students who will be entering these industries do so with an understanding of ethical professional and cultural issues that they will need to engage with as professionals. To this end Professional Issues in Computing focuses on the ethical, legal and social consequences of the design, implementation and use of computer and information systems.

Syllabus: What is a computer professional? Ethical theories including consequentialism and non- consequentialism; utilitarianism; deontological theory. Ethical decision-making frameworks. Applying ethical theories to moral problems in ICT. Codes of conduct of professional bodies in ICT. Legal implications of being a professional including: Intellectual property law; privacy and data protection; computer crime; Irish, European and American laws and potential for conflict. Conflict between the legal and the ethical approaches. Social impacts of ICT including Digital divide - exclusion based on: race, gender, age, language; North/South divide, power and democracy, unstoppable progress, physical and social disability

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Electronic & Computer Engineering



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Electronic & Computer Engineering: Year 1 Modules

CE4702 - COMPUTER SOFTWARE 2

ECTS Credits: 6 (Year 1 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: Further the students' knowledge of a modern object oriented programming language with particular emphasis on classes, objects and Graphical User Interfaces. Understand the concepts of inheritance and polymorphism. Develop the ability to produce moderately complex event driven programs with user interfaces developed using a graphical toolbox.

Syllabus: The following topics will be covered: In depth study of the object-oriented principles, abstraction, inheritance and polymorphism. Abstract data types including interfaces, abstract classes. Input and output including files and streams. Introduction to the use of regular expressions to manipulate text files Introduction to algorithms - efficiency, simple analysis and comparison Error handling techniques Binary trees Recursion Graphical user interfaces and development of event driven applications Unique global class naming and creation of class libraries Code documentation and code reviews Use case analysis.

Prerequisites: CE4701

EE4012 - CIRCUIT ANALYSIS 1

ECTS Credits: 6 (Year 1 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module develops advanced DC and AC circuit analysis techniques. Topics covered include: circuit theorems, mesh and nodal analysis, Thevenin and Norton equivalent circuits, resistive circuit analysis, inductance and capacitance, time response of RL, RC and RLC circuits, sinusoidal circuit analysis, complex impedance, resonance and the transformer.

Syllabus: This module on Circuit Analysis develops advanced electronic engineering principles for the analysis of DC and AC circuits. Specifically, the following major topics are covered: RESISTIVE CIRCUITS: Kirchhoff's voltage and current laws, resistor combinations, voltage and current divider circuits, and measuring resistance using the Wheatstone bridge. TECHNIQUES OF CIRCUIT ANALYSIS APPLIED TO RESISTIVE CIRCUITS: Mesh and nodal analysis, source transformations, Thevenin and Norton equivalent circuits, and maximum power transfer concept. INDUCTANCE and CAPACITANCE: Inductors, capacitors, series and parallel combinations of capacitors and inductors, and mutual inductance. RESPONSE OF RL, RC AND RLC CIRCUITS: Natural and step responses and switching. SINUSOIDAL CIRCUIT ANALYSIS CONCEPTS: Amplitude, frequency, phase, phasors, reactance of capacitor and inductor, complex impedance, power dissipation, power factor, Thevenin, Norton, superposition, maximum power transfer theorem and Kirchhoff's voltage and current laws as applied in sinusoidal circuit analysis. AC CIRCUIT ANALYSIS: Combining impedances, frequency response, source conversions, Thevenin and Norton equivalent circuits, Mesh and Nodal Analysis, and Delta-Y and Y-Delta conversions. RESONANCE: Series and parallel resonant circuits, Q factor and bandwidth. THE TRANSFORMER: Analysis of a linear transformer circuit reflected impedance, the ideal transformer, and the autotransformer.

EE4022 - SEMICONDUCTOR DEVICE FUNDAMENTALS

ECTS Credits: 6 (Year 1 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: The aim of this module is to provide an introduction to the structure and operation of solid state, or semiconductor, devices used in electronic circuits. The module will initially introduce semiconductor technology (semiconductor material properties, holes and electrons) and then the types of electronic devices that are commonly used in electronic circuits (diodes, transistors, thyristors, triacs, and integrated circuits). Qualitative descriptions of the types of electronic circuits and their applications for the devices introduced will be provided. .

Syllabus: The module will commence with an introduction to semiconductor materials (electrical properties, holes and electrons, band gap, Fermi-Dirac distribution) followed by the behaviour of the metal-semiconductor contact (rectifying and ohmic) and the rectifying pn junction. The metal-semiconductor (Schottky) and pn junction (silicon, germanium, Zener) diodes will then be introduced along with how semiconductor materials interact with light (light emitting diode (LED), photodiode, and phototransistor) and magnetic fields (Hall effect). The bipolar junction transistor (BJT), junction field effect transistor (JFET) and metal oxide semiconductor field effect transistor (MOSFET) will then be introduced, along with power devices (thyristor and triac) and the integrated circuit (IC). In the laboratories, experiments will be undertaken to determine the operation of the Schottky diode, silicon diode, Zener diode, and BJT through laboratory experiments that will include analysis of experiment results using MATLAB. SEMICONDUCTOR MATERIALS: free electron theory; simple band theory: insulators, semiconductors, conductors, superconductors, doping; carrier density; conductivity Intrinsic and extrinsic semiconductors. Carrier densities and Fermi level position, mobility, transport properties. Diffusion current, thermal equilibrium, diffusion constant and lifetime. SOLID STATE DEVICES: pn junction, space region and junction capacitance, switching response and recovery time, junction breakdown. General overview of MOS and bipolar technologies. DIODES: Schottky diode. Simple semiconductor diode characteristics, exponential law, leakage, breakdown voltage. Zener diode. Applications of diodes in everyday electronic circuits and systems. Qualitative overview of the use of diodes in electronic circuits. FIELD EFFECT TRANSISTOR (FET), junction field effect transistor (JFET): metal oxide semiconductor FET (MOSFET): current control characteristics, operating regions. MOS capacitor, enhancement and depletion mode MOSFET, gate structure, threshold voltage, sub-threshold current. JFET: differences from the MOSFET. Applications of the FET in everyday electronic circuits and systems. Qualitative description of the operation of amplifiers and switches. BIPOLAR JUNCTION TRANSISTOR (BJT): BJT construction; current control characteristics, operating regions. Applications of the BJT in everyday electronic circuits and systems. Qualitative description of the operation of amplifiers and switches. POWER DEVICES: Thyristor: current control characteristics, operating regions. Triac: current control characteristics, operating regions. Qualitative description of the operation of power control circuits using thyristors and triacs. INTEGRATED CIRCUIT (IC) technology: IC component overview.

EE4522 - DIGITAL SYSTEMS 1

Limited places available: 5

ECTS Credits: 6 (Year 1 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module is the first module in the core Digital Systems stream of the BE programmes in the department of Electronic and Computer Engineering.

Syllabus: Introduction to digital systems Distinguish between analog and digital representations. Number systems and codes Conversion between number systems. Describing Logic Circuits Truth tables and Basic Boolean manipulation Simple Gating functions, Data selectors. Demultiplexers. Karnaugh Mapping Logic Characteristics Delays and spurious responses. Buffers, Schmidt inputs. Characteristics of CMOS digital ICs. Basic Arithmetic Unsigned numbers signed numbers. 1's and 2's complement arithmetic Ripple carry adders Latches and flip-flops D-type level triggered. Edge-triggered D-type. J-K Timing waveforms for flip-flops Shift register operation Edge-triggering concepts, Propagation delay, set- up, hold, asynchronous inputs Registers and counters:

ET4162 - COMPUTING SYSTEMS ORGANISATION

ECTS Credits: 6 (Year 1 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: By introducing the concept of connected computing using networking examples, students will appreciate the driving forces affecting computer organisation and architecture. Students will learn about Instruction Set Architecture and its significance in computer design.

Syllabus: 1. Networking Basics a. Exploring the influence of networking on computer organisation b. Introduction to networking infrastructure c. Networks and the internet 2. Error correcting codes 3. Assembly language programming 4. Computer performance and performance measurement 5. RISC, CISC and limitations of each 6. An overview of multicore processing 7. Memory hierarchy in detail

Electronic & Computer Engineering: Year 2 Modules

EE4214 - CONTROL 1

ECTS Credits: 6 (Year 2 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: The module introduces students to some basic control theory, Dynamic System Modelling, open- and closed-loop systems, signal flow graphs, time response of first and second order systems. This module also gives students a basic introduction (from the control perspective to support the control theory and dynamic systems modelling) to some of the basic devices used in control, including actuators, sensors and transducers.

Syllabus: Dynamic System Modelling: Laplace Transform method, open and closed loop systems, signal flow graphs, transfer functions, time response of first and second order systems. Laboratory Work: Modelling and simulation of dynamic systems using Matlab Simulink and LabVIEW. Basic laboratory exercises, including data acquisition from sensors. Introduction to instrumentation. Sensor characteristics. Signal conditioning. Review of typical sensors.

Prerequisites: MA4001, MA4002, MA4003

EE4524 - DIGITAL SYSTEMS 3

ECTS Credits: 6 (Year 2 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: The module provides an in-depth treatment of the following topics: Basic Microprocessor; Processor Architecture and programming in machine code; Instruction sets, Addressing modes, Data formats; Exception handling, I/O programming; Software polling, Interrupts, Basic interrupt processing concepts, Interrupt service routines (ISRs); C programming as a programming language for embedded systems; Practical application of using a software development toolchain. (Digital Systems 1 on the programme is a prerequisite for this module.)

Syllabus: Microprocessor and Microcontroller Architecture: Processor Architecture and programming in machine code. Programmer's model, data formats including integer types, floating point numbers, ASCII and Unicode. Program instruction cycle. Dressing modes: register, immediate, direct, indirect, relative. Program control flow instructions. Stacks, local variables and subroutines. Exception handling. I/O programming: Simple handshaking concepts. Software polling. Interrupts: Basic interrupt processing concepts. Interrupt service routines (ISRs). Interrupt hardware -fixed versus programmable priority, interrupt vectoring. C programming as a programming language for embedded systems: Pointers and Macros in embedded software. Linking and sub-programs. Assembly programming and C. Memory: Addressing concepts, including memory mapped and I/O mapped I/O. Volatile and non-volatile memory. ROM, RAM. Serial data: Asynchronous and synchronous transfers. RS232, SPI, I2C.

Prerequisites : CE4701

ET4014 - DATA SECURITY

ECTS Credits: 6 (Year 2 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: To introduce the concept of security services such as authentication, integrity and confidentiality. To introduce the role of digital signatures and their implementation using cryptographic ciphers. To introduce basic security protocols that provide security services. Attacks against security services: Replay attack, man in the middle attack.

Syllabus: [Introduction to Security Services:] Security attacks, OSI model, security services: concepts of confidentiality, data origin authentication, entity authentication, data-integrity, access control, availability.

[Digital Signatures:] The role of signatures, MACs, Hash functions, digital signatures, public key certificates, X509 certification authorities, e-mail security: PGP. [Security Protocols:] Introduction to key management, peer-to-peer distribution protocols and identification protocols. Secure web (https/ssl), secure shell (ssh) etc. [Identification techniques:] Identification tokens and smart cards. Biometric identification: finger prints, retina scan, face recognition, voice recognition. [Attacks:] Definition of attacker and capabilities of attacker, introduction to attacks on protocols, such as replay attacks, man in the middle attack.

ET4334 – INTRODUCTION TO CLOUD COMPUTING

ECTS Credits: 6 (Year 2 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: To introduce the student to concepts and practice of Cloud Computing including foundational technologies of the cloud, principles of secure cloud computing and an overview of cloud architectural principles. Cloud economic modes are also introduced here. This is a modified version of ET4077, including the title.

Syllabus: Cloud Computing Fundamentals: Characteristics, Deployment, Impact. Cloud Computing Technology Foundations: Compute, Storage, Networking, tools for key cloud features, e.g., scaling, monitoring Cloud Computing Architectural Design Principles Cloud Computing Security Fundamentals: Security Principles applied to Cloud Environment, Security management and Access control issues. Cloud Computing Economics: TCO, Costing and control.

Electronic & Computer Engineering: Year 3 Modules

EE4024 - ELECTRICAL ENERGY (ELECTRICAL MACHINES)

ECTS Credits: 6 (Year 2 Module)

Electronic & Computer Engineering

Syllabus: Review of electromagnetism, Faradays, Amperes and Lezs laws, MMF, flux, flux density, magnetic field intensity and reluctance, self and mutual inductance, magnetic materials, BH curves, core losses. Magnetic circuits, electric circuit analogies, analysis of simple magnetic circuits. Transformers: Construction and principles, ideal transformer, voltage and current transformers, power transformers, single/3 phase, equivalent circuits, open and short circuit tests, application in power systems, per unit system. Machines - DC motors and generators: construction and principles, separately excited, series, shunt and compound machines. Voltage and torque equations. Equivalent circuits, Power flow. Machine Characteristics: open circuit/magnetization, speed, torque and dynamic characteristics. Which configuration for which application. DC machines in modern power generation and motion control. AC machines, rotating magnetic fields, alternators, 3 phase generators, salient pole/cylindrical rotor, derivation of equivalent circuit from open circuit and short circuit tests, synchronous reactance, the phasor diagram (of cylindrical rotor machine) and the Power Angle Curve. Synchronising to an infinite busbar. Steady state stability limit. Induction machines (motors and generators) single phase, 3 phase. Derivation of equivalent circuit, determination of torque speed characteristic. Locked- rotor and no-load tests. Induction generator. Introduction to V/F control. Starting methods and protection. Electrical machines developments for renewable energy generation. AC power real and reactive power calculations. Power factor correction balanced 3 phase systems analysis, star and delta connected loads, advantages of 3 phase systems, the per unit system.

CE4206 - OPERATING SYSTEMS 2

Limited places available: 2

ECTS Credits: 6 (Year 3 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: Study of multitasking operating systems. Study will be confined to single processor systems. A Unix or WIN-32 operating system will be selected as the prime example operating system. The module lab work will teach the student to develop concurrent program solutions. The module includes: concurrency, states, queues, scheduling. Process inter-communication. Memory management. File systems to

support multitasking, File sharing, file protection, performance issues. Conditions for deadlock and solutions. I/O devices and device drivers. File security and protection.

Syllabus: 1) Processes: Concurrency, states, queues, scheduling. 2) Process Communication: Mutual exclusion, race conditions, busy-waiting solutions, Test/Set locks, semaphores, monitors, simple message passing, pipes, classical problems. 3) Memory Management: Swapping, virtual memory, paging, segmentation, performance, and protection issues. 4) File systems to support multitasking: File sharing, file protection, performance issues. The UNIX i-node system. 5) Deadlock: Conditions for deadlock and solutions. 6)Input/Output: I/O Devices for multitasking environments, need for design of re- entrant drivers. 7) Computer Security and Protection: User authentication; protection matrix; ACL; capabilities. 8) Case Study: The UNIX Operating System: Origins; Standards; Shells; Utilities; Process Management; Memory Management; File Management; Programming in the Unix environment (Or, equivalent study based on a WIN-32 operating system.)

Prerequisites: CE4204

EE4216 - CONTROL 2

ECTS Credits: 6 (Year 3 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module extends fundamental Control principles with much more emphasis placed on the application of linear analytical techniques to control system design.

Syllabus: LINEAR SYSTEM ANALYSIS: Bode, Nyquist, and root locus, transfer function of plant with delay and non-minimum phase systems. Stability and Performance analysis using Bode, Nyquist, Routh-Hurwitz, and Root Locus methods. Design techniques for system compensation using Bode diagrams, Nichols charts and Root Locus. Lead and lag compensation, the application of these using op-amps as an example, internal compensators. Introduction to Modern Control methods using State Space Techniques. PROCESS CONTROL: Terminology and practice, application and use of three term control, PID design in the frequency domain, integral wind-up and similar problems, Benchmark methods for tuning PID controllers, (Ziegler-Nichols, Haalman etc.,).

EE4816 - SIGNALS AND SYSTEMS 1

ECTS Credits: 6 (Year 3 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: To introduce a number of mathematical and computer aided tools for analysing signals and systems in the time and frequency domains, such that students will develop a sound knowledge and understanding of linear transform theory for signal processing, and to apply it to correlation and filtering of signals, in analogue and digital domains.

Syllabus: Signal Classification: pulse waveforms, periodic waveforms, sine waves and phasors, signal symmetry. Fourier Series and Fourier Transform. Sampling, replication, and aliases. Finite Fourier Series and the DFT. Correlation and Convolution, digital and analogue. Introduction to Digital Filters and the DtFT. Windowing of signals, aspects of A/D and D/A conversion. Discrete-time systems and the z-transform. Elementary FIR filter design. LP, BP and HP filters. Simple IIR filters, intuitive design methods.

ET4006 - ELECTRONICS (ED)

ECTS Credits: 6 (Year 3 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: To provide the students with the knowledge and skills required to specify and manage classroom-based projects using analogue and digital electronic devices and equipment available in schools. To develop the knowledge, skills, values and attitudes appropriate to the teaching of technologies.

Syllabus: Transistor switch and operational amplifier circuits (op-amps) with output devices lamp, buzzer, LED, speaker, motor, relay. Operational amplifier circuits (op-amps) assembled as comparator, amplifier, and oscillator. Simple timing circuits. Logic Circuits, basic logic gates AND, OR and NOT NAND, truth tables for each. The main logic families (TTL and CMOS). The use of logic gates with sensors and output devices. Inputs and Outputs, buffers (transistors, amplifiers, paralleled outputs), Schmitt trigger. Binary inputs. Counters, clock circuits, de-bouncers, counters, seven segment displays and display drivers. Circuit Design and Assembly of Pre- designed Circuits. Printed circuit

boards (PCBs) Use of prototyping boards for initial assembly and testing of circuits. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area.

CE4717 - LANGUAGE PROCESSORS

Limited places available: 2

ECTS Credits: 6 (Year 3 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: To introduce the theory of compiler design and show its application in a simple compiler. An important part of the module is the implementation of a compiler for a simple, Pascal-like, language.

Syllabus: Compiler structure: Definition of terms. Source, object and executable files. Symbols, definition and resolution. Phases of a compiler and their functions. Single and multi-pass compilation. Cross-compilation, interpreters and pseudo-machines. Grammars: Mathematical grammars for language definition. BNF and EBNF notations. Parse trees. Properties of grammars. The Chomsky hierarchy. Syntax diagrams. Restrictions on grammars. Parsing: Top-down parsing. Lookahead. Recursive descent. LL(l) grammars. First, follow and predict sets. Syntactic error detection and recovery for recursive descent parsers. Semantic processing: The symbol table. Handling semantic errors. Code generation for a simple stack machine: Translation of expressions to reverse-Polish form. Procedure calls and block structure. Static and dynamic scope. Storage management for modern languages. Scanning: Regular expressions. State machine implementation. Nondeterministic automata and translation to deterministic automata. The use of a scanner generator such as LEX. Table-driven parsing techniques: LL(l) table-driven parsers. Shift-reduce parsers. LR parsing. The LR(0) Characteristic Finite State Machine. LR(l). SLR. LALR(l). The use of a parser generator such as yacc. Code generation for register architectures. Introduction to code optimisation techniques.

Prerequisites: CE4703

EE4317 – ACTIVE CIRCUITS 4

ECTS Credits: 6 (Year 3 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module introduces students to integrated circuit design, to the limitations that apply to chip-level components, and to IC design methods.

Syllabus: IC technologies and components: Processing methods. Semiconductor Junctions. Passive (R and C) components and their limitations. Integration of BJTs, JFETs and MOSFETs. Device characteristics. Analogue bipolar design methods: mirrors, high-gain stages, output buffers. Analogue CMOS design methods: mirrors, high-gain stages, output buffers. Digital logic families, an overview. Analogue building blocks: overview of op-amps, comparators and PLLs.CMOS and BiMOS technologies. Review of some analogue ICs, bipolar and MOS.

ET4224 - ROBOTICS 1: SENSORS AND ACTUATORS

ECTS Credits: 6 (Year 3 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module introduces students to fundamental principles of * Measurement of physical phenomena utilising various sensing techniques. * Transducer action and signal conversion * Various Actuator types and principles of operation. * Specification of a complete measurement system.

Syllabus: Introduction to Physical Phenomenon:- * SI Units. * Principles of sensor operation (mechanical, thermal, sound, light). Sensors and Transducers:- * Concept of transducer action as signal conversion with particular emphasis on an electrical signal as the output. * The ideal transducer. * Resolution, accuracy, linearity definitions and relevance. * Review of some physical phenomena that result in electrical parameter variations Actuators * Magneto Motive Force & magnetic circuits, transformers, DC generators and motors. * Motors: DC machines with permanent magnet and field windings, Induction motors, Stepper Motors,. Stepper drives.

* Motor Drive Circuits. Sensor Interfacing Circuitry introduction/review * Review of Op-Amp as applied to sensing systems, Instrumentation amplifiers, diff amps, etc. Simple DACs, ADCs successive approximation and integrating, operating principles and suitability for industrial applications. Overall concepts of accuracy, drift, resolution, and common mode rejection applied to a measurement system, complete system composed of a transducer, amplifier and ADC.

Electronic & Computer Engineering: Year 4 Modules

CE4208 - DISTRIBUTED SYSTEMS

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module is designed to provide students with a framework for comparing emerging distributed systems, as well as an understanding of the algorithms necessary to support a distributed system. Computing models and data communications will be studied, as well as software development issues relating to the development of distributed applications.

Syllabus: To introduce application design principles and techniques using available web-based technologies. (e.g SOAP, Microsoft.NET, Java Services). Reliability and security issues of distributed applications are addressed. Use of cookies and the covert use of applications to provide a community-wide service. Characterization of Distributed Systems. Tools and technologies used to develop distributed applications. Mechanisms to secure applications from malicious attacks and errant processes. Component based software development (e.g. CORBA, JavaBeans). Service portability via virtual servers. Replication and Fault Tolerance. Study of evolving Web services. The role of the hidden internet for intelligence gathering. Remotely hosted application environments.

Prerequisites: CE4607, CE4206

CE4518 - COMPUTER ARCHITECTURE

Limited places available: 2

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: To provide a grounding in the analytic study of computer architecture and an introduction to various architectural styles, e.g., CISC, RISC, and variousnon-von Neumann architectures.

Syllabus: Review of Von-Neumann architecture: Brief discussion of evolution in processor design from 1940's to today. Computer classifications. Flynn's taxonomy: SISD, SIMD, MIMD. Computer performance measurement: Execution time and clock cycles per instruction (CPI). MIPs, MFLOPs. Benchmarks: Dhrystone, Whetstone. Kernels: Livermore loops, Linpack, SPECmarks. Floating point arithmetic: IEEE 754. Addition. Rounding. Denormalised numbers. Multiplication. Iterative division. Precision. Instruction set design and architecture: Classification. Register machines. Addressing modes. The role of high-level languages and compilers in determining instruction set architecture, "semantic gap", "high-level language architecture", CISC and RISC architectures. Processor implementation techniques: Datapath. Execution steps. Control: hardwired, microcoded. Handling exceptions. Pipelining: Hazards in pipelines. CISC and RISC pipelines. Multicycle pipelines (superpipelining). Dynamic scheduling. Scoreboarding. Tomasulo's algorithm. Instruction level parallelism. Superscalar architecture. VLIW. Software pipelining and trace scheduling. Memory hierarchy design: Register windows. Caches: strategies, replacement policies, block size. Main memory: width, interleaving. Virtual memory: page tables, translation lookaside buffers.

ET4028 - HOST AND NETWORK SECURITY

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: Gain an in- depth knowledge of host and network security. Assess the security of a network. Recommend and implement measures to prevent security threats. Research and develop security audits. Conversant in current trends and methodologies. Syllabus: [Security Fundamentals] Basics of host and network security: threats, vulnerabilities and risk, risk assessment, business continuity and disaster recovery, security policies, defence in depth. [Firewalls] Packet filters, stateful firewalls, proxy firewalls. DMZ concept, layout and design. [Auditing and Intrusion Detection] Audit trail features, user profiling, intruder profiling, signature analysis, network IDS, host IDS, distributed IDS, combining firewalls and IDS. [Wireless Security] Wireless standards and technologies: IEEE 802.11, WEP Bluetooth, BlackBerry, wireless applications. Wireless network threats: wireless packet sniffers, transmission alteration and manipulation, denial-of-service attacks. [Designing Secure Networks] Host hardening: anti-virus software, host-centric firewalls and IDS. Installing and managing firewalls and IDS. VPN integration. Creating a security policy. [Assessing Network Security] Assessment techniques, maintaining a security perimeter: system and network monitoring, incident response, accommodating change. Network log analysis, troubleshooting defence components, importance of defence in depth. Design under fire: the hacker approach to attacking networks.

RE4002 - SPATIAL ROBOTICS

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This is a level 9 module and is an update of code-RE4006 Spatial Robotics level 9 module. This module covers a broad range of the necessary enabling and advanced technologies required for the design, integration and operation of Modern Robots including industrial robotic arms and mobile robots. This module will be offered to the Master of Engineering in Electronic and Computer Engineering programme using module ID 3296 Spatial Robotics

Syllabus: Design of Modern Robotic Systems. Component specification; Robot Arms, sensors and actuators. Position Control; Rigid Transformations, Kinematics, Inverse Kinematics. Robot Programming, Sensor System Integration, Robot Grippers. Positioning And Navigation, Position Estimation, Trajectory Following. Advanced topics: Robot arms: Payload analysis, Jacobians, Quaternions, Dynamics. Robot navigation: Explicit incorporation of uncertainty in Robotic Systems design, parametric approaches stochastic models of uncertainty, Kalman Filter design, specification and implementation.

Prerequisites: ET4224

EE4032 - TENSOR AND GPU FUNDAMENTALS

Limited places available: 2

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: In today's complex computing applications, there is a more towards incorporating AI (artificial intelligence), machine learning and deep learning concepts and algorithms within the computing software and hardware. Many systems are based on software programs operating on a CPU (central processing unit). With the need for high performance computing (HPC), the designer utilises other forms of processing unit and hardware resources to develop a computing platform that meets the needs of an application, in terms of processing time, data storage and processing, and cost. There is a need to understand how to use the available hardware and software resources available. The GPU (graphics processing unit) will be explored as a superior processor architecture to the CPU for AI and machine learning applications. The module is also to be offered on the new MEng programme offered by the Department of Electronic and Computer Engineering (MEng in Electronic and Computer Engineering).

Syllabus: The module will focus on the use of appropriate computing platform hardware and will be based on two parts. Each part having a specific focus and purpose as follows: Part 1: The Graphics Processing Unit (GPU) for AI and machine learning Heterogeneous parallel computing, architecture of a modern GPU, challenges in parallel computing, data parallel computing, CUDA program structure. Device and host memory transfers, kernel functions and threading, thread organisation, launching kernels. Thread scheduling and latency, CUDA memory types and usage, tiling. Warps, thread granularity, numerical and arithmetic issues with CUDA. Part 2: Data structures and hardware for AI and machine learning. Representing data: scalars, vectors, arrays, matrices, and tensors. Tensors: What are tensors, why use tensors? Example applications of tensors. Tensor calculus: Tensor

arithmetic. Tensor rank. Tensor products. Modelling the world using tensors. Multidimensional arrays. Hardware considerations: Processing units (C - Central, G - Graphics and T - Tensor). The TPU. Memory. The field programmable gate array (FPGA) and the application specific integrated circuit (ASIC).

Prerequisites : CE4703, CE4518

EE4042 - ENERGY DEMAND MANAGEMENT

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module provides the necessary understanding, knowledge and skills to implement energy demand management projects with a particular emphasis on automated demand response and the smart grid. This module (code 3291) is to be added to the Master of Engineering in Electronic & Computer Engineering

Syllabus: [Energy Management Systems] ISO50001, Energy policy, plan do, check , act [Energy Audit] Basic components of an energy audit, targeted and comprehensive audits. [SMART Meters] Operation & functionality of SMART meters and means of communication with them. [Data logging & Databases] Collection, transmission and analysis of utility (electricity, water, gas) consumption data. [Internet of Things] Use of device connectivity to manage energy consumption [Energy Data Analysis] Time series analysis, linear regression, multivariate regression against predictor variables [Automated Control for the Built environment] Building management systems, Energy efficient electrical services [Economic Analysis] life cycle costing, payback periods, cost benefit analysis [Demand side management] Automation of processes to reduce costs and emissions. Dynamic synchronisation of electrical energy consumption with single electricity market. [Energy and Behaviour Change] drivers and motivations of energy users, behaviour change strategies.

EE6032 - COMMUNICATION AND SECURITY PROTOCOLS

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: Introduces students to security services and cryptographic protocols used for information and system security, in areas such as wireless networks, e-commerce and the Internet. Provides an understanding of security protocol design techniques and formal methods for evaluation of the reliability of security protocols.

Syllabus: [Wireless Standards and Technologies] IEEE 802.11, WEP, Bluetooth, BlackBerry [Review Internet security] IPSec, SSL. [Role of security services in countering network attacks] confidentiality, data origin authentication, entity authentication, data-integrity, non-repudiation, access control, availability. [Cryptographic components] Review of the cryptographic components required in security protocols such as: ciphers & keys, hashing functions, random number generators, message authentication codes and digital signatures. [Public key infrastructures] X.509, SDSI, TLS. [Protocols] Key management, peer-to-peer distribution protocols, group distribution and identification protocols. Modern cryptographic protocols for: wireless communications (mobile, radio-link, secure mobile ad-hoc networks), e-commerce (e-payment, non-repudiation), Certified e-mail, E-voting. [Smart cards and protocols] for ATMs, passport identification and digital cash. [Security protocol design] Study of protocol design techniques [Use of formal methods] for evaluation of correctness of security of protocols.

EE6452 - DIGITAL CONTROL

ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: To study the application of digital computers to control engineering problems.

Syllabus: Linear System Analysis: Z-transform representations and discrete-time state-space descriptions of sampled data systems. Stability and performance analysis using Bode, Nyquist and Root Locus methods. Digital Control Law Design: PID controller design for sampled data systems using time-domain and frequency-domain techniques. Development and Testing: Software implementation and test of digital controllers.

EE6622 - ASICS 2 (ANALOGUE ASICS)

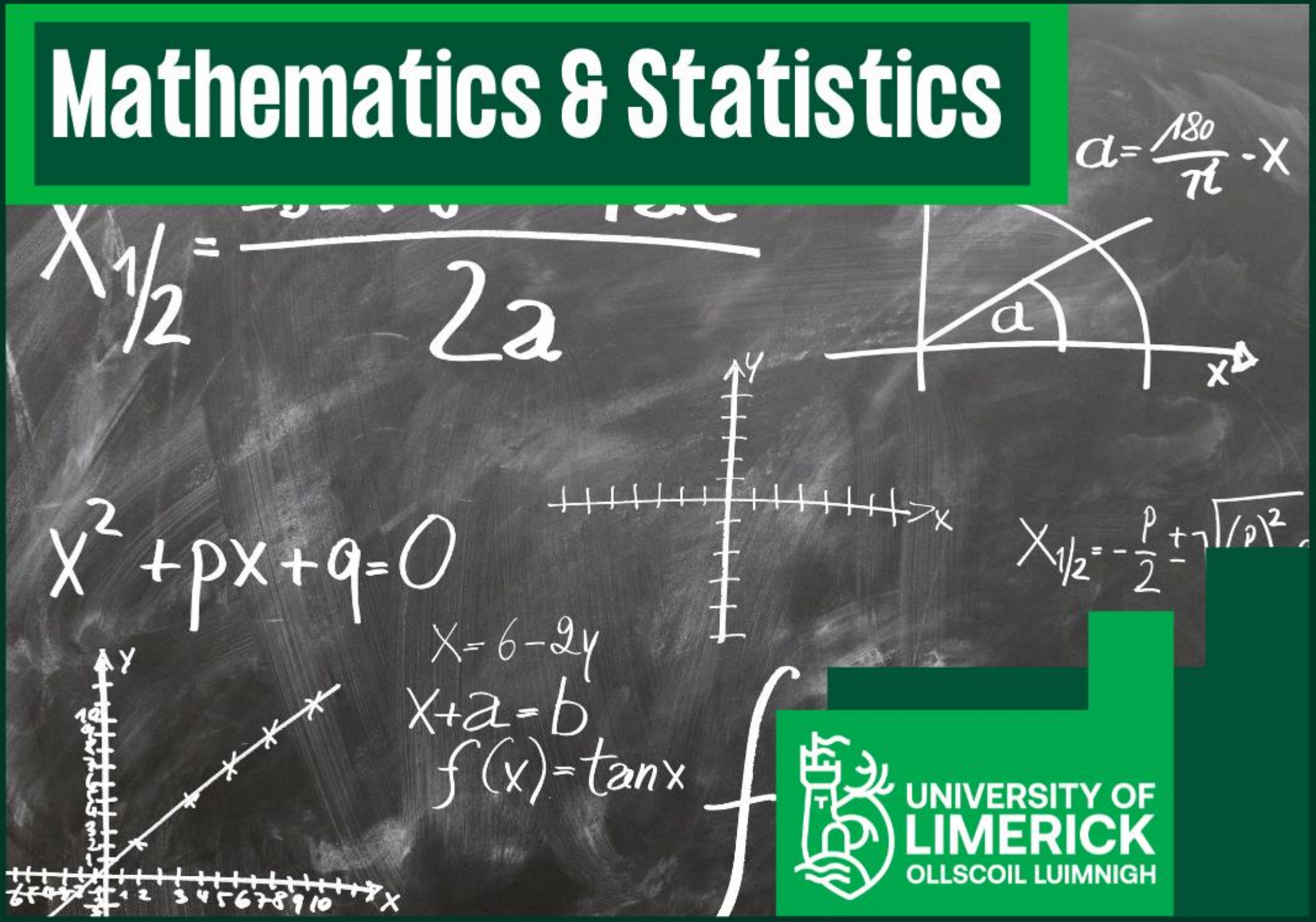
ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module aims to provide an introduction to the design of full custom analogue ASICs (Application Specific Integrated Circuits). It follows on from EE6621 and complements the material in the earlier module by shifting focus to consider analogue IC design.

Syllabus: Review of basic CMOS process. Basic electrical properties and SPICE modelling of MOS transistors. Circuit simulation and model complexity issues. Basic circuit concepts. Resistors and capacitors in CMOS. Sheet resistance Rs. Resistor structures. Area capacitances of layers. Wiring capacitances. Bipolar Junction Transistors and diodes. ESD protection structures. SPICE modelling of BJTs and diodes. Latch-up in circuits. The operational ampli?er. Functional operation and modelling. Macro and transistor level models in SPICE. Op-amp design. Current mirrors, differential input stage, voltage and power ampli?er stages. Single and dual-rail operation. Analogue IC layout design. MOS transistors, capacitors, resistors, interconnect. CAD tool and design issues. CIF output. The CMOS Inverter. Operation, modelling and simulation. Static CMOS logic cell design. Inverter delays. Propagation delays. Analog to digital converters. Successive approximation, ?ash and staircase ADC. Architectures and design. SPICE modeling and simulation. Digital to analog converters. Resistor string and weighted-current DAC. Architectures and design. SPICE modelling and simulation.

Mathematics & Statistics



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Mathematics & Statistics: Year 1 Modules

MA4002 - ENGINEERING MATHEMATICS 2

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To develop the student's understanding of and problem-solving skills in the areas of Integral Calculus and Differential Equations. To give the student an understanding of the Matrix Algebra and its application to solving systems of linear equations. To introduce the student to Multivariate Calculus.

Syllabus: [The Indefinite Integral]: Integration techniques including integration of standard functions, substitution, by parts and using partial fractions. [The Definite Integral]: Riemann sums, and the Fundamental theorem of calculus. Application of integration to finding [areas, lengths, surface areas, volumes, and moments of inertia]. [Numerical Integration]: Trapezoidal rule, Simpson's rule, other Newton-Cotes formulae, and Gaussian quadrature. [Ordinary Differential Equations]: first order including variables separable and linear types. Linear second order equations with constant coefficients. Numerical solution by Runge-Kutta. Functions of several variables and partial differentiation. Fitting a line or curve to a set of data points. Matrix representation of and solution of systems of linear equations. Matrix algebra, invertibility, determinants.

Prerequisites: MA4001

MA4302 - APPLIED STATISTICS FOR ACCOUNTING

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: This course is designed to give students the statistical background required to apply statistical techniques to data both of general interest and of interest specific to business activity. This involves 1) presenting data using descriptive measures and graphical means, 2) presenting hypotheses that can be tested statistically, together with an appropriate interpretation of the test results and 3) analysing time series data and prediction. In order to deal with large data sets, the lectures are accompanied by computer laboratories using a statistical computer package (SPSS).

Syllabus: 1. Sampling methods and descriptive statistics - collection and tabulation of data. Descriptive measures and graphical presentation of data. 2. Basic concepts of probability - probabilities of the union and intersection of events, conditional probability, contingency tables. Discrete probability distributions - the binomial distribution. Expected values. 3. Continuous probability distributions the normal and Pareto distributions relevance to natural and economic phenomena. 4. Applications of the central limit theorem - interval estimation. 5. Hypothesis testing - one and two sample tests for population proportions and means. Tests of association. 6. The Pearson and Spearman correlation coefficient and simple linear regression. 7. Time Series Analysis. Trends and Seasonal Variation. Use of moving averages. Prediction. 8. Use of a statistical package (SPSS) for data input and transformation, as well as carrying out the statistical methods described above.

MA4402 - COMPUTER MATHS 2

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To develop some of the foundations of mathematics. To introduce the students to mathematical ideas of crucial importance in computer science. Symbolic mathematics packages will be used to demonstrate many of these ideas.

Syllabus: Real-valued functions: a geometrical approach to calculus through the graphs of functions of one or two

variables (use will be made of symbolic maths packages). Convergence of sequences. Simple numerical methods. Iteration of functions. Matrices: addition, multiplication and scalar multiplication. Matrices as linear transformations in computer graphics. Graph theory: basic concepts of vertices, edges, paths, circuits, connectedness and trees. Computer representation of graphs. Graph algorithms.

MA4602 - SCIENCE MATHEMATICS 2

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To develop the fundamental concepts and basic tools of calculus. To introduce applications of calculus in science and technology. To develop and integrate the basic scientific mathematical skills.

Syllabus: [Integration and applications:] indefinite integral as antiderivative; integration by substitution; definite integral as area; Fundamental Theorem of Calculus; integration by parts; calculation of areas; applications in science. Introductory treatment of SimpsonÆs Rule. [Functions of the Calculus:] domain and range; inverse trigonometric functions, hyperbolic functions, their graphs and derivatives. [Curve sketching:] symmetries; intercepts; restrictions on range; discontinuities; uses of first and second derivatives; turning points; behaviour for large and small x ; asymptotes. [Series:] sequences; arithmetic and geometric series; infinite series and convergence; ratio and comparison tests; power series; Maclaurin and Taylor series; addition, multiplication, differentiation and integration of power series; use as approximation of a function; limits, l'Hopital's rule.

Prerequisites : MA4601

MA4702 - TECHNOLOGICAL MATHEMATICS 2

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To develop the fundamental concepts and basic tools of calculus. To introduce applications of calculus in science and technology. To develop and integrate the basic mathematical skills relevant to technology.

Syllabus: Functions of the Calculus: graphs and functions, domain and range, inverse trigonometric functions, hyperbolic functions. Curve sketching: symmetries, intercepts, restrictions on range, discontinuities, turning points, behaviour for large and small x, asymptotes; Series: sequences, series as sum of sequence, sums of arithmetic and geometric series, infinite series and convergence, ratio and comparison tests, power series, Maclaurin and Taylor series, manipulation of power series, differentiation and integration of power series, use as approximation of a function, limits, l'Hopital's rule; Integration and applications: indefinite integral as antiderivative, integration of standard functions, definite integral as area, integration by substitution, integration by parts, applications to: area, volumes, surfaces of revolution, numerical integration including Simpson's rule; Partial derivatives: functions of two variables, partial derivative, definition and examples, differential and total differential, higher partial derivatives, application to small errors.

Prerequisites: MA4701

MS4022 - CALCULUS 2

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: This module introduces the student to sequences and series, integral calculus, ordinary differential equations and functions of

several variables. It develops problem solving skills in these topics.

Syllabus: Sequences and series: Limit of a sequence, convergence of a sequence; series, convergence, tests for convergence, absolute and conditional convergence. Power series. MacLaurin and Taylor series: Order notation, big-O, little-O notation, asymptotic equivalence, Taylor's Theorem and remainders, applications. Indefinite Integral: Integration of standard functions, techniques including integration by parts, substitution and partial fractions. Definite Integral: The limit of a Riemann sum, fundamental theorem of calculus, Area between two curves, Volumes of revolution, Improper integrals. Introduction to ordinary differential equations: Definition of an ODE,linearity, first order variables separable, solution technique by integration. Introduction to functions of two real variables: Continuity, partial derivatives and their geometrical interpretation, Leibniz's rule, conditions (without proof) for maximum, minimum, saddle-point.

Prerequisites: MS4021

MS4122 - FURTHER LINEAR ALGEBRA

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: Course re-structuring in response to Project Maths. The aim of this module is to build the student's understanding of Linear Algebra to a more advanced level. The module includes a formal treatment of Vector Spaces and Inner Product Spaces followed by a careful treatment of the properties of vectors and matrices on R^n and C^n.

Syllabus: Axiomatic treatment of Vector Spaces and Inner Product Spaces. Linear Independence, spanning sets. Bases & Dimension. Inner products/norms. Angles/orthogonality in Inner Product Spaces. Orthonormal bases/Gram Schmidt Orthogonalization. Linear transformations/change of basis. Properties of matrices. Rank, row space, column space, null space. Vector norms on R^n and C^n. Existence and uniqueness of matrix inverse/relation to matrix rank. Fredholm Alternative. Unitary and Hermitian properties of matrices. Eigenvalue & Eigenvector Topics. Eigenvalue decomposition for Hermitian matrices. Algebraic & Geometric Multiplicity. Defective Eigenvalues and Matrices. Similarity Transformations. Diagonalisation/Unitary Diagonalisation. Induced matrix norms. Applications of the above topics.

Prerequisites: MS4131

MS4222 - INTRODUCTION TO PROBABILITY AND STATISTICS

Please note there is space for 3 students

ECTS Credits: 6 (Year 1 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: This module replaces existing module MS4212 Introduction to Data Analysis. The focus of the previous module MS4212 was the analysis of data without a formal background in probability. The philosophy underpinning this approach was to introduce students to real data, which was entirely absent from Leaving Certificate mathematics in the 1990s and begin to lay the foundations for the elements of data modelling necessary for the years three and four modules in the statistics options. Probability and Statistics account for 20% of the new Project Maths syllabus. Students now entering first year have had prior exposure to elementary data handling skills and experience applying some basic ideas of probability. Consequently, it is not obvious that it is still necessary or desirable to adopt a teaching approach that separates the subject areas statistics and probability. As things stand, probability is totally absent from MS4212. One consequence of this omission is that statistical tools are introduced without proper formal theoretical justification based on probability models. Likewise, students are not as well prepared as they could be for the (rather packed) follow-on module MS4213. The intention in

the revised (and renamed) first year introductory module is to include some probability in the syllabus. The strategy is to give students time to explore some of the many classical/famous problems that often arise in introductory probability. Discrete random variables and probability mass functions will be covered. As well as relieving some of the pressure in the congested semester 3 module MS4213, students will now be required to engage in more algebraic manipulation and basic mathematics. The Statistical content of the module has been reconfigured to allow the inclusion of the material on probability.

Syllabus: Elementary Probability: permutations and combinations; axioms, rules of probability; conditional probability; independent events; probability trees; law of total probability; Bayes' rule. Discrete Random Variables.

Mathematics & Statistics: Year 2 Modules

MA4004 - ENGINEERING MATHEMATICS 4

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To provide students with an understanding of the fundamentals of probability and its relation to statistics. To introduce statistical inference through the concepts of estimation and hypothesis testing. To apply these concepts to problems from both daily life and engineering/science.

Syllabus: The concept of variation - discrete and continuous variables. Graphical representation of data - frequency tables, histograms, bar charts, pie charts, boxplots. Descriptive statistics - measures of location and dispersion. Basic concepts of probability - Frequency interpretation and axioms of probability. Probability of an event. Laws of addition and multiplication. Compound events. Conditional probability. Independence. Bayes Theorem. Discrete and continuous random variables - expectation and variance, moments. Discrete probability distributions - Binomial, Geometric, Poisson. Continuous probability distributions - Exponential, Normal, Uniform distributions. The central limit theorem. Statistical inference - interval estimation and hypothesis testing, type I and type II errors, one and two-tailed tests. Linear regression - testing for an association between two continuous variables.

MA4604 - SCIENCE MATHEMATICS 4

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: This is a module designed for students of the life sciences and chemistry to equip them with the mathematical skills necessary for their core subjects and the ability to understand the mathematical language used in research papers in these areas.

Syllabus: [Complex Numbers:] necessity and definition; algebra including multiplication, conjugate, division, absolute value; Argand diagram representation; polar form, argument; exponential form; de Moivre's theorem, powers and roots. [Modelling with Differential Equations:] Derivation of differential equations of exponential growth and decay. Application to population growth, radioactive decay, and other problems from science. [First Order Ordinary Differential Equations:] First order equations of variables separable and linear types; applications including chemical reactions, mixing problems, Newton's Law of Cooling, radioactive decay. [Second Order Ordinary Differential Equations:] Second order homogeneous equations with constant coefficients. Application to damped harmonic oscillators. [Partial Derivatives:] Functions of several variables; partial derivatives, definition and examples (e.g. from thermodynamics); higher partial derivatives; optimisation and Second Derivative Test for functions of two variables. [Linear Algebra]: Review of matrices and determinants (3X3). Lines and planes in three

dimensions. Systems of equations as intersections of lines and planes. Matrices as linear transformations: scale, shear, rotation. Eigenvalues and eigenvectors. Matrix diagonalisation. Powers of a matrix. Possible applications include crystallography, forest management (sustainable yield); age-specific population growth; genetics.

Prerequisites: MA4602, MA4601

MA4704 - TECHNOLOGICAL MATHEMATICS 4

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To introduce students to the fundamental ideas of uncertainty through probability. To lay a good foundation for the stream of statistically oriented modules in the fourth year. To introduce students to the most widely used statistical distributions and applications thereof. To introduce statistical inference through the concepts of estimation and hypothesis testing.

Syllabus: [Variables] - continuous and discrete. [Representation of variables] - frequency tables, histograms, bar charts, etc. [Reduction of variables] - measures of location and dispersion, mean, variance, range, median, quartiles, etc. [Introduction to the fundamentals of probability]. Experiments, sample spaces, events. Laws of probability addition and multiplication, conditional probability. [Bayes theorem], prior and posterior distributions. [Introduction to random variables], probability density functions. [Special distributions][binomial, Poisson, geometric, uniform, exponential, normal].[Statistical inference], point and interval estimates, standard error of an estimator, hypothesis testing, one and two-tailed tests. One and two sample problems for the mean, variance and proportion. [Non-parametric tests] - sign test, rank tests. [Correlation and Regression] - method of least squares.

Prerequisites: MA4702, MA4701

MS4303 - OPERATIONS RESEARCH 1

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: The module will introduce OR and various standard techniques for decision-making. Linear programming will be covered in some depth. The student will be able to apply these techniques to realistic problems.

Syllabus: Model building and the methods of operational research. Linear programming - graphical interpretation, simplex method, and sensitivity analysis. duality and the dual simplex method, Applications of linear programming - Transportation and assignment algorithms, zero-sum games. Critical path analysis - minimum completion time, resource constraints and resource levelling, probabilistic task durations. Decision analysis - decision trees, expected value, utility, Bayesian approach.

Prerequisites: MS4213

MS4404 - PARTIAL DIFFERENTIAL EQUATIONS

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To introduce the partial differential equations of applied mathematics and physics with some standard solutions and applications. To introduce the theory and applications of first order linear and nonlinear partial differential equations of mathematical physics.

Syllabus: [Introduction to PDEs:] Introduction to the partial differential equation of physics; classification of second order linear partial differential equations

(hyperbolic, parabolic, elliptic). [Wave equation:] Derivation of wave equation for strings and membranes; solutions by separation of variables; harmonics; d'Alembert's solution; applications to light and sound. [Laplace's equation:] steady state heat flow; cylindrically symmetric solutions and Bessel functions; spherically symmetric solutions and Legendre functions; flow in porous media. [Diffusion equation:] Derivation of heat/diffusion equations in one dimension; relation to Brownian motion (random walk) in two and three dimensions; application to chemical diffusion; solutions by separation of variables. [First order PDEs:] Linear and quasilinear first order partial differential equations; characteristics; applications in chromatography, glacial flow, sedimentation; breaking waves and shocks; diffusion and dispersion (Burger's and KdV equations).

Prerequisites: MS4403

MS4014 - INTRODUCTION TO NUMERICAL ANALYSIS

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: This module provides an introduction to the basic concepts of numerical analysis.

Syllabus: Propagation of floating-point error; Zeroes of nonlinear functions: Bisection method, NewtonÆs method, Secant method, fixed point method; convergence criteria, rate of convergence, effect of multiplicity of zero; introduction to the use of NewtonÆs method for systems of nonlinear equations. Systems of linear equations: Gauss elimination, LU and Cholesky factorisation, ill-conditioning, condition number; iterative methods: Jacobi, Gauss-Seidel, SOR, convergence criterion. Interpolation and Quadrature: Lagrange interpolation, error formula; Newton-Cotes and Romberg quadrature. Numerical solution of ordinary differential equations: initial and boundary value problems, Runge Kutta and Adams Moulton methods, application to systems of ordinary differential equations.

Prerequisites: MS4022, MS4403

MS4034 - APPLIED DATA ANALYSIS

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: [Module replaces Numerical Computation MS4024] This is a new module the aim of which is to give the students experience building and using statistical models to analyse real data and formulate conclusions based on interval estimates, hypothesis testing, model selection and comparison. The module serves to integrate the practice and theory of statistics. The instructor and students are expected to analyse the data provided with each lab in order to answer a scientific question posed by the original researchers who collected the data. To answer a question, statistical methods are introduced, and the mathematical statistics underlying these methods are developed. Syllabus: Descriptive statistics; quantile plots, normal approximation. Simple random sampling; confidence intervals. Stratified sampling; parametric bootstrap allocation. Estimation and testing; goodness-of-fit tests, information, asymptotic variance. Contingency tables; experimental design. Poisson counts and rates; Mantel-Haenszel test. Regression: prediction, replicate measurements, transformations, inverse regression, weighted regression. Multiple linear regression; model checking, projections. Analysis of variance; unbalanced designs, indicator variables, factorial designs.

Prerequisites: MS4222

MS4414 - THEORETICAL MECHANICS

Please note there is space for 3 students

ECTS Credits: 6 (Year 2 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To introduce students to the fundamental concepts of theoretical mechanics. To prepare students by developing the basic mathematical skills in theoretical mechanics. To emphasise applications of vector calculus and ODEs. Syllabus: Kinematics: reference frames, motion in one dimension, motion with constant acceleration, kinematics in three dimensions, uniform circular motion, centripetal acceleration Dynamics: mass, force, NewtonÆs laws of motion, friction, Newton's Law of Gravity, planetary motion Conservation laws: momentum, angular momentum, energy (kinetic energy, potential energy as gradient of force) Oscillatory motion: free and forced pendulum, resonance, parametric resonance Introduction to the Hamiltonian and Lagrangian Mechanics.

Prerequisites: MS4403, MS4613

Mathematics & Statistics: Year 3 Modules

MA4006 - ENGINEERING MATHEMATICS 5

Please note there is space for 3 students

ECTS Credits: 6 (Year 3 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To introduce the student to elementary Vector Calculus. To give the student a broad understanding of analytical and numerical techniques for solving Partial Differential Equations.

Syllabus: Vector Calculus: Scalar and vector fields, contour maps, directional derivative and gradient vector of a scalar field, divergence and curl of a vector field (line, surface and volume integrals), Integral Theorems (Gauss', Green's and Stokes'). Partial Differential Equations: Modelling and derivation of wave, heat and Laplace's equation. Solution of such equations by separation of variables. Numerical methods for the solution of partial differential equations using finite differences.

Prerequisites: MA4003

Mathematics & Statistics: Year 4 Modules

MA4128 - ADVANCED DATA MODELLING

Please note there is space for 3 students

ECTS Credits: 6 (Year 4 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To ground the students in Applied Multivariate Analysis. The module serves business and mathematics students. It introduces the mathematical statistical ideas behind Principal Component Analysis, Factor Analysis, Cluster Analysis, Discrimination Function and the Multiple Linear Logistic function. The students learn how to implement these techniques in Minitab to become competent in the analysis of a wide variety of multivariate data structures.

Syllabus: Principal Component Analysis, Cluster Analysis, Discrimination Function and the Multiple Linear Logistic function and Factor Analysis are introduced in this order. From the outset the Minitab (Statistical Package) is introduced. Different types of multivariate data structures are introduced. The analyses appropriate to each type of data structure are deduced from general principles and their implementation in Minitab described. Many different data structures are considered. Emphasis is placed on the integration of the different methods of analysis available in order to achieve an effective interpretation and simple summary of the multivariate data. Report writing, communicating the interpretation to non-technical business managers, is taught.

Prerequisites: EC4307, MA4125

MA4008 - MULTIVARIABLE CALCULUS AND DIFFERENTIAL EQUATIONSECTS

Please note there is space for 3 students

Credits: 6 (Year 4 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: This module is an introduction to multivariable calculus and differential equations and focuses on aspects that facilitate pre-service teachers' understanding of the Functions and Calculus strand of the Senior Cycle curriculum, and consequently prepares them to teach it effectively.

Syllabus: Multivariable Calculus: review of vectors and introduction to vector functions; differentiation of vector functions and application of the derivative to determine the tangent to a curve and the arc length of a curve between two points; development of the notion of a derivative of a function of two or more variables and application of this knowledge to using partial derivatives of a function as a method to apply a linear approximation to a function (Taylor's expansion); interpretation of scalar and vector fields: grad, div and curl identities; determining the integral of a scalar or vector-valued function on curves.

Differential Equations: order, degree, solution, boundary and initial conditions, graphs of solutions; examples from mechanics and population growth; First order ODEs: variable separable, homogeneous, linear and exact with applications; Second order differential equations: linear with constant coefficients with applications; Numerical solution of first order differential equations: The Euler method.

MS4018 - DYNAMICAL SYSTEMS

Please note there is space for 3 students

ECTS Credits: 6 (Year 4 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: To demonstrate to the student how dynamical techniques can be applied to the analysis of nonlinear and chaotic models, data and systems.

Syllabus: One dimensional flows: flows on the line, fixed points and stability; bifurcations, flows on the circle. Two dimensional flows: Linear systems, classification of fixed points; phase plane, linearisation, stability and Lyapunov functions. Limit cycles, oscillators. Bifurcations in the plane, Hopf bifurcations, global bifurcations of cycles, quasi-periodicity. Poincare maps. Chaos : Lorenz equations; strange attractors; control of chaos. One dimensional maps : fixed points, periodic points and stability; bifurcations, the logistic map -- numeric and analysis, period-doubling and intermittency; Lyapunov exponents, renormalisation and Feigenbaum numbers. Introduction to time series applications. Fractals: dimensions; strange attractors revisited.

Prerequisites: MS4403

MS4028 - STOCHASTIC DIFFERENTIAL EQUATIONS FOR FINANCE

Please note there is space for 3 students

ECTS Credits: 6 (Year 4 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: Methods of stochastic dynamics applied to finance, and with reference to problems involving stochastic differential equations from physics and engineering.

Syllabus: Introduction to Monte Carlo simulation: Numerical simulation of paths; ensemble averaging and connections to partial differential equations. Examples from Finance and Physics. Stochastic differential equations and Langevin equations. Fokker- Planck/Kolmogorov equation and relation to Black- Scholes equation. Numerical methods for SDEs and Langevin equations: Euler-Maryuma method and higher- order schemes. Pricing barrier options and first-passage problems, including multiple stochastic

factors. Trinomial trees and finite difference methods: Pricing on trinomial trees. Analytical methods for partial differential equations. Explicit, implicit, Crank-Nicholson, and ADI implementations for numerical solution of partial differential equations, including options on multiple assets. Modelling markets with stochastic differential equations: Comparison of modelling methods for stochastic dynamics problems in Finance, Physics, and Engineering. The Ito/Stratonovich dilemma. Non-Gaussian distributions and fat tails in the markets. Long-memory effects. Coloured noise and the Ornstein Uhlenbeck process. Autocorrelation functions and spectra of noise sources. Wiener-Khinchin theorem.

Prerequisites: MS4213, MS4217

MS4218 - TIME SERIES ANALYSIS

Please note there is space for 3 students

ECTS Credits: 6 (Year 4 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: This course introduces students to the statistical basis behind model identification, model fitting and model criticism of time series probability models in both time and frequency domains.

Syllabus: Components of a time series; smoothing methods; trend projection; deseasonalising a time series, autocorrelation; autoregressive models; integrated models; estimation in the time domain; the Box-Jenkins approach; spectral analysis, the spectral distribution function, the spectral density function, Fourier analysis, periodogram analysis, the fast Fourier transform; forecasting methods, extrapolation, Holt- Winters, Box-Jenkins, prediction theory; bivariate processes, the cross-correlation function, the cross- spectrum; applied time series analysis using suitable software packages.

MS4408 - MATHEMATICAL MODELLING

Please note there is space for 3 students

ECTS Credits: 6 (Year 4 Module

Mathematics & Statistics

Rationale and Purpose of the Module: To learn the techniques of advanced mathematical modelling or real phenomena with examples from the physical, biological, chemical and financial sciences.

Syllabus: Review of modelling skills, applications from: classical models (e.g. heat transfer), continuum models, financial models, statistical models, mathematical biology, advanced models.

Prerequisites: MS4404, MS4407, MS4403

MS4528 - MATHEMATICAL AND STATISTICAL MODELS OF INVESTMENTS

Please note there is space for 3 students

ECTS Credits: 6 (Year 4 Module)

Mathematics & Statistics

Rationale and Purpose of the Module: The aim of this module is to equip the student with the necessary analytical and quantitative skills required for the pricing and hedging of contingent claims, as well as of interest rate products, credit default swaps, and analyse the risk and return of individual assets and portfolios.

Syllabus: • The Black-Scholes Model as a limit of the Binomial Model. Definition and Properties of Brownian motion. Stochastic Integration, Ito Calculus and Stochastic Differential Equations for continuous-time models in finance. Option pricing and hedging in the Black-Scholes model. • Fixed Income securities and interest rate derivatives, including Swaps, Caps, Floors, and Black's Formula. • Credit risk and Credit derivatives such as Credit default swaps, Collateralised debt obligations. Credit spreads, implied default probabilities and the pricing of simple derivatives. • What is volatility? Black-Scholes implied volatilities, realized volatilities, Volatility Swaps.

Time Series models for volatility estimation and forecasting (e.g. using GARCH). • Portfolio optimization with the Markowitz approach. The Capital Asset Pricing Model.

Physics



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Physics: Year 1 Modules

PH4012 - PHYSICS FOR ENGINEERS 2

Limited places available: 5

ECTS Credits: 6 (Year 1 Module)

Physics

Rationale and Purpose of the Module: Continuation of an introductory course in physics (PH4011) for engineering students.

Syllabus: Properties of Matter: Elastic and thermal properties of solids: stress and strain, thermal expansion, HookeÆs law, YoungÆs modulus, shear modulus, bulk modulus. Fluid mechanics: pressure, variation of pressure with depth, pressure measurements. Buoyant forces and Archimedes' principle. Fluid dynamics: Bernoulli's equation, other applications of fluid dynamics. Heat: The kinetic theory of gases: molecular model of an ideal gas, non-ideal gases, equipartition of energy. Heat transfer: conduction, convection, and radiation. Oscillations and simple harmonic motion: transverse and longitudinal waves, superposition, speed, reflection, harmonic waves; sound waves, sound intensity, Doppler effect. Light: EM Spectrum, Sources of light; Geometrical optics, reflection, refraction, dispersion, achromatic optics; Physical optics, interference; diffraction; diffraction gratings; polarisation; Optical systems, the microscope, the telescope, the eye.

Prerequisites: PH4011

PH4032 - PHYSICS FOR GENERAL SCIENCE 2

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: To introduce the student to general wave motion, optics and acoustics. To introduce the student to the mechanical and thermal properties of matter.

Syllabus: Review of the basic concepts of force and energy. Oscillations and simple harmonic motion: transverse and longitudinal waves, superposition, speed, reflection, harmonic waves, sound waves, sound intensity, Doppler effect. Light: EM spectrum, sources of light, Geometrical optics, reflection, refraction, dispersion, achromatic optics. Physical optics: interference, diffraction, diffraction gratings, polarisation. Optical systems: the microscope, the telescope, the eye. Elasticity: Hooke's law. Fluids. Heat: temperature, laws of thermodynamics, heat capacities. Heat transfer: conduction, convection, and radiation. Kinetic theory, the ideal gas. Heat engines.

PH4042 - THERMAL PHYSICS

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: The purpose of this module is to enhance students understanding of key concepts and models associated with thermal physics. The objectives are to first present a general thermodynamics framework, then to introduce statistical concepts followed by analysis of specific physical models.

Syllabus: Temperature: thermal equilibrium; the zeroth law; equations of state; temperature scales. [First law of thermodynamics]: internal energy; heat and heat capacity; reversible processes and work; free expansion and Joules law. [Second law of thermodynamics]: Carnot cycles, efficiency; thermodynamic temperature scale. [Entropy]: Clausius inequality and entropy; principle of increasing entropy; central equation of thermodynamics; entropy of an ideal gas. [Thermodynamic potentials and Maxwell relations]: internal energy U; enthalpy H; Helmholtz free energy F; Gibbs free energy G; energy equations; availability A and useful work; mechanical, magnetic & electrolytic systems. [Change of phase]: chemical potential; Clausius-Clapeyron equation; nucleation; Gibbs phase rule. [Microstates and macrostates]: statistical weight of a macrostate; Boltzmann definition of entropy;

entropy and disorder. [Equilibrium of an isolated system]: magnetic dipole lattice; Schottky defects. [Equilibrium of a system in a heat bath]: the partition function and the Boltzmann distribution; equivalence of thermodynamic and statistical quantities; the classical gas; heat capacities of solids; perfect quantal gas; Planck's law; thermodynamics of black body radiation. [Equilibrium of a system with variable particle number]: Gibbs distribution; Fermi-Dirac and Bose-Einstein distributions; Bose-Einstein condensation; Fermi energy; density of states; electrons in metals.

Prerequisites: PH4131

PH4062 - NANOTECHNOLOGY 2

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: The purpose of this module is to enhance the students' understanding of key concepts of mechanics, optical and electronic transport properties of nanostructured materials and to develop an understanding of the importance of mechanical and electro-optical properties in applications of nanostructured materials.

Syllabus: Nanotribology and Materials Characterization Studies Using Scanning Probe Microscopy: Description of AFM/FFM, Friction and Adhesion, Scratching, Indentation and wear, Phase, electrostatic and related scanning probe microscopies. Surface Forces: Types of Surface Forces; Methods Used to Study Surface Forces; Adhesion and Capillary Forces; Different Modes of Friction and the Limits of Continuum Models. Friction and Wear on the Atomic Scale: Friction Force Microscopy in Ultra-High Vacuum, The Tomlinson Model, Friction Experiments on Atomic Scale, Thermal Effects on Atomic Friction, Geometry Effects in Nanocontacts. Nanomechanical Properties of Solid Surfaces and Thin Films: Modes of Deformation, Thin Films and Multilayers. Mechanics of Biological Nanotechnology: Scales at the Bio-Nano Interface, Viruses as a Case Study. Optical Properties of Nanostructures: Collective oscillation (Gustav-Mie explanation), surface plasmon polaritons, subwavelength optics, nonlinear optical properties, Electron Transport in Nanostructures: Electronic transport in nanostructures, density of states in nanocrystals. Electronic Nanodevices: Quantization of resistance, single-electron transistors, resonant tunnelling diodes, organic molecular electronics. Magnetic Nanodevices: Spintronics. Photonic Nanostructures: Photonic crystals, metamaterials, disordered photonic media.

Prerequisites: PH4081

PH4092 - SEMICONDUCTOR DEVICES

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: To introduce the student to the physics of solid-state electronic devices and to their application To introduce the student to semiconductor devices, electronic logic and digital devices

Syllabus: Conduction in solids: elementary band Theory of conductors, semiconductors and insulators, doping; donor and acceptor impurities, intrinsic and extrinsic conduction, majority and minority charge carriers. The PN junction: junction diode and applications, Zener diode, the bipolar transistor; transistor action, applications the emitter amplifier, early effect; the field effect transistor, JFET, MOSFET, characteristics and application in simple circuits. Combinational Logic: BinaryLogic, Logic functions; AND, OR, NOT; Truth table; Boolean Algebra; Boole Boolean postulates and theorems, De Morgan; Logic gates - complete set; NAND and NOR implementations of logic functions; Multiple- input gates. Sequential Logic: Memory, feedback, synchronous/asynchronous, Flip-flops, Latches; basic SR latch, gated SR Latch, D-type, Master-slave latch, JK Latch; Shift Registers, Counters, UART (block diagram). Operational and Instrumentation amplifiers: desirable characteristics, comparators, voltage reference, virtual earth, voltage follower, Nyquist Shannon sampling theorem.

Prerequisites: PH4131

PH4102 - WAVES/LIGHT/MODERN PHYSICS

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: To introduce the student to general wave motion, optics and acoustics and to provide the student with a general introduction to special relativity and to atomic and nuclear physics.

Syllabus: Oscillations and simple harmonic motion: transverse and longitudinal waves, superposition, speed, reflection, harmonic waves. Sound: sound waves, sound intensity, Doppler effect. Light: EM Spectrum, Sources of light, Geometrical optics; reflection, refraction, dispersion, achromatic optics; Physical optics; interference, diffraction, diffraction gratings, polarisation; Optical systems; the microscope, the telescope, the eye. Special Relativity: Einstein's Postulates, time dilation, length contraction, the Lorentz Transformation, relativistic momentum and energy conservation. Atom: Classical models, Planck's quantum hypothesis, the Bohr atom, The photoelectric effect; quantized energy; the de Broglie wavelength. The nucleus: nucleons; isotopes; nuclear structure; binding energy. Radiation: X rays, alpa, beta and gamma radiation, the law of radioactive decay. fission and fusion; nuclear reactors. Detection, dosage.

Prerequisites: PH4131

PH4111 - SEMICONDUCTORS 2

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: The purpose of the module is introducing advanced CMOS process technology, and the problems associated with device fabrication as the technology moves towards 30 nm features and below. Syllabus: CMOS process flow: CMOS fabrication steps, active region formation, shallow trench isolation, n and p well formation. Gate formation: threshold voltage, control of Vth in n and p channel MOS devices, tip or LDD formation (hot electrons), side wall spacer. Source and drain formation: contact and interconnect formation, multilevel metal formation for ULSI, RC time delay. Surface contaminants: particules, metallic contaminants, organic contaminants, native/chemical oxide, moisture. Cleaning processes: surface characteristics, wet cleaning, dry cleaning,supercritical fluid cleaning, lamp cleaning- surface refreshing. Cleaning /Etching Chemistries]: contamination reduction, gettering (intrinsic and extrinsic). Chemical Mechanical Polishing (CMP): SiO2 inter-level dielectric layers planarisation, tungsten plug formation and shallow trench isolation. Dual Damascene: trench first approach, via first approach, optical proximity correction. High and low K dielectrics: silicon on insulator, ultra-thin oxides, gate dielectrics, degradation mechanisms, nitroxides, fluorinated oxides, shallow junction formation, transient enhanced diffusion. Electrstatic discharge (ESD): basics of ESD, principles of ESD control. Semiconductor Metrology: CD and overlay measurements, electrical and optical measurements. Assembly: frontend assembly, backend assembly. Semiconductor failure analysis: implant metrology, interconnect process metrology, ellpsometry, reflectrometry, sheet resistance measurements.

Prerequisites: PH4071, PH4805

PH4142 - INTRODUCTION TO PHYSICS

ECTS Credits: 6 (Year 1 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: Physics is a fundamental discipline for all Science & Engineering students. Studying physics helps teach students how to think rationally and logically, how to interpret the physical world around them, and how to quantitatively assess and

predict what happens in the world using the tools of mathematics to do so. The specific purpose of Introduction to Physics is to introduce students to the basic principles of measurement, mechanics, heat, fluids, waves and optics. The aim is teach students how to understand the relationship of these principles to the real world and through rational thought use this understanding to interpret, solve physical problems and question the meaning of their solutions. Syllabus: Measurement and units: The SI system, basic and derived. Mechanics: Displacement, velocity, acceleration, Newton's laws of motion, force, mass, momentum, work, energy, power. Heat: Temperature, calorimetry, specific heat capacity, latent heat, heat transfer, thermal conductivity. Optics: Geometrical optics, properties of optics, reflection, laws of reflection, refraction, laws of refraction, mirrors, lenses, total internal reflection, critical angle, optical instruments. Waves: Properties of waves, wave nature of light, Huygen's principle, double-slit experiment, diffraction, interference, diffraction gratings, polarization of light, the electromagnetic spectrum, ultraviolet, visible light, x- rays, -ray, infrared radiation.

Physics: Year 2 Modules

PH4072 - ELECTROMAGNETISM

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: The purpose ofthis module is to enhance students understanding of key concepts associated with electromagnetism. The objectives are to first present a general vector analysis, then to introduce electric and magnetic field concepts followed by analysis of specific physical problems using vector calculus. Secondly, the students will be introducedto the fundamental properties of electric and magnetic materials. The final objective is to introduce the students to the unified theory of electromagnetic waves and its application in matters and simple physical systems.

Syllabus: Vector methods: div, grad, curl; line, surface and volume integrals; Electric field E: electric charge, Coulombs law, electric field E, Gauss law, divergence of electric field, the Dirac delta function; Magnetic field: magnetic field B, Biot-Savart law, Amperes law, Lorentz force; Electromagnetic induction: emf, Faradays law, generators and motors; Maxwells equations in vacuum: integral and differential form, monopoles; Energy and potential: energy density in E and B fields, scalar potential V and vector potential A; Dipoles and multipoles: electric dipole p, magnetic dipole m, electric multipoles; Conductors: conductivity, Ohms law, Hall effect; Dielectrics: polarisation P, displacement D, permittivity, electric susceptibility, dielectric constant; Magnetic materials: diamagnets, paramagnets, ferromagnets; magnetic intensity H, magnetisation M, magnetic susceptibility, inductance, transformers; Maxwells equations in matter: Maxwells equations in terms of H and D; Boundary value problems: Poissons equation, Laplaces equation, uniqueness theorem, images; Circuits: transients, reactance, power, and impedance.

Prerequisites: PH4131

PH4132 - MODERN PHYSICS

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: This module will develop the student's understanding of fundamental concepts and ideas in modern physics, specifically the use and application of the Schrodinger equation, and the principles of special relativity.

Syllabus: Wave mechanics: De Broglie's hypothesis, wave functions and probability amplitudes, the Heisenberg Uncertainty principle. The Schrodinger wave equation: simple solutions in one dimension, transmission, reflection and penetration at a barrier, tunnelling, potential wells, the harmonic oscillator. The Schrodinger equation in three dimensions: the hydrogen atom, quantisation of

angular momentum, spatial quantisation, the Zeeman effect. Spin: the fourth quantum number, the Pauli exclusion principle. Special Relativity: Relativistic dynamics, relativistic mass and momentum, total energy, mass/energy equivalence. Spacetime: spacetime diagrams, introduction to four-vectors. Application of relativistic dynamics to particle beam devices and collision experiments. Nuclear Physics: Nucleons and nuclear models, nuclear spin nuclear reactions and cross-sections. Introduction to elementary particles and the Standard Model.

Prerequisites: PH4102

Physics: Year 4 Modules

PH5042 - CONDENSED MATTER PHYSICS 2

ECTS Credits: 6 (Year 4)

Limited places available: 10

Physics

Rationale and Purpose of the Module: This module will develop student's understanding of solid-state physics, and introduce key concepts in magnetism, superconductivity and low dimensional systems. Students will gain an understanding of magnetic phenomena and the underlying physical processes responsible, high and low temperature superconductivity, piezoelectrical phenomena and the concepts and applications of dielectric solids. They will master the relevant theory and obtain experience in solving numerical problems.

Syllabus: Magnetism: paramagnetism, diamagnetism, exchange interaction and ferromagnetism, Weiss model of ferromagnetism, Neel model of antiferromagnetism, domains and Bloch walls, giant magnetoresistance. Insulators: dielectrics and susceptibility, pyroelectrics, ferroelectrics and piezoelectrics. Quantum transport: ballistic transport, tunnelling and Coulomb blockade. Low dimensional systems: two-dimensional electron/phonon gas, density of states, quantum Hall effect. Superconductivity: Type-1 and Type-2 superconductors, magnetic properties, thermodynamics of superconducting transition, London equations, energy gap and Cooper pairs, tunnel junctions and Josephson effect.

PH4018 - MEDICAL INSTRUMENTATION

ECTS Credits: 6 (Year 4)

Limited places available: 5

Physics

Rationale and Purpose of the Module: To introduce the special considerations for electric/electronic instruments attached to patients for the purposes of diagnosis or therapy. *To introduce the medical device directive and the regulatory environment. * To give the student a working knowledge of the operation of some medical equipment *To introduce the student to the scientific basis of the well-known radiological equipment commonly in use in our hospitals and medical research institutes. * To provide a working knowledge of the operation of this equipment.

Syllabus: Introduction to regulatory bodies in the EU and US: CE, FDA etc.; 21 CFR, 510k, Medical Device Directive, Investigational Device Exemptions; Electrical isolation standards, implementation options; Laser Safety - EN 60825. Measurements in biological systems: obtaining a reference, ratiometric analysis, clinical requirements, Physiological monitoring; Invasive/non-invasive, Probes - Electrical, fibre optic, non-contact. Vital signs monitoring: ECG- Electro cardiogram, electrical function of the heart; EEG- Electro encephalo gram, electrical function of the brain; EMG- Electro myelo gram, electrical function of the muscle; Pulse Oximetry, optical measurement of arterial blood oxygen saturation; MAP- mean arterial pressure. Introduction to radiation transport in tissue: absorption/scattering theory (Mie, Rayleigh Gans), bulk scattering and bulk absorption, anisotropy, typical values for radiation transport properties, Monte Carlo modelling.X-RAY/CT: X-RAY generation and propagation, Introduction to tomography, Computed Tomography - Slicing the living human body. Ultrasound: Doppler effect, high frequency ultrasound, limitations. MRI/MRS: Magnetic Resonance basics, the hydrogen nucleus, proton spin and quantum mechanics; 3D map of hydrogen atoms and hence content

of the sample volume, Properties and amount of water in tissue, distinction between contrast and content imaging.

PH4608 - SOLID STATE PHYSICS 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: The purpose of this module is to enhance the students' understanding of key concepts in solid state physics, magnetism, superconductivity and low dimensional systems.

Syllabus: Magnetism: paramagnetism, diamagnetism, exchange interaction and ferromagnetism, Weiss model of ferromagnetism, Neel model of antiferromagnetism, domains and Bloch walls, giant magnetoresistance. Insulators: dielectrics and susceptibility, pyroelectrics, ferroelectrics and piezoelectrics. Quantum transport: ballistic transport, tunnelling and Coulomb blockade. Low dimensional systems: two-dimensional electron/phonon gas, density of states, quantum Hall effect. Superconductivity: Type-1 and Type-2 superconductors, magnetic properties, thermodynamics of superconducting transition, London equations, energy gap and Cooperpairs, tunnel junctions and Josephson effect.

Prerequisites: PH4607

PH5092 - SEMICONDUCTOR PROCESSES 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 10

Physics

Rationale and Purpose of the Module: The purpose of the module is to introduce advanced CMOS process technology, and the problems associated with the device fabrication as the technology moves towards nanoscale features.

Syllabus: CMOS (Complementary Metal-Oxide-Semiconductor) process flow: CMOS fabrication steps, active region formation, shallow trench isolation, n and p well formation. Gate formation: threshold voltage, control of Vth in n and p channel MOS devices, tip or LDD formation (hot electrons), sidewall spacer. Fundaments of CMOS Devices and Integration of Devices. Source and drain formation: contact and interconnect formation, multilevel metal formation for ULSI, RC time delay, reliability. clean room classes. Cleaning processes: surface characteristics, wet cleaning, dry cleaning, supercritical fluid cleaning, and lamp cleaning-surface refreshing. Cleaning /Etching Chemistries]: contamination reduction, gettering (intrinsic and extrinsic). Chemical Mechanical Polishing (CMP): SiO2 inter-level dielectric layers planarization, tungsten plug formation and shallow trench isolation. Dual Damascene: trench first approach, via first approach, optical proximity correction. High and low K dielectrics: silicon on insulator, ultra-thin oxides, gate dielectrics. Electrostatic discharge (ESD): basics of ESD, principles of ESD control.

PH5095 - NANOSCIENCE AND TECHNOLOGY 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 10

Physics

Rationale and Purpose of the Module: The purpose of this module is to enhance the students' understanding of key concepts of mechanics, optical and electronic transport properties of nanostructured materials and to develop an understanding of the importance of mechanical and electro-optical properties in applications of nanostructured materials.

Syllabus: Nanotribology and Materials Characterization Studies Using Scanning Probe Microscopy: Description of AFM/FFM, Friction and Adhesion, Scratching, Indentation and wear, Phase, electrostatic and related scanning probe microscopies. Surface Forces: Types of Surface Forces; Methods Used to Study Surface Forces; Adhesion and Capillary Forces; Different Modes of Friction and the Limits of Continuum Models. Friction and Wear on the Atomic Scale: Friction Force Microscopy in Ultra-High Vacuum,

The Tomlinson Model, Friction Experiments on Atomic Scale, Thermal Effects on Atomic Friction, Geometry Effects in Nanocontacts. Nanomechanical Properties of Solid Surfaces and Thin Films: Modes of Deformation, Thin Films and Multilayers. Mechanics of Biological Nanotechnology: Scales at the Bio-Nano Interface, Viruses as a Case Study. Optical Properties of Nanostructures: Collective oscillation (Gustav-Mie explanation), surface plasmon polaritons, subwavelength optics, nonlinear optical properties, Electron Transport in Nanostructures: Electronic transport in nanostructures, density of states in nanocrystals. Electronic Nanodevices: Quantization of resistance, single-electron transistors, resonant tunnelling diodes, organic molecular electronics. Magnetic Nanodevices: Spintronics. Photonic Nanostructures: Photonic crystals, metamaterials, disordered photonic media.

PH6072 - ADVANCED ANALYSIS OF MATERIALS 2

ECTS Credits: 6 (Year 4 Module)

Limited places available: 10

Physics

Rationale and Purpose of the Module: To provide detailed education and training in aspects of highly specialised materials analysis and characterisation To provide education and training in aspects of software packages related to materials stability (thermodynamics) and materials structure (modelling). This module will be taken by students on the Science and Engineering structured Ph.D. programmes, and will be provided to students of the national structured Ph.D. programme in nanoscience and nanotechnology, MSc Advanced Engineering Materials, MSc Applied Physics, and MSc Biomedical Device Materials.

Syllabus: Magic Angle Spinning - Nuclear Magnetitic Resonance spectroscopy {MAS-NMR}. Detailed X-ray analysis: e.g. analysis of mesoporous materials, order/disorder, crystallite size, small angle scattering, preferred orientation, residual stress / strain, prediction of X-ray diffraction data using atomistic modelling software, Detailed backscattered electron diffraction analysis, electron and FIB tomography. Fine structure analysis: high energy diffraction (radial distribution function {RDF}), Extended X-ray Absorption Fine Structure {EXAFS} and variants), nanoindentation, profilometry. Materials modelling: understanding of HSC Chemistry, Factsage, Calphad, MTDATA and Dictra packages, molecular dynamics methods, prediction of material properties and FTIR / Raman spectra.

PH6092 - PHYSICS OF SOLAR AND NUCLEAR ENERGY

ECTS Credits: 6 (Year 4 Module)

Limited places available: 5

Physics

Rationale and Purpose of the Module: Solar energy like most renewable energy sources is derived from nuclear energy. Both solar and nuclear energy will play key roles in the worlds future energy needs. Therefore it is important that Energy Scientists and Engineers have a general understanding of these energy sources and the various technologies for converting these energies to dispatchable heat and work.

Syllabus: In this module, we will explore two key sources of energy that have the potential to shape our sustainable future: solar power and nuclear power. Solar power, harnessed from the abundant and renewable energy of the sun, and nuclear power are both derived from the nuclear reactions and both offer unique solutions to address our growing energy needs while mitigating impact on the environment. In the solar energy part of the module, we will cover the basic principles of energy conversion in photovoltaic systems and other solar systems. We will explore how solar electricity generation works and the principles of photovoltaic electric systems.

PH6032 - SCIENTIFIC COMMUNICATION & LITERATURE REVIEW

ECTS Credits: 6 (Year 4 Module)

Limited places available

Physics

Rationale and Purpose of the Module: To educate the students in the principles and practice of analysing the relevant scientific literature, organizing the results of scientific experimentation and analysis and reporting the information in a format suitable for presentation at conferences and publication in the scientific literature as well as in reports, theses etc.

Syllabus: Objectives and characteristics of scientific reporting. Standard practices in presentation of scientific information: introduction, experimental methodology, results, analysis, discussion, and conclusions. Review and critical analysis of the relevant scientific literature; searching digital library databases. Organizing and communicating experimental methodology; appropriate levels of detail in reporting of procedures; identifying and describing essential principles of measurements, equipment and procedures used. Presentation of results and conclusions: qualitative and quantitative results. Data presentation; use of graphics including plots, diagrams, schematics, micrographs and pictures. Integration of graphics with text. Accuracy and internal consistency; comparison with relevant literature. Structure of documents such as theses, journal papers, conference abstracts, literature reviews and reports. Standard writing practices, terminology and formatting: titles, table and figure captions, references. Structure of scientific text; sentences and paragraphs; organization, coherence and emphasis. Dealing with numbers, units, symbols, formulas and mathematical English; punctuation, acronyms and formatting. Grammatical issues in scientific writing: parts of speech; simple, compound and complex sentences; coordinate and subordinate clauses; prepositional, participial, gerund and infinitive phrases; appropriate tense.

PH6042 - ADVANCED COMPUTATIONAL METHODS IN PHYSICS

ECTS Credits: 6 (Year 4 Module)

Limited places available

Physics

Rationale and Purpose of the Module: Physicists working in experimental and theoretical research, as well as in applied fields and industry require the ability to simulate physical processes based on the fundamental laws of physics. Physicists also requires handling increasingly large datasets from measurements and simulations, and the ability to extract relevant metrics and conclusions. This module will teach advanced computational methods of relevance in applied physics. The module has a strong practical computing laboratory component to maximize practical skills development.

Syllabus: The module is suitable for physicists or students in other scientific disciplines who have already attended introductory modules in programming and computing. The module will introduce students to relevant computational methods for simulations and data processing that allows solving problems in physics and engineering. The module includes practical examples and aims at giving hands on skills. The practical examples will be made with Matlab or equivalent. Content: data statistics and plots (variance, mean, histograms, etc); numerical differentiation, integration and other basic operations, including logic statements and coupled equations; Fourier transformation (signal processing, convolution thm, signal analysis, lock-in, phase problem and input-output algorithm) (with practical examples e.g. in image processing); Fitting and optimization (least square fit, particle swarm optimization, error function) (with practical examples e.g. XPS data analysis); machine learning (ANN, data reduction, encoder-decoder, classification/regression); finite element analysis (with practical examples e.g. photonics).

PH6052 - ADVANCED ENERGY CONVERSION AND STORAGE

ECTS Credits: 6 (Year 4 Module)

Limited places available

Physics

Rationale and Purpose of the Module: Physicists understand well the concepts of energy in general. Here, the module will focus on translating and applying these to practical methods of energy generation and storage. The module rationalize the methods and their role in the current societal challenges.

Syllabus: Fundamentals of advanced energy conversion and storage. - Electrochemical energy storage. Review of electrochemical cells. Electronic and ionic conductivity. Overpotential and ohmic losses. Types of cells. Batteries, fuel cells and supercapacitors. Primary, secondary and redox flow batteries. Lead-acid, nickel-cadmium, nickel-metal-hydride and lithium ion batteries. Vanadium redox flow batteries. Solid oxide, molten carbonate and proton exchange membrane (PEM) fuel cells. Water electrolysis. Hydrogen storage. Gravimetric and volumetric energy density and power density. Energy efficiency and coulombic efficiency. Grid and local energy storage. Batteries for electric vehicles. Environmental and safety considerations. - Flywheel energy storage. Principles. Components: rotor, magnetic bearings. Parasitic losses: Friction, hysteresis and eddy currents. Energy efficiency and energy density. - Hydroelectric energy storage. Principles. Fundamentals of hydroelectricity. Reversible hydroelectric turbines. Reservoirs and storage capacity. Comparison of storage by conventional hydroelectric plants, tidal hydroelectric plants and pumped storage. Response times. - Compressed air energy storage. Adiabatic, diabatic and isothermal systems. Heat exchangers. Energy density and efficiency. Mobile, underground and underwater storage.

Engineering



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Engineering:
Year 1 Modules

ID4112 - DESIGN MECHANICS

ECTS Credits: 6 (Year 1 Module)

Limited places available: 4

This module is not suitable for students majoring in engineering. It is a 1st year module to non-engineering students, so the content is too fundamental for engineering

School of Engineering

Rationale and Purpose of the Module: This module provides students with the necessary knowledge of mechanical stress and strain theory which when applied allows them to design mechanical components and/or structures capable of withstanding a required load. The module then studies the implementation of these designs by examining the components required to convert the designs into real world systems.

Syllabus: Direct stress and strain. Stress and strain in compound bars. Buckling. Thermal stress. Shear stress. Torsion. Shear force diagrams. Bending moment diagrams. Bending stress. Stress concentration. Fatigue. Prime movers. Belt drives. Gears and gear trains. Bearings. Shafts and couplings.

ME4111 - ENGINEERING MECHANICS 1

ECTS Credits: 6 (Year 1 Module)

School of Engineering

Rationale and Purpose of the Module: To enable students to achieve fluency and confidence in the application of Newtons Laws of Motion to particle and rigid body mechanics problems in which the bodies are in static equilibrium. In particular to become proficient in the use of Free Body Diagrams.

Syllabus: Application of Newton's Laws to particles and rigid bodies in equilibrium (Statics); equivalent force systems; two-and-three-dimensional force systems in equilibrium; analysis of rigid trusses and frames; centroids, centres of gravity, distributed forces, area and mass moments of inertia; friction.

ME4412 - FLUID MECHANICS 1

ECTS Credits: 6 (Year 1 Module)

School of Engineering

Rationale and Purpose of the Module: To introduce the nature of fluids, the dynamic behaviour of fluids and application of the principles of continuity, energy and momentum to viscous fluid flow.

Syllabus: Characteristics and Properties of Fluids. Fluid Statics and Manometry. Principles of Continuity, Momentum and Energy conservation applied to fluid dynamics, e.g. Drag of a Two-Dimensional Body. Boundary Layer theory with applications to smooth and rough pipes. Effect of pressure gradient on boundary layer. Flow over flat plate and air foil sections. Drag, lift and dependence on Air foil Section geometry.

WT4502 - CONSTRUCTION TECHNOLOGY

ECTS Credits: 6 (Year 1 Module)

School of Engineering

Rationale and Purpose of the Module: This module builds on the material covered in WT4401 through applied practical coursework based on residential construction practice. The course emphasises best industry practice and is framed around the relevant legislative instruments governing residential construction in Ireland.

Syllabus: * Site selection and analysis for residential construction û addressing engineering, planning and Irish Architectural heritage and conservation. * Soil identification, properties and behaviour û factors affecting drainage & foundation choice. * Concrete technology and mix design. * Environmental considerations in residential construction û sustainable technologies for waste disposal and energy. * Introduction to housing estate development and planning applications. * Interpretation of construction drawings. Trouble shooting residential building problems via case histories.

Prerequisites: WT4401

MT4002 - MATERIALS 1

ECTS Credits: 6 (Year 1 Module)

School of Engineering

Rationale and Purpose of the Module: This is a course in Engineering Materials for students with no previous background in the subject. It is designed to meet the needs of engineering, science and design students for a first materials course, emphasizing design applications.

Syllabus: Introduction to engineering materials and their properties. Price and availability of materials The Elastic moduli (bonding between atoms, packing of atoms in solids, physical basis of Young's modulus Yield strength, tensile strength and ductility (dislocations and yielding in crystals, strengthening methods and plasticity of polycrystals) Fast fracture and toughness (micro mechanisms of fast fracture) Fatigue failure (fatigue of cracked and uncracked components, mechanisms, design against fatigue) Creep and creep fracture (kinetic theory of diffusion, mechanisms of creep and creep-resistant materials) Design with materials Case Studies and laboratory experiments incorporating examples of mechanical testing, failure analysis, design and materials selection.

Engineering: Year 2 Modules

PT4004 - INTRODUCTION TO QUALITY MANAGEMENT

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

School of Engineering

Rationale and Purpose of the Module: The aim of the module is to give an effective and functional overview of Quality Management. It will: 1. Introduce the student to the basic concepts of Quality Management; 2. Inform the student about the role that quality plays in the workplace and impact that quality has on the organisation as a whole; 3. Make the student aware of the how to implement a range of quality strategies and tools.

Syllabus: 1. What is Quality and why is it important; 2. Quality Control / Assurance; 3. Quality Management Systems, 4. Development of Total Quality Management; 5. Continuous Improvement; 6. Documentation, Audits, Standards (ISO9000:2000); 7. Human Resource issues, 8. Quality Tools and techniques: Quality Function Deployment, Failure Mode and Effects Analysis, Statistical Process Control, Six Sigma; Benchmarking

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PT4014 - PLANT AUTOMATION

ECTS Credits: 6 (Year 2 Module)

Limited places available: 5

School of Engineering

Rationale and Purpose of the Module: To introduce the student to industrial sensors and their applications in automation. To introduce the student to fundamental control systems within automation. To outline the various types of hardware elements within a production environment. To provide the student with the ability to control and monitor data flowing to and from a production line - LABView software. To introduce the student to programmable logic controller hardware and software. To introduce the student to material transportation systems used within industrial environments.

Syllabus: Introduction to Automation Basic elements of an automated system, networks, interfacing and levels of automation within the manufacturing plant. Open Vs Closed loop systems Hardware: Sensors types and applications, correct selection, Analogue to Digital Converters, Digital to Analogue Converters, encoders, logic gates, Boolean algebra, signal conditioning. Programmable Logic Control Siemens PC based, Mitsubishi code, ladder logic, timers, counters, industrial applications and uses. LabVIEW Continuous monitoring of data, graphical user interface, control of systems, programming language, industrial applications and uses. Material Transportation Systems Material handling, transport equipment, AGVs, conveyors, design of systems, rating of systems, SMEMA control. Material storage systems, retrieval systems, carousels. Automated Identification: Bar-coding, 1D barcode, 2D barcodes, Radio Frequency ID, smart sensors linked to production control and warehousing.

CE4044 - FLUIDS AND ENERGY

ECTS Credits: 6 (Year 2 Module)

School of Engineering

Rationale and Purpose of the Module: This module contributes to the energy theme of Civil Engineering by introducing important concepts and prediction tools used when analysing fluid flows in energy applications.

Syllabus: Description of fluid boundary layers for laminar & turbulent flows; resultant forces and advection rates at surfaces. Introduction to dimensional analysis/scale analysis/similarity analysis in fluids; conditions of similarity; derivation of dimensionless parameters; overview of dimensionless groups commonly employed in engineering; reading correlations from literature and extracting useful data; derive correlations from experimental data; flow structures and transition regimes; use of correlations for scaling; fundamental applications to energy problems with analysis of: pipe flows; valves and fittings; pumps; lift and drag on structures, heat transfer, etc.; description and application of fundamental heat transfer relations.

ME4032 – STRUCTURAL ENGINEERING DESIGN

ECTS Credits: 6 (Year 2 Module)

Only available if students join Week 1

School of Engineering

Rationale and Purpose of the Module: Structural Engineering Design With the move to a general engineering common entry, this module will use the principles of Conceive, Design, Implement and Operate (CDIO) to help develop key structural engineering fundamentals. The module will, through lecture, lab and group activity, provide the student with a foundation in the theory and principles of statics and dynamics. Throughout the course emphasis is placed on the development of sound problem-solving techniques and logical interpretation of results. Application to realistic engineering problems is stressed through the use of examples, demonstrations, and assessment problems.

Syllabus: Load paths through structures under vertical gravity load; horizontal loads from wind / stability. Methods of providing lateral stability shear walls, cores, frames, strut / x-bracing; Field trip to significant building / structure to investigate / sketch load paths in-situ; Structural form funicular shapes applied to cables and arches; Bending moment and shear force diagrams under point and uniform loads, for simply supported and fixed end beams; Member forces in pin-jointed trusses; Introduction to structural dynamics / resonance; Introduction to relationship between bending moment / elastic modulus / bending stress; Develop research methods and resources. Experience of design as an iterative and creative process subject to constraints; Design, develop and construct small structure to carry 150g load, including trial models and associated calculations to determine main member forces; Synthesis of ideas from strength of materials, Assembly and Techniques and Drawing and Representation in a design task; Assignments will typically involve prototype or model construction, as well as material or component testing; Presentation for critique of research results and proposals.

ME4052 - CELL AND TISSUE BEHAVIOUR FOR ENGINEERS

ECTS Credits: 6 (Year 2 Module)

School of Engineering

Rationale and Purpose of the Module: The purpose of the module is to give a basic appreciation of the physics of living cells and tissues. This is done through integration of physical chemistry, electrostatics and mechanics of biological systems.

Syllabus: Presentation of physical chemistry, mechanics and electrostatics in the context of a unifying framework of thermodynamics. The students will learn to be acquainted with concepts such as chemical potential, electrochemical potential, diffuse double layers, electroneutrality, Brownian motion. Integrate these concepts with the knowledge that they acquired in earlier modules on thermodynamics, strength of materials, continuum mechanics, chemistry and biology. Application Of the Multiphysics of interfaces to mechanotransduction,tissue repair, cellular function, microfluidic devices, lab- on-a-chip and nanotechnological measurement. Gaining proficiency in laboratory skills of Multiphysics of tissues and cells.

Prerequisites: ME4523

ME4414 - FLUIDS MECHANICS 2

ECTS Credits: 6 (Year 2 Module)

Limited places available: 4

School of Engineering

Rationale and Purpose of the Module: To apply the principle of Continuity, Energy and Momentum covered in Fluid Mechanics 1 to dimensional analysis and similarity, viscous flow, inviscid flow, circular motion, hydraulic machines and compressible flow.

Syllabus: Dimensional analysis and dynamic similarity with applications; inviscid flow theory and applications; vortex motion; analysis and performance evaluation of turbines, fans and pumps; selection of hydraulic machines from specific property requirements; Navier- Stokes equations with applications, lubrication theory; compressible flow. Channel flow.

Prerequisites: ME4412

ME4417 - BOUNDARY LAYER THEORY

Very mathematical, suitable for students after second or third year depending on their background

ECTS Credits: 6 (Year 2 Module)

School of Engineering

Rationale and Purpose of the Module: To advance the knowledge of the students of fluid flow, aerodynamics and convective heat transfer

Syllabus: The Derivation of the Three-Dimensional Viscous, Steady, Compressible Equations of the Conservation of Mass, Momentum and Energy. The Distinction between Differential and Integral Solutions. Differential Solutions for Simple Pipe Flow with Heat Transfer and Couette Flow. The Von-Karmen Integral Solution of Flat Plate Flow with Heat Transfer. Dimensional Analysis for Free and Forced Convection: the Non-dimensionalised Differential Equations. Shear Stress Drag and the Reynolds Colburn Analogy. Theories of Turbulence: The Prandtl - Mixing Layer Theory, the K-E Model. The Effect of Turbulence on Drag and Heat Transfer: The Elements of a Turbulent Boundary Layer

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MF4733 - MANUFACTURING INFORMATION SYSTEMS

ECTS Credits: 6 (Year 2 Module)

School of Engineering

Rationale and Purpose of the Module: The development of large-scale complex manufacturing software-based systems proceeds from analysis through design and implementation to system verification and validation. This module covers the analysis and design phases of the software development cycle with particular emphasis on the use of manufacturing performance- oriented approaches to system specification.

Syllabus: - Software lifecycles: review of the waterfall model, prototyping, spiral, and object-oriented (OO) development models. - Focus on understanding the Unified Enterprise. - Characteristics of good software design - modules, cohesion, coupling or dependency, encapsulation, abstraction, etc. - Requirements investigation. - Requirements classification: functional and non- functional requirements. - Entity Relationship Modelling, Requirements Engineering: use case diagrams and use case descriptions. - Relational Database Design and Development. - Other methodologies - DSDM, Agile approaches, Extreme Programming. Integration with, and data capture from, metrology equipment and bar-code readers. Interfacing with, and control of, stepping motors and programmable logic controllers. Use of application program libraries and integration with other software applications. File format conversion between computer aided design, manufacturing systems and other Manufacturing applications, eg. Shop floor data acquisition systems.

ME6092 - RENEWABLE ENERGY TECHNOLOGIES

Not as mathematical as ME4417, suitable for students after second or third year depending on their background

ECTS Credits: 6 (Year 2 Module)
School of Engineering

Rationale and Purpose of the Module: To provide students with knowledge of renewable energy technologies.

Syllabus: From the following Renewable Energy topics, 3

areas will be addressed in detail each year Topics: Wind Turbines, Solar, Hydro, Wave, Tidal, Geothermal, Biomass, Fuel Cell Hydro Power: Introduction; Principles; Assessing the resources for small installations; An Impulse Turbine; Reaction Turbine; Hydroelectric systems; Social and environmental aspect Biomass: Processes for the use of biomass: Drying, Gasification, Fluidized Beds; Feedstock/Fuel: Particle characterisation, Flow through packed Beds, Carmen-Koseny equation, Ergun equation, Geldart classification, Grace-Reh diagram; Fluidization: flow through fluidized beds, minimum fluidizing velocity, regimes of fluidization; Elutriation of fine particles and pneumatic transport. Wind Power: Wind Characteristics and Resources; Aerodynamics of Wind Turbines: Momentum theory and the Betz limit, Horizontal Axis Wind Turbine, Aerofoils, Blade element theory, Effect of drag and blade number on optimum design; Wind Turbine rotor dynamics; Wind Turbine Design: Topologies, Materials, Machine Elements, Wind Turbine loads, Design Evaluation, Powel Curve Prediction; Wind Turbine Control; Wind Turbine Siting; Wind Energy System Economics; Environmental Aspects and Impacts of Wind Energy Systems Wave Power: Introduction, principle of wave motion, wave energy, power and resources, wave patterns, wave conversion devices, social and environmental aspect. Tidal Power: Introduction, the cause of tided, enhancement of tides, tidal current/stream power, tidal range power, world range power sites, social and environmental aspect of tidal power, Geothermal: Physics of geothermal resources; Technologies: Steam power plants, Ground source heat pumps, Hot dry rock technology; Environmental Implications & Economic potential; Geothermal Energy in Ireland - ground temperatures, soil types. Solar: Thermal Energy: Active Solar Heating, Passive Solar Heating, Solar thermal engines and electricity generation, Economics, potential and environmental aspects Electricity Generation - Photovoltaic: Semiconductors and Doping, Monocystalline silicon cells, Polycrystalline silicon, electrical characteristics of PV, remote power, grid connected PV systems, cost of PV, environmental impact & safety Fuel Cell: Fuel Cell principles: Thermodynamics, Charge Transport, Mass Transport, Fuel Cell Modelling and Characterisation; Fuel Cell technology: Fuel Cell types, System integration and subsystem design, Environmental impact of fuel cells

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WT4504 - BUILDING SERVICES 1

ECTS Credits: 6 (Year 2 Module)

School of Engineering

Rationale and Purpose of the Module: The aim of this module is to provide a comprehensive introduction to building services and associated technology: Key objectives Introduction to active and passive building services in domestic construction. Understand design, build and operation implications of these services.

Syllabus: * Heating ventilation and air conditioning services; district heating, heat loss calculations, thermal insulation, ventilation, air filters, heat recovery systems; principles of air conditioning, dual duct and convector air conditioning systems, DEAP. * Hot and cold water supply services; low, medium and high pressure hot water heating. * Drainage services; below ground drainage systems, pipe materials and pipe laying, soakaways, drain testing and inspection. * Waste services; soil and waste systems, modified single stack and ventilated stack systems; resealing and anti-siphon traps, air pressure in discharge stacks; irrigation systems, sewage pumping, refuse disposal systems; sewage disposal, settlement tanks, bio-filters.

Prerequisites: PH4032

CE4013 - STRUCTURAL ANALYSIS

ECTS Credits: 6 (Year 2 Module)

*Students must take **CE4024** alongside this module*

School of Engineering

Syllabus: SI units and manipulation of formulae, sources and types structural loading, reactions and supports, free body diagrams, shear force and bending moment calculations, static determinacy and indeterminacy, qualitative analysis of beams and frames, stability and analysis of pin jointed frames, section properties, engineers' equation of bending.

CE4024 - STRUCTURAL STEEL AND TIMBER DESIGN

ECTS Credits: 6 (Year 2 Module)

*Students must take **CE4013** alongside this module*

School of Engineering

Rationale and Purpose of the Module: This module introduces the student to the structural design and detailing of elements in steel and timber with the following key objectives: Key objectives * To master the concepts of structural design in steel and timber. * To develop the skill of detailing structural connections in steel and timber. * To develop an awareness of the structural uses and limitations of steel and timber.

Syllabus: * Structural Steel Manufacture and composition û a review, section properties tables, design of fully restrained, partially restrained and un-restrained beams, truss design, design of long and short columns; axial and combined loading conditions, design of pinned and moment connections, baseplate and splice design, structural detailing and fire & durability issues. * Timber Design Properties and conversion of timber û a review, beam design, column design; axial and combined loading conditions, truss design and stability issues, Introduction to diaphragm & shear wall design, bolted, nailed and stapled connections, glulam, LVL and I-beam design, structural detailing and fire & durability issues.

Prerequisites: CE4002

WT4704 - BUILDING MEASUREMENT

ECTS Credits: 6 (Year 2 Module)

School of Engineering

Rationale and Purpose of the Module: The overall aim of this module is to illustrate measurement techniques and procedures for buildings and associated works.

Syllabus: Setting down dimensions, alternative systems, applied mensuration, general rules for taking-off; measuring substructures, excavations, formwork areas, various foundation types and measurement; walls, floors, concrete, blockwork, masonry, partitions and suspended ceilings; internal surface finishes, dry linings roofs, structural elements, roof finishes and coverings, waterproofing; internal finishes, windows, doors, staircases, fixtures and fittings; reinforced concrete structures, columns, beams, slabs, formwork, concrete finishes, reinforcement, precast elements; structural steelwork; structural timber, standard joinery components; plumbing, fittings, mechanical and electrical installations; drainage, underground and above ground, external works, roads, pavings, earthworks and groundworks, landscaping; demolitions, alterations and renovations.

WT4014 - INTRODUCTION TO GEOLOGY AND SOIL MECHANICS

ECTS Credits: 6 (Year 2 Module)

Limited to 5 students. Students must notify lecturer at the end of the first class. If numbers exceed 5, places will be allocated by lottery.

School of Engineering

Rationale and Purpose of the Module: This module introduces the most common material encountered in the construction industry by exploring soil mechanics beginning with the fundamentals in civil engineering geology. The course is designed to challenge the student to seek the key concepts in geology and soil mechanics and apply these concepts in projects and self-directed learning to achieve the following key objectives: To provide a clear understanding of the role of geology and soil.

mechanics in achieving a successful construction project. To form the basis for subsequent modules on Soil Mechanics and Geotechnical Engineering Design. To generate enthusiasm for the subject through field trips, practical experimentation and case histories.

Syllabus: PART I The Earth and its formation; plate tectonics; physical and chemical processes; erosion and deposition; Quaternary geology; Rock types; igneous, sedimentary, metamorphic; geological maps and terminology; role of geology in civil engineering. PART II Geotechnical problem-solving model - soil mechanics triangle; soil composition and chemistry, clay bonding and double layer; classification and description of soils; phase relationships; soil compaction and ground improvement techniques; effective stress principle including the influence of water flow on soil behaviour; permeability and flow nets; site investigation - trial pitting.

Engineering: Year 3 Modules

DM4006 - ENGINEERING DESIGN

ECTS Credits: 6 (Year 3 Module)

Students must be able to use SolidWorks for Solid modelling and should have completed engineering mechanics

School of Engineering

Rationale and Purpose of the Module: To introduce the student to product engineering design systems and techniques. To provide experience in product design and concurrent engineering. To provide the students with experience in the use of finite element methods as part of the design cycle. To focus on the engineering of the solution by providing hands-on experience in the analysis of case studies, supplemented by an overview of the theoretical analysis.

Syllabus: Overview of the design process and innovative approaches in product design. Design for manufacture, assembly, disassembly and service. Product design and analysis tools, Solid Modelling and Finite Element Analysis. Analysis Types: Static, Stress, Thermal, Contact stress. Design Optimization, Processing and Post processing - theoretical and practical issues. Practical Case studies: static stress analysis, thermalanalysis, design studies. Use of the SolidWorks Simulation software package.

ME4117 - VIBRATION ANALYSIS

ECTS Credits: 6 (Year 3 Module)

Students cannot take ME4092 alongside this module

School of Engineering

Rationale and Purpose of the Module: To develop an understanding of the role of vibration analysis in structural design. To apply the techniques of modal analysis and the finite element method to solve structural vibration problems.

Syllabus: Single degree of freedom systems. Free response. Springs in series and in parallel. Logarithmic Decrement. Forced response to harmonic excitation. Excitation by an unbalanced rotor. Response to periodic excitation. Fourier series. Impulse response. Response to arbitrary excitation. Free and forced response of two and multi-degree of freedom systems. Use of the modal superposition method. Use of the finite element method.

Prerequisites: ME4112

ME4134 - AIRCRAFT DESIGN

ECTS Credits: 3 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: To introduce the student to the important considerations involved in the design of an aircraft, with particular emphasis on the aerodynamic load calculation and airframe structural design. Of critical importance will be the design philosophies associated with safe structures.

Syllabus: Review of low-speed aerofoil and finite wing aerodynamics, aerofoil stall characteristics, approximate methods for obtaining wing lift distributions, wing stall characteristics. Calculation of wing shear force, bending moment and torsional load distributions. Structural design and analysis philosophies, material design allowables, reserve factors, construction principles, fail-safe, safe-life philosophies. Design of structural components for ultimate failure and fatigue life estimation, including cumulative fatigue. Fasteners and structural joints.

ME4226 - MECHANICS OF SOLIDS 2

ECTS Credits: 6 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: To understand and analyse and measure the state of strain at a point ina 2D strain field. To analyse stresses and deformation in circular plates under symmetrical loading. To be able to determine yielding under multiaxial loading. To be able to predict the maximum deflection of a beam subjected to simple and complex loading in a plane. To predict the buckling load and maximum stress in a strut. To understand the factors influencing fatigue life and be able to predict the life of simple engineering components. To understand the basics of LEFM. To analyse the stresses in beams of

unsymmetrical section. Syllabus: Infinitesimal strain at a point in a 2D stress field and Mohr's strain circle. Selection of strain gauges for measurement on metals. Thin circular plates. Criteria of failure for isotropic homogeneous materials (Rankine, Tresca and Von Mises). Deflection of beams. Buckling of struts (Euler and Rankine-Gordon). LEFM. Fatigue. Unsymmetrical bending.

Prerequisites: ME4213

ME4306 - BIOCOMPATABILITY

ECTS Credits: 6 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: To give a basic appreciation of the Cellular-Material Interactions that occur when a Material is used for different Biomedical Applications.

Syllabus: Discussion of Pathological Changes and Approaches to repair. Classification of medical device interactions and methods of assessment. Relevance of testing to medical device design strategy, regulation, validation and post market surveillance. Evolution of the regulatory environment and its implications.

ME4516 - THERMODYNAMICS 2

ECTS Credits: 6 (Year 3 Module)

Limited to a total class size of 85 students. Prerequisite: it is assumed that student have previously taken an introductory module to Thermodynamics. Only available if students join in Week 1; and they MUST be able to attend all lectures

School of Engineering

Rationale and Purpose of the Module: To provide an understanding of the mode of operation for actual heat pump and refrigeration systems and to analyse their performance characteristics. To provide an understanding of the mode of operation of Rankine, superheat, reheat and regenerative steam power cycles and to analyse their performance characteristics. To analyse the power output characteristics of pure impulse turbines and impulse-reaction axial flow turbines. To relate the performance and characteristics of the latter to steam enthalpy change in multi-stage operation. To analyse the power input requirements, volumetric efficiency and heat loss characteristics for single stage and multi-stage compressors. To provide an understanding of the mode of operation for actual 2-stroke and 4-stroke spark ignition and compression ignition engines and to analyse their performance characteristics with reference to mean effective pressure, indicated power, brake power, specific fuel consumption, volumetric efficiency, thermal.

Syllabus: Refrigeration & Heat Pump Cycles, Vapour Power Cycles, Internal Combustion engines, Compressors, Seat Turbines.

Prerequisites: ME4523

ME4526 - INTRODUCTION TO HEAT TRANSFER

ECTS Credits: 6 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: To provide a basis to students in the concepts and solution methods of conduction, convection and radiative heat transfer, and the measurement techniques utilised in heat transfer.

Syllabus: Fourier's Law of Heat Conduction The Convection Equation Thermal Resistance's and their Application Two-dimensional Heat Conduction: An Analytical Example Numerical Methods in Heat Conduction Time Varying Heat Transfer: The Lumped Heat Capacity Method Forced Convection: Standard Heat Transfer Correlations and their Application Free Convection: Standard Heat Transfer Correlations and their Applications Thermal Radiation: An Introduction Heat Exchange Design Equations: The Log Mean Temperature Difference.

Prerequisites: ME4412

ME4736 - PHYSIOLOGICAL FLUID MECHANICS 1

ECTS Credits: 6 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: To introduce the students to the field of physiological fluid mechanics, develop their knowledge of physiological fluid flows including airflow, blood flow and urology, study these flows

in straight, rigid and compliant tubes and examine transport phenomena in biological systems, viscous flow, inviscid flow.

Syllabus: Viscous and inviscid flow theory and applications. The role of transport phenomena in biological systems and the definition of these processes, including momentum, convection, diffusion, and binding interactions. Introduction to the primary physiological convective transport systems: cardiovascular system, respiratory system, urological and lymph systems. Properties of physiological fluids and constitutive relations; Newtons law of viscosity, non-Newtonian rheology and time dependant viscoelastic behaviour. The derivation of the conservation relations for fluid transport, dimensional analysis, and scaling. Introduction to Mass Transfer, Fick's law of diffusion. Transport of Gases between blood and tissues: oxygen-haemoglobin equilibria and the dynamics of oxygenation of blood in lung capillaries.

Prerequisites: ME4412

ME4746 - PHYSIOLOGICAL FLUID MECHANICS 2

ECTS Credits: 6 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: To advance the knowledge of student's physiological fluid mechanics; specifically introducing concepts and applications in mass transport and heat transport.

Syllabus: The role of transport phenomena in biological systems and the definition of these processes, including momentum, convection, diffusion, and binding interactions. Introduction to the primary physiological transport systems: cardiovascular system, respiratory system, gastrointestinal tract, liver and kidneys. Extension of fluid mechanics of capillary flow into oscillating flow. Introduction to mass transport, derivation of the relevant conservation equations, dimensional analysis and scaling. Estimating mass transfer coefficients using correlations. Fick's law of diffusion (dilute solutions), the Stokes-Einstein equation and estimation of frictional drag coefficients. Osmosis and mass transport through membranes. Introduction to thermal transport, conduction, convection and radiation and derivation of the conservation equations. Estimation of heat transfer coefficients. Thermal regulation of biological systems.

Prerequisites: ME4736 or equivalent

MF4756 - PRODUCT DESIGN AND MODELLING

Students must have some experience with technical graphics or other 3D visualisation tools. This module does not cover mechanical design of systems, only 2D/3D CAD modelling. Limited by lab spaces. Students need to join the class in week 1 so any left over lab spaces can be allocated. This is done on first-come first-served basis.

ECTS Credits: 6 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: 3D parametric modelling systems are an integral part of the product design process. They are typically used to control key aspects of a product such as its design, communication, management, presentation, documentation and validation. The aim of this module is to introduce students to these six key product design areas using SolidWorks in the context of generic best practice modelling strategies. In addition, students will: Understand the primary issues and considerations involved in designing a new product and develop a creative approach to the solution of design problems. Understand the concepts and practices associated with 3D parametric modelling and visualisation technology. Model and develop products and components in contemporary computer modelling software. Be able to create comprehensive product models and specifications in the context of the total development of a product. Develop cognitive modelling/visualisation, problem-solving and decision-making skills.

Syllabus: Problem definition and clarification - design briefs; New Product Development (NPD) Concurrent Engineering NPD vs Traditional NPD; The deliverables of processes of design; design processes and the role of parametric CAD; Modelling strategies from cognition to prototype; Creative Design Methods; Product Concepts Surface modelling and solid modelling techniques; design intent: planning parts for design flexibility; relations and equations; parametric dimensions; design and modelling for manufacture and assembly; assembly modelling; drawings; drawing documentation; BOMs; creating design tables using Excel for multiple part and assembly configurations; Library features: SolidWorks Toolbox of fasteners and components; importing and exporting files;

CAD standards for data exchange; STL files and the FDM rapid prototyping system; linking with Solid CAM. FEA analysis and design validation; rendering and presentation techniques; product animation.

Prerequisites: MF4722

MF4736 - ENGINEERING ECONOMY

ECTS Credits: 6 (Year 3 Module)

School of Engineering

Rationale and Purpose of the Module: This module locates engineering design in the context of a broad-ranging cost-benefit analysis, through the development of alternative solutions and their evaluation in terms of onward impacts, in a quantitative multi-annual economic reference framework. As such, it recognises the key importance of a common yardstick for costs and benefits involving capital sums such as spent on facilities, andriodic cash flows such as those resulting from improved methods or reduced because of poor quality. It recognises the reality of taxes and of uncertainty in outcomes. Engineering Economy is a core subject in the US ABET scheme for accreditation of professional engineering courses leading to the designation Professional Engineer.

Syllabus: The key elements lie under the following headings: making economic decisions engineering costs and cost estimates interest and equivalence and interest formulas present worth analysis, annual cash flow analysis rate of return analysis, incremental analysis other methods - payback period, sensitivity and breakeven analysis uncertainty depreciation and taxes replacement analyses discount rates: inflation and escalation, selecting the MARR investment analysis in the public sector further topics: rationing capital amongst competing projects; accounting models and engineering economy.

Engineering: Year 4 Modules

ME6072 - ENGINEERING MECHANICS OF PLASTICS AND COMPOSITES

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Syllabus: Provide the foundations for analysing stress and strain in Polymers and Composite Materials. Identify how to use physical and mathematical models to describe the stress/strain response of polymers over time - creep, relaxation and recovery. The fatigue, fracture and creep rupture of plastics. Introductory concept of micromechanics to estimate the elastic constants of a unidirectional orthotropic composite. Experimental measurement of principal strains on an orthotropic composite coupon. Hierarchy of deformation processes for sheet-forming of composite component: Resin flow, Transverse flow, Interply slip and Intraply shear. Rheology including resin viscosity/fibre suspensions and infusion processing window dependency on time-temperature-shear rate, fibre preform permeability, D'arcy flow. Advanced manufacturing techniques being developed within the Composite Research Centre including autoclaving, liquid composite moulding (LCM) - RTM, RFI, VARTM; Hot-drape forming. Filament winding/tape-placement. Engineering design guidelines when using composite materials.

ME4029 - ORTHOPAEDIC BIOMECHANICS

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: This module will provide the student with an understanding of the role of mechanics and structure in orthopaedic tissue at both the organ and cellular level. The student will gain an insight of the structure of bone from the micro scale through to the macro-scale level, across all the musculoskeletal tissues (from the major bones, cartilage, tendons, ligaments etc). The module will detail the mechanical properties, structure properties, development, and kinematics for each of these musculoskeletal tissues. This knowledge will provide the foundations of the student's understanding for the synergistic role of these tissues in the normal function of the joints, from an engineering, clinical, and commercial point-of-view. Finally, the student will learn about design of lower-limb replacement devices, how they fail, the prevention of this failure based on design alterations. Overall, this module will provide an understanding of

orthopaedic biomechanics through engineering-based problems of the major joints within the body and how the forces/mechanics and tissues a replacement medical device needs to mimic and ultimately replace.

Syllabus: The module will first Introduce Orthopaedic Biomechanics by detailing the history of Biomechanics in the context of research and give past and present examples of applications of Biomechanics. The module will highlight the key differences between engineering and 'bio'-engineering throughout, and the importance of understanding that biological tissue is 'alive' and responsive to mechanics - i.e. cellular mechanobiology. The module will briefly detail the biology of the cell, the role of cells in tissue development, and how cells respond to mechanical environment and stimulation. The module will delve into the development, Anatomy, and Composition of Musculoskeletal Tissues Such as; Bone, Cartilage, Skeletal Muscle, Ligament, and Tendon. Next, it is important to understand the mechanical and structural Properties of these same Musculoskeletal Tissues. The mechanical responses of soft and hard biological tissues, Review of Mechanical testing of biological tissues (e.g., Tension, compression, and 3-point bend, mechanical behaviour of specific tissues (i.e., bone, cartilage, muscle, ligament, and tendon). This is followed by the solving of Biomechanics based problems of Joints and Muscles (e.g., Hip, Knee, Elbow, Shoulder, and/or Spine.) Diseases and Failure of Musculoskeletal tissues will be discussed in particular with bone and Cartilage diseases and progression, Fracture Repair and Remodelling of Bone, and Cartilage tissue remodelling. Medical Devices for Hip and Knee Joints A history and Overview of Replacement Devices, design and material considerations for replacement devices, and mechanical and failure properties of devices for these types of diseases. The future of Orthopaedic Biomechanics will be discussed with topics such as Tissue Engineering, 3D Printing, Gait Analysis, Biomarkers, and Artificial Intelligence.

CE4028 - ENERGY EFFICIENT BULDINGS: MODELLING AND DESIGN

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: Building energy design is now a primary driver of overall building design. Understanding building energy physics is now essential for all design team members. Aims and objectives: Train students how to design and model energy-efficient buildings; Equip students with the knowledge required to quantify the energy-efficiency of preliminary designs and propose building and material design modifications; predict thermal performance within building zones; understand how building design, occupancy and use interacts with thermal energy systems, solar irradiance and weather conditions as well as their effect on human comfort and energy consumption.

Syllabus: Building design and energy use: historical trends, current status and future trends Building energy policy at national and EU level; factors affecting human comfort; Steady-state and transient thermal physics of buildings; heat transfer mechanisms; performance metrics; typical metric values for building including exemplar low-energy and passive builds; design related and environmental performance drivers overall form, aspect ratio, surface-to-volume ratio, percentage glazing, orientation, site context, solar irradiance, prevailing winds, shelter, design features including insulation, solar shading, low-e coatings, automated shading and ventilation. Overview of strategies for modelling building thermal physics; thermal resistance networks; lumped capacitance; steady-state vs. transient; dimensionless scaling parameters and empirical correlations; compiling input data - building fabric, thermal mass, weather data, building use, active, passive and mixed mode ventilation, thermal sources, heating & cooling systems, control strategies and feedback. Design thermal model, build and digitise model, configure inputs, configure outputs, solve and interpret outputs; describe scope and limitations of model; suggest modifications to enhance energy usage, update model, analyse response and appreciate cost benefit of improvements.

CE4088 - REINFORCED CONCRETE DESIGN II

No formal prerequisites. It is assumed that students have previously taken an introductory module in Reinforced Concrete Design

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: This module develops the concepts and processes involved in the design of reinforced and prestressed concrete structures.

Syllabus: Reinforced Concrete (RC) Testing of a reinforced concrete beam. Prediction of failure. Failure analysis. Flat slab design. Punching shear resistance. Computer analysis. Design of slender RC columns. Strut & tie methods of analysis. Composite construction. Prestressed Concrete History of pre-stressed concrete. Principles of pre- stressed concrete design. Advantages and disadvantages compare to RC. Transfer and service stresses. Loss of prestress. Ultimate limit states of flexure and shear. Deflection.

ME4008 - ORTHOPAEDIC BIOMECHANICS AND MECHANOBIOLOGY

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: This module will provide the student with an understanding of the roleof mechanics in regulating orthopaedic tissue development and homeostasis at both the organ and cellular level.

Syllabus: Development and structure of bone; Bone biomechanics; Composition and structure of cartilage; Cartilage biomechanics; Structure and mechanics of the ligament and tendon; Computational models in orthopaedic biomechanics; Cell mechanics; Models of cell mechanical behaviour; Cellular Mechan transduction; Bone mechanobiology; Cartilage mechanobiology; Ligament and tendon mechanobiology; Techniques in mechanobiology; Mechanical stimulation of cells; Orthopaedic tissue engineering; Bioreactors in Tissue Engineering;

ME4047 - FUELS AND ENERGY CONVERSION

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Syllabus: Review of Thermodynamics. The Flow Through Gas Turbine Blade Rows: Compressible analysis; three dimensional flows; design example Combustion: fuels; methods of combustion; combustors; First Law Analysis of Combustion.; Second Law Analysis of combustion. Gas Turbine Performance.

ME4308 - BIOMATERIALS 2

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: To gain appreciation for hard tissue replacement materials in current use; To enable students to understand material selection and design criteria for hard tissue replacement applications; Gain understanding of regulatory environment.

Syllabus: Materials for hard tissue orthopaedic materials, survey of applications (TJR, substitution, fixation) alloys bone cements, substitutes (bioactive andresorbable). Dental implant applications and materials Dental restorative materials Regulatory affairs: 93/42/EEC, MDD, FDA, EN46000, AIMDD, IVDD and related standards.

ME6182 - ENGINEERING ALLOYS

ECTS Credits: 6 (Year 4 Module)

Students should have done an introductory materials module

School of Engineering

Rationale and Purpose of the Module: Aimed at postgraduate engineering students to increase our elective options. The module will cover established and new developments in the area of advanced high performance metallic materials used in general engineering, structures, power generation, and transportation.

Syllabus: Brief introduction to the chronology of metallic materials and their significance and importance to technological development. The prominence of materials as an enabling technology will be emphasised. Examples of quantitative materials selection to determine materials performance indices for selected case study components - illustrated by selecting optimised materials for specific applications. Physical metallurgy and structure property relationships of low alloy and high alloy steels, stainless steels, aluminium alloys, titanium alloys, nickel based

alloys. Other niche alloy systems will be briefly mentioned including cobalt alloys, copper alloys, various aluminides, magnesium alloys, so called memory metals and metal matrix composites. Selection and mechanical performance of these materials illustrated by using case studies. Future development trajectories of metallic materials and the competition from other material systems.

ME6062 - ADVANCED COMPUTATIONAL FLUID DYNAMICS

Includes computational lab work with the software package ANSYS/Fluent. Prior knowledge in the field of fluid mechanics required

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: The purpose of this module is to provide the student with an understanding of advanced topics in the field of Computational Fluid Dynamics (CFD). These topics will be relevant to engineering problems particularly in the Aerospace, Biomedical, Civil and Mechanical disciplines and will be demonstrated using industry standard CFD codes.

Syllabus: 1. Practical Guidelines for CFD Simulation and Analysis: Mesh generation methods; Guidelines on mesh quality and design. 2. CFD Uncertainty Analysis: Types of Uncertainty; Mesh Convergence; Mesh Adaption. 3. Boundary Conditions: Types of boundary conditions; solution strategies. 4. Solution Techniques: Segregated Solution Techniques, Pressure-Velocity coupling, steady-state and time-dependant calculations. Coupled Solution Techniques; time marching for steady-state flows, temporal discretisation of unsteady flows. 5. Turbulence Modelling: Turbulence model overview and their limitations; Boussinesq's approximation to the Reynolds stress, Spalart-Allmaras model, Standard and Realizable k-e models, standard and SST k-w models, Reynolds Stress Transport Model (RSM), Large Eddy (LES) and Detached Eddy (DES) Simulation methods. Near-wall treatments for wall bounded turbulent flows. 6. Lattice Boltzmann Methods: incompressible single-phase flow with BGK collisions 7. Specialised CFD Simulation Topics: Heat Transfer, Aerodynamically Generated Noise, Fluid-Structure Interaction (FSI).

PT4008 - DELIVER AND RETURN WITHIN SUPPLY CHAINS

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: This module is the third in a stream. There is a need to appreciate the external operational landscape and the complexities that arise in the multiplicity of processes encountered in international logistics operations. This takes in the processes of getting materials between suppliers' facilities, intermediate production facilities and onwards to customers. These processes are subject to incessant disturbances, and also demands from myriad bodies governmental and commercial, with considerable uncertainty and risk components, yet customers expect a smooth supply of their regular products on time, to agreed high quality and sustainability standards, and economically, as if nothing else matters. Framing these activities and applying them to configure and operate supply networks and to optimise their contribution to performance trade-offs is the subject of this module. In the context of the Supply-Chain Operations Reference (SCOR) model these concepts lie in the domain of Delivery And Return activities.

Syllabus: Concepts of Logistics and Distribution, Introduction to history and development, Channels of distribution, Planning framework for logistics, Logistics network planning and management. Physical Logistics Planning Warehousing, stocking, order- picking, Transportation, modes of transport, intermodal freight. International Contracting in Logistics International Contracts, Customs, Regulations, Incoterms, Managing transaction risk, payments, exchange rate exposure. Regulation and Green Logistics Reverse logistics and product lifecycle management, return of goods at end of life, Logistics and the environment.

PT4038 - PRODUCTION AND SERVICE SYSTEMS

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: Prior module material may be seen as disparate unconnected knowledge. The aim of this module is o draw together learning from prior modules into a whole-systems perspective, through the application of operations theory to case questions in specific domain areas. This is a capstone module.

Syllabus: Differentiation between production, manufacturing and service activities. Analysis of case examples linked back to theory of supply chain operations in specific domains, as follows. Systems dynamics phenomena: Forrester-Bullwhip effect and explanation (Beer game or similar eg mortgage game), in eg a service environment. Supply chain operations reference model SCOR, and SCE implementation framework, in eg a global high technology supply chain case context. New service development, including service encounter and service quality, in eg a franchise casse context. Capacity and demand management, including forecasting and yield/revenue management, in eg a health service case context. Waiting time management and capacity planning in variable time and demand environments, eg airport or health service design case context.

WT4208 - BUILDING SERVICES 2

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: The aim of this module is to provide a comprehensive introduction to the more complex building services and equipm ent being adopted in modern nondomestic buildings. It is also an aim to introduce the student to key elements of services design for buildings. This module builds on the learning of WT4504 Introduction to building services in non-domestic construction including both active and passive services. Understand design, build and operation implications of these services. Have good knowledge of water installations to multi storey buildings Understand the essentials of electrical and gas distribution and supply Identify the principle firefighting equipment needs for modern buildings Understand the principles of providing appropriate lighting within buildings Syllabus: * Heating and air-conditioning services: energy performance measurements using, SBEM and NEAP; heating and air conditioning, temperature drop through structures; gas supply and distribution, gas controls, ventilation ducts and fans, solar heating, heat pumps and bio-mass. * Hot and cold-water services: Pipe sizing for hot and cold-water multi-storey buildings, force and pressure, hydraulics. * Drainage services: sustainable urban drainage, retention tanks, oil separation, green roof, grey water recycling * Electrical services: electrical terms and installations, supply and distribution of electricity, supply controls, protection, conductor and cable rating, methods of wiring and distribution systems, single phase power circuits; electrical installations in large buildings; site electricity, electric space heating * Access services: lifts, escalators and service ducts, automatic control. * Lighting services: integration with electric light, natural lighting, artificial lighting, design of lighting, lighting controls * Safety services: classification of fire risks, safety devices, heating and flues; sprinklers, risers and hose reel installations, dry and wet risers; portable and fixed extinguishers, automatic fire detectors, alarms and dampers, pressurisation of escape routes, automatic fire ventilation fire detection, security systems. *Electrical services: supply to non-domestic buildings micro generation (solar and wind) *Data services; audio visual, broadband and telephony.

Prerequisites: WT4504

ME6191 - AIRWORTHINESS AND SPACEWORTHINESS

This module is available only to study abroad/exchange students who are enrolled in aeronautical/aerospace engineering Bachelor programmes or aeronautical/aerospace engineering minors in mechanical engineering Bachelor programmes

ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: The purpose of this module is to introduce students to the regulatory requirements, practice and technological solutions utilised for the effective management of airworthiness in the civil and military aviation and aerospace domain. Emphasis is given on the current challenges faced by the aviation and aerospace industry, including certification and operation of

aircraft and space vehicles (spaceworthiness).

Syllabus: Introduction and definitions: Initial and continuing airworthiness; aviation maintenance concepts and principles. Regulatory context: The regulatory frameworks; certifying design, modifications and manufacturing of aircraft and aeronautical products; regulation and management of continuing airworthiness and maintenance, repair maintenance certifying requirements and training; safety management principles; Practice: Airframe and engine maintenance programmes principles; development, planning and implementation of maintenance programmes; technology in aircraft maintenance. Modern challenges: Ageing aircraft airworthiness sustainment; harmonising the global practice in aircraft maintenance; distinctions and similarities between military and civil aviation in airworthiness and maintenance management. Spaceworthiness: From airworthiness to spaceworthiness, FAA rules, commercial space transportation, licensing, launch safety responsibilities, flight safety analysis, ground safety, experimental permit, advisory material.

ME6192 - PLASTICITY OF CONVENTIONAL AND 3D PRINTED METALS

This module is available only to study abroad/exchange students who are enrolled in their 3rd or 4th year mechanical engineering Bachelor programmes, who have previously completed advanced modules in solid mechanics.

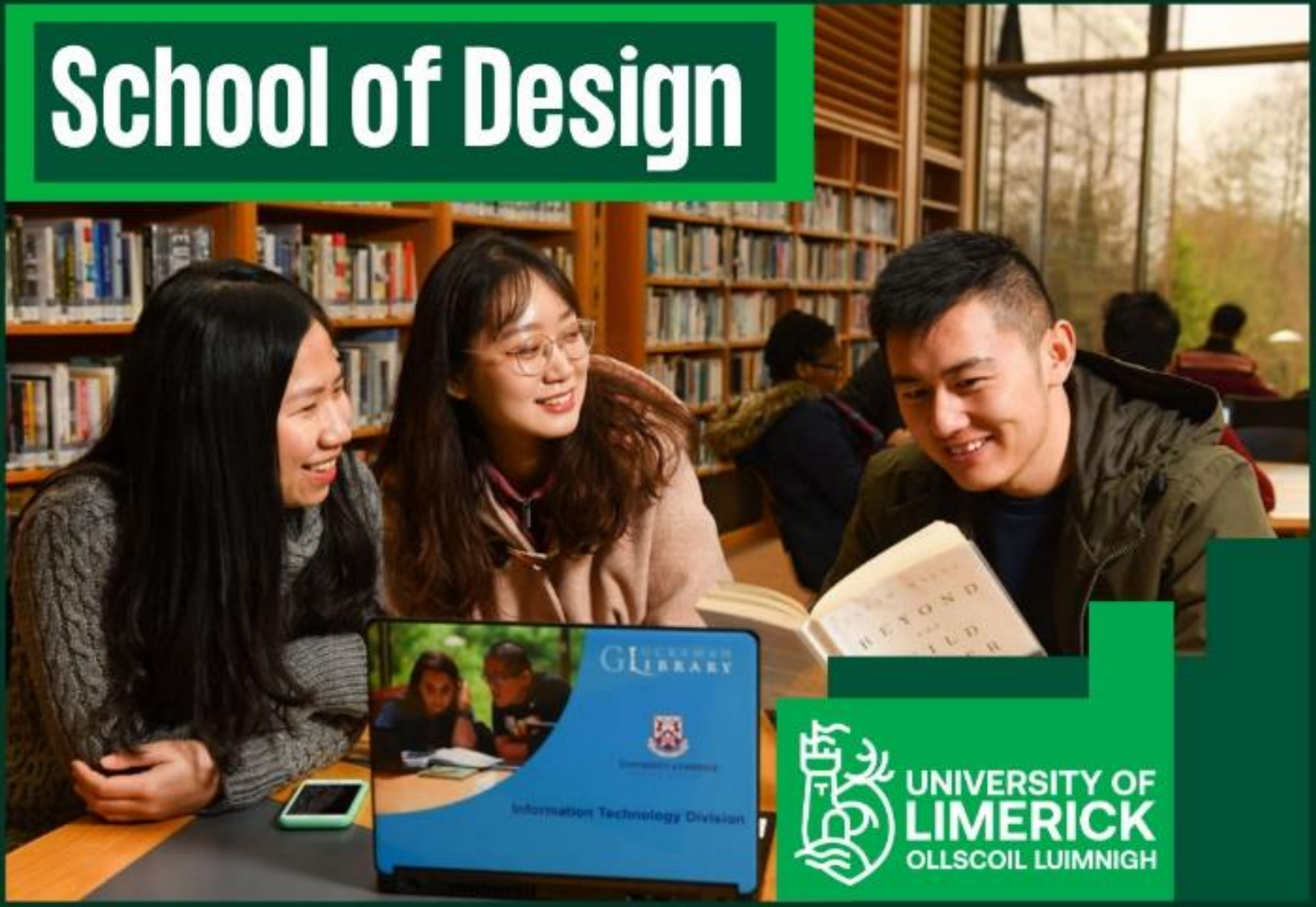
ECTS Credits: 6 (Year 4 Module)

School of Engineering

Rationale and Purpose of the Module: This module introduces to students to the physical mechanisms, phenomena and modelling of the elastoplastic behaviour of conventionally and additively manufactured (3D printed) metals.

Syllabus: Physical mechanisms in plastic deformation: dislocations, slip systems Macroscopic elastoplastic behavior of metals: Phenomena under monotonic and cyclic loading Basic tensor algebra and continuum mechanics Mathematical theory of plasticity: Concept of yield surface, kinematic hardening, isotropic hardening, bounding surface plasticity Material symmetry: isotropy, anisotropy, anisotropic yield surfaces Plasticity modelling and implementation in FE analysis: Basic formulation, Abaqus models, UMAT Plasticity of 3D printed (additively manufactured) metals: additive manufacturing technologies and influence on microstructure, physical differences with conventional metals, anisotropy, mechanical properties under monotonic & cyclic loading, modelling considerations.

School of Design



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

School of Design: Year 1 Modules

PD4102 - DESIGN STUDIO 2

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Limited Capacity

School of Design

Rationale and Purpose of the Module: To develop the basic skills in and cognitive processes of product design and to continue to build from PD4101 to lay the foundations for the subsequent Design Studio modules.

Syllabus: This module comprises three complimentary streams: • Design Methods • Design Techniques • Design History

Prerequisites: PD4101

WT4902 - MODEL MAKING

ECTS Credits: 6 (Year 1 Module)

(Lab-Based Module)

Limited Capacity

School of Design

Rationale and Purpose of the Module: To introduce students to skills and techniques that will enable them to create representational and visual models to enhance and compliment their design process. Students can expect to use a variety of materials, such as modelling foams, soft woods, and sheet material. Students will also be introduced to responsible usage of power tools.

Syllabus: - Health and safety in a workshop and building environment. - Use of hand tools to form and shape applicable materials. - Correct and safe use of workshop machinery. - Methodical approach to creating representational models. - Measuring, marking and methodical approach to creating representational models. - Working to technical drawings and scale. - Correct finishing, spraying and painting techniques.

School of Design: Year 2 Modules

PD4004 - DESIGN VISUALISATION

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited Capacity

School of Design

Rationale and Purpose of the Module: The aim of this module is to introduce methods for communication of design solutions useful during several phases of the design process: development of form, functionality, and final solution. On completion of the module, students will be competent visual storytellers.

Syllabus: • Visualisation of design form • Communication of design function • Photography of products in context • Digital editing of images • Fundamentals of graphic design.

PD4044 - Design Studio 4

ECTS Credits: 12 (Year 2 Module)

(Lab-Based Module)

Limited Capacity

School of Design

Rationale and Purpose of the Module: This module builds on the learning and skills acquired through the pre-requisite Design Studio modules, while introducing new topics such as Creativity Methods, User Interface Design and Design for Manufacture.

Syllabus: The following is an outline of topics covered in project-based studio classes: Idea generation techniques. Communication of ideas through sketching and modelling. Graphical user interface design. Design for manufacture

Prerequisites: PD4101, PD4102

PD4124 - CONTEMPORARY DESIGN CULTURE

ECTS Credits: 6 (Year 2 Module)

(Lab-Based Module)

Limited Capacity

School of Design

Rationale and Purpose of the Module: • To allow students to place their design practice in an international, cultural and historical context. • To develop critical and reflective skills on current practices in design. • To introduce contemporary trends, concepts and philosophies. • To familiarise students with the language of Design. • To encourage students to look critically and objectively at contemporary (as well as historical) design and begin to develop an individual design philosophy. • To introduce a wide range of professional experts from design and related industries. • To foster real links with the design world through site visits and relevant field trips (both nationally and internationally). • To encourage debate and discussion amongst students.

Syllabus: Design Appreciation. History of Design. Critical Design. Emerging Design disciplines. Contemporary theories. New philosophies. Design Sociology & Psychology. Cutting-edge technologies and materials. Forecasting. Trends. Design Styles. Appreciation of design related fields (Fine Art, Cinema, Sculpture, Architecture etc.). Design Futures. Speculative Design. Collaboration and Interdisciplinary work.

Architecture and Product Design



UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

Architecture: Year 1 Modules

AR4032 - HISTORY AND THEORY

OF ARCHITECTURE 2

ECTS Credits: 3 (Year 1 Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: This module aims to illustrate the dialectic of architectural design. Beyond the ties to a specific site, architects operate within a specific historical and theoretical context. On one side, architects are bound by this context and respond to it. On the other side, architectural form is never just the mechanical consequence of that response to context, and architects are free to formulate a position of their own. With this artistic licence comes a responsibility. By exercising their liberty responsibly, architects in turn transform the context of their work.

Syllabus: The module provides a focused survey of buildings for architectural education throughout the twentieth century. This specific building programme has allowed architects to formulate their theoretical position more clearly than any other. These select buildings are discussed within their specific historical and theoretical contexts. In the process, students will probe the relation between architectural expression and theoretical manifesto. Class discussions and assignments aim to develop skills in observation and critical description. Students are expected to explain individual insights and argue critical positions with precision and clarity, always with necessary reference to sources and in an appropriate academic format.

Architecture: Year 2 Modules

AR4034 - HISTORY AND THEORY OF ARCHITECTURE 4

ECTS Credits: 3 (Year 2 Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: The second-year program in Architectural Research provides students with a comprehensive survey of the history of architecture and urbanism. In the second semester students will continue to hone the specific cognitive skills required to address the field, deepening their knowledge of the local and global built domain while reading, writing, and researching architecture. The second-year program revolves around intensive workshops and seminars.

Syllabus: Continuing the survey from the first term, the period covered will be from 1945 to the present day, course will survey not simply the history of modern architecture, but the history of environmental, structural, and social systems in such terms. The course is composed of Lectures, seminars, writing workshops, together with research papers.

Architecture: Year 3 Modules

AR4036 - HISTORY AND THEORYOF ARCHITECTURE 6

ECTS Credits: 3 (Year 3 Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: The third-year program in Architectural Research continues the comprehensive survey of the history of architecture and urbanism in the programme curriculum. This module exposes students to urban history.

Syllabus: Through lectures, discussion seminars, field trips, and writing the course will survey urban history from prehistory to the present day. The course is a broad introduction to urbanism throughout the ages, from the Paleolithic to the present day both in critical texts and first hand. Students will be exposed to the complexity of collective human inhabitations throughout the ages, bothin Ireland and abroad.

Architecture: Year 4 Modules

AR4367 - Digital Technology

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. This elective provides the theoretical framework, tool expertise and technical skills required to analyse, understand and represent three-dimensional complex forms (curves, surfaces and volumes) using digital tools. NURBS-based modelling tools and physically correct rendering tools are taught and applied in the process, specifically Rhino and Maxwell Render. The course will also present a number of techniques for sketching complex surfaces using pencil. The course also analyses prototyping and fabrication processes related to these complex forms, and students will study outstanding references of their application in contemporary design.

AR4407 - ARCHITECTURE INTELLIGENCE UNIT

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. Allow a discussion and exploration with every interested party - local authorities, stakeholders, companies, conservation bodies, planners, professional architects, engineers etc. The research will engage both interested professionals and students of architecture in an exciting opportunity to demonstrate the capacity of architecture in a wider set of imminent and pressing questions. As a group, IU works in a strategic way, located within the context of ongoing work at SAUL.

AR4327 - Culture Place Environment (Building Land)

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. There are many ways of reading, examining, explaining and presenting the city. How the city represents itself or rather the aesthetic of the city is dependent on so many flows and forces. Our relationship with the city is constantly under interrogation simply because as the environment of the city changes just so we change in response. This module proposes to interrogate the evolution of the constructed territory. It hopes to build an understanding of relations within the given environment concurrent with their historical importance and their place in the canon of the built place.

AR4337 - Urban Design

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. The module addresses the recent history, current discourse and emerging processes of urban design and place-based planning governance, with an emphasis on the design of civic space. It explores directly the meaning and application of sustainable development policies in urban development. It investigates, particularly, contemporary examples of interdisciplinary practice in urban design and emerging, bottom-up approaches to place making as a design practice. The course will develop a context for understanding the role of design in shaping the urban environment, both physically and culturally.

AR4347 - Design Philosophy

ECTS Credits: 6 (Year 4 Module)

School of Architecture and Product Design

(Studio-Based Module)

Limited places available: 2

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. Considering a wide array of research processes from the scholarly to the wildly eccentric, this module will analyse the relationship between inquiries into archives, sites and objects and the structures used to organize the results. Taking research beyond a mundane or tedious task, this module will uncover the researchers power to make strange and unpredictable the world of neat certainties. Subsequently, it will relate the way we position ourselves in the world, the way we describe it, to the way we act within and upon it.

AR4357 - Architectural Form & Culture

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. This module will map the contradictory and polemical understandings of the role performed by the façade in both architectural discourse and contemporary architectural practice. Using a set of constructed binary conditions as an organising matrix for discussion, this module will look critically at the slippery allocation of meaning and performance of the most public side of architecture.

AR4377 - Engineering Research

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. This elective module is open to students with an interest in advanced engineering construction and its application in architectural design, and who wish to develop skills and pursue applied knowledge in design research and engineering know-how located in existing as well as emerging production paradigms. Construction materials and connections, production and assembly processes will be investigated with regards to their potential for optimisation and innovation with input from architects, engineers, technologists, and industry

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AR4387 - Experimental Construction

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. In this elective students develop the technological know-how, tool expertise and practical skill required to understand, conceptualise and implement emerging and experimental technologies in manufacturing and building construction. The construction experiment relates to a specific environmental or cultural condition (extreme climate, earthquake, disaster areas, developing countries) and aims at a high degree of self sufficiency in operation. The design will implement research findings on programme, user group, natural and cultural context, available materials and technologies etc.

AR4397 - UTOPIAN STUDIES

ECTS Credits: 6 (Year 4 Module)

(Studio-Based Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. This module will examine the nature and history of utopianism, especially in relation to the processes of the imagination and social design. It will consider utopianism in all its manifestations, including books and buildings, intentional communities and political movements; and it will especially pay attention to the role of the utopian method in producing the built environment. To do so, students will read and discuss work that describes and enacts utopia in description and theory and in fiction and film (especially science fiction). Classes will be comprised of a lecture, followed by close discussion of assigned texts.

AR4417 - DIGITAL MEDIA AND REPRESENTATION

ECTS Credits: 6 (Year 4 Module)

Limited places available: 2

School of Architecture and Product Design

Rationale and Purpose of the Module: Architecture electives provide a flexible framework to accommodate (short-term) research projects on a wide spectrum of issues, and to allow students to pursue their own personal interests within architecture. Focusing on case studies, the elective module will be delivered through a programme of lectures, seminar discussions and case study

presentations.

Syllabus: The subject matter can change depending on the interest and availability of academic staff. This elective provides the theoretical framework, tool expertise and technical skill required to produce technically advanced and aesthetically meaningful imagery. The elective aims at pursuing applied knowledge and developing skills to employ digital media in the visual representation of ideas.

The student will create a body of work through a process of composition and editing, layout and production (printing).