Introduction:

The University of Limerick operates a modular 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 the faculties and departments. Acceptance on these modules is subject to academic pre-requisites, timetabling constraints, and ceilings on and Romans. The module descriptions follow present an outline of the salient topics covered in each module.

Normal course load is five modules per semester.

Module Key

The module code is the key in most cases to find out when the class is running.

Example: **CU 4051**

- **CU** is the subject area
- **4** is the type of study only modules beginning in 4 offered to study abroad students
- **05** is just a departmental way to distinguish between classes

The final digit is the only way to determine which semester the module will run in.

Odd numbers (1, 3, 5, 7) are full semester classes

Even numbers (2, 4, 6, 8) are spring semester classes

1 and 2 are first year classes

3 and 4 are second year classes

5 and 6 are third year classes

7 and 8 are fourth-year classes

This is the usual key for classes but there are always exceptions!

Modules Featured in Booklet

All modules are in an alphabetical order by module code

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Faculty Key

- **BUS**: Kemmy Business School
- **SEN**: Science & Engineering
- **AHS**: Arts, Humanities & Social
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History
History 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, dictators 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.

GY4002 - INTRODUCTION TO PHYSICAL GEOGRAPHY
ECTS Credits: 6 (Year 1 Module)
History

Rationale and Purpose of the Module: This module introduces students to the key principles that underlie 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, coastal 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.

History Year 3 Modules

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 ascendency; agrarian society in 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.

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 scrutinised 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 Annalies 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.

HI4056 - NEW HEAVEN, NEW EARTH, POWER AND BELIEF IN THE EUROPEAN REFORMATION, 1517-1618
ECTS Credits: 6 (Year 3 Module)
History

Rationale and Purpose of the Module: This module examines the history of the Reformation in central Europe. It intends to introduce and explain why the Reformation offered the possibility of a relatively unknown professor at a minor university (Martin Luther of Wittenberg) ultimately gave rise to fundamental changes in the religious, political, and social order of the period. The module explores varieties of Reformation thought from the conservative to the radical and aims to interrogate their social and political implications and general historical significance. The module is designed for third-year students of History. The module will enable these students to develop a thorough understanding of the European Reformation in its various guises. It is also intended to act as a bridge between the general surveys of early modern history offered in years 1 and 2 and the specialist electives offered in year 4.

Syllabus: The late medieval Church; popular piety in the late medieval world; pre-Reformation patterns of heresy and reform; Christian Humanism; Martin Luther, a Wittenberg theologian; preaching, propaganda and cultures of persuasion; political responses to Luther in the Holy Roman Empire; Huldrych Zwingli and the Reformation in Zurich; iconoclastic fury and the populus unleashed; the early Reformation in the cities; the Radical Reformation; the German Peasants' War; Apocalypse Now: Anabaptist Münster and the New Jerusalem; the Magisterial Reformation; Calvin’s Geneva and the Second Reformation; International Calvinism; Catholic Reform; the Council of Trent and the Council of Trent; political conflict and settlements in the Holy Roman Empire; confessionization and social discipline; religious exiles and refugees; the Reformation and the family; female religious congregations and the Reformation; the Reformation and education.
**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:** ENVIROMENTS 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  
SOCITIES AND CULTURES: rural social structures: landownership, farming, labour; the cult of improvement; household; gender, sexuality and patriarchy; urban society: merchants, trades, mendicants; the languages of Ireland: Anglicisation 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.

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**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; industrialisation 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.

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**History 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.
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.


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 the how the criminal justic system operates.


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 to 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.

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 realisation 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 sentence of animals in the Treaty of Amsterdam and Lisbon, recent development 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.

LA44440 - CONSTITUTIONAL LAW 2
ECTS Credits: 6 (Year 1 Module)
Law
Rationale and Purpose of the Module: Currently, the School of Law delivers two modules called Law of Business Associations 1 and 2. The name Law of Business Associations is outdated and cumbersome. The two new modules being created will keep the content of the Law of Business Associations modules but will use the more commonly used name of Company Law. It will be to the advantage of students, and professional bodies and employers with which they deal, as the term Company Law bears the more commonly used term for the study of this area of 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 examinship for a company in financial difficulty is reviewed and the duties of court appointed examiners analysed. Finally, the module covers the various methods of winding up of 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.

LA4540 - COMPANY LAW 2
ECTS Credits: 6 (Year 1 Module)
Law
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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.

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 familiarise 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.

LA4040 - LAW OF EVIDENCE
ECTS Credits: 6 (Year 2 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.

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 practice 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 confidentiality and access to medical records, an increasing awareness of the need to recognise 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 familiarise the student with the legal regulation of contracts and/or employment, industrial relations and remedies thereto.


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

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 organisation: the corporate entity and the partnership unit.

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 criminalisation; Crime prevention; Organised crime; Desistance and re-integration of offenders.

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**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.

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**LA4938 - ADMINISTRATIVE LAW**
ECTS Credits: 6 (Year 4 Module)

**Law**

**ACADEMIC CONTENT IS NOT CURRENTLY AVAILABLE FOR THIS MODULE - UPDATES ARE IN PROGRESS**
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 programme. Pre-requisite module for this module is Module ID 154B 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 organisations • 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 and Democratization Authoritarianism and Totalitarianism Arguments for and against Democracy Freedom and Rights Theories of Justice War and Terrorism Inequality and Development.

PO4047 - 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 centred 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 familiarise 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 globalisation, 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 Organisation.

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 programmes 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
Politics and Public Admin

Year 4 Modules

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.


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 conceptualisation 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 centred 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 laggardship; 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.

PO4088 - INTRODUCTION TO TERRORISM AND VIOLENT POLITICAL EXTREMISM
ECTS Credits: 6 (Year 4 Module)
Politics and Public Admin

Rationale and Purpose of the Module: This rationale and purpose of this module is to introduce students to a number of key issues and policy responses within the realm of international terrorism and violent extremism. The module will cover a variety of different typologies including state-sponsored terrorism, separatist groups, far-right, single-issue, and violent jihadis.

Syllabus: The module will first explore the key debate surrounding definition(s) of terrorism(s) and follow through with analysis of various typologies including state-sponsored terrorism, separatist groups, far-right, single-issue, and violent jihadis. Throughout the module, students will be expected to critically analyse each case, exploring the underlying ideologies, developments over time and state responses. Groups covered will include al Qaeda, Hizbollah, the Provisional Irish Republican Army (IRA), ETA, GAL, violent dissident Republicans and the Far-Right.

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 Union 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

PA4048 - 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 theorectical 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 globalisation, 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.

PO4108 - MULTICULTURALISM AND POLITICAL THEORY
ECTS Credits: 6 (Year 4 Module)
Politics and Public Admin

Rationale and Purpose of the Module: This module takes up some contemporary themes in political theory, examining the concepts of justice, freedom, equality, democracy, pluralism and respect in light of the demands for greater recognition and accommodation that have been put forward by ethnic, racial, religious, and linguistic minorities. The aim of this module is to explore the formidable problems raised by the challenge of cultural diversity from the perspective of normative political theory, and in particular to evaluate the range of alternative
justifications for multicultural political policies. By the end of
the module, students should be aware of the various rights
claims, policy proposals and political alternatives that have
been suggested by and on behalf of minority cultural
communities; have a sense of the challenges these pose to
established liberal theories and to liberal-democratic practices;
be able to critically evaluate the various justifications offered;
understand a range of arguments for and again.

**Syllabus:** Multiculturalism and Political Theory; Pluralism;
Citizenship; Toleration; The Politics of Recognition; Liberal
Culturalism; Cosmopolitan Criticisms; Feminist Objections;
Democracy and Minority Representation; Education and Cultural
Diversity; Headscarves; Universalism, Ethnocentrism and
Relativism.

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**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:** Conceptualising and theorising 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 the mediating
factors. Reflecting on new patterns of governance. Looking to
the future. Module review.

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School of Modern Languages and Applied Linguistics
School of Modern Languages and Applied Linguistics Year 1 Modules

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 proposed by all disciplines participating in the degree programme. 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 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 as 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 (CEFIR). (i) To provide students with an introduction to major aspects of contemporary Francophone societies and cultures; (ii) to familiarise 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 (CEFIR). 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) decolonisation 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)  
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) decolonisation 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

**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: 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

**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.

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**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 familiarise students with organisational 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; b) Grammar work continued, listening comprehension. Autonomous Project work utilizing CALL facilities.

**Prerequisites:** GE4921

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**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.

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**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.

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**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 emphasising 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

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**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). Practising the language is paramount
in achieving fluency and accuracy, and yet language studies programmes 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.

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**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.

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**SP4002 - INTRODUCTION TO LATIN AMERICAN CULTURE**  
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 programme.

**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 characterised 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.

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**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 B1 on the Common European Framework of Reference for Languages (CEFR). The beginning courses aim to provide the student with a strong basic knowledge of Spanish and of contemporary Spain and Latin America. The course is designed to: * Revise and broaden the students knowledge of the structures of Spanish grammar. * 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 course is designed to: * Revise and broaden the students knowledge of Spanish grammar. * 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.

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**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 Spanish grammar. * 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.

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**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 beginners 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; a-ue, e-1 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 Expertos. These include areas such as: the lexicon of international business; presenting oral reports; marketing materials and the lexicon of entrepreneurship; the lexicon of the stock exchange; writing summaries; the lexicon 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). One General Lecture

Prerequisites: SP4151

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 students 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 - INDIENISMO 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 analyse Latin American literature from the marginalised 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 analyse 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), JosU MarYa Arguedas, Enrique López Alb-jar and NiomUdes Santa Cruz (Per-), Lydia Cabrera and Manuel Cofió (Cuba) among others.

Prerequisites: SP4003
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 programmes 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 text book, 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, prepositions, prepositional phrases, idioms, discourse markers (oral and written) e.g. connectives, sequencing, signposting.

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 programmes 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 text book, 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.

ECTS Credits: 6 (Year 1 Module)
School of Modern Languages and Applied Linguistics

Rationale and Purpose of the Module: This module is set at C2 on the Common European Framework of Reference for Languages (CEFR). The module is aimed at students 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) 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 syllabus is set at C2 on the Common European Framework of Reference for Languages (CEFR). Students work from a set text book, back-up audio visual and on-line material. Practice is given in the four language 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 Japan and deepen their knowledge and understanding of Japanese society and culture.

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 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 syllabus is set at C2 on the Common European Framework of Reference for Languages (CEFR). Students work from a set text book, back-up audio visual and on-line material. Practice is given in the four language 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 Japan and deepen their knowledge and understanding of Japanese society and culture.

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) 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 syllabus is set at C2 on the Common European Framework of Reference for Languages (CEFR). Students work from a set text book, back-up audio visual and on-line material. Practice is given in the four language 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 Japan and deepen their knowledge and understanding of Japanese society and culture.

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) 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 syllabus is set at C2 on the Common European Framework of Reference for Languages (CEFR). Students work from a set text book, back-up audio visual and on-line material. Practice is given in the four language 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 Japan and deepen their knowledge and understanding of Japanese society and culture.

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) 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 syllabus is set at C2 on the Common European Framework of Reference for Languages (CEFR). Students work from a set text book, back-up audio visual and on-line material. Practice is given in the four language 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 Japan and deepen their knowledge and understanding of Japanese society and culture.
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.

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**CU4014 - ANALYSING MEDIA DISCOURSE**

ECTS Credits: 6 (Year 2 Module)

**School of Modern Languages and Applied Linguistics**

**Rationale and Purpose of the Module:** This module is designed to help students develop the skills, tool and knowledge required to engage critically with a range of media texts, and evaluate their linguistic features using qualitative and quantitative approaches. Students will engage with the notion of discourse/text, and discourse analysis, and will interact with a broad range of approaches to the analysis of discourse. This module is primarily concerned with language use in media texts, though it takes a broad perspective on the nature of language.

**Syllabus:** The nature of media texts, and discourse analytic methods that connect with media discourse, including critical approaches and contemporary blended approaches that harness electronic text analysis. Considering the nature of discourse in the media, and theoretical/analytical concepts that can help use to analyse media discourse.

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**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.
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. 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

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**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

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**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

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**SP4914 - 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

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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’/E 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/E 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)

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 is cinema. 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

FR4246 - FRENCH 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). 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 practise 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 recognise 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 - analysing French painting , particularly the the realist/impressionist tradition - reading and studying a selected realistic/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 an 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. Tutorial work: Oral presentation & discussion class: drawing on text and audio-visual materials to develop formal oral skills (note-taking, structuring presentations, summarising and reporting content); Literary text analysis & production; Translation theory and practice: historical and socio-political texts.

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 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

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

JA4246 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 4  
ECTS Credits: 6 (Year 3 Module)  
School of Modern Languages and Applied Linguistics

SP4246 - SPANISH LANGUAGE, CULTURE AND SOCIETY 4
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

ECTS Credits: 6 (Year 3 Module)

School of Modern Languages and Applied Linguistics

TE4016 - TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES (TESOL) 1
ECTS Credits: 6 (Year 3 Module)

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 TE4016 (TESOL 2) and TE4018 (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. TE4016 (TESOL 1) and TE4018 (TESOL 2) 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 TEFL 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.

ECTS Credits: 6 (Year 4 Module)

School of Modern Languages and Applied Linguistics

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.

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: FR4147C

FR4248 - FRENCH 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), 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
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 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).

Prerequisites: FR4927

FR4927 - FRENCH FOR BUSINESS 8A
ECTS Credits: (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 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 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, Dehorsö by Annie Ernaux.

Prerequisites: GE4147

GE4147 - GERMAN LANGUAGE AND SOCIETY 6: ISSUES AND DEBATES
ECTS Credits: 6 (Year 4 Module)
School of Modern Languages and Applied Linguistics

Syllabus: This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). The 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 womenEs 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

JA4247 - 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 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
**Rationale and Purpose of the Module:** This syllabus is set at C1 on the Common European Framework of Reference for Languages (CEFR). This final module in the sequence presents students with a sophisticated, challenging and appropriate range of authentic, multimedia materials in order to fully consolidate their familiarity with Hispanic business environments and issues and their command of appropriate lexis, genres and styles in Spanish.

**Syllabus:** This syllabus is set at C1 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 final module of the course. The Spanish for Business 7 module provides students with a language rich environment to further their knowledge and increase their confidence. Students conduct research and complete a task-based Internet project on a Latin American or Spanish city which they are familiar with, in most cases via a prior off-campus placement there. Students identify and analyse key political, social, or cultural issues to which there is an economic or commercial dimension.

**Prerequisites:** SP4157

**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' understanding of the 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.

**Prerequisites:** TE4025, TE4026

**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, - 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

**TE4018 - 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 TE4016 (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. TE4016 (TESOL 1) and TE4018 (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:** TE4016, TE4018
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.

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.

SO4014 - SOCIOLOGY OF HEALTH AND ILLNESS FOR NURSING AND MIDWIFERY
ECTS Credits: 6 (Year 2 Module)

Sociology

Rationale and Purpose of the Module: This module introduces students to sociological concepts and models of understanding in relation to health and illness and how these affect nursing and midwifery.

Syllabus: Sociological models/theories of health and illness; social determinants of health (gender, ethnicity and class); illness-related stigma; the meanings and experience of chronic illness. Social context of healthcare provision; healthcare policy (historical and contemporary context); equity and healthcare structures. Professionalisation and socialisation of nursing and midwifery; social power of medicine, gender and power relations in health care, discrimination. Relationships between the nurse and midwife and other health care professionals, professional-patient/client relationships. Social context of health care for clients and families, accessing services. Contemporary politics of health care; social implications of healthcare policy, changing context of healthcare provision.

SO406 - 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; Victimisation 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).

S04046 - 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
S04053 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 analyse 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 analysing
quantitative data with statistical software programmes
such as SPSS.

Sociology Year 4 Modules

S04078 - 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
conceptualisation and operationalisation 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 familiarised 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.

S04088 - 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 globalisation.
b. To offer ways of evaluating the work of major sociological schools/theorists in the study of economic, cultural and political globalisation.
c. To develop the ability to analyse and evaluate various outcomes of globalisation through a critical framework.

**Syllabus:** The aim of this course is to provide a comprehensive introduction to the various discourses of globalisation. It will explore some of the key meanings, history and differing theoretical perspectives and interpretations of globalisation in contemporary research, and will identify main policy issues related to economic, cultural and political globalisation. 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 globalisation; and the extent to which sociology like other disciplines needs to think of many of its central concepts, debates and theoretical approaches in the light of globalisation processes. The analysis and discussion will be illustrated with international and Irish case studies.

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**SO4178 - THE SOCIOLOGY OF THE BODY**

*ECTS Credits: 6 (Year 4 Module)*

**Sociology**

**Rationale and Purpose of the Module:** Aims: This module introduces students to the sociology of the body/embodiment. Key theoretical work is reviewed, incorporating reference to various perspectives from a range of disciplines and approaches (e.g., biology, anthropology, sociology and feminism). Empirical studies in the social sciences, exploring a range of bodily issues and practices, are also considered.

**Objectives:**

1) Locate sociological interest in the body/embodiment within its larger social context.

2) Describe and critically assess the main theoretical approaches for studying human embodiment and bodily practices.

3) Ground theoretical discussion on human bodies in empirical work from sociology and the social sciences.

**Syllabus:** The module begins by introducing students to social theory on the body and highlights the case for embodying social theory. Sociology is the main disciplinary approach taken for exploring bodies as the source, location and medium of society, but we will first underscore the socially constructed character of the body with reference to broader socio-cultural changes and anthropological research. Attention then focuses on some key themes and debates in late modernity, such as medicalisation, risk, identity, the significance of biology, consumption and gender. More specific substantive lectures will explore themes such as: the obesity debate; disordered eating; cosmetic surgery; sport, physical activity and fitness; bodybuilding and drug-taking; tattooing; piercing; working bodies; sexualities; virtual bodies and cultures of technological embodiment (cyborgs); ageing; disability, chronic illness and healthcare; and, the body as a research instrument.

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**SO4208 - SOCIOLOGY OF LOVE AND ITS DARK SIDE**

*ECTS Credits: 6 (Year 4 Module)*

**Sociology**

**Rationale and Purpose of the Module:** This module examines the different aspects of relationships: love, mate selection and dating, non-marital lifestyles, marriage, reproduction and forms of parenting. A key component of the course is the influence of changing work patterns and changing sexual values and behaviour on increasing diversity in family forms. The objectives of this module are:

* To introduce students to the sociological perspective as it applies to the understanding of relationships and familial phenomena.

* To present various sociological theories regarding love, sexual relationships, marriage and family systems.

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 familiarisation with new methods emerging from Internet research. Students will also be introduced to debates regarding e-participation and digital exclusion. This

* To familiarise students with the results of empirical research of social scientists who study partnership formation and family behaviour.

**Syllabus:** The module explores a number of key themes: Trends in family formation and their competing theories; classifications and functions of the family especially in relation to Ireland, past and present; love, sex and courtship, exploring issues of partner choice; marriage and cohabitation, addressing the effects of cohabitation on both nuptiality and fertility; lone-parenting, various paths into and out of family life; separation and divorce, exploring trends across social groups and their correlates; re-marriage and stepfamilies with a particular focus on growing up in a step-family; work and families, analysing power relations within the family in terms of gender roles and housework by discussing a range of contemporary studies of the domestic division of labour especially the impact of increasing male unemployment, the crisis of masculinity, the new man, dual burden/triple shift and the relationship between home and work; the family, state and social policy: the role of social policy and the declining family.

**Prerequisites:** SO4073, SO4001

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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 familiarise 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 familiarise 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. This module aims to develop students appreciation of and ability to employ sociological concepts, theories and methods as key tools for investigating the Internet.
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)

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 operationalisation of the key concepts / theories that they have engaged with in their degree programme. 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.
School of English, Irish and Communications
School of English, Irish, and Communication Year 1 Modules

**JM4031 - SUB-EDITING AND DESIGN 1**

ECTS Credits: 6 (Year 1 Module)

School of English, Irish and Communication

**Rationale and Purpose of the Module:** This module aims to introduce students to key principles of sub-editing and design for journalism. It will develop students’ theoretical understanding as well as skills and abilities by introducing them to the fundamentals of sub-editing practices including grammar, punctuation and syntax for news and feature journalism, for both print and online. It will also introduce students to the basic principles of news design using text and images for print and online.

**Syllabus:** Students will use a stylebook to understand the basic principles of editing, proofreading and sub-editing. They will learn the principles of professional editing, headline and standfirst writing, and cutting to length. They will be introduced to the basic principles of illustrating news, including taking photographs and generating graphics. They will learn print and website design and will create their own websites. They will analyse and compare design in national and local newspapers and websites, and will use these analyses to inform their own work. Assessment will be by sub-editing assignments, the production of a portfolio of work completed during the course, and a news website.

**EH4022 - ENGLISH LITERATURE 2: EARLY MODERN POETRY AND PLAYS**

ECTS Credits: 6 (Year 1 Module)

School of English, Irish and Communication

**Rationale and Purpose of the Module:** This module introduces students to the poetic and dramatic developments of the period. The poetic and dramatic developments of the period will equip students with the skills to identify and critically analyse poetic forms and dramatic conventions.

School of English, Irish, and Communication Year 2 Modules

**JM4044 - MAGAZINE JOURNALISM AND ADVANCED LAYOUT DESIGN**

ECTS Credits: 6 (Year 2 Module)

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 different 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 on Oscar Wao: 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

**JM4013 - RADIO JOURNALISM**

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)
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.

**AW4006 - PEER-TUTORING IN ACADEMIC WRITING**
ECTS Credits: 6 (Year 3 Module)
School of English, Irish and Communication

**Rationale and Purpose of the Module:** This module recognises the centrality of writing in higher education and the importance of writing as a means of learning. Writing fosters metacognitive thinking about writing leading to the development of transferable generic and complex-thinking skills for students in all disciplines, which in turn generates better writers in both academic and professional settings. Better writers, critical thinkers and researchers are better equipped to sustain the knowledge economy. In this context, the module responds to the University/Es ongoing need to create better writers in all disciplines. Peer-tutoring is a step towards providing a coordinated and systematic approach to writing development that is sustainable and cost effective as it will produce a cohort of fully trained, confident graduate and postgraduate student-tutors from a wide variety of disciplines.

**Syllabus:** Students will develop an awareness and command of the metalanguage to discuss their own writing process. This will be developed through reflecting on existing and past writing assignments. Through small group discussion and writing-focused workshops, students will be engaged in activities to develop themselves as writers and writing tutors, including critical and reflective evaluation of their own writing; familiarity with the conventions honoured and the criteria used by other disciplines for the evaluation of writing therein; development of tutoring strategies; observations of experienced peer-tutors; engagement in regular peer-tutoring activity; managing diverse tutoring situations; and professional development. Students will read, write and talk about argumentation, arrangement of ideas, coherence, discipline-specific style conventions and values, grammar, and ethical concerns.

**EH4006 - VICTORIAN TEXTS AND CONTEXTS**
ECTS Credits: 6 (Year 3 Module)
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.

**EH4026 - IRISH LITERATURE 1930 - 1990**
ECTS Credits: 6 (Year 3 Module)
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.

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**EH4125 - FEMINIST LITERARY THEORY**
ECTS Credits: 6 (Year 3 Module)
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 erasure, 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.

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**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

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**TW4006 - WRITING FOR NEW MEDIA**
ECTS Credits: 6 (Year 3 Module)
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.

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**EH4026 - COLONIAL/POSTCOLONIAL LITERATURE IN ENGLISH**
ECTS Credits: 6 (Year 3 Module)
School of English, Irish and Communication

**Rationale and Purpose of the Module:** On successful completion of this module, students will be able to apply a critical and cogent awareness of Colonial and postcolonial histories of the 19th and 20th centuries. Multiple socio-political and cultural contexts associated with Anglophone world literature. Key literary texts in the field of postcolonial studies from around the world. A sample of key theoretical debates in the field of postcolonial studies at large (connected to additional theoretical fields such as feminism, ecocriticism, postmodernism, and so on). Ways to compare, contrast and combine different theoretical and methodological positions in the field of postcolonial studies.

**Syllabus:** This module will examine colonial discourse of the British Empire, through a series of colonial and postcolonial literary and theoretical readings. More specifically, we will review the fundamental dichotomies of colonial discourse - master/slave, center/margins, enlightenment/barbarism, authenticity/hybridity, secular modernity/religious conservatism, nation/nativism - and will proceed to read articles and novels from the end of the 19th century, as well as 20th century, from India, Africa and the Caribbean, that both address and attempt to reconfigure the colonial experience from a variety of perspectives.

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**EH4046 - OLD AND MIDDLE ENGLISH LITERATURE: TEXTS AND CONTEXTS**
ECTS Credits: 6 (Year 3 Module)
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.
School of English, Irish, and Communication Year 4 Modules

**JM4052 - MEDIA CHALLENGES IN THE DIGITAL AGE**
*Please note there is limited availability*
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.

**EH4038 - STUDY OF A MAJOR AUTHOR**
*Please note there is limited availability*
ECTS Credits: 6 (Year 4 Module)
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.

**EH4008 - BRITISH LITERATURE SINCE 1945**
ECTS Credits: 6 (Year 4 Module)
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 womens 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), with significant concepts and philosophies (Thatcherism, postmodernism), and with literary movements (Angry Young Men, Kitchen Sink Realism, New Brutalists).

**TW4118 - Content Development and Information Management**
*Please note there is limited availability*
ECTS Credits: 6 (Year 4 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.
Irish World Academy of Music and Dance
Irish World Academy of Music & Dance Year 1 Modules

MU4002 - CRITICAL ENCOUNTERS WITH POPULAR MUSIC AND DANCE
ECTS Credits: 6 (Year 1 Module)
Humanities

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 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)
Humanities

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 musics 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.

Irish World Academy of Music & Dance Year 2 Modules

MD4114 - CRITICAL ENCOUNTERS WITH GLOBAL POP
ECTS Credits: 6 (Year 2 Module)
Humanities

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 musics 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.

MU4034 - DANCE IN HEALTH 1
ECTS Credits: 6 (Year 2 Module)
Humanities

Rationale and Purpose of the Module: This module provides basic skills and knowledge to allow dancers to work in healthcare settings, under the supervision of, and in collaboration with, medical healthcare professionals. The content will cover practices that promote a healthy and mindful approach to movement while also helping dancers apply their knowledge for use across a range of healthcare situations. This module will provide preparation for clinical placement (MODULE CODE) and contextualization, through theory and studio-based practice. The continued development of an integrated mind/body approach will enable students to facilitate appropriate and effective dance classes for multiple populations to increase mobility, cardiovascular function, agency and expression, while minimizing risk of injury.

Syllabus: This module provides basic skills and knowledge to allow dancers to work in healthcare settings, under the supervision of, and in collaboration with, medical healthcare professionals. The content will cover practices that promote a healthy and mindful approach to movement while also helping dancers apply their knowledge for use across a range of healthcare situations. This module will provide preparation for clinical placement (Module 2) and contextualization, through theory and studio-based practice. The continued development of an integrated mind/body approach will enable students to facilitate appropriate and effective dance classes for multiple populations to increase: mobility, cardiovascular function, agency and expression, while minimizing risk of injury.
MU4043 - VOCAL PEDAGOGY
ECTS Credits: 6 (Year 2 Module)
Humanities

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)
Humanities

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.

MU4084 - SECOND INSTRUMENT STUDIES FOUR
ECTS Credits: 6 (Year 2 Module)
Humanities

Rationale and Purpose of the Module: This module allows students on the BA Irish Music / BA Irish Dance / BA World Music / BA Contemporary Dance / BA Voice to further develop performance skills in an instrumental skill (including voice) secondary to their main performance practice at the Irish World Academy. Students will have the opportunity to critically engage embodied expressions of performance practice on an instrument and or practice other than that in their core Practicum A module. Students will engage these studies in an environment informed by recent principles in arts practice research. This module will give students invaluable new perspectives on their creative and artistic potential. This is an elective module to be offered throughout the BA Irish Music / BA Irish Dance / BA World Music / BA Contemporary Dance / BA Voice and is subject to the Irish World Academy being able to source appropriate expertise and resources.

Syllabus: Students in this module will continue to develop a second instrumental performance area in small group and one-on-one contexts. Students will develop and document an appropriate practice regime as well as use reflective tools such as auto-ethnographic journals. Students will generate a short public performance which will play a part in the assessment of this module.

Prerequisites: MU4018

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Irish World Academy of Music & Dance Year 3 Modules

MU4013 - RESEARCH SKILLS: ETHNOMUSICOLOGY/ETHNOCHOREOLOGY/ARTS PRACTICE
ECTS Credits: 6 (Year 3 Module)
Humanities

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.

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MU4106 - ARTS AND HEALTH
ECTS Credits: 6 (Year 3 Module)
Humanities

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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 and higher education 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)

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-nós and set dancing.

MU4004 - MATERIALS AND CONTEXT FOR VOCAL PERFORMANCE
ECTS Credits: 6 (Year 4 Module)

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)

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 stepping stone 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.

Irish World Academy of Music & Dance Year 4 Modules
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 behaviours in daily life. The brain is central to human behaviour 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 behaviour, 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

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PR4002 - ANATOMY 2
ECTS Credits: 12 (Year 1 Module)
School of Allied Health

Rationale and Purpose of the Module: This module will build on basic anatomical concepts taught in Anatomy 1 module and provide a comprehensive knowledge and understanding of the structure and function of the anatomy of the upper limb, face, head, neck, brain and spinal cord that will be further enveloped in subsequent clinical modules. This module will enable students to understand the functional relevance of all anatomical structures covered in this module and to appreciate the significance of interrelationships of structures to function. The total hours scheduled will be 96 (based on 3hrs lectures, 3hrs labs and 2hrs tutorials over 12 weeks)

Syllabus: Structure, functional & applied Anatomy of the upper limb - muscles, joints, nerves; shoulder girdle, shoulder joint, elbow joint, radio-ulnar joints, wrist, hand and finger joints; Analysis of basic functional activities involving upper limb. Structure, functional & applied Anatomy head, neck, face (temperomandibular joint), brain and spinal cord (cns + peripheral ns)
Nervous control of muscle tone and posture: cranial nerves: myotomes and dermatomes and reflexes of upper limb.

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School of Education Year 1 Modules

**EN4022 - EDUCATIONAL TECHNOLOGY FORTEACHING AND LEARNING**
ECTS Credits: 6 (Year 1 Module)
School of Education

**Rationale and Purpose of the Module:** This module introduces students to various forms of educational technology. The module provides participants with the practical and pedagogical skills to integrate these technologies into their teaching. The module also provides students with relevant policy and professional issues related to ICT use in educational settings. A core focus of the module is to empower students to capitalise on the personal, social and educational benefits of the technologies whilst recognising the critical questions raised by an increasingly technological society.

**Syllabus:** Reconceptualising teaching and learning in the context of ICT; rationale for the integration of educational technologies in schools; national and international policy trends in educational technology; critical perspectives on educational technology; deconstructing the 'net generation'; critical media literacy; cyber bullying and child welfare issues; information security and legislative requirements; productivity tools for teachers; teacher and student generated content (wikis, podcasting, video content); technologies in the classroom; assistive technologies in education; Communication and collaborative learning technologies (LMS platforms in schools, Social media in education); ICT planning and leadership; use of ICT in supporting independent learning; Evidence-based uses of technologies in the classroom; emerging trends and technologies in education.

**EN4032 - UNDERSTANDING YOUNG PEOPLE AND HOW THEY LEARN**
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 developmental psychology and how young people learn.

School of Education Year 3 Modules

**EN4006 - SUBJECT PEDAGOGICS 2 (MATHEMATICS)**
ECTS Credits: 6 (Year 3 Module)
School of Education

**Rationale and Purpose of the Module:** This is the second subject pedagogics module in mathematics and is devoted to applying the trainee teachers general pedagogical knowledge and developing mathematics-specific pedagogical knowledge. The module attempts to integrate three strands concurrently (a) a theoretical mathematics education strand focusing on the mathematics education curriculum (b) aspects of the psychology of mathematics teaching and learning (c) practical preparation for school-based practice.

**Syllabus:** LECTURE TOPICS: (2x13 weeks) Mathematics and Learning; Learning theories and mathematics; Mathematical thinking; Assessing Mathematics learning; Classroom Practice; International Perspectives; Senior Cycle Maths Curriculum.

SEMINARS: (1x5 weeks) Student groups (1 presentation per group)
Using resources effectively; Assessing mathematical learning; Self-appraisal for mathematics teachers; Professional practice; Senior Cycle mathematics; Assessment approaches/practices; Teaching strategies;

Designing a maths curriculum for a specific target group; The use of technology in maths teaching; Problem solving and modelling in secondary mathematics teaching; Teaching algebra; Teaching geometry; Proving in mathematics; Teaching proof and proof techniques; Learning theories in mathematics education; Research perspectives in mathematics education; Student choice (to be approved).

WORKSHOPS/MODEL LESSONS Student Groups (1 presentation per group) Group Brief: Develop and present to peers 30min model lesson for target senior cycle group. Lesson will be discussed and evaluated by panel of peers chaired by lecturer

**Prerequisites:** EM4004

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**EN4026 - INCLUSIVE EDUCATION 2: SPECIAL EDUCATIONAL NEEDS**
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 positive teacher attitudes and a capacity to differentiate appropriately. This module aims to enhance students' understanding of inclusion and to develop their capacity to identify and respond to students' special educational needs collaboratively and within a whole school framework.

**Syllabus:** Knowledge of key national and international policy and legislative documents that pertain to special educational needs in Ireland; identification and assessment of need across cognitive, physical and emotional/behavioural domains; effective writing of individual education plans; 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) and a multi-agency approach to the inclusion of young people with SEN; experience of an alternative educational experience.
**EY4016 - SUBJECT PEDAGOGICS 2 (ENGLISH)**
ECTS Credits: 6 (Year 3 Module)
School of Education

**Rationale and Purpose of the Module:** 1. Students will be introduced to the principles and practices of teaching English in second level schools. 2. Students will be enabled to understand the concepts and methodologies outlined in Senior Cycle English Syllabi.

**Syllabus:** The syllabus will be structured around the key concepts of teaching English, i.e., 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)
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.

**SE4016 - ADVANCED SCIENCE PEDAGOGY**
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

**School of Education Year 4 Modules**

**EN4018 - TEACHER AS PROFESSIONAL**
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, learning 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)
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

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**PN4038 - DESIGN AND COMMUNICATION GRAPHICS 6**

ECTS Credits: 6

**School of Education**

**Rationale and Purpose of the Module:** The importance of graphacy 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 graphacy. 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 professionally and effectively convey ideas relating 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: Graphacy, 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.

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Rationale and Purpose of the Module: Fundamental motors skills are foundational to participation in physical activity for a lifetime and engagement with more complex sport forms. The purpose of this module is to equip students with the skills, knowledge, and attitude regarding fundamental motor skills to enhance their participation and that of others.

Syllabus: Fundamental motor skills are generic motor activities with specific observable patterns. They encompass one stage in motor skills development, occupying a place between rudimentary movement skills and the development of sport specific skills. This module will examine the development of selected fundamental motors skills. The fundamental motors skills to be included are those considered to be critical to the majority of future participation. Specific content will include: 1. Development of competence a. Locomotor skills (walk, run skip, gallop, leap, hop, slide) b. Throwing c. Catching d. Sticking with the hand e. Kicking f. Jumping (horizontal and vertical) g. Landing h. Balance (static and dynamic) i. Rolling 2. Identification of critical elements of selected fundamental motor skills a. Feedback b. Analysis 3. Importance of fundamental motor skills a. Participation b. Social competence c. Attitude d. Self-confidence 4. Overview of issues with teaching a. Time b. Feedback c. Environment

Rationale and Purpose of the Module: This course is a unique opportunity to become familiar with key concepts in kinesiology, the study of human movement, and physiology, the study of how the body functions. It will also examine the role of physical activity (PA) and related themes (link with sport, health, etc.), while particular emphasis will be placed on the role of Health-Related and Skill-Related Fitness (HRF / SRF) in Physical Education (PE). To enable students to understand the basic anatomy of the musculo-skeletal system and how the system functions in normal motion such as walking. To enable students to understand the basic physiology of the systems which support movement in the body.

Apply the concepts to a physical education/activity environment.

Syllabus: 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. The nervous system and the brain; nerve structure and function, nerve transmission; the action potential; the neuromuscular junction, neurotransmitters; The central nervous system, the peripheral nervous system, autonomic and somatic nervous systems. Structure and function of muscle fibres; organisation into motor units; Motor unit recruitment in muscle contraction. Functional properties of muscle. The circulatory system; structure and function of the heart; blood vessel structure and function; blood pressure and its measurement. The capabilities teaching outdoor and adventure to post primary students; 2) draw links between the current national curricula/syllabi regarding outdoor education and selected curricular and instructional models; 3) recognize the potential of non-sport related activity in the lives of post primary students; and 4) gain understanding of the conduct of off-site teaching.

Syllabus: Through the acquisition of adventure and outdoor skills and knowledge, the pedagogy in teaching outdoor and adventure education and selected curricular models will be examined. Adventure principles include full value contract, experiential learning cycle, challenge by choice, briefing, processing and facilitating an experience, the determination of physical and emotional risk, and safety. Outdoor activities may include: orienteering, hill walking, camp craft, exploring nature, leave no trace, canoeing, rock climbing. Pedagogical skills involve big picture goals and assessment, aligned learning outcomes, content progression, and assessment, focused reflection on student learning linked to teacher action.

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**Please note there is space for 2 students**

ECTS Credits: 6 (Year 1 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The rationale of this module is to allow students to become familiar with a selection of invasion games, ones in which skills and tactics can easily be identified and practiced, and where minimal equipment is required. The purpose of the module is twofold: 1.) for students to be able to understand the tactical approaches, appropriate skills, and safety considerations necessary when engaging in invasion games and 2.) to provide students with the pedagogy skills needed to teach invasion games within a post-primary setting. The module will be taught through particular curriculum model, for example TGFE. The students will live the curriculum model in order to understand the structure of the model and how it can be taught within a post primary setting. The module will focus on principles of play and tactics within invasion games. Therefore links will be made across all invasion games so students can see the correlation and common tactics involved in each.

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**Please note there is space for 2 students**

ECTS Credits: 6 (Year 1 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: National documents (Teaching Council 2011) call for preservice teachers to, among other things: • have knowledge of current national curricula/syllabi in the relevant sector and an awareness of curriculum requirements in preceding and subsequent stages of learning, • understand the subject matter, pedagogical content and related methodology of the relevant curricula/syllabi and guidelines, and • be able to think critically, analyse and solve problems, as an individual and a member of a team. The concepts and skills associated with outdoor and adventure uniquely address each of these skill sets. As such, this module is designed to prepare preservice teachers to organise, teach, and facilitate outdoor and adventure education in Irish physical education. Specific purposes are to: 1) enhance students’
how to introduce activities and progressions; and safety considerations specific to all the games. The module will be taught through a curriculum model, for example: TGFU. TGFU will aid the principles of play and tactical focus of the module.

SS4411 - COACHING SCIENCE AND PERFORMANCE 1

ECTS Credits: 3 (Year 1 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To give students a basic proficiency, understanding and appreciation of principles, tactics and demands of a selected sport. To introduce students to basic coaching skills and current issues.

Syllabus: Sports: Students will learn about and through a selective individual/dual sport. In addition to sport specific content (skills and tactics), common elements of coaching and applied physical conditioning will be included. Pedagogy: Criteria for effective coaching, philosophy and role of the coach, coaching styles, communication, group organisation and management, demonstrations, safety and ethics in sport.

Department of Physical Education & Sport Sciences Year 2 Modules

PY4084 - PEDAGOGY OF LIFETIME PHYSICAL ACTIVITIES

ECTS Credits: 3 (Year 2 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: The rationale for this module centres on a commitment to putting learners' needs and interests at the centre of curriculum planning and a willingness to think 'outside the box' by exploring new pathways for post-primary physical education. Specifically, in this module pre-service teachers will be introduced to lifetime physical activities (LPAs) and how they can be included within the physical education curriculum. LPAs will include, but are not limited to, yoga, Pilates, Tai Chi, power/hill walking, boxercise, step aerobics, rock climbing, disc golf, Ultimate, roller skating and bowling. Pre-service teachers will become familiar with and be able to participate in these various LPAs; further informing what they believe is worth learning and assessing within physical education. Pre-service teachers will be directed to address these central topics in their continued preparation of schemes of work and lesson plans for year 2 school placement. The purpose of this module is as follows:

1. To allow pre-service teachers to become familiar with various ways of looking at curricula which encourage lifetime physical activities as part of the (Irish) post-primary physical education curriculum.
2. To acquaint pre-service teachers with how learning by individual pupils can be facilitated through lifetime physical activities. It will introduce pre-service teachers to ideas on how to design challenging learning experiences for students, select applicable teaching strategies to facilitate student learning, and modify / adapt these to accommodate student learning.
3. To conduct and apply relevant research as appropriate to pre-service teachers' teaching context, identifying, critically analysing and integrating new knowledge regarding curriculum, pedagogy and assessment into his or her practice.

Syllabus: This module provides an opportunity to understand instructional, curricular, and assessment concepts related to lifetime physical activities (LPAs) as they relate to physical education. It has been designed to further develop the knowledge, content and applications in conjunction with other applied/practical modules. Particular emphasis will be placed on exploring the role that health-related activity (HRA) and regular exercise plays in the maintenance of health and wellness over the lifespan. It is intended for pre-service teachers to understand the need, and assume the responsibility for, maintaining a healthy lifestyle. Through both on and off campus laboratory learning experiences, students explore and participate in lifestyle physical activities. Additionally, using this content, pre-service teachers will continue to use the concepts of appropriate and effective pedagogy as it applies to LPAs in the physical education setting. The preparation of schemes of work and lesson plans for year 2 school placement will be a consistent focus of the module.

SS4103 - PSYCHOLOGY OF MOVEMENT DEVELOPMENT FROM INFANCY TO ADOLESCENCE

**Please note there is space for 4 students**

ECTS Credits: 6 (Year 2 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To advance the students' knowledge and understanding of psychological development from infancy to adolescence from both motor development and psychosocial perspectives.

Syllabus: MOTOR SKILL DEVELOPMENT

Motor development as a part of human development; motor development as (a) a process and (b) as a field of study. Descriptions of the phases of motor development from infancy through adolescence to adulthood (reflexive, rudimentary, fundamental skills, sport specific skills) noting the changing characteristics. Factors influencing motor development (growth, maturation, genetics (nature), environment (nurture); historical overview of theories to explain motor development with focus on the maturation perspective of 1930s and more recent dynamic systems theory; influences of the individual, the environment and task demands. Methods of investigation. Concepts of direction of development, readiness, critical/sensitive periods. Motor development in infancy, childhood and adolescence; early and late developers, implications for teaching and coaching.

Importance of a developmental philosophy. Perception and perceptual development with focus on vision. Balance and its development. Evaluation of stimulation and perceptual motor training programmes at various phase of development.

PSYCHO-SOCIAL DEVELOPMENT

This module aims to develop a fundamental knowledge and understanding of how developmental issues from childhood to adolescence can influence participation and performance in sport and physical activity. This module will include content relating to youth sport participation and development including models of development in sport, the influence of significant others, stages of development, motivation and participation in sport, and burnout and dropout in sport. This module will compare and contrast readiness for youth sport competition from the biological, social, cognitive and psychological perspectives. The module content will consider psychological considerations of participation in sport and physical education from childhood to adolescence and will critically examine current practices in this area. This module will also critically consider best practices in this area based on research from youth sport and motor development, specifically addressing issues such as long term participation patterns, competition, and program.
**SS4204 - SUPPORT SYSTEMS TO MUSCLE CONTRACTION**

**Please note there is space for 2 students**

ECTS Credits: 6 (Year 2 Module)

**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

**SS4403 - COACHING AND SCIENCE PERFORMANCE 3**

**Please note there is space for 2 students**

ECTS Credits: 6 (Year 2 Module)

**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, e.g. 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 mentor 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

**PY4133 - PEDAGOGY OF DANCE AND GYMNASTICS**

**Please note there is space for 2 students**

ECTS Credits: 6 (Year 2 Module)

**Physical Education & Sport Science**

Rationale and Purpose of the Module: The purpose of this module is to prepare students to teach the fundamentals of Dance and Gymnastics in a post-primary context; to provide safe, inclusive and educationally meaningful experiences for post-primary students in the Dance and Gymnastics. Students will be introduced to Junior cycle requirements for both strands, develop their knowledge and understanding of the key pedagogical principles of both through critically examining the Physical Education curriculum and the frameworks for the relevant Junior Cycle short course. Students will learn about relevant bodily techniques, skill development, aesthetic appreciation, creative composition, using basic gymnastics equipment and the transferability of learning in Dance and Gymnastics across the post primary curriculum. A range of strategies for teaching, learning and assessment in and through Dance and Gymnastics will be introduced and practiced. The key instructional strategy will focus on but not be limited to the Inquiry Model. To give focus to the module learning outcomes and module content this module will be framed around selected Curriculum Models for example Sport Education. This will help frame the content of the module and by focusing teaching and learning experiences on a more complete and authentic level in these two Physical Education strands students will be provided with a map for decision making about teaching and learning in Dance and Gymnastics.

**Syllabus:** At the centre of this module syllabus will be the introduction to the Junior and Senior Cycle Frameworks for Physical Education and JCPE short courses. Attention will be paid to Wellbeing as well as aesthetic education through meaningful movement experiences along with the Junior Cycle Statements of Learning and Key skills. There will be an introduction the Laban’s Movement Analysis as a tool for developing observation for physical literacy, Curriculum Models, inclusive teaching and learning practices, resources for teaching Dance and Gymnastics, assessment of and for Dance and Gymnastics, lesson planning (warm ups, task based activities, lesson development and closure) and schemes of work design with specific reference to curriculum alignment. Students will be introduced to basic equipment and apparatus and as a consequence also be introduced to safe practice in Gymnastics.

**SS4403 - COACHING SCIENCE AND PERFORMANCE 2**

**Please note there is space for 3 students**

ECTS Credits: 6 (Year 2 Module)

**Physical Education & Sport Sciences**

Rationale and Purpose of the Module: To enable the student to extend their coaching knowledge and ability in a specific sport and in the related areas of pedagogy, exercise prescription and physical conditioning / training.

**Syllabus:** Sports: Students will be required to select one sport from three offered during the semester. In addition to the sports specific content, common elements of pedagogy (reflective practice, ethics in coaching and the development of 'expert' coaches) and applied physical conditioning will be included. Exercise Prescription: Classification of sports. Sports needs analysis in terms of physical, technical, tactical and mental demands. Athlete assessment. Periodisation. Monitoring of training and athletic condition. Tapering for peak performance. Physical Conditioning 2: Sport-specific warm-ups and cool down. Circuit training - different types, structure and phases. Flexibility development - active and passive techniques. Resistance training - selection, structure, progressions, regressions. Plyometric training - slow and fast.
SSC exercises. Devising and implementing training programmes. Aspects of organisation and safety will be addressed throughout. Developing competence in demonstrating specific exercise techniques, competence in spotting and coaching, knowledge and understanding of progressions and regressions are key elements of this element.

Prerequisites: SS4402

Department of Physical Education & Sport Sciences Year 3 Modules

PY4096 - PEDAGOGY OF STRIKING, FIELDING, NET GAMES

**Please note there is space for 2 students**

ECTS Credits: 6 (Year 3 Module)

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. The 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

PY4155 - PEDAGOGY OF AQUATICS / ATHLETICS

**Please note there is space for 2 students**

ECTS Credits: 6 (Year 3 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: This module introduces students to two strands that are focused on individual performance; Aquatics and Athletics. Students will learn how to plan both Aquatics and Athletics lessons which are safe, enjoyable, inclusive and educationally meaningful. Furthermore, established links will be made between the two respective activities and bio-mechanics particularly in the context of contemporary Irish Physical Education. Both strands provide opportunities for the personal, physical, and social development of each student in a safe, enjoyable environment (JCPE, 2003; 19). It will be emphasized how important adaptions and modifications are with in a physical education class, whether it be "modified forms of standard events" or "combinations/adaptations" or recognized strokes. The module will be taught through particular curriculum model, for example HRA. The students will live the curriculum model in order to understand the structure of the model and how it can be taught within a post primary setting.

Syllabus: Aquatics: the focus will be on learning the fundamentals of swimming; buoyancy, propulsion and streamlining. Being aware of the effects of being in water on balance, propulsion and resistance will be introduced. Observing the differences in buoyancy between individuals and various depths in the pool will also be observed. Understanding and demonstrating the importance of safe water entries will be emphasized. Performance and analysis of various strokes/modifications of strokes, e.g. front crawl, back crawl
and breast stroke will be taught. Understanding the benefits of and participating in exercise in the water will be taught to the students. Demonstrating the ability to perform various water safety skills and survival skills will be an important skill for the students to learn. A brief introduction to water polo will be introduced. Athletics: An overview of athletics from a variety of perspectives (bio-mechanical, physiological, educational) will be given to the students. Athletics within post primary schools will be explored; limitations and possibilities, athletics lessons, planning for mixed ability and the logistics of running a school athletics event. The fundamentals of running, jumping and throwing will be emphasized, progressing to basic, event specific techniques in traditional track & field athletics events (e.g. sprints, hurdles, Long Jump, High Jump, Shot, Discus etc.). Students will be involved in 'athletics related activities' (indoors & out). There will be a focus on the teaching of athletics within a post primary school setting.

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Department of Physical Education & Sport

Sciences Year 4 Modules

PY4118 - PHYSICAL ACTIVITY BEHAVIOUR, PROMOTION AND HEALTH

**Please note there is space for 4 students**

ECTS Credits: 3 (Year 4 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To create awareness and to motivate individuals to become involved 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

SS4145 - PERCEPTION AND COGNITION IN ACTION

**Please note there is space for 3 students**

ECTS Credits: 6 (Year 3 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To advance the students knowledge and understanding of the scientific methods used to gain an understanding of how motor skills are interpreted, controlled and learned To provide students with frameworks for the analysis of motor cognition and insights for the facilitation of acquisition, retention and transfer of motor skills


SS4072 - EXERCISE IS MEDICINE - EXERCISE PSYCHOLOGY

**Please note there is space for 8 students**

ECTS Credits: 9 (Year 4 Module)

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

SS4081 - APPLIED SPORTS BIOMECHANICS

**Please note there is space for 3 students**

ECTS Credits: 9 (Year 4 Module)

Physical Education & Sport Sciences

Rationale and Purpose of the Module: To consolidate students’ understanding of kinematic and kinetic analysis by more advanced and applied biomechanical analysis skills in 2D and 3D analysis of motion, force platform analysis and analysis using state of the are applied biomechanical technologies and techniques. To apply 2D analysis techniques to selected sporting and exercise activities and to assess and evaluate the reliability and validity of field based biomechanical analysis equipment and protocols and apply these equipment and protocols to the practical sporting and exercise environments. To demonstrate an appreciation of equipment selection for biomechanical analysis.

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 students ability to critically appraise the extensive 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.
**Syllabus:** • Design of biomechanical projects. Scientific writing. Analysis of data. • Kinematic analysis of sporting movements. 2D and 3D analysis. Calibration and marker set-up. Kinematic Conventions - Absolute spatial reference system, Total description of segments in 3D space. Advanced use of link segment equations and free body diagrams. • Application of kinetic analysis for strength and power testing. • Applied use of state of the art applied biomechanical technologies and analysis. • Modelling and movement. Application of biomechanical models to sporting performance.

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**SS4082 - EXERCISE IS MEDICINE - CLINICAL APPLICATIONS**

**Please note there is space for 4 students**

ECTS Credits: 9 (Year 4 Module)

**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.
Psychology

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Department of Psychology

Psychology Year 1 Modules

PS4012 - HUMAN DEVELOPMENT AND THE LIFESPAN 1
ECTS Credits: 6 (Year 1 Module)
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 foundational information about how psychologists have studied human development from pre-natal life through childhood, adolescence and the stages of adult life including old age. 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

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 sexualities; society and mental health; social inclusion and exclusion; bullying at work; equality and advocacy; parenting and childcare; the environment

Module: PS4042 - PSYCHOLOGY: THEORY AND METHOD 2
ECTS Credits: 6 (Year 1 Module)
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 pre-natal life through 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 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.

Module: PS4062 - INTRODUCTION TO PSYCHOLOGY APPLIED TO NURSING AND MIDWIFERY
ECTS Credits: 6 (Year 1 Module)
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 lifespan, 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.

Module: PS4037 - COGNITION 1
ECTS Credits: 6 (Year 4 Module)
Psychology

Rationale and Purpose of the Module: To provide core research 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 and theoretical examination of cognitive processes, students will develop their knowledge of central aspects of cognition including perception, memory and attention.

Prerequisites: PS4042, PS4021

Module: PS4047 - SOCIAL PSYCHOLOGY 2
ECTS Credits: 6 (Year 4 Module)
Psychology

Rationale and Purpose of the Module: To build upon previous introductory modules in social psychology by providing comprehensive indepth coverage of the core areas of the sub-discipline as well as alternative critical perspectives. To introduce students to more advanced epistemological and methodological debates in the sub-discipline 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 sub-discipline. 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 indepth 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

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**PS4087 - POLITICAL PSYCHOLOGY**  
ECTS Credits: 6 (Year 4 Module)  
**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, psychosistory. 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.

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**PS4097 - DEVELOPMENTAL PSYCHOPATHOLOGY**  
ECTS Credits: 6 (Year 4 Module)  
**Psychology**

**Rationale and Purpose of the Module:** To introduce students to the rapidly developing field of developmental psychopathology to improve students understanding of the role that social, psychological and biological factors play in determining mental health and to highlight the importance of the developmental approach to understanding adjustment and maladjustment.

**Syllabus:** The specific focus of this module is developmental psychopathology. Developmental psychopathology is a domain of psychology which concentrates on how psychosocial and biological factors contribute to psychological adjustment and maladjustment. The module will introduce students evidence relating both environmental and genetic determinants of mental health and consider the role that developmental factors may have in the expression of mental health problems.

**Prerequisites:** PS4012

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**PS4108 - APPROACHES TO SOCIAL IDENTITY**  
ECTS Credits: 6 (Year 4 Module)  
**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 Year 1 Modules

NM4092 - INTRODUCTION TO HEALTH AND HEALTH PROMOTION
**Please note there is space for 3 students**
ECTS Credits: 6 (Year 1 Module)
Nursing & Midwifery

Rationale and Purpose of the Module: To introduce the concepts of health, health education and health promotion to nursing and midwifery students and provide the necessary foundations to develop competence in the promotion of health.

Syllabus: Concepts of health and wellbeing, illness, disease and disability. Determinants of and influences upon health. Health inequalities, protection and welfare of vulnerable groups. Measuring health and identifying health care needs. Health strategies and policies. Empowerment, advocacy, partnership working, health literacy, ethical issues. Health education, health promotion, public health, screening and preventative medicine. Health promotion models and approaches. Health needs of diverse groups and different cultures. The role of the nurse/midwife in promoting health and supporting healthier life choices across the health spectrum. Settings approach to health promotion e.g. communities, work place, schools, hospitals.

NM4231 - MIDWIFERY CARE IN PREGNANCY
**Please note there is space for 2 students**
ECTS Credits: 6 (Year 1 Module)
Nursing & Midwifery

Rationale and Purpose of the Module: The aim of the module is to facilitate students to acquire a thorough understanding of the anatomy and physiology of pregnancy, maternal adaptations and the care needed for women during pregnancy.


NM4181 - PERSON CENTRED MEDICAL NURSING
**Please note there is space for 2 students**
ECTS Credits: 6 (Year 1 Module)
Nursing & Midwifery

Rationale and Purpose of the Module: This module builds on the philosophies and fundamentals of person centred nursing and introduces students to the principles of acute medical nursing.

Syllabus: Person centred medical nursing; assessment and monitoring techniques, planning interventions and interrelationships between activities of living utilising exemplars from conditions including assessment of breathlessness, asthma, pneumonia, hypertension, myocardial infarction, acute pain, altered consciousness. The impact of illness on the individual's physical, spiritual, social, cultural and psychological wellbeing; promoting health and recovery. Clinical skills Airway management Nursing assessments and monitoring techniques Oxygen therapy Suctioning techniques Devices: nebulisers and inhalers Active and assisted limb exercises Introduction to neurological assessment

NM4252 - INTRODUCTION TO SUPPORT STRATEGIES ACROSS THE LIFESPAN
**Please note there is space for 4 students**
ECTS Credits: 6 (Year 1 Module)
Nursing & Midwifery

Rationale and Purpose of the Module: The module explores the role of the nurse in supporting the person, transitioning through the lifespan.

Person centred care provision utilising the nursing process as applicable across the lifespan. In meeting the needs of individuals in a safe, legal, and ethical manner using the nursing process. Students will be introduced to policies, practices and procedures that directly influence the lives of people with intellectual disabilities.

Syllabus: Definition and characteristics of a lifespan approach, theories of lifespan development e.g.; Bronfenbrenner’s. Person centred and health focused approaches to care. Nursing models and theories. Application of the nursing process towards understanding the needs/outcomes of individual/families person centred plans, health action plans, communication passports etc. Nursing care skills - assessment, observation, decision making, risk management and interventions in supporting individuals. International, national and local strategies to support the rights of people with ID. Development of age appropriate interpersonal, cross cultural and communication techniques and skills essential for communicating with persons with an intellectual disability, families, and colleagues. Person centred nursing skills Care planning underpinned by principles of person centred care Personalised, enabling and co-ordinated planning approaches Needs and Outcomes assessment, planning implementation and evaluation Introduction to nutritional assessment and support Case management skills; organisation, administration and relationship skills.

NM4152 - BIOLOGICAL SCIENCES APPLIED TO NURSING & MIDWIFERY 2
**Please note there is space for 3 students**
ECTS Credits: 6 (Year 1 Module)
Biological Sciences

Rationale and Purpose of the Module: The aim of this module is to provide students with a foundation for understanding human systems and provide an introduction into pathology as applied to nursing and midwifery practice.

Syllabus: The structure, function and biochemistry of the endocrine system and the special senses. Structure and function of the central nervous system, pain pathways and the biochemical and signalling process regulating action potentials and nerve impulses: The peripheral nervous system The autonomic nervous system. Introduction to pathology: Inflammation, granulomas, repair/regeneration of tissues,
tumours, degenerative changes in cells/tissues, carcinogenesis, classification of tumours, tumour biology. Introduction to X-rays, radioactivity and diagnostic radiology.

**Please note there is space for 4 students**
ECTS Credits: 6 (Year 2 Module)

**Nursing & Midwifery**

Rationale and Purpose of the Module: The aim of this module is to foster and connect students' understanding of healthy ageing and promote person centred nursing with older persons and their families across the care continuum.

**Syllabus:** Valuing individuality, dignity, choice and diversity in later life, protecting and upholding rights of older people, autonomy and advocacy. Meaningful engagement with individuals, families and/or carers connecting intergenerational communities and society. Application of theories of ageing, role transitions and loss. Personal and relationship centred care. Promoting recovery, rehabilitation, wellbeing and choice. Mental and physical factors e.g. cognitive impairment, dementia, pain, falls prevention, vision and hearing loss. Elder abuse and neglect principles and interventions. Therapeutic modalities, dementia screening, polypharmacy, medication concordance. Interdisciplinary collaboration across the care continuum in environments that promote and support independence across community care settings; carer support. Communication and therapeutic strategies to support older person centred care.

**NM4134 - INTELLECTUAL DISABILITY ADULT NURSING**

**Please note there is space for 4 students**
ECTS Credits: 6 (Year 2 Module)

Nursing & Midwifery

Rationale and Purpose of the Module: Building on previous knowledge this module addresses nursing aspects related to nursing the older adult with intellectual disability and specific support and intervention strategies required assisting in health and wellbeing of the older adult.

**Syllabus:** Ageism, concepts and theories of ageing, physiological social and psychological changes associated with generic ageing and the older person with an intellectual disability. Nursing care and management of support for the older person with an intellectual disability. Person centred planning and the concept of choice and quality of life in older adulthood. Nursing process applied to the older person with an intellectual disability associated with age related illness and dementia macular degeneration. Living arrangements and service provision for the older person with an intellectual disability. The following concepts related to the older person with an intellectual disability; retirement, recreational and leisure pursuits, spiritual care, pastoral care and palliative care. Applied pharmacology. Person centred nursing skills. Care planning underpinned by principles of person centred care. Health and wellbeing (engagement in activities of living, maintaining social connectedness) Nutritional assessment and support of the older adult Dementia assessment, care skills, care support planning Health Promotion (communication skills: talking mats, reality orientation, reminiscence, fragility and falls assessment) Bereavement support.

**NM4154 - PROMOTING RECOVERY IN PERSONS EXPERIENCING PSYCHOSIS**

**Please note there is space for 4 students**
ECTS Credits: 6 (Year 2 Module)

Nursing & Midwifery

Rationale and Purpose of the Module: The purpose of this module is to develop students' knowledge and understanding of the role of the psychiatric/ mental health nurse in supporting an individual experiencing...
psychotic disorder and their family/carer on the shared journey of recovery. The module will build on the knowledge gained in previous modules.

**Syllabus:** Person-centred and recovery-focused practice. Assessment and management of persons with psychotic disorders. Strengths based approaches. Early intervention for psychosis. The role of the nurse in providing psychosocial (e.g. CBT, family interventions, relapse prevention, social skills) and pharmacological interventions which facilitate recovery and well-being in persons with psychosis and their families/carers. Collaboration with other health care professionals, service users, families and communities to provide culturally appropriate care for persons with psychotic disorders. Contemporary research findings and relevant health policy.

Clinical Skills
- Engaging persons who experience psychosis
- Biopsychosocial pharmacological recovery/strengths assessment and care
- planning/relapse prevention
- CBT for psychosis
- Family interventions
- Recovery focused interventions
- Group interventions (e.g. social skills training, familywork)

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**NM4164 - MENTAL HEALTH AND WELLBEING IN OLDER PERSONS**

**Please note there is space for 4 students**

ECTS Credits: 6 (Year 2 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** The purpose of this module is to develop students’ knowledge and understanding of common mental health difficulties associated with the older person. The module aims to consider and discuss the most up to date evidence based assessment and treatment modalities in tandem with current health care policies so as to ensure quality, holistic, and safe nursing care for the older person experiencing mental health problems, and their families/carers across primary, secondary and tertiary health care settings.

**Syllabus:** Mental health and healthy aging, diversity, spirituality, sexuality. Mental health difficulties that affect the older person; functional and cognitive disorders. The role of the mental health nurse caring for older people with mental health difficulties living in a variety of settings. The statutory and voluntary services in the care of the older person. Person-centered care. Recovery approaches to older person assessment, planning, interventions and evaluation. Falls prevention. Supporting older persons for optimal emotional, psychological and physical wellbeing. Palliative and end of life care. The concept of recovery and older people’s narratives. Elder abuse. Support mechanisms for family and carers. Pharmacological and non-pharmacological interventions. National and international policies and strategies.

Clinical Skills
- Assessment (e.g. risk, nutritional, Mini-Mental State Examination) and care planning
- Meaningful person-centered activity planning for the older person
- Therapies for the older person: e.g. reminiscence therapy, validation and reality orientation, working with Life history
- End of Life care/ last offices

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**NM4233 - FOUNDATIONS OF MATERNAL, CHILD, AND MENTAL HEALTH NURSING**

**Please note there is space for 4 students**

ECTS Credits: 6 (Year 2 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** This module provides undergraduate general students with the opportunity to develop foundational knowledge in relation to three discrete areas of nursing: maternity, children and mental health nursing.


**Skills**
- Maternal and paediatric early warning scores
- Examination of the baby, feeding and baby bathing babies/children
- Communicating with children
- Relaxation and self-care techniques
- Introduction to crisis intervention strategies

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**NM4243 - NURSING INDIVIDUALS LIVING WITH LONG TERM CONDITIONS**

**Please note there is space for 4 students**

ECTS Credits: 6 (Year 2 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** This module will address person-centred nursing care of individuals with long term health conditions across hospital and community settings.

**Syllabus:** Promoting health and wellbeing for individuals, living with and managing chronic pain, disability, co-morbidity and impairment in long term conditions across care settings. Assessment, care planning, therapeutic interventions supporting families and carers, psychosocial approaches; self-management and assisted technologies. Spirituality, concepts of hope, choice, resilience, empowerment and coping across disease trajectories. Collaborative multi-disciplinary team practice and recognising the need for escalation care. The nursing contribution in maximising the quality of life for persons living with long term conditions.

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**NM4253 - MIDWIFERY CARE FOR THE POSTNATAL MOTHER, BABY AND FAMILY**

**Please note there is space for 2 students**

ECTS Credits: 6 (Year 2 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** The aim of this module is to explore the provision of midwifery care in the postnatal period for the mother, baby and family.

Clinical skills:
Postnatal examination of the mother
Examinations of the baby
Neonatal vital signs including pulse oximetry
Skin care and hygiene of the baby
Newborn bloodspot screening technique
Documentation and administration of medication to the mother and baby
Perinatal mental health assessment tools
Parenting skills
Discharge planning for mother and baby
Initial steps of resuscitation of newborn Bereavement and perinatal loss workshop.

NM4274 – OBSTETRIC COMPLICATIONS INPREGNANCY AND CHILDBIRTH
**Please note there is space for 2 students**
ECTS Credits: 6 (Year 2 Module)
Nursing & Midwifery

Rationale and Purpose of the Module: The aim of this module is to enable students to recognise midwifery and obstetric emergencies and initiate appropriate management and escalate care in collaboration with other health care professionals.

Syllabus: The midwife's role in the identification, care and management of women experiencing complicated birth.
- Malpositions and malpresentations
- Preterm labour
- Prolonged pregnancy and disorders of uterine action
- Amniotic fluid embolism
- Operative and assisted birth
- Intrapartum and primary postpartum haemorrhage
- Multiple pregnancy and birth

Clinical skills:
- Interpretation of fetal heart rate patterns and cardiotocograph
- Mechanisms of malpresentations/malpositions
- Management of shoulder dystocia
- Management of breech birth
- Management of presentation and prolapse of the umbilical cord
- Assessment and management of postpartum haemorrhage including estimation of blood loss
- Manual removal of the placenta
- Management of birth of twins
- Application of principles of perioperative skills including cricoid pressure
- Communication using ISBAR and Irish Modified Early Warning Scoring System (IMEOWS).

NM4284 - REPRODUCTIVE HEALTH AND WELLBEING
**Please note there is space for 2 students**
ECTS Credits: 6 (Year 2 Module)
Nursing & Midwifery

Rationale and Purpose of the Module: The aim of this module is to enable the student to promote gynaecological and reproductive health and well-being and provide care for women with social, physical, emotional, intellectual, educational and healthcare needs.


Nursing & Midwifery Year
3 Modules

NM4036 - MEETING AND SUPPORTING THE PERSON WITH INTELLECTUAL DISABILITY AND COMPLEX NEEDS
**Please note there is space for 3 students**
ECTS Credits: 6 (Year 3 Module)
Nursing & Midwifery

Rationale and Purpose of the Module: Nurses are central in today's increasingly collaborative healthcare teams that place a premium on quality care and this module addresses the holistic management of multiple health conditions that persons with intellectual disability experience.

Syllabus: Acute and chronic physical illness; multiple and complex needs. Profiling disability related conditions, epilepsy, diabetes, nutrition, trends, health needs and provision of services. Approaches to assessments and developing a comprehensive clinical impression, referral for specialist assessment; Nursing management of conditions related to trends, disability specific conditions; in addition to respiratory, metabolic and gastrointestinal conditions. Assessing, investigative and diagnostic procedures, planning interventions, evaluating plans and interventions of multiple health conditions. Case management of multiple and complex needs, multi-trans-inter disciplinary approaches. Person Centred Nursing Skills
- Person centred nursing approaches in comprehensive health assessment (physical health; head to toe and systems assessment approaches)
- Nutritional care (nutritional tools and assessment, PEG, enteral feeding)
- Continence care (Skills and protocols of catheterisation, enema/suppository administration)
- Reporting clinical impression
**Rationale and Purpose of the Module:** This module will develop students understanding of research and evidence informing healthcare practice.

**Syllabus:** Research skills development; cognitive and practical. Research terminology; processes and approaches; research methodology and methods. Systematic searching, hierarchy of evidence. Data extraction techniques; reviewing evidence; ethical principles and research integrity. Working with evidence and evidence based practice and translating evidence and research into practice.

**Rationale and Purpose of the Module:** This module will explore person centred approaches in supporting individuals with rehabilitation care needs through primary, secondary and tertiary interfaces.

**Syllabus:** Concepts of rehabilitation and recovery, individual values, preferences and choices. Assessment frameworks, therapeutic interventions and transitions of care across emergency and specialist departments and care teams using exemplars including COPD, exacerbations and outreach care, Parkinson’s disease, Multiple sclerosis. Stroke care, hip fracture and frailty syndrome, amputation, chronic renal disease, transplantation. Collaborative practice and coordination of care planning services across multidisciplinary teams; recovery and rehabilitation in partnership with families, carers, services and teams, connecting primary, secondary, and tertiary services, community, voluntary and support groups.

**Rationale and Purpose of the Module:** This module is founded on the centrality of person centred approaches in supporting individuals and their families across a palliative care journey.


**Rationale and Purpose of the Module:** This module will provide students with a deeper understanding of contemporary professional roles and responsibilities related to clinical judgement and decision making. It will enable students to apply this knowledge in becoming a lifelong reflective learner and competent practitioner.

**Syllabus:** Professional values and scope of practice; responsibility and expectations towards becoming a competent practitioner including continuing professional development. Reflective practice as a lifelong endeavour in fulfilling personal and professional accountability. Clinical judgement and decision making guiding practice; responding to, reporting and referring to incidents and practice events, developing resilience in sustaining therapeutic relationships in dynamic changing healthcare environments. Approaches to adult learning, principles of preceptorship including the promotion of a quality clinical learning environment, models of supervision. Becoming a lifelong learner, practitioner and scholar.

**Rationale and Purpose of the Module:** This module is

**NM406 - PRINCIPLES OF PALLIATIVE CARE**

**ECTS Credits:** 6 (Year 3 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** This module is

**NM4086 - RESEARCH AND EVIDENCE IN HEALTHCARE**

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**NM4106 - PRINCIPLES OF PALLIATIVE CARE**

**ECTS Credits:** 6 (Year 3 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** This module is

**NM4116 - TRANSITION TOWARDS A COMPETENT PRACTITIONER**

**ECTS Credits:** 6 (Year 3 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** This module will provide students with a deeper understanding of contemporary professional roles and responsibilities related to clinical judgement and decision making. It will enable students to apply this knowledge in becoming a lifelong reflective learner and competent practitioner.

**Syllabus:** Professional values and scope of practice; responsibility and expectations towards becoming a competent practitioner including continuing professional development. Reflective practice as a lifelong endeavour in fulfilling personal and professional accountability. Clinical judgement and decision making guiding practice; responding to, reporting and referring to incidents and practice events, developing resilience in sustaining therapeutic relationships in dynamic changing healthcare environments. Approaches to adult learning, principles of preceptorship including the promotion of a quality clinical learning environment, models of supervision. Becoming a lifelong learner, practitioner and scholar.

**NM4136 - RESPONDING TO COMPLEX NEEDS DURING THE POSTNATAL PERIOD**

**ECTS Credits:** 6 (Year 3 Module)

**Nursing & Midwifery**

**Rationale and Purpose of the Module:** This module is

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**NM4046 - SUPPORTING THE PERSON WITH INTELLECTUAL DISABILITY IN CHALLENGING BEHAVIOURAL OR MENTAL HEALTH SITUATIONS**

**ECTS Credits:** 6 (Year 3 Module)

**Nursing & Midwifery**
Rationale and Purpose of the Module: The aim of this module is to enable students to recognise and respond to complex needs of the woman during the postnatal period and to initiate appropriate management and escalate care in collaboration with other health care professionals.


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**NM4146 - RESPONSING TO COMPLEX NEEDS OF THE AT RISK AND ILL NEONATE**

**Please note there is space for 2 students**

ECTS Credits: 6 (Year 3 Module)

Nursing & Midwifery

Rationale and Purpose of the Module: The aim of this module is to develop the student's knowledge and skills required to care for the at risk and ill neonate in collaboration with members of the multidisciplinary health care team.

Syllabus: Systematic care for the at risk and ill neonate e.g. management of cardiovascular and respiratory disorders, neonatal jaundice, metabolic transient disorders, endocrine disorders chromosomal and congenital anomalies, infections in the neonate, trauma in the neonate; complications arising with low birth weight, preterm and post term infant; nutritional requirements for infants with special needs; neonatal resuscitation and rapid midwifery intervention; perinatal and infant morbidity and mortality. Parenting journey in the neonatal unit; adoption and fostering; child protection issues; ethical and legal issues; support for parents experiencing bereavement and loss with the at risk and ill neonate. Clinical skills: Neonatal Resuscitation Programme. Assessment and management of the at risk and ill neonate. Nutritional support for the at risk and ill neonate (feeding practices oral, nasogastric). Care of baby in an incubator. Care of baby with jaundice. Breastfeeding under special circumstances and alternative methods of infant feeding. Administration of medication to the neonate.

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**NM4155 - CONTEMPORARY MIDWIFE PRACTITIONER**

**Please note there is space for 4 students**

ECTS Credits: 6 (Year 3 Module)

Nursing & Midwifery

Rationale and Purpose of the Module: The aim of this module is to provide students with opportunities to integrate practice in the care of women experiencing normal birth in the context of choice and risk.


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**NM4165 - CHILD AND ADOLESCENT MENTAL HEALTH**

**Please note there is space for 4 students**

ECTS Credits: 6 (Year 3 Module)

Nursing & Midwifery

Rationale and Purpose of the Module: The purpose of this module is to develop students' knowledge and understanding of common mental health problems associated with children and adolescents. The module will consider the most up to date evidence based assessments and treatment modalities in tandem with current health care policies to ensure quality, holistic, culturally sensitive and safe nursing care for children and adolescents with mental health problems and their families across primary, secondary and tertiary health care settings.

Department of Accounting and Finance
Accounting and 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.

AC4018 - CORPORATE TRANSPARENCY AND BUSINESS ETHICS
ECTS Credits: 6 (Year 1 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.


Prerequisites: AC4001, AC4004, AC4305

Accounting and 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 regulations 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 reponsibilities 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
excludes 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 presents the framework for best practices from an aircraft lessee's perspective while understanding 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.

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**IN4004 - INSURANCE LAW AND CLAIMS**
ECTS Credits: 6 (Year 2 Module)

**Accounting & Finance**

**Rationale and Purpose of the Module:**
1. To develop the student an understanding of and insight into the insurance law and claims processes
2. 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 assessed so that a negotiator or investigator can formulate optimum tactics in their vocation.

**Prerequisites:** IN4003

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**IN4014 - LIFE INSURANCE**
ECTS Credits: 6 (Year 2 Module)

**Accounting & Finance**

**Rationale and Purpose of the Module:** The module provides 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 pension 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 premiums for term, whole life, endowment and annuity.

**Prerequisites:** IN4003

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**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

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**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 career 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.


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**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 reinsurance 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.


Prerequisites: TX4305
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 globalization, 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 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, globalization, macroeconomic models and the time horizon, a brief history. Topic 2. National Income and Economic Performance
Aggregate production function, measuring the output of nation’s, 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 doesn’t 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.

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;
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 shocks

The European Central Bank The design of the ECB; price stability; central bank independence; monetary policy in EMU.

Prerequisites: EC4102

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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 I Introduction and Context
Topic 1 Introduction
Topic 2 International Trade Theory
Topic 3 Comparative Advantage
Topic 4 The Standard Trade Model
Topic 5 The Heckscher-Ohlin Trade Model
Section II International Trade
Topic 6 Policy Tariffs
Topic 7 Policy Tariffs
Topic 8 Non-tariff Trade Barriers
Section IV Integration and Investment Relations
Topic 9 Economic Integration
Topic 10 International Resource Movements
Section V Balance of Payments and Exchange Rates
Topic 11 Balance of Payments
Topic 12 Exchange Rates
Topic 13 Foreign Exchange Markets and Exchange Rates
Section VI The International Economy in Operation
Topic 14 Exchange Rate Regimes

EC4004 - 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 macro economics 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

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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 Regarding 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 Ahearn NUIG, 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 8 The Euro Area Inflation Record oOne 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 • Reversion • 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

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**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 (IMF) and the World Bank. (ii) Changing hegemonic role of the US economy in international political economy and the rise of the BRIC economies. (iii) The 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

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**EC4108 - 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 taxation and expenditure decisions.


**Prerequisites:** EC4101, EC4102, EC4004
Management and 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 behavior, 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 organizations quantify and perceive risk, broadening their understanding of risk and crisis portrayed 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
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)
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 marketing 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: MK4003

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 organizational 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 organizational capability; models and conceptual frameworks for knowledge management; knowledge management systems; knowledge codification; the transfer of knowledge at an individual, group, organizational 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 organizational 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

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**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.

**Prerequisites:** MI4407

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**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 liberalization 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.

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**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.

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**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
show 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.

Management and 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.

**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.

C2C interaction in networks.

**Prerequisites:** MK4002
Department of Work and Employment Studies
Work and 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; disciplinarily 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 Well being: 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.

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 and 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成功
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 the 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.
BY4002 - BIOLOGY 2

**Lab numbers are capped at 2-3 students**
ECTS Credits: 6 (Year 1 Module)

**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

**Lab numbers are capped at 2-3 students**
ECTS Credits: 6 (Year 1 Module)

**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 be 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

BY4102 - BIOLOGY FOR BIOSCIENCES

**Lab numbers are capped at 2-3 students**
ECTS Credits: 6 (Year 1 Module)

**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

EV4024 - EQUINE REPRODUCTION

**Lab numbers are capped at 2-3 students**
ECTS Credits: 6 (Year 1 Module)

**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

**Lab numbers are capped at 2-3 students**
ECTS Credits: 6 (Year 1 Module)

**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 racehorses and sport horses.
**EQ4013 - EQUINE PHYSIOLOGY**
**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, BY4003

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**EV4014 - EQUINE NUTRITION**
**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; Amylase and amylpectin; 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; deficiencies, dental health, osteoporosis, cancer and immunity will be discussed. The role of national and international regulatory agencies (including the World Health Organisation, Food Safety Authority of Ireland, Food Safety Promotion Board, European Food Safety Agency) will be examined in terms of safe guarding population public health. The purpose of this module is to: a) To provide an overview of the role of nutrition as a major factor in the aetiology of chronic disease of relevance to public health b). To examine the role of diet in treatment and prevention of a range of chronic disease c).Explore a number of emerging diet-related public health issues. The most relevant and up-to-date literature will be used and referenced to provide the best evidence base for this module content.

**Rationale and Purpose of the Module:** 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 them to make informed decisions about the necessity for veterinary intervention.

**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 them to make informed decisions about the necessity for veterinary intervention.

**Syllabus:** To acquaint students with disease conditions of toxicologic origin and with the causes, management and prevention of infectious diseases.

**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


**Rationale and Purpose of the Module:** This module provides the necessary understanding, knowledge and skills to allow students undertake more advanced learning in nutrition in subsequent semesters. Public Health Nutrition will focus on population-based epidemiological evidence linking diet and disease and explore interactions between nutrition, genetics and lifestyle. Specific topics of issue to public health including obesity, type II diabetes, heart disease, specific micronutrient deficiencies, dental health, osteoporosis, cancer and immunity will be discussed. The role of national and international regulatory agencies (including the World Health Organisation, Food Safety Authority of Ireland, Food Safety Promotion Board, European Food Safety Agency) will be examined in terms of safe guarding population public health. The purpose of this module is to: a) To provide an overview of the role of nutrition as a major factor in the aetiology of chronic disease of relevance to public health b). To examine the role of diet in treatment and prevention of a range of chronic disease c).Explore a number of emerging diet-related public health issues. The most relevant and up-to-date literature will be used and referenced to provide the best evidence base for this module content.

**Rationale and Purpose of the Module:** 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 them to make informed decisions about the necessity for veterinary intervention.

**Syllabus:** To acquaint students with disease conditions of toxicologic 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.

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**EQ4014 - FOUNDATIONS OF EQUINE PERFORMANCE**

**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 lunging 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.

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**FT4204 - FOOD CHEMISTRY**

**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


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**FT4214 - PUBLIC HEALTH NUTRITION**

**ECTS Credits:** 6 (Year 2 Module)

**Biological Sciences**

**Rationale and Purpose of the Module:** This module provides the necessary understanding, knowledge and skills to allow students undertake more advanced learning in nutrition in subsequent semesters. Public Health Nutrition will focus on population-based epidemiological evidence linking diet and disease and explore interactions between nutrition, genetics and lifestyle. Specific topics of issue to public health including obesity, type II diabetes, heart disease, specific micronutrient deficiencies, dental health, osteoporosis, cancer and immunity will be discussed. The role of national and international regulatory agencies (including the World Health Organisation, Food Safety Authority of Ireland, Food Safety Promotion Board, European Food Safety Agency) will be examined in terms of safe guarding population public health. The purpose of this module is to: a) To provide an overview of the role of nutrition as a major factor in the aetiology of chronic disease of relevance to public health b). To examine the role of diet in treatment and prevention of a range of chronic disease c).Explore a number of emerging diet-related public health issues. The most relevant and up-to-date literature will be used and referenced to provide the best evidence base for this module content.

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**BY4016 - ANIMAL PRODUCTION SYSTEMS**

**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
BY4026 - HORTICULTURE

**Lab numbers are capped at 2-3 students**

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: BY4025

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EQ4068 - ADVANCED EQUINE PHYSIOLOGY

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 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.
**FT4468 - FOOD BIOTECHNOLOGY**

**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 (QTLs) Related issues; Regulations and Legal declarations, Ethics, Consumer concerns, biotechnology and the environment, Future trends

**Prerequisites:** BC4904, BC4803

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**FT4438 - FOOD MICROBIOLOGY**

**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**

**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].

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**FT4428 - ADVANCED FOOD CHEMISTRY**

**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.

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**EV4017 - EQUINE PHARMACOLOGY**

**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 musculoskeletal 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.

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**BY4008 - GENETICS AND MOLECULAR BIOLOGY**

**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.


Prerequisites: BY4002, BY4006
Department of Chemical Sciences Year 1 Modules

BC4002 - INTRODUCTORY BIOCHEMISTRY
ECTS Credits: 6 (Year 1 Module)
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


CH4102 - ORGANIC CHEMISTRY 1
ECTS Credits: 6 (Year 1 Module)
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 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)
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.


Prerequisites: CH4701

ER4606 - CLEAN TECHNOLOGY
ECTS Credits: 6 (Year 1 Module)
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.
Department of Chemical Sciences Year 2 Modules

**BC4904 - PROTEINS AND DNA**
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 Laws 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; Raoult's and Henry's Laws - Phase Diagrams; Phase Rule; Two-Component Systems - Equilibrium Electrochemistry: Thermodynamic Properties of Ions in Solution; Electrochemical Cells; Nernst Equation.

**Prerequisites:** CH4003, CH4002

**CH4004 - ORGANIC CHEMISTRY 3**
ECTS Credits: 6 (Year 2 Module)

**Chemical Sciences**

**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 keypart 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’ 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-haloaminoacids; 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)

**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. Countercurrent extraction. Introduction to chromatography, modes of separation. Gas Chromatography. Liquid Chromatography. HPLC, Ion Chromatography, Size exclusion chromatography. Mass Spectrometry. Hypenated techniques, GC-MS HPLC-MS

**Prerequisites:** CH4303

**CH4354 - ANALYTICAL CHEMISTRY FOR THE ENVIRONMENT**
ECTS Credits: 6 (Year 2 Module)

**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:** SPECTORSOCOPIC METHODS:

- AAS ATOMIC ABSORPTION
- SPECTORSOCOPYAES ATOMIC EMISSION SPECTROSCOPY
- UV/VIS ULTRA-VIOLET/VISIBLE
- SPECTORSOCOPYIR INFRARED SPECTROSCOPY (FTIR)
- CHROMATOGRAPHIC METHODS: PARTITION (GLC, HPLC, TLC) ABSORPTION (GC) ION-EXCHANG
- SIZE EXCLUSION (GEL PERMEATION) ELECTROMETRIC METHODS: POTENTIOMETRIC (PH, ISE) CONDUCTOMETRIC

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**CH4404 - PROCESS TECHNOLOGY 1**

ECTS Credits: 6 (Year 2 Module)

**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 characterisations and dynamic response behaviour of first and second order systems.

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**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 particular 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

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**Department of Chemical Sciences Year 4 Modules**

**BC4008 - IMMUNO AND DNA DIAGNOSTIC TECHNIQUES**

ECTS Credits: 6 (Year 4 Module)

**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.


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 structures of antibodies.

Immuno- and nucleic acids diagnostics (diagnosis for infectious and genetic diseases), for instance PCR and critical analysis of issues/topics pertaining to these themes and to provide scope for a measure of student self-directed learning.

**Department of Chemical Sciences Year 3 Modules**

**BC4705 - INDUSTRIAL BIOCHEMISTRY 1**

ECTS Credits: 6 (Year 3 Module)

**Chemical Sciences**

**Rationale and Purpose of the Module:** To present an overview of major practical aspects of pharmaceutical manufacture, quality systems and pertinent environmental regulation. To present an overview of industrial enzymes/proteins and their uses. To facilitate...
PCR variants, Real-time PCR, RAPDs, RFLPs, DNA profiling and DNA fingerprinting.

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BC4718 - INDUSTRIAL BIOCHEMISTRY 2
ECTS Credits: 6 (Year 4 Module)
Chemical Sciences

Rationale and Purpose of the Module: To present an overview of (a) animal cell culture and (b) biopharmaceutical 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

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BC4907 - CELL BIOCHEMISTRY
ECTS Credits: 6 (Year 4 Module)
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 approaches to future diagnoses, pharmaceuticals and biopharmaceuticals. To show how an in-depth understanding of molecular biochemistry can aid this.


Prerequisites: BC4905, BC4905

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CG4008 - PROCESS TROUBLESHOOTING
ECTS Credits: 6 (Year 4 Module)
Chemical Sciences

Rationale and Purpose of the Module: To provide the student with skills and knowledge in the field of chemical and biochemical process troubleshooting. To provide the students with a working knowledge of a commercial Computational Fluid Dynamics code via practical computer laboratory sessions.

Syllabus: Characteristics of trouble shooting problems and the methodologies used to solve them. Approaches to the analysis and formulation of solutions to process issues. Data gathering and critical thinking techniques. The use of interpersonal communication skills in handling management issues associated with industrial process problems.


Prerequisites: CH4405, CH4415

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CH4008 - ORGANIC PHARMACEUTICAL CHEMISTRY 2
ECTS Credits: 6 (Year 4 Module)
Chemical Sciences

Rationale and Purpose of the Module: To build on the functional group chemistry covered in CH4102, CH4103, CH4104 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: Lindlar 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 Borohydrides), chiral catalysts -Monsanto catalyst for L-Dopa production. Section B: Quantitative structure activity relationships: development and use of the Hammet 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, Benzene chemistry.

Prerequisites: CH4008

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CH4017 - CHEMICAL NANOTECHNOLOGY
ECTS Credits: 6 (Year 4 Module)
Chemical Sciences

Prerequisites: CH4008
**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. The Nanotechnology module will provide the student with a broad understanding of the 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 nanostructures 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

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**CH4306 - ANALYTICAL CHEMISTRY 4**

ECTS Credits: 6 (Year 4 Module)

**Chemical Sciences**

**Rationale and Purpose of the Module:** To review and extend the student’s 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 principals; Fragmentation Patterns; Rearrangements; Interpretation of spectra; Hyphenated techniques.

NMR Spectroscopy:

1-D 1H NMR: Review of some basic principals; Relaxation Processes; Homotopic, enantiotopic and diastereotopic systems; Nuclear Overhauser Effect (NOE); Second-Order Spectral Interpretation.

13C NMR: Theory; DEPT 13Cnmr; NOE, Quantitative 13Cnmr; Interpretation of spectra.

Solid State 13C nmr (brief).

2-D 1H NMR: 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).

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**CH4608 - PLANT AND PROCESS MANAGEMENT 2**

ECTS Credits: 6 (Year 4 Module)

**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.

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**ER4508 - POLLUTION CONTROL 2 (WASTE MANAGEMENT)**

ECTS Credits: 6 (Year 4 Module)

**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.


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**HS4208 - SAFETY TECHNOLOGY**
ECTS Credits: 6 (Year 4 Module)

**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.

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Department of Computer Science and Information Systems
Department of Computer Science & Information Systems Year 1 Modules

CS4072 - MEDIA PROGRAMMING 2
ECTS Credits: 6 (Year 1 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;

Prerequisites: CS4061

CS4082 - INTRODUCTION TO WEB DEVELOPMENT
ECTS Credits: 6 (Year 1 Module)
Computer Science & Information Systems

Rationale and Purpose of the Module: This module will introduce students to the concepts and techniques underling 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 MarkUp 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 SQL commands.

Prerequisites: CS4061

CS4232 - MUSIC AND COMPUTERS
ECTS Credits: 6 (Year 1 Module)
Computer Science & Information Systems

Rationale and Purpose of the Module: Students will develop their knowledge and competence of digital music 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.

Department of Computer Science & Information Systems Year 2 Modules

CS4029 - ADVANCED AUDIO PRODUCTION
ECTS Credits: 6 (Year 2 Module)
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)
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

CS4084 - MOBILE APPLICATION DEVELOPMENT
ECTS Credits: 6 (Year 2 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...
in the 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 considerations: performance and memory management; performance and threading; graphics and user interface performance; use various facilities for concurrency. Security considerations: encryption, authentication, protection against rogue applications. Location based application; location API. Packaging and deploying applications for mobile devices.

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CS4174 - PERFORMANCE TECHNOLOGY 1
ECTS Credits: 6 (Year 2 Module)
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.

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CS4826 - HUMAN-COMPUTER INTERACTION
ECTS Credits: 6 (Year 2 Module)
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.

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Department of Computer Science & Information Systems Year 3 Modules

CS4005 - PERCEPTUAL SYSTEMS AND MULTIMEDIA
ECTS Credits: 6 (Year 3 Module)
Computer Science & Information Systems

Rationale and Purpose of the Module: Creating an awareness and understand how our senses work in order 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)
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 and Intelligent Systems. 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.

CS4040 - ADVANCED VIDEO PRODUCTION
ECTS Credits: 6 (Year 3 Module)
Computer Science & Information Systems

Rationale and Purpose of the Module: To give students a theoretical grounding in digital media formats, to explore the fusion of the sonic with the visual and to combine skills in video, graphics and animation toward creating higher-quality video content.

Syllabus: 1. Collaborative Design (Creation, Production, Delivery)
2. Semiotic theories relevant to media, meaning, artist and audience
3. Theories underpinning audio-visual production
4. Conceptual Design Approaches
5. Performance Practice Aesthetics
6. Client relations relevant to audio-visuals
7. Video Art Aesthetics

Prerequisites: CS4053, CS4034

CS4045 - MOBILE APPLICATION DESIGN
ECTS Credits: 6 (Year 3 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

CS4076 - EVENT DRIVEN PROGRAMMING
ECTS Credits: 6 (Year 3 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.

CS4106 - MACHINE LEARNING: METHODS AND
**APPLICATIONS**
ECTS Credits: 6 (Year 3 Module)

**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 lecturers involved in delivery of the module, particular emphasis may be placed on application 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

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**CS4126 - 3D MODELLING AND DIGITAL FABRICATION**
ECTS Credits: 6 (Year 3 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. · FreeCAD 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 digital prototypes. · Applications of digital fabrication: art, architecture, medicine, manufacturing.

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**CS4358 - INTERACTIVE MULTIMEDIA**
ECTS Credits: 6 (Year 3 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, SoundForge, etc.; media asset management. · Authoring: introduction to high-end authoring tools such as Macromedia Director, Authorware, 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.

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**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.

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**CS4458 - COMPUTER SUPPORTED COOPERATIVE WORK**
ECTS Credits: 6 (Year 3 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.

Department of Computer Science & Information Systems Year 4 Modules

**CS4047 - MULTIMEDIA INDUSTRY PERSPECTIVES**
ECTS Credits: 6 (Year 4 Module)
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)
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)
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 criss-crossings within the structure of an essentially hypertextualised 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

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**CS4158 - PROGRAMMING LANGUAGE TECHNOLOGY**

ECTS Credits: 6 (Year 4 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;
- Recursion 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,

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**CS4168 - DATA MINING**

ECTS Credits: 6 (Year 4 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.
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, maximiner.
6. Evaluation of predictive and descriptive analytics models: Holdout and cross-validation, cost-benefit analysis, user feedback.
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.
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

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. The module is based on 4 contact hours per week (2, 1-hour lectures, and 1, 2 hour laboratory), along with self-study time. In the laboratory sessions, the operation of the diode and transistor will be investigated along with data analysis using MATLAB.

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.

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
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.

**EE4044 - COMMUNICATIONS AND NETWORKS PROTOCOLS**
ECTS Credits: 6 (Year 2 Module)
Electronic & Computer Engineering

Rationale and Purpose of the Module: The main objective of this course is to provide an opportunity for students to gain a basic understanding of Communication Networks and Protocols

**Syllabus:** Motivations and objectives of computer networks; overview of layered architecture and the ISO Reference Model; network functions, circuit-switching and packet-switching; physical level protocols; data link protocols including HDLC and multi-access link control. Network control, transport, and session protocols including routing flow control; end-to-end communication and inter-networking. Presentation layer protocols including web, virtual terminal and file transfer protocols, cryptography, network security. It also introduces some important merging technologies, such as, integrated voice and data networks (VOIP) and the integration of wireless and wired networks. Specific examples and standards will be cited throughout the course.

**Prerequisites:** EE4313

**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.

**Prerequisites:** MA4001, MA4002, MA4003

**EE4314 - ACTIVE CIRCUIT DESIGN 2**
ECTS Credits: 6 (Year 2 Module)
Electronic & Computer Engineering

Rationale and Purpose of the Module: This module introduces the basic properties of operational amplifiers feedback, and their use in both linear and non-linear applications as well as the introduction of AC low frequency design. An introduction to Analogue signal conversion is also given.

**Syllabus:** THE DIFFERENTIAL AMPLIFIER AS A TWO ENDED INPUT AMPLIFIER. Introduce the diff amp as the input element to Op Amps. Define the terms Differential Gain, Common Mode Gain and Common Mode Rejection Ratio
OP-AMP CHARACTERISTICS: Simplified internal view of a typical 3-stage op-amp, current limiting, open-loop transfer curve, offset error. Op-amp configurations; current in, voltage out etc. Finite gain errors. Slew limitations.
OP-AMP LINEAR APPLICATIONS: Selected linear applications, including voltage amplifiers, regulators, integrators and instrumentation issues.
OP-AMP NON-LINEAR APPLICATIONS: Comparators, Schmitt trigger, rectifiers, peak detectors etc. Non-linear oscillators (square-triangle), monostable circuits. A.C. COUPLED AMPLIFIERS: Low frequency limitations, break points, Bode plots, design steps.
**Prerequisites:** EE4313

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**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.addrressing 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 I/O mapped I/O. Volatile and non-volatile memory. ROM, RAM.  
Serial data: Asynchronous and synchronous transfers. RS232, SPI, I2C.  

**Prerequisites:** CE4701

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**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: PG.  
[Security Protocols:] Introduction to key management, peer-to-peer distribution protocols and identification protocols. Secure web (https/ssl), secure shell (ssh) etc.

**Prerequisites:** ET4141

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**ET4122 - ANALOGUE ELECTRONICS 2**  
ECTS Credits: 6 (Year 2 Module)  
Electronic & Computer Engineering

**Rationale and Purpose of the Module:** The aim of this module is to continue the introduction and analysis of the principles of operation of electronic devices and circuits using the principles introduced in Analogue Electronics 1. A more in-depth analysis will be undertaken using suitable analysis techniques. At the end of this module students should be able to solve problems concerning simple DC circuit theorems and analyse AC circuits using both the phasor approach and the complex notation approach.


**COMPLEX ANALYSIS:** Analysis of circuits using complex notation, derivation of amplitude and phase data from complex representation of signals and impedance. Transfer functions, frequency response, corner frequency, Bode diagrams for simple R-C circuits. Power dissipation in complex impedance. Maximum power transfer theorem for complex source and load impedances.

TUNED CIRCUITS: Series and parallel R-L-C circuits, resonance, Q, bandwidth, dynamic impedance. Circulating current in parallel tuned circuit.

COUPLED CIRCUITS: Inductively coupled coils, induced e.m.f., mutual inductance, coupling coefficient. Reflected impedance for loaded coupled circuit for k < 1. Input and output equivalent circuits. Properties of ideal voltage and current transformers. The auto transformer.

**Prerequisites:**
Electronic & Computer Engineering Year 3 Modules

**CE4206 - OPERATING SYSTEMS 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  

**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.  


**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 introduces 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

CE4717 - LANGUAGE PROCESSORS
ECTS Credits: 6 (Year 4 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.


Prerequisites: CE4703

EE4038 - POWER ELECTRONICS
ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module will give students (ECE BE/ME students) an understanding of modern power electronics both at the device/products level and at the renewable energy generation and distribution level. The module is to replace EE4328 Power Electronics and upgrade the content of this module for BE/ME 4th/5th year level 9.

This module will be offered to the Master of Engineering in Electronic and Computer Engineering programme using module ID 3299 Power Electronics

Syllabus: Introduction (examples of typical power conversion applications e.g. a complete computer power supply system block diagram/space craft system, importance of efficiency, comparison linear vs switching supplies, overview key components utilised in power conversion) Switch realisation: semiconductor switches: diodes, Power MOSFETS, Thyristors, GTOs, IGBTs, properties, circuit symbols, comparative characteristics and application areas, power losses in switches. The ideal switch, ripple and switching frequency, conduction losses, switching losses. Switch mode power conversion: basic concepts; role of inductors, capacitors and transformers. Analytical treatment of converters in equilibrium (steady-state converter analysis).


EE4117 - ELECTROMAGNETICS 1
ECTS Credits: 6 (Year 4 Module)

Electronic & Computer Engineering

Rationale and Purpose of the Module: This module is a 3rd year core module for BE in Electronic Engineering (LM079).

Syllabus: Review of vector calculus. Electrostatics - Electric field, calculation of the electric field, electric potential, conductors and dielectrics, electrostatic field boundary conditions, capacitance. Poisson/Es and Laplace/Es equations. Current density. Resistance calculations. Magnetostatics - Magnetic flux density, vector magnetic potential. Biot-Savart law, magnetic field intensity, magnetic circuits, magnetic materials, inductance. Time-varying fields - Faraday/Es law, Maxwell/Es equations, time harmonic electromagnetics, plane electromagnetic waves in lossfree and lossy media, low-loss dielectrics and conductors, power propagation and the Poynting vector, instantaneous and average power densities. Transmission lines - Transverse electromagnetic waves along a parallel-plate transmission line, transmission line equations, wave characteristics along infinite and finite lines, transmission lines as circuit elements, resistive and arbitrary terminations, the Smith chart, impedance matching.
EE4317 - ACTIVE CIRCUITS 4  
ECTS Credits: 6 (Year 4 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. 
Analog bipolar design methods: mirrors, high-gain stages, output buffers. 
Analog CMOS design methods: mirrors, high-gain stages, output buffers. 
Digital logic families, an overview. 
Analog building blocks: overview of op-amps, comparators and PLLs, CMOS and BiMOS technologies. Review of some analog circuits, bipolar and MOS.

Prerequisites: EE4316

ET4018 - MOBILE AND WIRELESS COMMUNICATIONS  
ECTS Credits: 6 (Year 4 Module)  
Electronic & Computer Engineering  

Rationale and Purpose of the Module: The aim of this module is to provide an introduction to mobile communications and mobile networking. 
At the completion of the module, students should have an understanding of the important issues in providing a mobile communications system including signal transmission, network management and interaction with a fixed network. Students should understand the principles of operation of a current mobile communications system and the potential for future services development.

Syllabus: Digital mobile and personal communications systems: General configuration of cellular systems; comparison with a fixed communications systems; systems overview: Fixed wireless Access, cellular, WLAN, Wireless Personal Area Network (WPAN), satellite. 
Cellular Concepts: Frequency reuse; channel assignment; capacity; sectoring. 

Medium access control: SDMA, TDMA, FDMA, CDMA, WCDMA, effects of Multiple Access Interference and ISL. 
Mobile telecommunications systems: GSM, GPRS, EDGE, UMTS, HSDPA, future generation (4G). 
Key concepts in the dynamic management of resources; call control, switching, wireless access and channel allocation, handoff, roaming, HLR and VLR. 
Wireless network issues: MAC, QoS, ad-hoc networks, MANET.

Example systems: Bluetooth, IEEE 802.11, Ultra-wideband (UWB). 
Mobile IP, mobile TCP issues. 
Support for mobility at higher communications layers.

ET4027 - COMPUTER FORENSICS  
ECTS Credits: 6 (Year 4 Module)  
Electronic & Computer Engineering  

Rationale and Purpose of the Module: This module aims to give the student a firm understanding of the problems associated with computer forensics in relation to data recovery from digital media, whether the data was accidentally lost or deliberately destroyed. 
The student will learn to extract information from a computer which might be of relevance at a crime-scene using a variety of forensic techniques, tools and commands.

File systems: Disk technologies; Data organisation; File systems on Unix and Windows. 
Data recovery: Recovering data and analysing data usage patterns: the Audit Trail; Use of caches, spoofing, paging files, logs, backup media, computer memory (while still powered). 
Tools for forensic analysis: Laboratory/project based: file system analysis tools; investigate a case study forensic problem; emphasis on the use of tools.

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.

[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. 
Network log analysis, troubleshooting defence components, importance of defence in depth. Design under fire: the hacker approach to attacking networks.

ET4345 - OPERATING SYSTEMS 2  
ECTS Credits: 6 (Year 4 Module)  
Electronic & Computer Engineering  

Rationale and Purpose of the Module: The prerequisite module, Operating Systems 1, introduces operating system concepts for uniprocessor systems. This module builds on the previous module by introducing a specific operating system, UNIX, and covering the underlying design and implementation features of the UNIX operating system. A set of laboratory exercises exposes the student to the internals of the UNIX operating system.

UNIX architecture: Features, partition of functions and position in the layered structure. 
Kernel organisation: Control flow, execution, daemons, timers, interrupts, clocks, modules. 
Process Management: Process manager, system calls,

Prerequisites: CE4703, CE4518

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EE4024 - 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.

Mathematics & Statistics
Mathematics & Statistics

Year 1 Modules

MA4002 - ENGINEERING MATHEMATICS 2
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 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]. [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.

Prerequisites: MA4001

MA4302 - APPLIED STATISTICS FOR ACCOUNTING
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.
3. Continuous probability distributions - the binomial distribution. Expected values.
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.
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
ECTS Credits: 6 (Year 1 Module)
Mathematics & Statistics

Rationale and Purpose of the Module: To introduce 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
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 Simpson's rule.

Function 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
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
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.


Prerequisites: MS4021

MS4122 - FURTHER LINEAR ALGEBRA
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 $C^n$.


Prerequisites: MS4131

MS4222 - INTRODUCTION TO PROBABILITY AND STATISTICS
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 the 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. Thesetistical 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: probability mass functions (Bernoulli, binomial, Poisson, geometric); expected value, variance; Poisson approximation to the binomial; law of total expectation (discrete form). The Normal Curve: the normal curve as an idealised histogram; areas under the normal curve; normal probability plot; illustrating the sampling distribution of the mean through applications in statistical quality control; precision of an estimate; the foundations of hypothesis testing and confidence intervals. Gathering Data: sample surveys; designed experiments and observational studies; randomized control trials. Exploratory Data Analysis: frequencies; histogram; empirical density curve; percentiles; measures of centre; measures of spread; outliers; boxplots; scatterplots; correlation; contingency tables, Simpson's Paradox. Regression Models: least squares line; transforming to linearity; out-of-sample prediction.
Mathematics & Statistics

Year 2 Modules

MA4004 - ENGINEERING MATHEMATICS 4
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.


MA4604 - SCIENCE MATHEMATICS 4
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
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.


Prerequisites: MS4213

MS4404 - PARTIAL DIFFERENTIAL EQUATIONS
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

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**MS4014 - INTRODUCTION TO NUMERICAL ANALYSIS**

**Rationale and Purpose of the Module:** This module provides an introduction to the basic concepts of numerical analysis.


**Prerequisites:** MS4022, MS4043

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**MS4034 - APPLIED DATA ANALYSIS**

**Rationale and Purpose of the Module:** To introduce students to the fundamental concepts of theoretical mechanics.

This is a new module 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

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**MS4414 - THEORETICAL MECHANICS**

**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.


**Prerequisites:** MS4403, MS4613

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**Mathematics & Statistics Year 3 Modules**

**MA4006 - ENGINEERING MATHEMATICS 5**

**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 (Green's, Gauss', 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

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Mathematics & Statistics Year 4 Modules

**MA4128 - ADVANCED DATA MODELLING**
*ECTS Credits: 6 (Year 4 Module)*

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 MinTab 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 MinTab (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 MinTab 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

**MB4018 - DIFFERENTIAL EQUATIONS**
*ECTS Credits: 6 (Year 4 Module)*

Rationale and Purpose of the Module: To develop and understanding of the theory of differential equations. To study standard solution techniques. To apply differential equations to real situations.

Syllabus: Basic concepts: order, degree, solution, boundary and initial conditions, graphs of solutions; Mathematical modelling: examples from mechanics and population growth; Classical mechanics: velocity, acceleration, motion of a rigid body; Newton's Laws, simple harmonic motion, elastic strings and springs; Projectile motion and orbital motion; First order ODEs: variable separable, homogeneous, linear and exact with applications; Second order differential equations: linear with constant coefficients, trial method and D-operator method with applications; Numerical solution of first order differential equations: Euler to Runge-Kutta.

Prerequisites: MA4702

**MS4018 - DYNAMICAL SYSTEMS**
*ECTS Credits: 6 (Year 4 Module)*

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 -- numerics and analysis, period-doubling and intermittency; Lyapunov exponents, renormalisation and Feigenbaum numbers. Introduction to time series applications. Fractals: dimensions; strange attractors revisited.

Prerequisites: MS4403
**Prerequisites:** MS4213, MS4217

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**MS4218 - TIME SERIES ANALYSIS**
**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.

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**MS4408 - MATHEMATICAL MODELLING**
**ECTS Credits:** 6 (Year 4 Module)
**Mathematics & Statistics**

**Rationale and Purpose of the Module:** To learn the techniques of advanced mathematical modeling 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

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**MS4528 - MATHEMATICAL AND STATISTICAL MODELS OF INVESTMENTS**
**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 analyze the risk and return of individual assets and portfolios.

**Syllabus:** &bull; 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. &bull; Fixed Income securities and interest rate derivatives, including Swaps, Caps, Floors, and Black’s Formula. &bull; Credit risk and Credit derivatives such as Credit default swaps, Collateralised debt obligations. Credit spreads, implied default probabilities and the pricing of simple derivatives.

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**MS4327 – OPTIMISATION**
**ECTS Credits:** 6 (Year 4 Module)
**Mathematics & Statistics**

**Rationale and Purpose of the Module:** To give students a broad understanding of the theoretical and numerical aspects of non-linear optimisation.

Department of Physics
Department of Physics

Year 1 Modules

PH4012 - PHYSICS FOR ENGINEERS 2
ECTS Credits: 6 (Year 1 Module)

Physics

Rationale and Purpose of the Module: Continuation of an introductory course in physics (PH4011) for engineering students.


Prerequisites: PH4011

PH4042 - THERMAL PHYSICS
ECTS Credits: 6 (Year 1 Module)

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)

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.


Prerequisites: PH4081

PH4032 - PHYSICS FOR GENERAL SCIENCE 2
ECTS Credits: 6 (Year 1 Module)

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,
Rationale and Purpose of the Module: The purpose of this 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 introduced to the fundamental properties of electric and magnetic materials. The final objective is to introduce the studentsto the unified theory of electromagnetic waves and its application in matters and simple physical systems.

Syllabus: Vector methods: div, grad, curl; line, surfaceand volume integrals; Electric field E: electric charge, Coulombs law, electric field E, Gauss law, divergence ofelectric field, the Dirac delta function; Magnetic field: magnetic field B, Biot-Savart law, Ampere law, Lorentzforce; Electromagnetic induction: emf, Faradays law, generators and motors; Maxwell's 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; Dipole and multipoles: electric dipole p, magnetic dipole m, electricmultipoles; Conductors: conductivity, Ohms law, Hall effect; Dielectrics: polarization P, displacement D, permittivity, electric susceptibility, dielectric constant; Magnetic materials: diamagnets, paramagnets, ferromagnets; magnetic intensity H, magnetisation M, magnetic susceptibility, inductance, transformers; Maxwell's equations in matter: Maxwell's 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

PH4102 - WAVES/LIGHT/MODERN PHYSICS
ECTS Credits: 6 (Year 1 Module)

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 dilatation, 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, alpha, beta and gamma radiation, the law of radioactive decay, fission and fusion; nuclear reactors. Detection, dosages.

Prerequisites: PH4131

PH4111 - SEMICONDUCTORS 2
ECTS Credits: 6 (Year 1 Module)

Physics

Rationale and Purpose of the Module: The purpose of the module is introduce advanced CMOS process technology and the problems associated with device fabrication as the technology moves towards 30 nm features and below.


Prerequisites: PH4071, PH4805

PH4132 - MODERN PHYSICS
ECTS Credits: 6 (Year 1 Module)

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, NyquistShannon sampling theorem.

Prerequisites: PH4131
**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 Schrödinger equation, and the principles of special relativity.

**Syllabus:** Wave mechanics: De Broglie's hypothesis, wave functions and probability amplitudes, the Heisenberg Uncertainty principle. The Schrödinger wave equation: simple solutions in one dimension, transmission, reflection and penetration at a barrier, tunnelling, potential wells, the harmonic oscillator. The Schrödinger 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

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**PH4142 - INTRODUCTION TO PHYSICS**

**ECTS Credits:** 6 (Year 1 Module)

**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 to 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.


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**Department of Physics Year 4 Modules**

**PH4018 - MEDICAL INSTRUMENTATION**

**ECTS Credits:** 6 (Year 4)

**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:

**PH4608 - SOLID STATE PHYSICS 2**

**ECTS Credits:** 6 (Year 4 Module)

**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 Cooper pairs, tunnel junctions and Josephson effect.

**Prerequisites:** PH4607
School of Design Year 1

Modules

Please note: For any queries on Architectural Modules please contact jan.frohburg@ul.ie. Jan is the International Academic Coordinator for the school of design and a lecturer in Architecture.

PD4102 - DESIGN STUDIO 2
ECTS Credits: 6 (Year 1 Module)
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)
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 complement 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.

AR4032 - HISTORY AND THEORY OF ARCHITECTURE 2
**Please note there is space for 1 or 2 students**
ECTS Credits: 3 (Year 1 Module)
School of Design

Rationale and Purpose of the Module: to expand students/E horizons of knowledge about architecture while teaching the foundational skills in reading and writing in the discipline. Even though students at the School of Architecture are expected to be literate and articulate, entering into a new field, such as architecture, is a difficult intellectual transition to make. Students will need to develop specific cognitive skills to address the new territories they will have to map. The first year program sets out to help students attain a basic literacy in the discipline while introducing contemporary ways of thinking about the field.

Syllabus: The theme for the spring workshop is Building. Just as students need to learn to describe a site and objectify their reactions to it, as architects it is essential that they also learn to discuss buildings at a high level. Seminars will address Skin, Program, Circulation, Structure, and Codes, introducing both historical and contemporary material to challenge students. Throughout, students will explore architecture's intersection with the material and social realms. As in the first semester, students will undertake close readings of the most significant works in modern and contemporary architecture. Projects likely to be discussed will include Joseph Paxton's Crystal Palace, Otto Wagner/Es Parkkase, Mes van der Rohe/Es 860-880 Lake Shore Drive and Seagram Buildings, Le Corbusier/Es La Tourrette, Eero Saarinen/Es IBM Headquarters, Bernard Tschumi/Es Parc de la Villette, FOA/Es Yokohama Terminal, MVRDV/Es WozCos Housing Project. Readings by authors such as Robin Evans, Colin Rowe, Anthony Vidler, Otto Wagner, Alan Colquhoun, Le Corbusier, and Walter Gropius will explore the diverse ways by which buildings can be discussed. We will visit nearby sites first-hand in order to learn how to read buildings. Afternoon workshops will focus on describing these sites. The writing projects introduced in the fall semester will be built upon in order to ensure that students have a high degree of skill in thinking about architecture through writing by the end of the term.

This course will be teamed with a series of workshops by Elizabeth Hatz that will introduce students to ways of attaining close readings of buildings through drawing.

School of Design Year 2

Modules

IE4214 - INDUSTRIAL ORGANISATION
ECTS Credits: 6 (Year 2 Module)
School of Design

Rationale and Purpose of the Module: To introduce the subject of operations management, differentiating between operations and processes. To introduce performance optimisation within limited system resources. To prepare students for coop.

Syllabus: Basic concepts: Operations versus processes and relationships to lead-time, Little/Es law, lean production and dynamic responsiveness, make-to-order versus make-to-stock, resources (4 Ms), types of manufacture, product-process matrix, production planning and control activities. Cost estimating: cost elements, materials, time and capacity, quality costs, overhead activity costs, final cost/selling price, break-even analysis and make/buy, budget variance control, target costing, Layout: types of layout, Systematic Layout Planning, work-station space allowances and templates, material load and or adjacency measures of proximal desirability, Pareto analysis of flows, string diagrams, layout evaluation and improvement. Project Planning: Gantt networks, critical path, uncertain times, resource levelling, time-cost trade-offs, line-of-balance. Dispatching clerical process, priority dispatching rules, kanban Inventory control direct/indirect and opportunity costs of inventory, independent demand systems: perpetual and periodic reordering, safety stocks, dependent demand, bill-of-materials, material requirements planning, lot-sizing by EOQ for 1 product, Pareto ABC inventory analysis, limitations of EOQ, push versus pull, system requirements for small-lot production Organization structure: organisation charts, determining processes and functions, grouping and integration, alternative structures.

PD4004 - DESIGN VISUALISATION
ECTS Credits: 6 (Year 2 Module)
School of Design

Rationale and Purpose of the Module: The aim of this module is to introduce methods for communication of design

Prerequisites: AR4031

School 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.

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**PD4044 - Design Studio 4**
ECTS Credits: 12 (Year 2 Module)

**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

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**PD4124 - CONTEMPORARY DESIGN CULTURE**
ECTS Credits: 6 (Year 2 Module)

**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.


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**AR4034 - HISTORY AND THEORY OF ARCHITECTURE 4**
**Please note there is space for 1 or 2 students**
ECTS Credits: 3 (Year 2 Module)

**School of 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.

**Prerequisites:** AR4033

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**School of Architecture Year 4 Modules**

**AR4367 - Digital Technology**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)

**School of Design**

**Rationale and Purpose of the Module:** Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (short-term) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio this is to allow the student the space to start making their own decisions and setting their own direction.

**Syllabus:** 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, workshops and applied technology laboratories. 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**
**Only open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)

School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

**AR4327 - Culture Place Environment (Building Land)**
**Only open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)

School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

**Syllabus:** 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. - 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**
**Only open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)

School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

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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
**Ony open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)

School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

Syllabus: 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. - 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 slipper allocation of meaning and performance of the most public side of architecture.

AR4357 - Architectural Form & Culture
**Ony open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)

School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

Syllabus: 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. - 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 slipper allocation of meaning and performance of the most public side of architecture.

AR4377 - Engineering Research
**Ony open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)

School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

Syllabus: 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. - 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 slipper allocation of meaning and performance of the most public side of architecture.

AR4387 - Experimental Construction
**Ony open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)
School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

Syllabus: 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, workshops and applied technology laboratories. 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 selfsufficiency in operation. The design will implement research findings on programme, user group, natural and cultural context, available materials and technologies etc.

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AR4417 - DIGITAL MEDIA AND REPRESENTATION

**Ony open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)
School of Design

Rationale and Purpose of the Module: Students are offered the opportunity to tailor their education to a larger degree in fourth and fifth year, with the invitation to make choices of modules beside the core Design Studio and adjacent modules. The introduction of architecture electives is intended to provide a flexible framework to accommodate the diverse field of interests and (shortterm) research projects within architecture, and to allow students to pursue their own personal interests within architecture. Smaller classes allow for in-depth interrogation of the subject at an advanced level. The elective modules have been conceived and created to give venue to research, to permit the students particular (and varying) interests to diversify and develop - apart from the Design Studio. This is markedly different from the lower three years of the course, where integration is the focus of the course, coordination between modules and Design Studio is essential, and particular student interests are less relevant than developing competence as an architect. Therefore the content of the elective modules cannot be specifically related to the Design Studio - this is to allow the student the space to start making their own decisions and setting their own direction.

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AR4397 - UTOPIAN STUDIES

**Ony open to Architectural Students**
**Please note there is space for 1 or 2 students**
ECTS Credits: 6 (Year 4 Module)
School of Engineering Year 1 Modules

AS2402 - INTRODUCTION TO ENGINEERING
ECTS Credits: 6 (Year 1 Module)
School of Engineering

Rationale and Purpose of the Module: To understand the role of engineers in society and the different types of engineering.
To understand the basic techniques of problem solving in engineering.
To understand the basis of forces and moments in analyzing structures.
To understand the basics of linear and angular motion when analyzing dynamic problems.

Syllabus: Overview of the engineering disciplines currently being offered by the Mechanical and Aeronautical Engineering department: The profession (Mechanical, Aeronautical, Biomedical, Design), real-life engineering examples, skills required, career opportunities and career progression.

Prerequisites: AS2391

ID4112 - DESIGN MECHANICS
ECTS Credits: 6 (Year 1 Module)
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.


ME4042 - INTRODUCTION TO DESIGN FOR MANUFACTURE
ECTS Credits: 6 (Year 1 Module)
School of Engineering

Rationale and Purpose of the Module: 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 engineering fundamentals.


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 behavior of fluids and application of the principles of continuity, energy and momentum to viscous fluid flow.


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 addressing engineering, planning and Irish architectural heritage and conservation.
* Soil identification, properties and behaviour factors affecting drainage & foundation choice.
* Concrete technology and mix design.
* Environmental considerations in residential construction 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

ME6071 - NON-LINEAR FINITE ELEMENT ANALYSIS
ECTS Credits: 6 (Year 1 Module)
School of Engineering

Nonlinear behaviour of solids and structures: geometric and material nonlinearities; problems involving contact; nonlinear dynamics; mathematical idealisation of nonlinear problems; nonlinear continuum mechanics; solution strategies for nonlinear problems, finite element software, experimental verification. Finite element (FE) equations in nonlinear analysis: weak and strong forms; general FE equations; incremental form of FE equations; total and updated Lagrange framework. FE solution strategies: linearization of FE equations, incremental-iterative methods; convergence...
criteria; tangent stiffness matrices. FE solution of geometrically nonlinear problems: stability problems, Riks algorithm, FE solution of problems involving material nonlinearities: continuum quantities and approaches; principle of objectivity; displacement-pressure formulations; implicit and explicit integration; consistent tangent stiffness matrices; radial return algorithm. FE solution of contact problems: frictionless problems; finite element equations; penalty and Lagrange multipliers approaches; frictional problems. Computer implementation of nonlinear FE algorithms: commercial packages; user-subroutines.

**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.

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**ME6191 - AIRWORTHINESS AND SPACEWORTHINESS**
**ECTS Credits: 6 (Year 1 Module)**
**School of Engineering**

**Rationale and Purpose of the Module:** 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 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 (micromechanisms 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.

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**School of Engineering Year 2 Modules**

**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.

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**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

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**ME4414 - FLUIDS MECHANICS 2**

ECTS Credits: 6 (Year 2 Module)

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

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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.

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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

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**WT4604 - LAND SURVEYING**

ECTS Credits: 6 (Year 2 Module)

School of Engineering

**Rationale and Purpose of the Module:** The aim of this module is to provide an understanding of principles of land surveying and the use of specialist surveying equipment. The principles and techniques of surveying are applied to a wide variety of realistic construction project applications. The specific objectives are to provide:
- An understanding of surveying fundamental principles and use of surveying instruments.
- Knowledge of the application of these to conduct land and site surveys.
- Practical experience in using these modern instruments in the solving of a variety of site problem situations.

**Syllabus:** Surveying fundamentals, tape & offset surveying; levelling, the theodolite and its use, tension determination, steel taping differential levelling, traversing, angle measurement electromagnetic distance measurement, satellite positioning systems, survey methods, analysis & adjustment of measurements, areas & volumes, setting out, curve ranging, topographic surveying, construction control surveys, geographic information systems, global positioning systems, construction applications, field coding, automatic target recognition, typical field operations. Practical case studies and fieldwork.

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**CE4013 - STRUCTURAL ANALYSIS**

ECTS Credits: 6 (Year 2 Module)

School of Engineering

SI units and manipulation of formulae, sources and types structural loading, reactions and supports, free body diagrams, shear force and bending moment calculations, static determinancy and indeterminancy, qualitative analysis of beams and frames, stability and analysis of pin jointed frames, section properties, engineers equation of bending.

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**CE4024 - STRUCTURAL STEEL AND TIMBER DESIGN**

ECTS Credits: 6 (Year 2 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.
School of Engineering Year 3 Modules

**DM4006 - ENGINEERING DESIGN**  
ECTS Credits: 6 (Year 3 Module)  
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 truss design and stability issues, Introduction to diaphragm & shearwall design, bolted, nailed and stapled connections, glulam, LVL and I-beam design, structural detailing and fire & durability issues.

**Prerequisites:** CE4002

**WT4014 - INTRODUCTION TO GEOLOGY AND SOIL MECHANICS**  
ECTS Credits: 6 (Year 2 Module)  
School of Engineering

**Rationale and Purpose of the Module:** To provide an appreciation of the critical design issues associated with vibrations in aircraft and spacecraft structures and devices. To enable students to analyse vibrational problems with standard mathematical tools for linear systems, and design simple vibration absorption and isolation systems.

**Syllabus:** Oscillatory motion; free vibration of single degree of freedom systems; harmonically excited vibration; transient vibration; vibrations under general forcing conditions; systems with two or more degrees of freedom; modal analysis; random vibrations in space launchers.

**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.

**School of Engineering**

**ME4226 - MECHANICS OF SOLIDS 2**  
ECTS Credits: 6 (Year 3 Module)  
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 finite element method to solve structural vibration problems.


**Prerequisites:** ME4112

**ME4092 - AEROSPACE VIBRATIONS**  
ECTS Credits: 6 (Year 3 Module)  
School of Engineering

**Rationale and Purpose of the Module:** To provide a clear understanding of the role of 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 finite element method to solve structural vibration problems.


**Prerequisites:** ME4112
Rationale and Purpose of the Module: To understand and analyse and measure the state of strain at a point in a 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 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)
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 efficiency.

Syllabus: Refrigeration & Heat Pump Cycles, Vapour Power Cycles, Internal Combustion engines, life of simple engineering components. To understand the basics of LEFM. To analyse the stresses in beams of unsymmetrical section.


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.


Prerequisites: ME4412

ME4726 - FLIGHT MECHANICS
ECTS Credits: 6 (Year 3 Module)
School of Engineering

Rationale and Purpose of the Module: To introduce the student to aircraft performance and the static and dynamic stability and control of aircraft.


Prerequisites: ME4424, ME4412
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 students 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. Ficks 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:** 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

**MT4006 - TISSUE ENGINEERING**
ECTS Credits: 6 (Year 3 Module)
School of Engineering

**Rationale and Purpose of the Module:** The rationale of this module is to augment the Biomedical Engineering undergraduate module portfolio with a module in Tissue Engineering and Regenerative Medicine. The purpose of the module is to cover the physical principles and engineering science associated with TissueEngineering, encompassing biomaterial selection, tissue scaffold design, bio printing, and cell–matrix interactions.

**Syllabus:** Fundamental Principles of Tissue Engineering and regenerative medicine & Biomaterials in tissue Engineering: hydrogels; growth factors; synthetic scaffolds; Stem Cells for Tissue Engineering & TissueScaffold design &; Scaffold fabrication Bioprinting; Electrospinning; freezedrying &bull; Cell Culture for Tissue Engineering &bull; Cell Proliferation and Migration &bull; Scaffolds for Tissue Based Repair &bull; Bioprinting &bull; Bioreactor Systems and Design &bull; Diffusion & Nutrient Transport Limitations in Tissue Engineered Constructs &bull; Skin Tissue Regeneration &bull; Cartilage Tissue Engineering & Regeneration &bull;Bone Tissue Engineering &bull; Cardiovascular Tissue Engineering &bull; Corneal Tissue Engineering and Replacement &bull; Cell encapsulation &bull; Immunomodulation and protection example Diabetes &bull; Peripheral Nerve Repair &bull; Cell Separation Technology &bull; Gene Therapy &bull; Regenerative Surgery in Orthopaedics & Sports Medicine &bull; Ethical Issues and Considerations for Tissue Engineering

**School of Engineering Year 4 Modules**
CE4028 - ENERGY EFFICIENT BUILDINGS: 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 material metric values for building including exemplar low-energy and passive buildings; 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.

DM4028 - ENGINEERING SUSTAINABLE PRODUCTS
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)

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 role of 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 mechanotransduction; 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

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 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.

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**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 and resorbable). Dental implant applications and materials Dental restorative materials Regulatory affairs: 93/42/EEC, MDD, FDA, EN46000, AIMDD, IVDD and related standards.

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**ME4718 - FLUID PROCESS CONTROL**
ECTS Credits: 6 (Year 4 Module)
School of Engineering

**Rationale and Purpose of the Module:** To provide the student with a very good knowledge of advanced process control with emphasis on fluid & thermal processes.

**Syllabus:** Advanced Control Strategies
Control of Multi-Input-Multi-Output (MIMO) Processes
Development of Discrete-time Models
Dynamic Response of Discrete-Time systems
Analysis of Sampled-Data systems
Design of Digital Controllers

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**ME6192 - PLASTICITY OF CONVENTIONAL AND 3D PRINTED METALS**
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:** 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.

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**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 as soon as possible, of their products on time, to agreed high quality and sustainability standards, and economically, as if nothing else mattered. Framing these activities and applying them to configure and operate supply networks and to optimise their contribution to performance tradeoffs is the subject of this module. In the context of the Supply-Chain Operations Reference (SCOR) model these concepts lie in the domain of Deliver 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.

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**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 to 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 servicecounter and service quality, in eg a franchise 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.

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**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 equipment being adopted in modern non domestic 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 fire fighting 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

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**IE4238 - OPERATIONS ANALYSIS AM**

ECTS Credits: 6 (Year 4 Module)

**School of Engineering**

**Rationale and Purpose of the Module:** To give students an understanding of the use of analytical models in the management of resources. To provide students with skills for the application of linear programming and related models to resource management. To give students an understanding of the technique of simulation and its application to systems design.
Module Leaders

A full list of module leaders can be found below. Your module leader will be your point of contact for any queries relating to your module. When emailing please include a "." between the first & last name with the last name ending with "@ul.ie", for example firstname.lastname@ul.ie.

Please note: Any module leader showing as AON means the lecturer hasn’t been assigned, we recommend you attend the first lecture to obtain this information.

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