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# BSc Supply Chain Management

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## Programme Information

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**UNIVERSITY of LIMERICK**

**O L L S C O I L L U I M N I G H**

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## **Programme Title:**

Bachelor of Science in Supply Chain Management

## **Award Type and Level on National Framework of Qualifications**

Bachelor of Science Honours Degree Level 8

## **Rationale:**

The development of this programme was inspired by a specific demand from industry to meet the clear need to upskill current personnel who have shown the aptitude and track record of competence in supply chain operations to aspire to a degree level qualification. This programme represents the outcome of a close, respectful, responsive and productive collaboration with an number of industry partners locally and internationally. It has strong potential to reach a broader supply-chain audience, both in Europe and in Asia.

Supply-chain enterprises operate in a highly dynamic business environment characterised by three Cs – change in globalisation such as outsourcing, change in product possibilities and expectations such as product-service bundling, and change in ways of integrating businesses such as the emergence of enterprise networks.

This programme's content aligns with the framework of the Supply-Chain Council's Supply Chain Operations Reference model (SCOR). While in the form of a template, this model places operations planning and control centrally in a way that prior implicit framings did not and so provides a basis for the strongly conceptual navigations that supply-chain managers face in their everyday lives. The programme combines strong human factor, cause-effect modelling, and process improvement orientations to leverage innovative opportunities.

To specifically target those currently employed, or seeking employment, in a variety of technology rich industries, such as Pharmaceutical, Medical Devices, Biotechnology and Manufacturing, who require a degree qualification and are seeking the same for professional advancement.

The BSc in Supply Chain Management underpins, supports and is consistent with the objectives of the University of Limerick Strategic Plan:

(a) Broadening access to and offering greater flexibility in the delivery of programmes of study that are relevant to the needs of students and society. Education and development of human capital are widely acknowledged as factors contributing to issues such as greater social inclusion, labour market progression and participation (CSO, 2007) and economic development. The BSc in Supply Chain Management is an innovative programme that provides an opportunity to a wide range of people to increase their educational attainment and employability through the attainment of a recognised level 8 qualification

(b) Increasing the diversity of the undergraduate population by increasing the numbers of Lifelong Learning and mature students. The flexible learning model allows for greater access for mature students. This will particularly benefit those for whom full time education may not be feasible due to work, family or other commitments

(c) Renewing our commitment to breath in the undergraduate curriculum by offering students a wider choice.

(d) Maintaining in the curriculum a balance of breadth and depth that develops our student's

independent lifelong learning capacity so that they become versatile and adaptable graduates.

(e) Continually enhancing the skills base of the workforce. The BSc in Supply Chain Management is specifically designed to broaden and develop the competencies from a variety of disciplines required by export orientated organisations and those that are part of a larger supply chain.

The programme seeks to support and guide participants by providing a learning environment that leverages their existing knowledge, skills and experience to enable them to achieve a broader management perspective and related strategic insights.

### **Learning Outcomes:**

After completing this programme, students should be able to:

- Identify the fundamental theories and concepts and methods that inform supply chain management within a variety of organisational settings and in a variety of disciplines.
- Demonstrate detailed knowledge and understanding of specialised areas pertaining to different supply chain functions.
- Display specialised technical, analytical and creative skills which are fundamental to problem solving and decision making.
- Apply knowledge in a variety of enterprise settings.
- Transfer and apply skills developed to a range of situations including the workplace and further study.
- Cultivate skills in problem identification, research design, data analysis and problem solving and exploit those skills to enhance innovation and facilitate process optimisation
- Display interpersonal skills, knowledge, confidence and capability to engage effectively with peers, and other relevant personnel, teams and groups.
- Display professional competence and effectiveness when engaging in management/leadership roles.
- Enable graduates to facilitate sustainable improvements at the personal and enterprise level through effective work systems and improved knowledge management.
- Display appropriate competence and skill to achieve personal goals and targets and engage in continuous professional development and reflective learning.
- Build the management and leadership capabilities of individuals and enterprises
- Acknowledge role and capacity to effect change responsibly in enterprise, professional, academic and societal contexts.
- Be able to synthesise various theories, concepts, issues, problems and as a result develop and articulate ideas, views and insights pertaining to supply chain management.
- Recognise the importance of ethics sustainability and internationalisation in global business.
- Acknowledge the importance of continuous development and reflection as a lifelong activity.

**Syllabus:** Click on hyperlink to read module outline

## BSc Degree in Supply Chain Management

Year 2			60	Credits	Year 2			Credits	Year 2		Credits
Semester 01			24	Semester 02			24	Semester 03			12
1	<a href="#">MG2101</a>	Management & Leadership	6	1	<a href="#">IEX169</a>	Introduction to Models & Frameworks for SCM	6	1	<a href="#">IEX167</a>	Supply Chain Case Study 1	6
2	<a href="#">PT3001</a>	Introduction of Supply Chain Management	6	2	<a href="#">AU3014</a>	Operations Engineering	6	2	<a href="#">IEX168</a>	Skills Portfolio (Supply Chain Management)	6
3	<a href="#">AU3023</a>	Statistics	6	3	<a href="#">MG2132</a>	Quality Management - CRM	6				
4	<a href="#">MG2131</a>	Managing Communications	6	4	<a href="#">PM2082</a>	Managing Change and Conflict	6				

Year 3			60	Credits	Year 3			Credits	Year 3		Credits
Semester 01			24	Semester 02			24	Semester 03			12
1	<a href="#">PT3011</a>	Plan Within Supply Chains	6	1	<a href="#">PT3051</a>	Source Within Supply Chains	6	1	<a href="#">PTX182</a>	Supply Chain Project 2	12
2	<a href="#">PT3021</a>	Make Within Supply Chains	6	2	<a href="#">PT3061</a>	Deliver & Return within Supply Chains	6				
3	<a href="#">PM3081</a>	Organisational Behaviour 1	6	3	<a href="#">MG3652</a>	Strategic Management	6				
4	<a href="#">EC3601</a>	Irish Economic Environment	6	4	<a href="#">MGX181</a>	Supply Chain Risk Assessment & Forecasting	6				

Year 4			63	Credits	Year 4			Credits	Year 4		Credits
Semester 01			27	Semester 02			24	Semester 03			12
1	<a href="#">IEX183</a>	Advanced Models & Frameworks for SCM	6	1	<a href="#">PT3041</a>	Lean Sigma Improvement Methodologies	6	1	<a href="#">PTX184</a>	Supply Chain Project 3	12
2	<a href="#">MG4917</a>	Supply Chain & Customer Relationship Management	9	2	<a href="#">EC4908</a>	Issues in the Global Economic Environment	9				
3	<a href="#">PT3071</a>	Information Systems & Decision Support	6	3	<a href="#">AC4906</a>	Corporate Social Responsibility	9				
4	<a href="#">PT4025</a>	Simulation Modelling & Analysis	6								

## **Structure**

The terminal award on this programme is a Bachelor of Science (Honours) in Supply Chain Management NQF Level 8.

The BSc programme will allow entry into year 2, 3 or 4 of the programme onto the BSc route provided applicants meet the entry criteria specified.

The programme is designed as a continuous professional development programme and will give exempted credits for the BSc route into the year of study to successful applicants who meet the specified entry requirements and can demonstrate that they have attained the learning outcomes of the exempted years.

There will be an exit point at the end of year 2 and year 3 for those on the BSc route who successfully complete the years study and are eligible to progress but who do not wish to do so.

## **Entry Requirements**

In addition to the Year specific requirements the following are required:

- Submission of a prior learning and prior experiential learning portfolio, to document prior learning and work experience in general and specifically around the field of Supply Chain management related studies. This portfolio is to demonstrate the attainment of the learning outcomes of the previous years of the programme from which the applicant is seeking exemptions.

and

- If deemed necessary, completion of PT4900 skills portfolio modules and/or an interview.

### **Year 2 Entry**

NQF level 7 qualification 60ECTS in any discipline. Exempted credits will be given for year 1. e.g. Participation on first year of a degree programme,

### **Year 3 Entry**

NQF level 7 2.2H award 120ECTS in a cognate business, science or technical discipline.

### **Year 4 Entry**

NQF level 7 2.2H award 180ECTS in in a cognate business, science or technical discipline.

UL's PRL policy will be applied to this course. The course board may at its discretion accept a level 6 qualification with stronger evidence of prior learning and experience. Entry is decided on a case by case basis.

## **Exit Awards**

### **Year 2 Exit**

NQF level 7 Certificate in Supply Chain Management 120ECTS for those wishing the exit at the end of Yr 2

### **Year 3 Exit**

NQF level 7 Diploma in Supply Chain Management 180ECTS for those wishing the exit at the end of Yr 3

### **Year 4 Exit**

NQF level 8 BSc (Honours) in Supply Chain Management 240ECTS.

## Module Outlines

### Module Code - Title:

AC4906 - CORPORATE SOCIAL RESPONSIBILITY

### Rationale:

The central objective of this module is to introduce Corporate Social Responsibility (CSR) to students. In doing so it is intended to provide a framework for examining and evaluating the actions and performance of organisations in the context of sustainable and socially responsible activity. While CSR is a relatively new term its roots can be traced to a variety of philosophical, ethical and environmental discourses. Accordingly there are a number of different approaches to CSR and definitions as to what exactly CSR comprises.

### Syllabus:

Introduction to CSR; defining CSR; the social, political and economic context; stake holders Vs. shareholders; issues concerning sustainability; ethics; CSR corporate and managerial behaviour; performance evaluation and performance reporting; globalisation and CSR; stakeholder relationship management; business planning.

### Learning Outcomes:

After completing this module, students should be able to:

- Value and explain the relationship between CSR, corporate and managerial behaviour.
- Describe and critique the various components of socially responsible behaviour.
- Prescribe possible actions of an organisation to its environment.
- Apply critical and interpretative skills to an evaluation of corporate activity.
- Embrace and appreciate the often interdependent and complex ethical, managerial, organisational and economic issues involved with socially responsible business management

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### Module Code - Title:

AU3023 - STATISTICS

### Rationale:

This module provides a basic introduction to the ideas of probability and statistics, and how probability can be applied in a number of contexts including statistical inference.

### Syllabus:

Introduction to Statistics, Descriptive Statistics: Graphical Methods, Numerical Methods, Bivariate Data, Probability, Discrete Probability Distributions, Continuous Probability Distributions, Sampling Distributions, Confidence Intervals for a Single Population, Hypothesis Testing for a Single Population, Confidence Intervals for Two Populations, Hypothesis Testing for Two Populations, Enumerative Data Analysis, Correlation, Linear Regression.

### Learning Outcomes:

After completing this module, students should be able to:

- Demonstrate a broad foundation in statistics and to build on this foundation so that you have the necessary confidence and statistical skills to visualise and interpret data.
- Demonstrate a working knowledge of the statistical package Minitab; providing examples of using Minitab and you will be expected to integrate the knowledge and skills learned in the various examples.

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**Module Code - Title:**

AU3014 - OPERATIONS ENGINEERING

**Rationale:**

Operations engineering is the know-how that factories/organisations use to produce goods and services. It is the process know-how that has been learned from past experience and innovation from engineering disciplines. The strategic importance of operations engineering lies in its awareness of the objective of each operation in the transformation process, and the cost of quality. The student will get acquainted with the industrial and service operations within this framework.

**Syllabus:**

Introduction to Operations Engineering,  
Operations Strategy, Product and Service Design, Process and Technology, Facility Layout, Human Resources, Supply Chain Management, Forecasting (Industrial Case Study) , Capacity Planning and Aggregate Production Planning, Inventory Management (Industrial Case Study) , Enterprise Resource Planning, Scheduling, Just in Time & Lean Production, Six Sigma, Project Planning and Control, Quality Planning and Control

**Learning Outcomes:**

After completing this module, students should be able to:

- Describe how operations are designed and managed.
- Describe the role and challenges facing an operations manager in a dynamic business environment
- Describe the importance of the people, process and technology relationship in operations
- Describe the impact and implications of operations oriented problems
- Generate and prioritise alternative solutions for real life operations problems
- Apply operations tools to industrial problems
- Discuss information technology solutions suitable to the field

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**Module Code - Title:**

EC3601 - IRISH ECONOMIC ENVIRONMENT

**Rationale:**

This course deals with important macro and micro economic issues and problems facing the Irish economy in the context of its status as one of the most globally integrated economies. The course covers characteristics of the economy such as demographic and labour market characteristics and distributional aspects. It also examines the principal sectors of the economy including agriculture, services and manufacturing. It emphasises the challenges posed by increased integration in the international economy including questions of immigration and environmental sustainability.

**Syllabus:**

The course begins with a review of the history and characteristics of the Irish economy in terms of its transition to relatively small closed economy to a regional economy with high levels of integration with the global economy. It covers recent demographic and labour market trends as well as distributional issues including poverty and income distribution. It proceeds to cover the policy and performance of the agriculture, services and manufacturing sectors. This is followed by the conduct of supply side policies such as competition and regulation policy. The course also covers the issues arising from the increased integration of emerging economies such as China as well as developing economies and the challenges posed by their development in terms of different aspects of sustainability including environment, trade and labour market issues.

**Learning Outcomes:**

After completing this module, students should be able to:

- Describe the factors that have led to Irelands development from relatively closed and underdeveloped economy to modern regional economy;
- Describe recent demographic and labour market trends and critically evaluate the implications of

- these trends;
- Describe recent trends in the distribution of economic resources in Ireland and critically evaluate the policy implications of these trends;
- Describe and critically evaluate the public policy and performance of the key Irish economic sectors,
- Describe and critically evaluate the conduct of competition regulation policy in Ireland in the context of relevant international developments;
- Describe and critically evaluate the challenges posed by their development in terms of different aspects of sustainability including environment, trade and labour market issues.

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**Module Code - Title:**

EC4908 - ISSUES IN THE GLOBAL ECONOMICS ENVIRONMENT

**Rationale:**

To help learners understand in more detail the complex real world economy. This module will be divided into two sections: understanding the benefits and limitations of economic analysis as a means of studying business behaviour, and the effects of the real world economy on business decision making.

**Syllabus:**

Conceptual observations about entrepreneurship from an economic perspective, Underlying microeconomic theory small firm behaviour, macro / international economic environment, Business formation growth and death, Networking innovation and technology policy. Corporate governance, differences between small and large firms, industrial enterprise policy, rationale for government interventions, economic evaluation of small firm public policy interventions.

Credit money and banking, structure of the Irish financial system. European central bank. Balance of payments and exchange rates. Fixed exchange rate systems. Inflation and interest rates in open economies, Irish experience in the EMU. Model of the open economy, examination of the Irish economy in the long-run.

**Learning Outcomes:**

After completing this module, students should be able to:

- Explain key economic concepts and issues that impact on both small and large firm behaviour.
- Justify the rationale for public policy interventions in industrial enterprise.
- Describe the structure of the Irish financial system and its linkages to European and global institutions.
- Explain the open economy model and the impact of global economic changes.

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**Module Code - Title:**

MG2101 - MANAGEMENT AND LEADERSHIP

**Rationale:**

This module is designed to provide an introduction to the role of the front line manager, and to develop understanding of the theories, concepts and techniques of self-management. Also to heighten awareness of personal effectiveness and develop skills in personal development planning and action planning. Provide insight and gain knowledge in the most salient theories of management and leadership and develop an understanding of the core competencies and skills associated with effective management and leadership.

**Syllabus:**

Syllabus includes - Role of front line manager, Managing Time: establishing objectives, setting priorities and scheduling time, Identification of core management skills, Authority, Responsibility and

Accountability, Leadership theories and the Concept of Managerial Styles, Essential Skills of effective Leadership, Distinguishing Leadership from Management also the Formal and Informal aspects of Organisations.

**Learning Outcomes:**

After completing this module, students should be able to:

- Develop deeper level of insight and understanding into personal management strengths and development areas. Distinguish and understand the relationship between Management and Leadership. Develop and synthesis key theories of both Leadership and Management.
- Acknowledge the importance of Personal development planning and associated Action Plans. Embrace the importance of Time Management and Prioritising. Integrate Actions Plans within career and workplace.

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**Module Code - Title:**

MG2131 - MANAGING COMMUNICATIONS

**Rationale:**

This module is designed to introduce the concept of the communication process and develop skills in questioning, active listening, making effective presentations also writing & utilising information technology as an aid to effective communication. Develop detailed understanding of both verbal and non-verbal communication also the horizontal and vertical linkages of communication within the organisation. Understand the implications of current legislation regarding the communication process.

**Syllabus:**

Syllabus includes - Communication barriers, Personal and Team based communication, Development of Questioning, Active Listening and Assertiveness skills, Dynamics, Construction & Delivery of Effective communication, Sources & Construction of Written communication and Information Technology and communication.

**Learning Outcomes:**

After completing this module, students should be able to:

- Understand the regulatory environment influencing organisational communication. Develop detailed understanding of personal, team and organisational communication processes. Understand the nature and significance of both horizontal and vertical communication linkages.
- Prepare, practise and conduct an effective presentation. Embrace key active listening skills and demonstrate personal communication techniques.

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**Module Code - Title:**

MG2132 - QUALITY MANAGEMENT

**Rationale:**

This module is designed to introduce front line managers to the theory and practice of quality management also to develop the skills to apply the tasks and techniques to the continuous improvement initiatives in the workplace. Provide insight and gain understanding to the linkage of quality management to main stream management theories.

**Syllabus:**

Syllabus includes - Defining quality management, Links to mainstream management theory, Contributions of quality management theories and concepts, Methods, tools and techniques of quality management, hard and soft approaches to quality management, TQM versus business process engineering, TQM and the management of change.

**Learning Outcomes:**

After completing this module, students should be able to:

- Apprise and apply Total Quality Management techniques. Develop awareness of the relationship between traditional management and TQM. Appraise the implementation of TQM and the concept of continuous improvement re-engineering. Debate the basic concepts of quality assurance and purchasing role in quality assurance.
- Acknowledge the basic issues related to the change in management thinking centred about quality management. Understanding of quality management practices and total quality planning process. Assess the financial implication of quality control.

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**Module Code - Title:**

MG3652 - STRATEGIC MANAGEMENT

**Rationale:**

This module helps students understand the process of strategic management and how it interprets external environmental factors and impacts on the internal dynamics of the organisation. Major objectives of the module are to help students:

Understand the key steps in the process of strategic management

Apply a number of strategic management techniques to the analysis of the external business environment

Differentiate between mission statements, vision, corporate strategy and business objectives

Identify the range of competitive strategies available to an organisation.

**Syllabus:**

Strategic management process; strategic management and strategic change; vision; mission and objectives; analysing the business environment; PEST and SWOT analysis; forecasting the environment; scenario planning; strategy creation; changing strategies; strategic thinking and strategic planning.

**Learning Outcomes:**

After completing this module, students should be able to:

- Identify the different stages in the strategic management process and the ways in which strategic planning can benefit the effectiveness of the organisation
- Explain the terms vision, mission and objectives
- Identify how the business environment can change and its likely impact on the organisation
- Recognise why competitive strategies need to change in a dynamic environment
- Complete a PEST and SWOT analysis for their own organisation
- Complete a scenario planning exercise
- Identify the various stakeholders of the organisation and assess their impact on objectives

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**Module Code - Title:**

MG4917 - SUPPLY CHAIN MANAGEMENT AND CUSTOMER RELATIONSHIP MANAGEMENT

**Rationale:**

This course is designed to understand how logistical decisions impact the performance of the firm as well as the entire supply chain. The key will be to understand the link between supply chain structures and logistical capabilities in a firm - or the entire supply chain. It deals with the integration of information and material flows across multiple organizations in the supply chain. By managing functional areas of logistics such as customer service, transportation and order processing as an integrated unit, a firm can gain a strategic advantage in logistics competency and be a strong contributor to successful supply chain management. Four major perspectives of CRM (Strategic, Operational, Collaborative and Analytical).and the five generic models of CRM with a specific focus on the Value Chain Model are explored.

**Syllabus:**

Introduce and define Logistics and Supply Chain Management. Demonstrate the relationship between Marketing and Logistics. Identify the components of Logistics Management in terms of inputs, outputs and activities. Demonstrate the role of logistics in Supply Chain Management. Describe the factors that influence supply chain network structure, business processes, and SC management components. Introduce customer service and show the difference between customer service and customer satisfaction. Identify the key performance measures used for customer service. Demonstrate how the order processing system can form the basis of a logistics information system at the strategic and tactical levels. Show how advanced information technologies support logistics and the supply chain. Introduce basic inventory management concepts and show how they are applied. Show how production policies influence inventory levels. Describe various types of non-automated and automated materials handling systems. Examine the role of warehousing in a just-in-time (JIT) environment. Investigate the four major perspectives of CRM. Review the five generic models of CRM (IDIC, QCI, Value Chain, Payne's Five Process Model, Gartner's Competency Model)

**Learning Outcomes:**

After completing this module, students should be able to:

- Develop an understanding of key drivers of supply chain performance and their inter-relationships with strategy and other functions of the company such as marketing, manufacturing and accounting.
- Describe the scope and function of business logistics, and its terms and principles. Develop an understanding of the potential contribution of logistics to the formation of business strategy.
- Apply concept of integrated supply chain management to the business.
- Define and develop a working knowledge of customer service and its contribution as a value added service.
- Estimate the cost and service trade-offs in the supply chain.
- Demonstrate the link between supply chain performance and financial performance.
- Assess the implementation of CRM and the concept of continuous improvement re-engineering.
- Acknowledge the importance of Logistics and Supply chain management in a global setting and; the challenges for managing the different elements that make up the supply chain.
- Embrace the underlying structures that are required in Logistics and Supply Chain Management.

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**Module Code - Title:**

PM2082 - MANAGING CHANGE AND CONFLICT

**Rationale:**

This module is designed to develop the knowledge and skills of front line managers to successfully manage change within their organisations. Explore the nature of organisational change and the internal and external sources of change. Develop understanding of the key steps involved in successful change management including the management of human and social factors.

**Syllabus:**

Syllabus includes - Environmental triggers for change, Impact of change at the organisational, team and individual levels, Resistance to change and the strategies to overcome such resistance, Organisational culture and climate, Major change strategies and the HRM implications.

**Learning Outcomes:**

After completing this module, students should be able to:

- Identify opportunities for change using SWOT analysis. Ability to apply STEEP analysis to examine changes in the external environment.
- Apply Force Field Analysis in assessing support for change. Compare the central individual and organisational sources of resistance to change.
- Comprehend the difference between organisational culture and climate.
- Develop understanding of the main triggers / sources of change.

- Demonstrate the capacity to value and acknowledge the context of change management at individual, team and organisational levels.

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**Module Code - Title:**

PM3081 - ORGANISATIONAL BEHAVIOUR 1

**Rationale:**

To provide an understanding of the influence of motivation, perception, attitudes and group behaviour upon job performance and job satisfaction

To comprehend how attitudes are formed and the interaction between attitudes and behaviour

To recognise the impact of perception upon managerial decision making

To appreciate how group norms affect behaviour at work

To differentiate groups and teams

To examine the links between motivation, job satisfaction and performance

To explain the relationship between job design and job satisfaction and explore ways of motivating employees via job rotation, job enlargement and job enrichment.

**Syllabus:**

Perception: role stereotyping; Motivation: theories of motivation, relationship between motivation, performance and reward; Job satisfaction: job design, job rotation, job enlargement, job enrichment; Attitudes: formation of attitudes, attitudes and behaviour; Group behaviour: group norms, differences between groups and teams, Belbin Team Type Roles

**Learning Outcomes:**

After completing this module, students should be able to:

- Recognise how perception and attitudes impact upon managerial judgements and decision making across a wide range of managerial activities from selection, promotion and development to delegation, group behaviour and leadership style.
- Comprehend and integrate a range of motivation theories and appreciate that each individual requires different motivational challenges in the workplace.
- Appreciate the impact of group norms upon individual behaviour and how managers may influence group norms.
- Explain the relationship between motivation, job satisfaction and performance
- Have greater self-awareness of how own attitudes and perceptions impact upon leadership style and decision-making
- Apply job satisfaction questionnaires to assess areas for improvement in the workplace.
- Use Belbin Team Types questionnaire to identify the respective strengths and develop rest of their team
- Apply motivational theories to assist in the design of personal development plan for team members.
- Recognise the wide range of different motivates and attitudes amongst team members; Discriminate between different team type profiles held by team members.

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**Module Code - Title:**

PT3001 - INTRODUCTION TO SUPPLY CHAIN MANAGEMENT

**Rationale:**

Position supply-chain management in the context of its roots in operations management, and its relationship with other functional management

**Syllabus:**

CONTEXT: Operations and Supply Chain Strategy, integration and the SCOR framework structure and possible approach to implementation.

SOURCE: Forecasting, New Product Development, Project Management,  
MAKE: Capacity Planning, Process Design and Analysis, Quality Management  
DELIVER/RETURN: Independent Demand Inventory, Dependent Demand Inventory, Optimization/  
Simulation Modelling and logistics.  
PLAN: Quality Improvement Methods and Lean Enterprise, Technology and Integrated Supply  
Management, Global Supply Chain and Service Integration.

**Learning Outcomes:**

After completing this module, students should be able to:

- Explain some key concepts underpinning decision-making in supply-chain management
- Appreciate the central role of planning in integrating source, make, deliver and return activities, and in accounting for work done and feedback into revaluation and review towards continuous improvement.
- Understand need for an integrative frame of reference in structuring supply-chain activities in terms of transactional activities and outcome measurement; in particular to understand the main high-level elements of the SCOR model with some ideas on how to implement it in practice.
- To understand the system nature of supply-chain at a global level.
- To link the elements in a systematic fashion to the practical context of supply-chain work, with reference to the spirit of the SCOR framework.

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**Module Code - Title:**

PT3011 - PLAN WITHIN SUPPLY CHAINS

**Rationale:**

Develop the student's management techniques for planning and controlling the flow of materials, information & value in a supply chain.

Describe current planning systems and how they are used for planning the supply chain.

**Syllabus:**

Demand and Order Management: Role of demand management in supply chain planning, Forecasting, Fundamentals of sales and operational planning.

Capacity Planning and Utilization: Role of capacity planning, Capacity planning techniques, Scheduling capacity and materials.

Production and Inventory Management: Master Production Scheduling (MPS) techniques, Bill of material structuring for MPS, Production Activity Control (PAC), Inventory management concepts, Inventory related costs, Multi-item management.

Distribution Requirements Planning: Distribution Requirements Planning (DRP) in the supply chain, Available to Promise, Allocated Available to Promise.

Planning in Source, Deliver and Product Returns: Source requirements, Deliver requirements, Product return requirements, Reverse logistics.

Planning Systems: Enterprise Resource Planning (ERP), Performance measures for system effectiveness, Material Requirements Planning (MRP) techniques, Advanced Planning and Optimisation tools and techniques

**Learning Outcomes:**

After completing this module, students should be able to:

- Distinguish and understand the requirements of the different aspects of planning in a supply chain context (e.g. Demand, capacity, production, supply and return)
- Demonstrate knowledge of the systems used in supply chain planning and understanding of the principles on which they operate.
- Explain planning principles through the application of analysis techniques to planning problems

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**Module Code - Title:**

PT3021 - MAKE WITHIN SUPPLY CHAINS

**Rationale:**

Outline how production systems have developed historically and identify how they are being currently impacted by recent developments such as Mass Customisation, and Just-in-Time.

**Syllabus:**

Introduction To Operations Engineering, Operations Strategy, Quality Planning And Control, Product And Service Design, Process Technology, Facility Layout And Line Balancing, Human Resources, Key Performance Indicators In Semiconductor Manufacturing, X-Factor And Operations Curves, Forecasting, Capacity Planning And Aggregate Production Planning, Inventory Management, Scheduling, Just In Time (JIT) And Lean Systems, Project Planning And Control, Enterprise Resource Planning (ERP)

**Learning Outcomes:**

After completing this module, students should be able to:

- Describe the steps involved in product development and service design.
- Explain the key performance indicators, x factor and operation curves in semiconductor manufacturing.
- Describe the layouts and characteristics of the basis manufacturing processes-product, process, fixed location and cellular.
- Demonstrate an understanding of project planning and control and enterprise resource planning (ERP).

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**Module Code - Title:**

PT3041 - SIGMA IMPROVEMENT METHODOLOGIES

**Rationale:**

Explain the concept of Six Sigma by knowing the definitions of quality and the principles on which quality management philosophies are based.

**Syllabus:**

Six Sigma Principles of Quality Management, Sigma Improvement Methodologies, Principles of Six Sigma, DMAIC Process, Define, Measurement, Analysis, Improve, Control, Concept and Design, Implementation

**Learning Outcomes:**

After completing this module, students should be able to:

- Explain how to use the Lean Sigma Improvement Methodologies in terms of lean supply chain for product and service functionality;
- Describe methods to introduce innovation into problem solving
- Describe methods to introduce flexibility to process improvement
- To encourage process owners to be change oriented
- To incorporate agility in to process design
- Explain how the correct application of the tools and techniques in Lean Sigma Improvement Methodologies can reduce variability and increase the speed of a process.
- Appreciate Sigma Improvement Methodologies.
- Appreciate how Sigma Improvement Methodologies meet the challenges of modern complex manufacturing systems (semiconductor manufacturing).
- Appreciate Sigma Improvement Methodologies can bring the voice of the customer (VoC) into the design of a product and service.

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**Module Code - Title:**

PT3051 - SOURCE WITHIN SUPPLY CHAINS

**Rationale:**

Explain the context, role and objectives of purchasing activity in supply chains.  
Explain the key concepts in supply-based development.

**Syllabus:**

Context and evolution of industrial purchasing, context, role and objectives of purchasing activity, purchasing process, integration, organisation, category and sourcing strategies, Supplier evaluation concepts and tools, supplier evaluation and selection, supply-base development, worldwide sourcing pitfalls and success factors, costing for purchasing, Economic costing towards appropriate decisions, negotiation, contract management, key recurrent constructs of contract structure purchasing law, principles of law in dealing with dynamic working relationships in supply-make-deliver/return, subject to temporal contractual relationships with suppliers/customers ethics in purchasing, procurement under government contracts, performance measurement and evaluation, current practices in measurement and presentation of performance of suppliers for purposes of purchasing supply chain and its integration with supplier development, emerging trends in supply-chain purchasing with respect to supply-base, production, delivery, and return policies..

**Learning Outcomes:**

After completing this module, students should be able to:

- Demonstrate a strong awareness of the principles and practices of purchasing in the context of a large-scale OEM organisation which is dynamically reconfiguring its supply-chain.
- Explain of how the principles and practices of purchasing are applied within their organisation
- Recognise improvement opportunities based on purchasing best practices and emergent trends.
- Support economic based purchasing decisions (e.g. the importance of costing analysis).
- Describe the current practices in measurement and presentation of performance of suppliers for purposes of purchasing supply chain and its integration with supplier development.
- Identify Key emergent trends in purchasing with respect to supply-base, production, delivery, and return policies.
- Acknowledge Strategic thinking in terms of categories of products/services, supply-chain development, and sourcing.

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**Module Code - Title:**

PT3061 - DELIVER AND RETURN WITHIN SUPPLY CHAINS

**Rationale:**

This module offers a broad framework and clear description of the basic functions and elements related to logistics and distribution. Relevance to practice is a primary focus throughout the material. Key aspects of supply chain philosophy are included along with costing, contractual and legislative concerns but with the primary focus on distribution and logistics including international logistics requirements. Logistics revolves around freight movement or flow of goods and storage of items between the point of origin and end users and is supported by information, energy people and other resources. More importantly logistics refers to the planned and systematic application of these functions with specific objectives usually based around low costs and high service and quality levels. This module will introduce logistics in a historical context, define its concepts, and track the main drivers in the area along with exploring the theories of logistics. It aims to give practical and holistic tools to the student to identify logistics functions, to plan, and maintain effective logistics networks.

**Syllabus:**

Logistics International Contracts, Customs, Regulations, Incoterms, Managing transaction risk, payments, exchange rate exposure, Regulation and Green Logistics Reverse logistics and product lifecycle management, return of goods at end of life, Logistics and the environment.

**Learning Outcomes:**

After completing this module, students should be able to:

- Understand logistics concepts and development and their place in the business/industrial environment
- Understand how products move to point of retail
- Comprehend logistics planning as a whole in the context of company strategic plans
- Be familiar with the fundamentals of warehouse management, including equipment, information and methodologies for effective inventory holding
- Understand modes of transport, integration of modes in logistics, cost considerations and transporting legislation
- Appreciate the contractual obligations involved in logistics and international logistics
- Be familiar with terminology and gain understanding of obligations. Understanding of concepts of payment and international trade
- Understand the process of transactions of money in logistics particularly international payment processes
- Understand the emergence of Reverse Logistics and its role in future manufacturing
- Understand the concepts of Product Lifecycle Management (PLM) and manufacturing under green legislation
- Appreciate logistics functions within the business, plan accordingly and manage relationships

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**Module Code - Title:**

PT3071 - INFORMATION SYSTEMS AND DECISION SUPPORT

**Rationale:**

At the end of the module, students will have an introduction to:

The role of information systems within supply chains

Basic Programming Concepts

Relational database management systems

The software development process

Software specification to support the software development process

**Syllabus:**

Role of Information Systems in Supply Chain, Descriptions of elements of integrated Supply Chain Information Infrastructure, Case studies to show the strategic importance of information systems in supply chain, Introduction to Programming, Introduction to a programming tool and IDE, Breakdown and demonstration of a sample program, Structure of a software program, Programming: Basic Programming Blocks, Introduction to basic blocks, variables, sub programs, Introduction to Programming Interface Concepts, Understanding of basic concepts in graphical user interface development, Introduction to Database Systems, Description of a database, Description of components of a database system, Introduce database models, Relational Database Model, Phases of database design, Introduce Entity-Relationship Model, Relational Database Concepts, Querying databases, Introduction to Access, Introduction to Software Development, Software Characteristics, Process of Software Development, Introduction to Software Specification Concepts, Describe the role of software specification, Overview of software specification methods, Introduction to a software specification method, Process of Software Development, Basic Concepts Unified Modelling Language (UML)

**Learning Outcomes:**

After completing this module, students should be able to:

- Discuss the role of information systems within supply chains
- Describe basic Programming Concepts, the software development process and the basic concepts of programming.
- Describe Relational database management systems
- Explain Software specification to support the software development process
- Distinguish the elements and understand the importance of supply chain information systems

- Understand the presentation tier and graphical user interfaces, underlying business logic and basic concepts of database systems
- Understand develop software specification documents and basic UML models

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**Module Code - Title:**

PT4025 - SIMULATION MODELLING AND ANALYSIS

**Rationale:**

To provide students with knowledge on discrete event simulation modeling and its application to manufacturing, logistic and services systems.

To provide students with modelling and software capabilities to apply simulation to manufacturing, logistic and services systems

**Syllabus:**

Introduction to simulation Overview of simulation modelling, introduction to the basic concepts of discrete event simulation. The simulation process steps involved in carrying out a simulation project. Comparison of discrete event simulation with continuous simulation and system dynamics. Computer simulation packages Overview of available computer packages, description of representative packages, computer implementation issues. Development of programming skills to apply simulation to manufacturing, logistic and services systems using a generic simulation package. Provide an overview of available simulation software. Statistical aspects of simulation Input analysis, random number generation, output analysis, experimental design. Queuing Models Provide comparison of simulation with stochastic mathematical models through the introduction of basic queuing models. Systems Design Using simulation students will carry out systems (manufacturing, logistic and services systems) design assignments.

**Learning Outcomes:**

After completing this module, students should be able to:

- Critique and be able to explain the role of simulation modeling in systems design and analysis.
- Apply the steps of a simulation project.
- Develop simulation models of basic manufacturing, logistics and service systems.
- Analyse statistically input data, output data analysis.
- Apply basic queuing theory and evaluate its advantages/disadvantages when compared to discrete event simulation.

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**Module Code - Title:**

IEX183 ADVANCED MODELS & FRAMEWORKS FOR SUPPLY CHAIN MANAGEMENT

**Rationale:**

To introduce students to a wide range of frameworks to inform systematic thinking on the alignment, design, implementation and operation supply chains to promote their agility, adaptability and growth.

To support the lean pursuit of key strategic performance dimensions delivery, quality, and economy in the context of a dynamic, uncertain and competitive operating environment.

To consider frameworks appropriate at micro, meso and macro levels of operation.

To promote a quantitative approach to supply chain operations analysis.

To include a strong human context in addressing diagnosis and design questions.

**Syllabus:**

Supply Chain Context: Positioning, competitive priorities and capabilities. Role of operations and associated decision areas. Comparison of services versus manufacturing, supply-chain structures, identification of supply-chains. Operations reference models, Supply-Chain Operations Reference Model SCOR, Design Chain DCOR, Customer Chain CCOR, Product Development PLCOR performance framework.

Sourcing, Product control, Quantity control, Quality control, Production economy, Information Systems, Human factors, Process Improvement,

### **Learning Outcomes:**

After completing this module, students should be able to:

- Describe the context for supply-chain design and discuss key consequences.
- Describe principles of production economy including costing and estimation of potential benefits from lost opportunities and failure of control, and discuss key consequences.
- Describe and discuss the implementation of major supply-chain con/re-configuration such as SCOR through the SCE project template.
- Apply a small number of the above areas to analysing particular supply-chain questions in greater detail.
- Establish a commitment to the value of operations analysis and systems thinking in thinking about supply-chain structure, process and performance outcomes.
- Value both technical and human dimensions in design, implementation and operation.
- Anticipate and respond to the need for change in supply-chain structure and processes and outcomes.
- Adopt a stance on the philosophy of continuous improvement.

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### **Module Code - Title:**

IEX169 INTRODUCTION TO MODELS AND FRAMEWORKS FOR SUPPLY CHAIN MANAGEMENT

### **Rationale:**

To introduce students to a wide range of frameworks to inform systematic thinking on the alignment, design, implementation and operation supply chains to promote their agility, adaptability and growth.

To support the lean pursuit of key strategic performance dimensions delivery, quality, and economy in the context of a dynamic, uncertain and competitive operating environment.

To consider frameworks appropriate at macro levels of operation.

To promote a quantitative approach to supply chain operations analysis.

### **Syllabus:**

Supply Chain Context

Positioning, competitive priorities and capabilities. Role of operations and associated decision areas.

Comparison of supply-chain structures, identification of supply-chains. Supply-Chain Operations Reference Model SCOR.

### **Learning Outcomes:**

After completing this module, students should be able to:

- Describe the context for supply-chain design and discuss key consequences.
- Describe the nature of supply chain operations in the context of globalisation
- To establish a commitment to the value of operations analysis and systems thinking in thinking about supply-chain structure, process and performance outcomes.
- To value both technical and human dimensions in design, implementation and operation.
- To anticipate and respond to the need for change in supply-chain structure and processes and outcomes.
- To describe and discuss the implementation of major supply-chain con/re-configuration such as SCOR through the SCE project template.

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**Module Code - Title:**

IEX168 SKILLS PORTFOLIO (SUPPLY CHAIN MANAGEMENT)

**Rationale:**

The central objective of this module is to promote both the understanding and development of a range of skills appropriate to the performance of supply chain management related roles in contemporary organisations. The module aims to inform and facilitate the development of specific skills, which will be utilised in the workplace, through the application of theory encountered throughout the programme. This module also aims to provide an opportunity for students to reflect on the development these key skills in an open and supportive learning environment.

The module supports the work of students in translating their study of their own practice into a portfolio of work reflecting their development and achievements in the programme

**Syllabus:**

Use a combination of general and specialist knowledge and understanding to optimise the application of existing and emerging technology.

Apply appropriate theoretical and practical methods to the analysis and solution of supply chain management problems

role of professional networks and associations in developing and maintaining a Supply Chain body of knowledge and best practice.

Use effective communication and interpersonal skills

Personal Portfolio Development, Constructing a portfolio of previous experiences and how they relate to the development of the role of a supply chain professional.

**Learning Outcomes:**

After completing this module, students should be able to:

- Demonstrate a comprehension of the interrelationships and responsibilities of a specific role within a supply chain organisation and the impact of the performance of that role within the wider supply chain.
- Demonstrate a comprehension of the role of reflective practice in continuous professional development.
- Analyse the importance of teamwork and the role of leadership in the completion of complex tasks
- Demonstrate their competence in making a presentation
- Demonstrate their ability to work in teams through practical activities.
- Demonstrate their written communication ability through reflective logs.
- Demonstrate their ability to critically analyse their own learning requirements through reflective logs.
- Demonstrate their ability to analyse supply chain scenarios from an ethical viewpoint and develop creative middle ways in cases of conflicting values.

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**Module Code - Title:**

IEX167 SUPPLY CHAIN CASE STUDY 1

**Rationale:**

This module is designed to integrate learning across a range of subjects within the BSc in Supply Chain Management. To develop analytical skills in identifying the key management problems depicted within the case study. Apply knowledge and techniques gained across programme modules by solving the key supply chain management problem(s) identified.

**Syllabus:**

Syllabus includes - Distribution of case material and briefing session / discussion, Full day in depth case study on live management problem, Analysis of case and the application of strategies including - team building, problem solving, communication and analytical ability, presentation of findings to programme team, practitioners and peers.

**Learning Outcomes:**

After completing this module, students should be able to:

- Engage in reflective practice on core case issues. Analyse core case issue(s) against established management theory and practice. Development of effective and innovative solutions. Analysis key issue(s) and the development of suitable action plan. Demonstrate skills associated with team working and communication.
- Participate in group discussion about the analysis and de-brief of case.
- Acknowledge the challenges in translating theory to practice with particular emphasis on improved enterprise performance.
- Value the steps involved in the analytical and decision making processes necessary in identifying key success factors, addressing dynamic enterprise environments and applying theoretical concepts and modules.

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**Module Code - Title:**

MGX181 SUPPLY CHAIN RISK ASSESSEMNT & FORECASTING

**Rationale:**

Supply chain and manufacturing methodologies such as lean, Just-in-time and outsourced supplier networks have provided major benefit in the value chain but are causing serious concerns too. Organisations are experiencing rapid supply chain expansion with a decentralised supplier base. Although the expanded supplier based supply chain has helped organisations in gaining major cost advantage and market share, it has resulted in a more unstable supply chain. This module aims to provide the supply chain manager with the competencies to cope in this type of environment as follows:

**Syllabus:**

Supply Chain & Process Mapping, Geographic Risk Mapping & Country Risk Exposure, Scenario Planning, Risk-Monitoring Dashboard, Root Cause Analysis, International Supply Chains, Forces toward Globalization, The efficient supply chain and the risky supply chain, Anatomy of a supply chain disruption – Thailand floods, Japanese tsunami, Volcanic Ash Cloud, Supply Chain Risk quantification and business continuity planning, Manufacturing example, Healthcare example, Business continuity planning, Best practices in supply chain risks management, What is Supply Chain Risk Management? Evolution of Supplier Development, Review of Research, Publication and Experience in Supply Risk. Key elements of supply chain disruption management. Disruption, Discovery and Recovery. Redundancy, Supply Risk Model, Supply Chain Risk Perspectives, Structuring the Relationships of Supply Risk, Supply Risk Management Road Map

**Learning Outcomes:**

After completing this module, students should be able to:

- Appreciate the nature and importance of the supply chain within organisations
- Comprehend the key theories associated with supply chain management within modern organisations and integrate the basic steps of a risk management strategy
- Develop and implement a broad strategy for introducing a risk management strategy with in the supply chain
- Analyse supply chain risk management in organisations and its impact upon strategies within an organisation
- Critically evaluate key models and theories relating to the supply chain risk management.
- Embrace the supply chain risk management process and synthesise the values of risk within the organisation.

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**Module Code - Title:**

PTX182 SUPPLY CHAIN PROJECT 2

**Rationale:**

Integrate the different aspects of the taught stream and apply the acquired knowledge to a business standard, industry focused project.

Incorporate all module elements on the stream to demonstrate a well rounded comprehension of tools, techniques and methodologies investigated.

**Syllabus:**

[Project Management] Students undertaking of this module must implement a project plan outlining various phases of the project. Estimation of goals and task scheduling must be analysed, identified and prioritised. The project plan must be revisited throughout all stages of the lifecycle.

[Independent Research] Students must demonstrate an ability to research and investigate aspects of the project independently. A proven aptitude in coordination of, and active involvement in, information gathering, analysis and formal presentation of findings must be exhibited

[Knowledge Implementation] Implementation of the project must incorporate all modules associated within the project stream. In this manner students are guaranteed to be equipped with the essential tools to acquire further knowledge and insight.

[Documentation Proficiency] As part of the module criteria a report must be completed to support the project. This should include the initial scope, methodologies applied and tools and techniques employed, in addition to the motivations for the project

**Learning Outcomes:**

After completing this module, students should be able to:

- Construct a project plan outlining a schedule for task completion for each stage of the project lifecycle.
- Analyse and identify essential fundamental objectives and requirements relevant to the specific project.
- Employ and exercise judgement and problem-solving techniques.
- Communicate results and findings effectively both orally and in written form.
- Prioritise objectives within technical, time and knowledge constraints.
- Research, analyse, implement and document all stages of the project lifecycle resulting in a substantial overall project.
- Critically evaluate the overall project, proposing recommendations for future development and improvement..
- Describe an appreciation for the complexity and interrelationships of the processes involved in supply chain management.
- Develop a sense of personal responsibility for the outcomes of a project and encourage self-motivation

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**Module Code - Title:**

PTX184 SUPPLY CHAIN PROJECT 3

**Rationale:**

Integrate the different aspects of the taught stream and apply the acquired knowledge to a business standard, industry focused project.

Incorporate all module elements on the stream to demonstrate a well rounded comprehension of tools, techniques and methodologies investigated.

**Syllabus:**

[Project Management] Students undertaking of this module must implement a project plan outlining various phases of the project. Estimation of goals and task scheduling must be analysed, identified and prioritised. The project plan must be revisited throughout all stages of the lifecycle.

[Independent Research] Students must demonstrate an ability to research and investigate aspects of

the project independently. A proven aptitude in coordination of, and active involvement in, information gathering, analysis and formal presentation of findings must be exhibited

[Knowledge Implementation] Implementation of the project must incorporate all modules associated within the project stream. In this manner students are guaranteed to be equipped with the essential tools to acquire further knowledge and insight.

[Documentation Proficiency] As part of the module criteria a report must be completed to support the project. This should include the initial scope, methodologies applied and tools and techniques employed, in addition to the motivations for the project

### **Learning Outcomes:**

After completing this module, students should be able to:

- Construct a project plan outlining a schedule for task completion for each stage of the project lifecycle.
- Analyse and identify essential fundamental objectives and requirements relevant to the specific project.
- Employ and exercise judgement and problem-solving techniques.
- Communicate results and findings effectively both orally and in written form.
- Prioritise objectives within technical, time and knowledge constraints.
- Research, analyse, implement and document all stages of the project lifecycle resulting in a substantial overall project.
- Critically evaluate the overall project, proposing recommendations for future development and improvement..
- Describe an appreciation for the complexity and interrelationships of the processes involved in supply chain management.
- Develop a sense of personal responsibility for the outcomes of a project and encourage self-motivation

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