# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Department Offices</td>
<td>3</td>
</tr>
<tr>
<td>Kemmy Business School</td>
<td>5</td>
</tr>
<tr>
<td>Faculty of Education and Health Sciences</td>
<td>9</td>
</tr>
<tr>
<td>Faculty of Engineering and Science</td>
<td>10</td>
</tr>
<tr>
<td>Faculty of Arts, Humanities and Social Sciences</td>
<td>18</td>
</tr>
</tbody>
</table>
INTRODUCTION

MODULES

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 faculties and departments. Acceptance on these modules is subject to academic prerequisites, timetabling constraints and ceilings on enrolments. The module descriptions that follow present an outline of the salient topics covered in each module.

Normal course load is 5 modules per semester.

MODULE CODES

The first two letters of the code indicate the subject area to which the module belongs. The FINAL numerical digit of the code corresponds to the semester of study in which the module is normally taken by Irish students i.e. year one modules end in 1 (Fall semester) and 2 (Spring semester), year two modules end in 3 (Fall semester) and 4 (Spring semester) and so on until year four. These codes should be used as a guide to the level of each course.

The three digit codes found at the right of a module title represents the number of corresponding Lecture, Tutorial and Laboratory hours (in this order).

KEY

* Prerequisite standard is necessary for entry into these modules
+ A minimum number of students are necessary before these modules are offered

The contents of this booklet are for information purposes only and should not be viewed as the basis of a contract between student and the University. No guarantee is given that modules may not be altered, cancelled or otherwise amended at any time.
SPRING SEMESTER MODULES
Kemmy Business School - Spring

AC4002 Managerial Accounting (Spring/1)
4 hours per week; 13 weeks/8th semester; 26L/13T/13L; ECTS credits:6

The module introduces students to the nature, basic techniques, language and principles of modern cost and management accounting. The role of the management accountant in the management process is considered in the context of a dynamic business environment. In particular, the use of accounting information in the internal decision making process of an organisation as well as recent developments in management accounting.

AC4004 Accounting & Auditing Frameworks (Spring/2)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:6

This module develops students understanding of the various historical, governance, regulatory and political contexts within which accounting operates. It is intended to give them an understanding of the broader considerations that impinge upon accounting and auditing policy and practice. It also extends students understanding of the broader frameworks within which accounting operates. Finally it addresses similar issues relating to auditing. Prerequisite AC4001.

AC4018 Corporate Transparency and Business Ethics
Rationale And Purpose Of The Module:
1. Understand the control mechanisms of governance and financial transparency that infer the credibility of financial reporting.
3. Explore the elements of a professional judgement as an approach to making ethical decisions in business.
4. Understand that corporate compliance is fundamental to corporate social responsibility.

Syllabus:

AC4024 Financial Accounting and Reporting
Rationale And Purpose Of The Module:
This module is an updated version of AC4014 Intermediate Accounting 1, intended to replace AC4014. The aim of this module is to develop a student’s 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 critically evaluate selected accounting standards.

Syllabus:
The module will consider the theory and practice of selected accounting standards and issues. Focus will be on the preparation and reporting of information 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 ought to be or might be. The module will cover the International Financial Reporting Standards.

AC4214 Accounting for Financial Decision Making (Spring/2)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:6

This module introduces the non-business student to the fundamental concepts and practices of management accounting and finance. Management accounting provides information for product/service costing and profit determination in addition to information for planning, control and decision-making. Finance is concerned with the ways in which funds for a business are raised and invested. The topics covered include the relationship between financial and management accounting, costing, budgeting, short-term decision making, strategic management accounting, sources of finance, investment appraisal and management of working capital. This module is designed to be a prerequisite for the module AC4417 Management Accounting 1.

AC4417 Management Accounting 2 (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:6

Information for planning and control; budgeting and budgetary control; standard costing and variance analysis; behavioural aspects of accounting control systems; management accounting systems and advanced manufacturing strategies/techniques; decentralisation and performance measurement; transfer pricing; accounting control systems; past, current and future developments in management accounting.

EC4006 Intermediate Macroeconomics (Spring/3)
3 hours per week; 13 weeks/7th/8th Semester; 26L/13T; ECTS credits:6

The labour market and the extended Keynesian, Classical model; The Phillips curve and the inflation-unemployment trade-off; Purchasing power parity; Covered and uncovered interest rate parity theory; Open economy monetary model; Economic adjustment given the constraints imposed by EMU membership; The Design of the European Central Bank (ECB); The ECB’s monetary policy; The ECB and interest rate policy; The ECB and exchange rate policy; The economic performance of the Irish economy in the long-run.

EC4014 International Economics (Spring/2)
3 hours per week; 13 weeks/7th/8th Semester; 26L/13T; ECTS credits:6

The world economy: recent trends in trade and capital flows Traditional trade theories, The Mercantilists, Smith, Ricardo, Heckscher-Ohlin.
Modern trade theories, Monopolistic Competition and Imperfect Competition Trade policy; theory of Tariffs, Non-tariff barriers Trade policy; practice, The political economy of trade policy, Strategic trade policy International production factors: labour and capital mobility, the welfare effects of labour and capital mobility. Foreign Direct Investment and the Multinational Corporation, Theories explaining NCS and FDI Prerequisites EC4101, EC4102 and AC4004.

EC4018 Monetary Economics (Spring/4)
3 hours per week; 13 weeks/7th/8th Semester; 26L/13T; ECTS credits:6

The main topics included in the syllabus are: The Design of the European Central Bank; The ECB’s Monetary Policy; Controlling the Money Supply; Interest Rate Determination and Policy; The Growth and Stability Pact; Exchange Rate Determination and Policy; Open Economy; Monetary Model; Economic Adjustment in a Monetary Union; The Economic Performance of the ECB.

EC4024 Financial Economics (Spring/2)
3 hours per week; 13 weeks/4th Semester; 26L/13T; ECTS credits:6

This module is concerned with issues in global financial management. Among the topics examined are: the international monetary system, the foreign exchange market, measuring and managing foreign exchange exposure, financing the global firm, managing multinational operations and foreign investment decisions. Prerequisites EC4101, EC4102 and AC4004.
IN4008 Insurance Law and Claims (Spring/2)

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

IN4108 Contemporary Issues in the Global Economy

Syllabus: The students will gain a general understanding of international insurance and produce some in-depth analysis

G4037 Strategic Management (Spring/4)

Syllabus: The students will gain a general understanding of international insurance and produce some in-depth analysis

MG4037 Strategic Management (Spring/4)

4 hours per week; 13 weeks/8th semester; 26L/13T/13LAB; ECTS credits:6

Multi-perspective nature of strategy, strategic dimensions, strategy processes, theories of corporate competitive advantage – market positioning, resource-based and competitive dynamics. Strategic options and decision making; implementation issues; resource allocation, stakeholder management, strategic control and change management. Strategic cultures and paradigms, the role of the strategist. Corporate level strategic issues, multi-business structures and coherence.
MG4058 Management and Strategy Consulting (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6
This module introduces the business student to a strategic perspective on the role of knowledge, information and technology in organisations. It studies the role of technology and infrastructure in organisational transformation. It presents frameworks for the planning and implementation of information as a competitive resource. It provides an appreciation of the need to manage knowledge as an organisational resource and the infrastructural requirements to facilitate this. The above concepts will be reinforced and developed through the use of various software packages including web, intranet and knowledge portal software systems.

MK4002 Marketing (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits: 6
Nature of Marketing; Histories of Marketing; Marketing Concept; Marketing Mix; Marketing as Organisational Culture; Market Orientation; Barriers to Market Orientation; Marketing in different contexts. The Consumer; Consumer Sovereignty; Consumer Rights; The Consumer Movement; Marketing, Ethics and Social Responsibility; How Marketing Adds Value; Marketing’s Contribution.

MK4004 Consumption & Consumer Culture (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits: 6
The Circle of Consumption; The Meaning & Nature of Culture; Consumption Meanings; Consumption & Marketing Strategies; Identity & Consumption; Embodiment & Consumption; Motivation & Involvement; Experience, Learning & Knowledge; Approaches to Consumption; Purchase Behaviour; Gift Giving; Organisational Consumption; Family & Household Consumption; Interpersonal Influence; Innovation, Compulsive Consumption; Disposition.

MK4006 Marketing Management (Spring/3)
3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS credits: 6
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's 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.

MK4008 Applied Marketing 2 (Spring/4)
4 hours per week; 13 weeks/4th semester; 13L/13T/13L; ECTS credits: 6
Through applied project work students will be exposed to project planning and management, the effective use of communication channel(s), and sales and negotiation processes. The module also addresses stakeholder communication and cultivates in the delivery of presentation skills, both written and oral.

MK4014 Branding (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits: 6
The syllabus presents, in the first instance, a review of the history and origins of branding. This provides context for the subsequent discussion of the role and importance of branding. Next, students are introduced to the processes of segmentation, targeting and positioning. Brand building activities are reviewed with consideration given to strategic brand management, comparative analyses of brand image and brand concept, and an exploration of brands as assets. Finally, branding in discussed in terms of how it relates to different marketing contexts: service brands; industrial brands; retailer brands; international brands and corporate brands. Prerequisite MK4002.

MK4018 Interaction, Relationships and Networks
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

PM4008 Employment Relations Practice (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26L; ECTS credits: 6
Theoretical content: An introduction to the theory and practice of negotiation. The role of procedural regulation in discipline and grievance administration in the workplace. The management of employment relations legislation. Third party interventions in employment relations.

Practical skill comprising the following: Effective interaction with employees in the area of bullying and dignity and respect. Skills development in the following areas: interviewing skills, case presentation, active listening, team preparation and organisation. The preparation and submission of cases to third parties.

PM4014 Human Resource Development (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits: 6
The organisational process of developing people at work; rationale for HRD; individual and organisational learning; identifying learning needs; designing learning events; delivering effective learning events; evaluating outcomes; careers and career management; management development; life-long and continuous learning.

PM4022 Principles of Organisational Behaviour (Spring/2)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6
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. Learning & the Individual: Defining learning and theories of learning. Emotion, Stress & Psychological Well being: Emotion in the workplace; stress at work; stress and performances; psychological well-being and self esteem. Communication and the individual: Defining Communication; the purpose and process of communication; communication and effectiveness. Groups & Team Roles: What is a group in psychological terms; function of groups; Hawthorne studies; the group formation
process. Power and Politics: Interrelated concepts; sources of power; the use of power; political tactics and their use and legitimacy in organisational life. Organisation Development: What is organisational development; the process of organisational development; models of organisational development.

PM4028 Psychometrics and Psychological Testing (Spring/4) 3 hours per week; 13 weeks/8* semester; 26L/13T; ECTS credits:6
Key psychometrics concepts, measurement testing, norming, reliability and validity, statistical processes and methods relevant to psychometrics. Different types of tests: aptitude, ability, attainment, personality and career inventories, selecting tests for selection, development and career purposes, evaluating the contents of a test manual, test administration, test scoring and evaluation, evaluating different types of test. Concepts of personality, personality inventories and measurement, career inventories, the status of testing in selection, development and careers; Ethical issues in testing, integration of testing in broader assessment and bias and its avoidance.

PM4044 Employment Relations: Theory and Development 3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits 6
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.

PM4054 Applied Organisational Behaviour 3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits:6
The syllabus allows for the treatment of a small number of critical dimensions of organisational behaviour. Building on material covered in an earlier organisational behaviour module, the module explores a number of processes and issues associated with individual and group behaviour in organisations. It explores the following areas: the development of the individual; personality and individual difference perception, attitudes, the psychological contract and individual motivation. Group development; structures and roles, the dynamics of groups and teams, communication processes, organisational leadership and organisational citizenship behaviour are also examined.

PM4078 Human Resource Management: Context and Strategy 3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits:6
Introduction to course; Introduction to key concepts; Work routines; Work systems and changing priorities of production; The changing context of work; Contemporary influences on HRM; Strategy and strategic HRM; Models of strategic HRM; HRM and industry dynamics; Changing labour markets; segmentation; internal and external labour markets; flexibility and labour markets; organisational flexibility and HRM; International HRM; annual Lovett lecture; diversity; strategic HR planning; strategic rewards; performance management; live case study from Irish or international context.

TX4407 Corporate Taxation (Spring/4) 3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:6
Corporate Tax: tax implications of incorporation; computation of the corporation tax liability; manufacturing; liability of manufacture, extended definitions of goods; debt and equity, tax implications; dividend policy and advance corporation tax, company distributions; loss relief for companies including excess payments of ACT and excess charges; group relief for losses, charges and ACT; close companies, definition and consequences; tax planning for companies including restructuring of companies to maximise tax relief; capital gains tax: computation of capital gains and allowable expenses for companies and individuals; reliefs and exemptions; losses and company group reliefs; valued added tax: general principles and administration, registration and de-registration, exemptions and zero rating; inter EU sales and purchases.

EP4003 Entrepreneurship and Innovation
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 technical entrepreneurship and 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 creative behaviour. The theories and models of both creativity and innovation are examined with contextual emphasis on radical and incremental innovation in products, services and processes; product strategy, and new product/service development. The identification of the characteristics of an intrapreneur, corporate entrepreneurship and the creation of an entrepreneurial spirit within this environment. This leads to the application of creative thinking to identify venture opportunities, business planning, market entry strategies, marketing new inventions, intellectual property and technology transfer.

Faculty of Education and Health Sciences - Spring
EN4008 Teachers as Professional* (Spring/4) 3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:6
Equity in schooling; gender; social class; special needs; education of minorities; values in education; the European dimension in education; school based assessment; the school as a social agency; substance abuse; sex-education; bullying and harassment; AIDS education; assessment. Prerequisite EN4007

EN4012 How Young People Learn 3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits: 6

EN4014 Technology and Society (Spring/2) 4 hours per week; 13 weeks/4th semester; 13L/26L/13Lab; ECTS credits:6
Technology and culture in developing and in technologically advanced cultures; technology for sustainable economic growth and development; appropriate technology and technology transfer to developing countries; ethics and technology; biotechnology, reproductive technology; educational technology; communication technology and international relations; technology and the environment: acid deposition, greenhouse warming, forest decline, ozone depletion. An examination of the dominant issues confronting the classroom teacher today; the role and professional status of the teacher in contemporary society; the psychology of motivation; school effectiveness; educational evaluation and assessment; psychometric, dialectical and information processing models; intelligence and creativity.

EN4016 Responding to Diversity in Education
Rationale And Purpose Of The Module: Aim: To develop in students an awareness and understanding of diversity in society and its implications for their professional practice. Syllabus:
Recognising diversity within self and other; starting educational planning for the needs of the learner; understanding the range of types of student diversity which are found in Irish schools (ability/ disability
and specific learning difficulties; gender; sexual orientation; social class; ethnicity/culture and membership of the Traveller community; first language) and its implications for planning and for practice; Policy and legal dimensions of such diversity; Student-centred, active and participatory learning approaches such as problem-based learning, debates, values clarification processes, the use of digital media and ICT in enhancing and supporting learning, photo and image work, ranking exercises, simulations, scenarios, role-playing, research projects (including discussion of surveys, focus groups, interviews and case studies), role of excursions and outdoor learning, and diverse workplace experience; management of non-traditional learning environments (students will have an experience in a non-traditional educational setting)

EN4024 Planning for Teaching
This module builds upon EN4003 in preparing student teachers for their teaching practice experience. It supports students in planning, implementing and evaluating schemes of work and lesson plans. There will be a strong focus on the importance of their role and responsibilities as student teachers towards pupils, cooperating teachers, principals and the wider school community. They will engage in the study of inclusive teaching strategies. The period after teaching practice will be used to collectively reflect upon and discuss the teaching and learning that took place in the previous weeks. As part of this module, students will be expected to construct a reflective practice portfolio.

SE4006 Science Teaching 3
Syllabus:
Review of the Senior Cycle Science syllabuses (Biology, Agricultural Science, Chemistry, Physics, as appropriate); structure and rationale for the syllabus. Structures of subject knowledge; innovation in the classroom/laboratory/workshop; curriculum development; justification for inclusion of the subject on the curriculum; mixed ability teaching; alternative approaches to assessment; varieties of teaching/learning styles; classroom/workshop/laboratory organisation; international perspectives; cross curricular aspects.

SE4014 Teaching Science 1
Syllabus:
Junior Cycle curriculum; syllabuses and assessment procedures. Junior Certificate Science syllabus; rationale, structure, content and assessment; cross curricular aspects.
Transition from Primary to Secondary Level: Curriculum na Bunscoile. Application of learning theory to the teaching of science; teaching methodology; project work; critical reflection; classroom/workshop/laboratory exercises and organisation; data loggers, their use and integration into the teaching of science. Preparation and evaluation of schemes of work and lesson plans. Teaching resources, to include the range of teaching aids and textbooks, e-learning resources, learning enhancement possibilities.

SN4003 Social Science 1: Sociology of Health and Illness
Rationale And Purpose Of The Module:
The purpose of this module is to introduce students to basic sociological concepts and models of understanding in relation to health and illness. Students will be expected to develop an understanding of the social factors that influence health status, as well as an understanding of how sociology may be relevant to understanding the social context of healthcare policy and health work.

Syllabus:
Social definitions of health and illness, debates in medical sociology, social causes of illness, social patterns of illness, models of healthcare, social aspects of healthcarers practice, social implications of contemporary healthcare policy.

SN4202 Social Sciences 2: Sociology of Health and Illness
Rationale And Purpose Of The Module:
This module introduces students to basic sociological concepts and models of understanding in relation to health and illness. Students will be expected to develop an understanding of the social factors that influence health status, as well as an understanding of how sociology may be relevant to understanding the social context of healthcare policy and health work.

Syllabus:
Sociological models of health and illness; mental health and mental illness; social factors, particularly gender and class, effecting health chances; socio-cultural health beliefs, health actions and deviant actions
Social context of health care provision: Social stratification and its impact on health care delivery; types of health care models; social role of medicine; social agency within healthcare; organisational structure; power and control in health care systems.
Social context of health care clients: access to services; information and education; public health and private health; interaction with statutory and voluntary health services; outcomes for clients; social support.
Contemporary politics of health Care: crisis in welfare; crisis in health care; social implications of health care policy; changing context of health work.

EY4014 Subject Pedagogies 1 (English)
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 the Junior Cycle English Syllabi.

EY4016 Subject Pedagogies 2 (English)
The syllabus will be structured around the key concepts of teaching English, ie., 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.

EY4034 Subject Pedagogies 1 (Geography)
(No description given)

EY4036 Subject Pedagogies 2 (Geography)
(No description given)

PS4012 Human Development and the Life Span 1
This module provides students with foundation information about how psychologists have studied human development from prenatal life through childhood, adolescence and the stages of adult life including older adulthood. The course will require students to reflect critically on recent empirical studies examining human development through these life stages. The course will focus on the topics of cognitive, biological, social and moral development, from the field of psychology. These topics are studied from a lifespan perspective.

PS4032 Psychology and Social Issues (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits: 6

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

PS4033 Introduction to Research Methods (Spring/2 and 3)
3 hours per week; 13 weeks/6th semester; 13L/26Lab; ECTS credits: 6

The module lectures will cover the core principles of psychological research design and analysis. This will involve a recap of basic statistical concepts as well as covering the main types of quantitative research methods and various statistical analyses used in psychology. The lab practicals will allow you to conduct a piece of group research in which you will implement the skills and techniques outlined in the lectures. The coursework for this module will consist of a group project to be written up as a research report. Groups of six students will select a topic, perform a literature search, find appropriate measures, collect, analyse and interpret data. This will be submitted in the required format. The title, methods and results section will necessarily be identical for all group members, but the rest of the report must be the individual’s own work. This will constitute 45% of the marks for the course. An additional 10% of marks will be allocated through peer assessment of contribution to the group project. In the final week of term there will be a statistics class test which will constitute the final 45% of marks for the course.
This module is designed to develop students' ability to design, collect, code, and analyse empirical data using non-experimental approaches in psychology. Classical approaches to psychology emphasise the importance of the experimental paradigm in understanding behaviour and mental processes. This lab-based module introduces students to the shortcomings associated with the traditional experimental approach and familiarises them with alternative correlation and observational paradigms via a series of practicals. Students learn to design, conduct, code, and analyse quantitative psychometric data whilst paying due consideration to the welfare of participants and attending to the appropriate ethical guidelines. Evaluation is based on two pieces of lab reports, each accounting for 50% of the final grade.

**PS4042 Psychology: Theory and Method 2 (Spring/1)**

3 hours per week; 13 weeks/2nd semester; 13L/26T; ECTS credits: 6

The aim of this module is to continue with a broad introduction to the historical evolution, issues, debates, themes and theories in psychology which started in Introduction to Psychology 1. Much of what is covered will be covered in more depth in later modules, and this module is designed to provide a broad foundation to the subject. The course will provide a good grounding in a range of methodological perspectives in psychology. This module is the second of two modules which provide a broad introduction to the discipline of psychology. This module will cover the humanistic perspective, social constructionism, interactionism, and individual differences.

**PS4047 Social Psychology 2 (Spring/4)**

3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

Social psychology is a 'broad church' in terms of the values, theories and methods applied across the subdiscipline. More than other areas of psychology it also reflects the contemporary concerns and values of the societies in which it occurs. The purpose of this module is to provide students with a more 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.

**PS4052 Practical Psychology 2**

This practical class introduces the range of methods employed in psychology to students. The value of experiments, observational, survey and interviews and case studies work are considered using illustrative examples. Practical skills in the experimental and survey methods are developed though the use of selected examples. Students are encouraged to become increasingly familiar with SPSS for coding of data and simple inferential statistics are introduced.

**PS407 Abnormal and Clinical Psychology**

**Rationale And Purpose Of The Module:**

Abnormal psychology is the study of mental illness and distress, as well as psychological dysfunction. The aim of this module is to foster a critical appreciation of some key theoretical issues at a theoretical level in abnormal psychology, as well as how this is applied in the practice of clinical psychology.

**Syllabus:**

Through a series of lectures, students will be introduced to the theoretical perspective on several categories of common mental health disorders, including mood and anxiety disorders. In addition, other topics in abnormal psychology, such as dysfunctional behaviour, will be examined from a range of perspectives, including cognitive, behavioural, and neurological. The focus is on how psychological models, particularly cognitive ones, can aid our understanding of psychological disorders. The course will also examine how the theoretical understanding of disorders translates into practice in clinical settings. Contemporary models of clinical practice and psychotherapeutic intervention will be introduced, including scientist and reflective practitioner models, and formulation and assessment models of clinical psychology. The link between clinical psychology and health care settings will also be explored. In this way we will demonstrate that psychological models have considerable application to clinical practice. This provides a valuable introduction to key issues and concepts that will be experienced in clinical practice, by students who decide to move into clinical work after graduation.

**PS4108 Approaches to Social Identity (Spring/4)**

3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

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.

**PS4138 Health Psychology**

**Rationale And Purpose Of The Module:**

to introduce students to the rapidly developing field of health psychology, to highlight the importance of a biopsychosocial approach to understanding health and illness, and to improve students understanding of the role that behaviour plays in determining health and illness.

**Syllabus:**

Health Psychology is a sub-discipline of relatively recent origin in psychology, but is rapidly developing a unique identity. Whilst having some concerns in common with clinical psychology- health psychology is concerned with both mental and physical health and in particular their inter-relationship- it is quite distinct from that discipline. Its range of interest is wide and continues to develop, but the discipline by its nature is interdisciplinary, requiring the study of variables at the biological, psychological and social levels. It is an area that is often controversial, reflecting in part, the methodological and conceptual problems inherent in a subject straddling several disciplines. Topics covered include Models of health behaviour, stress, psychoneuroimmunology.

**PY4006 Physiotherapy Studies – Theory and Context 2**

This course builds on the two previous years study by revisiting the core areas of physiotherapy practice (musculoskeletal, respiratory and neurology) through a case-based approach. New material is introduced in order to support the student in integrating knowledge from all practice areas and addressing the complexity of treating and managing multi-pathology. Embedded within the teaching of this course is the expectation that students will learn and acquire knowledge using the principles of evidence based practice; formulating appropriate clinical questions about patient care, searching for information, critically appraising the information, integrating and applying the new knowledge.

**PY4014 Musculoskeletal Problems**

This module aims to develop an understanding of the conceptual and evidence base that neuromusculoskeletal assessment and treatment of the spine and pelvis. The student will learn to assess the appropriateness of a particular treatment choice for an individual patient, apply this treatment in a safe and effective manner, evaluate its effectiveness and progress or adapt the treatment plan according to the patient’s individual needs.

**PY4019 Impairment and Disability 2**

The students will be allocated to study groups for a specific topic (one group per topic). Via facilitated discussion groups and seminars each group will plan a short course for their allocated topic. This will involve identifying, sourcing and critically appraising the course content, deciding on the mode of delivery and structure of the short-course. Knowledge will be obtained in the facilitated sessions, independent learning, and peer discussion; and during the short-courses, which will be delivered by the student group in the teaching period of semester 2. Evaluation of the short courses will be by both staff, self and peer review.
PY4022 Physiology and Anatomy

Rationale And Purpose Of The Module:
This module offers a unique opportunity to become familiar with both practical and theoretical concepts in (1) kinesiology, the study of the human movement, and (2) physiology, the study of how the body functions.

Aims:
- To enable students to understand the basic anatomy of the musculo-skeletal system and how the system functions in normal motion such as walking gait.
- To enable students to understand the basic physiology of the systems which support movement in the body.
- To provide students with an indepth knowledge of all the components of physical fitness and how measurement plays a critical role in developing this understanding.

Syllabus:
- Physiology: An introduction to the physiology of movement: the concept of homeostasis; the role of physiological systems in sport performance; basic cellular physiology; membranes, energy metabolism and cellular control. Systems Physiology (1): 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; sensory organs. Systems physiology (2): the musculoskeletal system; structure and function of muscle fibres; organisation into motor units; of the motor unit; connective tissue and bone. Systems physiology (3): the circulatory system; structure and function of the heart; blood vessel structure and function; blood pressure and its measurement. Systems physiology (4) the respiratory system; structure and function of the upper respiratory tract, the lungs, pulmonary ventilation, and pulmonary gas exchange, cellular respiration. Systems physiology (5): the digestive system and nutrition; structure and function of the gastrointestinal tract; the process of digestion and absorption; the physiological function of the liver. (6) Energy transfer at rest and exercise Anatomy: Anatomical terms and definitions; functions and structure of skeletal and particular systems. Origin and insertion of prime movers and available range of motion. Biomechanics: Basic mechanical concepts with special reference to sport and exercise, forces of motion, linear and angular motion. Introduction to the free body diagram. Friction in sport. Projectiles, importance of angle, speed, and height of release and distance in several sports, adaptation to the real world. Biomechanics of swimming. Analysis of specific sports and activities. Health Related Activity: Overview of role of health related activity in physical education. Introduction to components of health related fitness (HRF). Introduction to and personal experience of field tests for HRF. Warm up and cool down procedures. Health appraisals and screening. Components of physical fitness (PF). Principles of training specific to HRF and PF. Field tests for physical fitness.

PY4026 Youth, Sport and Policy

Rationale And Purpose Of The Module:
The purpose of this module is to encourage students to examine the relationship between the three pillars of physical education, extra-curricular sport and sport outside school and the potential role of the physical education teacher and coach in each pillar.

Syllabus:
- Students will be introduced to the current youth sport provision in Ireland available through the existing pillars of physical education, extra-curricular sport and sport outside school and possible motivations for involvement in youth sport (sampling/specialising/investing). Students will identify the elements of quality coaching and engage with the extent to which communication, methodologies and the management of the training / learning environment are evident in coaching and teaching contexts.

PY4034 Physiotherapy in Clinical Neurology

Pathology and mechanisms of recovery from the following conditions: Stroke, Parkinsonism, Multiple Sclerosis, Spinal Cord injury, Spina Bifida, Cerebral palsy, Peripheral Nerve Lesions, Guillain Barre Syndrome. Neuromuscular electrical Stimulation. Measurement of Impairments, Activities and Participation. Analysis and facilitation of normal movement during the following activities: Upright sitting, Sit to stand, Preparation for gait, Gait, Upper Extremity, Normal Development (Paeds), Balance/Cordination. Assessment of patients with neurological dysfunction, Orthotics.

PY4036 Research Methods and Physiotherapy 2

The module will build on skills that have students have previously acquired such as critical appraisal and literature searching and will follow-on from the first Research Methods Module. In addition, it will provide students with practical experience of formulating a research question, literature searching, and function of the upper respiratory tract, the lungs, pulmonary ventilation, and pulmonary gas exchange, cellular respiration. Systems physiology (5): the digestive system and nutrition; structure and function of the gastrointestinal tract; the process of digestion and absorption; the physiological function of the liver. (6) Energy transfer at rest and exercise Anatomy: Anatomical terms and definitions; functions and structure of skeletal and particular systems. Origin and insertion of prime movers and available range of motion. Biomechanics: Basic mechanical concepts with special reference to sport and exercise, forces of motion, linear and angular motion. Introduction to the free body diagram. Friction in sport. Projectiles, importance of angle, speed, and height of release and distance in several sports, adaptation to the real world. Biomechanics of swimming. Analysis of specific sports and activities. Health Related Activity: Overview of role of health related activity in physical education. Introduction to components of health related fitness (HRF). Introduction to and personal experience of field tests for HRF. Warm up and cool down procedures. Health appraisals and screening. Components of physical fitness (PF). Principles of training specific to HRF and PF. Field tests for physical fitness.

PY4044 Psychology for Physiotherapists 2

The module will build on skills that have students have previously acquired such as critical appraisal and literature searching and will follow-on from the first Research Methods Module. In addition, it will provide students with practical experience of formulating a research question, literature searching, and literature appraisal and proposal preparation. Moreover, it will provide students with a sound understanding of the process involved in applying for ethical approval for their research and the necessity for good study design.

PY4048 Pedagogy, Exercise and Children’s Health

Rationale And Purpose Of The Module:
The module gives the students an opportunity to critically examine the role physical education plays in promoting physical activity and the health of the individual and the nation. The role of Health Related Activity and Kinesiological Aspects on the curriculum is examined and means of successfully providing this aspect of the curriculum are discussed. Additionally, students require the opportunity to consider and reflect on various models of teaching, which cater for different populations.

Syllabus:

PY4053 Philosophy and Aesthetics in Physical Education

Rationale And Purpose Of The Module:
The module aims to enable students to critically examine philosophical issues related to Physical Education including areas such as: Knowledge and the curriculum? Moral education? Aesthetic and artistic aspects? To provide a theoretical framework for participation as performer and spectator.

Syllabus:
- Week 1 - Introduction - Basic Philosophical Concepts
- Week 2 - Philosophy and Physical Education - the Context
- Week 3 - Values in the Physical Education Curriculum
- Week 4 - Curriculum Values in the Irish Physical Education Curriculum
- Week 5 - Physical Education & the Nature of Knowledge
- Week 6 - Some Ethical Considerations
- Week 7 - Issues regarding Winning and Losing
- Week 8 - The Perception of the Body
- Week 9 - Aesthetic and Artistic distinctions? Creativity and the education of feeling.
- Week 10 - Moral issues in Sport and Physical Education
- Week 11 - Movement, Meaning, Art and Gender
- Week 12 - Final considerations: Leaving Certificate Aesthetic/Artistic Programmes

Topics to include:
1. Justification of Physical Education as a curriculum area
2. Criteria for selection of curriculum content in Physical Education
3. Knowledge and Physical Education

PY4051 Theoretical and Practical Aspects of Coaching and Teaching

Rationale And Purpose Of The Module:
The module gives the students an opportunity to critically examine the role physical education plays in promoting physical activity and the health of the individual and the nation. The role of Health Related Activity and Kinesiological Aspects on the curriculum is examined and means of successfully providing this aspect of the curriculum are discussed. Additionally, students require the opportunity to consider and reflect on various models of teaching, which cater for different populations.

Syllabus:
4. Potential for moral and aesthetic education within Physical Education
5. Artistic and aesthetic elements in Physical Education
6. Creativity and Physical Education
7. Feeling, reason and perception in the Arts (with special reference to Dance)

PY4062 Human Anatomy 2 (Lower Extremity)

To provide students with Comprehensive knowledge and understanding of general structural and functional organisation of the lower extremity, pelvis and the cardiopulmonary system. To enable students to understand the structure and function musculo-skeletal framework of the lower extremity, pelvis and the cardiopulmonary system. Functional relevance of all anatomical structures is emphasised to enable students to appreciate the significance of interrelationships of structure to function. An understanding of application of core anatomical knowledge to clinical conditions is developed through problem-integrated learning. This modules also enables students to appreciate the interrelationships of the individual constituent parts of the upper extremity to the body as a whole.

PY4074 Pedagogy of Invasion Games 1

(No description given)

PY4084 Pedagogy of Lifetime Physical Activities

(No description given)

PY4092 Physiotherapy: Therapy and Practice

(No description given)

SS4102 Psychology 1: Socio-Psychology Foundations Sport & Exercise (Spring/1)

4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits:6

Psychology as a discipline and mode of enquiry; major branches of psychology; evolution of sport and exercise psychology; sociological aspects, sport in Ireland - structures and processes, groups in sport, participation levels; introduction to key concepts in the psychology of sport - attention, personality, motivation, stress; the individual performer; key mental skills; rationale and pathway for the socio-psychological study of the course, the life cycle approach.

SS4103 Psychology of Movement Development Form – Infancy to Adolescence

Students will be involved in considering how material can be selected for teaching. Students will be encouraged to address such environmental factors when constructing schemes of work for activities. The context of selected activities will allow students to focus on pupilsÊ learning that is not only considered as what is visible but also what is not observable or measurable.

SS4128 Applied Sport Psychology

Content relating to performance enhancement includes psychological characteristics of peak performance, characteristics of elite athletes and their development, increasing of awareness; selected mental skills and strategies (e.g. muscle relaxation, autogenic training, meditation, self talk, plans & routines, simulation training); guidelines and procedures for implementing intervention strategies; conducting mental skills training programmes. Attention will also be given to the environment in which sport occurs focusing on aspects of group dynamics.

SS4204 Physiology 2: The Physiology of Exercise * (Spring/2)

4 hours per week; 13 weeks/4th semester; 26L/26LAB; ECTS credits:6

Physiological changes during acute and chronic exercise, especially involving cardiovascular, respiratory and muscular systems and thermoregulation in children, adults and the elderly; limiting factors to performance including fatigue; influence of altitude on training and performances; respiration underwater using SCUBA apparatus; use and abuse of argument, evidence, reason proof, analysis and interpretation; academic standards of accuracy and record.

SS4304 Introduction to Basic Biomechanics

Rationale And Purpose Of The Module:
To introduce the students to the area of biomechanics within the discipline of Sport & Exercise Sciences.
Syllabus:
Theoretical Content
Revision of basic mechanical concepts but with special reference to sports examples: Forms of motion, linear and angular kinematics and kinetics. Introduction to segmental modelling techniques: cadaver dissection data, water displacement. Construction of generalised link segment models for digitising video. Qualitative analysis - deterministic models. Centre of gravity and radii of gyration. Fluid mechanics and air flow effects with applications to cycling, sking, and aquatics. Differentiation of video data by finite differences. Integration of force traces by midpoint rule and Simpson's method. Projectiles - importance of angle, speed and height of release/projection and distance travelled and applications in sport. Analysis of specific sports/activities to include: Walking and running, selected gymnastic skills and diving, throwing and striking skills, jumping and throwing and sprint start.
Practical Content
Qualitative Analysis: derivation and use of deterministic models of performance.
Use of video and observation skills. Strategies for improving technique/performance. Creating spatial models for digitising video. Video analysis: loading and deleting files, stick figure animation techniques point and CG tracing, linking sequence windows, calibration techniques data in SI units, Calculation and smoothing techniques point and CG tracing, linking sequence windows, calibration techniques data in SI units, Calculation and smoothing techniques, graphing data and analysis of graphs. Exporting data to Excel and Word.

SS4318 Novel Methods in Biomechanics


SS4402 Sports & Exercise Applications 2 (Spring/1)

**SS4405 Sports Injuries**

Syllabus
- The incidence and causes of sports injuries; risk factors and mechanisms of injury.
- Classification of soft tissue injuries, body response to trauma, phases of tissue healing.
- A review of the most common sports injuries.
- Application of first aid principles to injuries, use of RICES in first handling of injuries, E.A.P., procedures for referral to medical/other agencies.
- Goals of sports rehabilitation, components of rehabilitation programme.
- Prevention and rehabilitation of injuries through the application of stretching and strengthening exercises, sports massage and the aquatic environment.
- Overview of the modalities used in the treatment of sports injuries.
- Rehabilitation programmes for specific injuries, functional progressions, guidelines for return to sport.
- The role of medications in the treatment of injuries.
- The role of the sport scientist in the sports medicine team.
- Psychology of sports injuries, research in sports injuries.

**SS4418 Clinical Applications of Exercise**

The course begins with a structures review 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. The course covers the application of exercise in the following conditions: people with: neuromuscular disorders, with a focus on multiple sclerosis. Cardiorespiratory disorders, including COPD and myocardial infarction. Vascular disease, with a focus on peripheral arterial disease. Osteoporosis. Learning disorders, focusing on autistic spectrum disorder. Pregnancy.

**ENGINEERING MODULES – Spring**

**ID4112 Design Mechanics* (Spring/1)**

4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6

Mechanical elements; shafts, bearings, gears, power screws, belt and chain drives; structures; types of structures; simple stress/strain relationship in shear and direct form; finite element methods; illustration of techniques and their implications; demonstration of plane stress and framework (case study).

**IE4214 Industrial Organisation + Spring (Spring/2)**

3 hours per week; 13 weeks/4th semester; 26L/13lab; ECTS credits: 6

Production planning: types of manufacture, resources (4 Ms), bill of materials, routing, layout by templates and string diagrams, quality system; organisational functions; determining functions, grouping, integration, alternative structures; estimating: types of cost, cost elements, use of time data, final cost/selling price, break-even; project planning; Gaantt, networks, critical path, uncertain times, resource levelling, time-cost trade-offs, line-of-balance; inventory control; pareto analysis, ABC, EOQ, Little’s law, JIT; executing plans; dispatching expediting, push/pull, planned review.

**IE4238 Operations Analysis AM (Spring/4)**

5 hours per week; 13 weeks/8th semester; 39L/26T; ECTS credits: 6

Linear programming: Introduction to integer programming; application of linear programming; project work.

**IE4248 Project Planning and Control (Spring/4)**

Project planning: networks; work breakdown structures (wbs), job ordering procedures, multiple projects, concurrent engineering: milestones, review points and slip charts; project life cycles: from concept through design- validation-production-service; support and disposal: computer programs for project management. [p] Man management: effective communications, cross-functional experience; relationships, organisational make-up, change management. Cost estimation for products; projects: estimating resource, time, cost requirements and constraints; life cycle costs, detailed; parametric cost estimating models, 3-estimate method: opportunity costs of project delays; budget determination, opening; maintaining accounts: basic profit; loss determination.

**IE4518 Engineering Psychology (Spring/4)**

3 hours per week; 13 weeks/8th semester; 26L/13LAB; ECTS credits: 6

Ability assessment; reliability and validity of tests, situational specificity, information theory, attention and perception; training; learning, educational and training, memory, designing a training programme and developing materials; testing a programme; training methods, assessing trainability, evaluating training programmes; decision making; information processing models of decision-making; feedback, hypothesis testing, diagnosis and forecasting, decision-making aids; human-machine interaction.

**IE4712 Operations Integration (Spring/1)**

4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6

Data capture from metrology equipment and bar code readers; tooling management using database techniques; control of stepping motors and programmable logic controllers; integration with other software applications; on-line capture of training, inventory, posture or heart rate data.

**ME4002 Introduction to Engineering 2**

Oral presentation techniques and use of information technology; teamwork skills; metal casting processes; shaping processes for plastics: extrusion, injection moulding, compression moulding, blow moulding, thermoforming; shaping processes for polymer matrix composites: open moulds, closed moulds; powder metallurgy and processing of ceramics; metal forming; material removal processes; heat treatment; surfacing; joining; mechanical assembly; rapid prototyping; microfabrication processes; quality control, measurement and inspection; manufacturing systems; sustainability.

**ME4008 Orthopaedic Biomechanics and Mechanobiology**

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.

**ME4101 Aircraft Mechanisms**

ME4112 Engineering Mechanics 2* (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6
Application of Newton's laws to particles and rigid bodies in equilibrium (dynamics); kinematics of particles, Cartesian, polar, normal and tangential co-ordinates; kinetics of particles, work, kinetic energy, potential energy, impulse and momentum; kinetics of systems of particles; rigid bodies in plane motion, motion relative to rotating axes, mechanisms; rigid bodies in three-dimensional motion, Euler's equations of motion, gyroscopes.

ME4116 Aircraft Vibrations (Spring/3)
3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS credits: 6
Oscillatory motion; free vibration of single degree of freedom systems; harmonically excited vibration; transient vibration; transient vibration; systems with two or more degrees of freedom; vibration of continuous systems; sources of aircraft vibrations; flutter and aero elasticity; control of aircraft vibrations.

ME4226 Mechanics of Solids 2 (Spring/3)
4 hours per week; 13 weeks/6th semester; 26L/26LAB; ECTS credits: 6
Infinitesimal strain at a point in two dimensional stress field and Mohr's strain circle; selection of strain gauges for measurements on metals, thin circular plates, criteria of failure for isotropic homogenous materials; rankine, tresa and von-mises, deflection of beams, buckling of struts and plates, thick cylinders, linear elastic fracture mechanics, fatigue. Prerequisite: ME4213

ME4306 Biocompatibility
Rationale And Purpose Of The Module:
To give a basic appreciation of the Cellular-Material Interactions that occur when a Material is used for different Biomedical Applications
Syllabus:
Discussion of Pathological Changes and Approaches to repair. Classification of medical device interactions and methods of assessment. Relevance of testing to medical device design strategy, regulation, validation and post market surveillance. Evolution of the regulatory environment and its implications.

ME4308 Biomaterials 2
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:

ME4328 Aircraft Maintenance (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26TF; ECTS credits: 6
Aircraft maintenance: philosophy of maintenance, inspection schedules, regulatory requirements (JAR, FAR), condition monitoring, durability and reliability of materials and components, traceability of materials and components and ageing aircraft programmes. Introduction to the failure effects and reliability of aircraft systems. Aircraft repair and inspection; causes and mechanisms of corrosion, non destructive testing (NDT) techniques and procedures, analysis and design of repair procedures for both metallic and composite structures.

ME4412 Fluid Mechanics 1 (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6
Characteristics and Properties of Fluids. Fluid Static's and Manometry. Principles of Continuity, Momentum and Energy conservation applied to fluid dynamics, e.g. Drag of a Two Dimensional Body, Boundary Layer theory with applications to smooth and rough pipes, Effect of pressure gradient on boundary layer. Flow over flat plate and airfoil sections. Drag, lift and dependence on Airfoil Section geometry.

ME4414 Fluids 1 (Spring/2)
3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS credits: 6
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. Prerequisite ME4313

ME4417 Boundary Layer Theory

ME4516 Thermodynamics 1* (Spring/3)
4 hours per week; 13 weeks/8th semester; 39L/13LAB; ECTS credits: 6
Axial and radial flow turbines and compressors; reciprocating expanders and compressors; vapour power cycles; gas turbine cycles; introduction to combustion theory; performance of internal combustion engines. Prerequisite ME4313

ME4526 Thermodynamics 2
Rationale And Purpose Of The Module:
To provide a basis to students in the concepts and solution methods of conduction, convection and radiative heat transfer, and the measurement techniques utilised in heat transfer
Syllabus:
Fourier's Law of Heat Conduction
The Convection Equation
Thermal Resistance's and their Application
Two-dimensional Heat Conduction: An Analytical Example
Numerical Methods in Heat Conduction
Time Varying Heat Transfer: The Lumpend Heat Capacity Method
 Forced Convection: Standard Heat Transfer Correlation's and their Application
Free Convection: Standard Heat Transfer Correlation's and their Applications
Thermal Radiation: An Introduction
Heat Exchange Design Equations: The Log Mean Temperature Difference

ME4528 Propulsion Systems
Rationale And Purpose Of The Module:
To provide a basis to students in the concepts and solution methods of conduction, convection and radiative heat transfer, and the measurement techniques utilised in heat transfer
Syllabus:
Fourier's Law of Heat Conduction
The Convection Equation
Thermal Resistance's and their Application
Two-dimensional Heat Conduction: An Analytical Example
Numerical Methods in Heat Conduction
Time Varying Heat Transfer: The Lumpend Heat Capacity Method
 Forced Convection: Standard Heat Transfer Correlation's and their Application
Free Convection: Standard Heat Transfer Correlation's and their Applications
Thermal Radiation: An Introduction
Heat Exchange Design Equations: The Log Mean Temperature Difference
transport systems: cardiovascular system, respiratory and the definition of these processes, including
The role of transport phenomena in biological systems
ME4736 Physiological Fluid Mechanics 1
relations; Newtonian law of viscosity, non-Newtonian rheology and time dependent viscoelastic behaviour.
The derivation of the conservation relations for fluid transport, dimensional analysis and scaling. Introduction to Mass Transfer, Fick's law of diffusion. Transport of Gases between blood and tissues: oxygen-haemoglobin equilibria and the dynamics of oxygenation of blood in lung capillaries
ME4746 Physiological Fluid Mechanics 2
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
ME4818 Mechanical Design + (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13LAB; ECTS credits:6
Integration of machine elements into designs; overview of common engineering materials and their functional properties; review of steels and heat treatment processes relevant to transmission design; practical aspects of stress analysis; review of the history of gear design showing the relationship to fatigue theory; advantages of helical and spiral bevel gears in relation to noise, wear and strength; clutches and brakes - selection considerations; electric motors - types and control options; starters and protection devices; design for fatigue life use of fatigue data; load and environment factors in design and selection; pressure vessel design use of standards.
ME4826 Aircraft Design (Spring/3)
4 hours per week, 13 weeks/6th semester; 26L/26T; ECTS credits:6
Aircraft design process, phases of design projects. Design aspects of the airworthiness regulations (JAR, FAR), aircraft certification. Aircraft loads limit and ultimate loads, flight envelope, construction of V-n diagram. Structural design and analysis philosophies, material design; reserve factors, construction principles, fail-safe, safe-life philosophies. Wing lift distribution, shear force, bending moment and torsional load distribution. Design of structural components for ultimate failure and fatigue. Fasteners and structural joints. Aircraft design practise, drawings, lofting, standard hardware. Aircraft component manufacture and assembly.
ME4717 Modelling and Control of Dynamic Systems
Rationale And Purpose Of The Module:
To develop skills in analysing and modelling dynamic systems. To develop the students' ability to build and analyse models at a systems level.
To introduce the concept of controlling dynamic systems. To view operations and manufacturing in an integrated fashion.
Syllabus:
System definition and component identification. Mathematical model building of dynamic behaviour of physical systems, transient and steady state responses. Limitations of non linear models. Control of Dynamic Systems including PID control. Reverse of this process, i.e., modelling from analysis of system responses. Design techniques to meet performance targets or specifications, including stability. General MATLAB will be used where appropriate to the above topics.
ME4727 Operations Management 3
Rationale And Purpose Of The Module:
The aim of this module is to draw together material from the prerequisite modules and apply them to understand and optimise the operation of systems, i.e. manufacturing, supply chains and services systems. The module will address the following issues: Scheduling; Planning, Inventory Control; Variability and Resource Optimization
Syllabus:
Systems design (Manufacturing, Supply and Services Chains); strategy, describe the role of: information systems, production planning and inventory control, scheduling, modelling and analysis and optimization. Apply simulation to modelling the operation of systems (manufacturing, supply and service) for analysis and design. Use simulation to understand the impact of systems design, optimization and variability in these systems. Introduce queuing models for analysis of systems. Apply mathematical models for location, layout, planning and scheduling. Introduce heuristic solution methods.
ME4728 Occupational Psychology (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits:6
To acquaint the student with the wider context in which he or she will be working. They will, for example, need management skills.

MF4756 Product Design & Modelling* (Spring/3)
3 hours per week; 13 weeks/6th semester; 52LAB; ECTS credits:6
Students will understand the primary issues and considerations involved in designing a new product and develop a creative approach to the solution of design problems; will understand the concepts and practices associated with computer modelling and visualisation technology; will model and develop products and components in contemporary computer modelling software; be able to create comprehensive product models and specifications in the context of the total development of a product and to develop cognitive modelling/visualisation, problem solving and decision making skills. Prerequisite MF4722.

MF4768 Ergonomics* (Spring/4)
3 hours per week; 13 weeks/8th semester; 13L/26LAB; ECTS credits:6
To extend earlier work in design and layout of workplaces and to study the topics of person/machine interface design and workplace design from an ergonomics viewpoint. To counter the effects of adverse industrial environments and to reduce error rates and accidents. Prerequisite MA4604.

MT4002 Materials 1
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.

MT4004 Materials Process Engineering/ Polymers* (Spring/4)
3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits:6
The general principles of polymer processing; flow in liquids, drag flow and pressure flow, Newtonian and non Newtonian behaviour; flow behaviour of polymer metals; extrusion of polymers; injection moulding; blow moulding; rotational moulding; cellular polymers; reaction injection moulding.

MT4008 Properties of Materials (B) (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13LAB; ECTS credits:6
Rubber elasticity; impact behaviour and fracture; two phase polymer systems, thermodynamics and miscibility, blends and alloys; polymer stability, combustion, weathering, degradation and protection, physical ageing.

MT4038 Failure, Damage and Life Prediction
Rationale And Purpose Of The Module: The aim of this module is to enable students to develop their understanding of the mechanisms by which materials undergo failure and enable them to assess information leading to how a component structure has failed. Further aims of this module are (i) to enable the students to be able to perform calculations relating to tolerable loading and life prediction, (ii) to enable the students to select materials and protection systems for use in corrosive environments and (iii) to give students a comprehensive overview of failure analysis techniques and to allow students apply their knowledge to analyse component and structural failures. Syllabus:

|Fracture| - chronological development of fracture theories; |linear elastic fracture mechanics|+ application to design etc.; |dislocation theories of fracture - transition temperatures; |theories of ductile fracture; |fatigue - life prediction| laws & relationships (S-N, Basquin etc.); |Initiation of fatigue cracks; |fatigue crack growth - Paris law; |fatigue crack growth rates - effect of K on striation morphology; |surface effect finish & treatment; |[stress corrosion cracking] - elementary corrosion science (up to over potential vs. i curves); |relationship between stored strain energy, chemical energy & crack propagation; |crack growth rates & life prediction techniques, importance of NDT; |corrosion - cathodic reactions; |[corrosion mechanisms; protection processes]; |creep - [creep Mechanisms] - primary, secondary, tertiary, dislocation, diffusion, e.g. sliding; |crack initiation & growth; |life prediction techniques - rupture strength, creep strength, Larson-Miller, theta projection. Methods of gathering information on materials failures, Study of features which identify different types of failures, Types of failures which occur and how; ductile/brittle, fatigue, elevated temperature, wear, different forms of corrosion, Case studies

MT4104 Physical Metallurgy (Spring/2)
2 hours per week; 13 weeks/4th semester; 13L/13T; ECTS credits:6
Dislocation theory; strengthening mechanisms in metals and alloys; phase transformation and control of microstructure; Austenite decomposition in steels; tempering of martensite; examples of commercial materials exhibiting; above mechanisms.

MT4208 Materials Selection & Design* (Spring/4)
2 hours per week; 13 weeks/8th semester; 13L/13T; ECTS credits:6
Basic principles of materials selection; assessment of design function; selection procedures; selection for mechanical properties.

MT4518 Surface Technology (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits:6
To acquaint engineers and technologists with the concepts of corrosive degradation and wear processes and to give methodologies by which these processes can be decelerated by the use of electrochemistry, coatings, heat treatments or mechanical working.

MT4943 Materials Processing (Spring/2)
4 hours per week; 13 weeks/3rd semester; 26L/26LAB ECTS credits:6

PD4004 Design Visualisation Studio (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/13LAB; ECTS credits:6
Appreciate the place of the visual image in design. Use a variety of manual design communication methods. Use computers software to model, render and animate design ideas and solutions. Make 3D models of design concepts. Produce a response to a design assignment which reflects a thorough appreciation of visualisation techniques The visual image, visual thinking, graphic ideation. Visualisation systems. Traditional media, including presentation and rendering techniques. Computer-modelling, rendering and animation. Design for electronic media. 3D Studio – Studio basics and applications. Importing CAD models, Lighting, Rendering, Texturing, Animation. Design presentation assignment. Prerequisite modules: ID4811, ID4812

PD4014 Design Concept Development and Realisation (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/13LAB, ECTS credits:6
Produce concept design solutions. Take a user based design approach. Understand the ethics of design. Consider value systems where users are central to the process of design. Understand the formal procedural framework for evaluating design problems. Develop the skills of collaborative design. Design concept development and realisation based on specifications. Ideas development. Concept - generation and development. Concept evaluation, rationalisation and compromise based on specifications and constraints. Elaboration of specifications.
and presentation of final concept. Sustainability, environmental and universal design issues.

**Prerequisite module:** Design Research and Specifications

**PD4018 Design Project 2**

**Rationale And Purpose Of The Module:**
Semester 8 will see the realisation and execution of the final design project. The individual designs will be brought to a high level of development, detailing and presentation.

To bring the design ideas proposed in Semester 7 to a high level of professional execution.

To advance design skills to a professional level, including sketching, visual communication, model-making.

To explore and refine design detailing through user testing.

Use detailed functioning prototypes to assess the viability of design ideas during the design process.

To develop design ideas to a high level of manufacturing and material specification as well fully detailing product functionality and interface features.

To bring design concepts to a professional standard of aesthetic refinement.

To employ cutting edge technology and software to present design concepts at a professional level.

Produce appropriate communication media, design record and final evaluation of the project.

Present the final project in a professional manner for public exhibition.

**Syllabus:**
Advanced Design skills: Sketching, Rendering, Ideation, Concept development, Design Detailing, Manufacturing and Materials, Technology, Design Visualisation, Modelling, Marketing, Human Factors.

New Product Innovation, Professional Project Planning and Management.

Advanced Human Factors and User Experience.

Design for Sustainability and Responsible Design Practices.

Aesthetic; Aesthetic detailing; Understanding of form; Design Acuity.

Design for Manufacture; Material and Manufacturing specification; Component Specification.

Mechanical and technical understanding.

CAD, Solid modelling, Rapid Manufacture & prototyping.

Advanced Product marketing for design.

Communication, visual communication, verbal presentations.

Digital Visualisation and Realisation.

Problem solving and Innovation.

Professional Practice.

**PD4102 Design Studio 2**

**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.

These will be taught under the following headings: Design Methods, Design Techniques and Design History.

**Syllabus:**
This module comprises three complimentary streams, Design Methods, Design Techniques and Design History. These combine to introduce the student to the designed product in total taking into account practical considerations, aesthetics and social conditions.

**Design Methods:**
To develop an approach to design - Working to a brief - following a design process - Working to a time schedule - Stimulating the imagination through design projects - an introduction to conceptual 2D and 3D design skills - basic problem solving - basic creative thinking techniques - an introduction to the relationship between design and manufacture - An introduction to user research and user understanding and simple ergonomics - The development of high fidelity prototyping and sketch-model making skills - The development of the manual and cognitive skills of idea development and communication.

**Design Techniques:**
The development of drawing, illustration and rendering skills - perspective, form building and orthographic technical drawing - the practical development of the manual and mental skills of idea development and communication - Both formal and informal techniques - Emphasis on fluidity and speed - The of 2D and 3D shape and form understanding through the use of tone and colour using rendering media including felt-tipped pens, pencils, pastels, gouache and markers - fundamentals of professional presentation techniques and graphic layout.

**Design History:**
An overview of industrial design in the context of social and economic conditions (from the Industrial Revolution to Contemporary Design).

**Discussion of the evolution of design styles and practices and how design style and design problem solving have to compromise to reach optimal solutions.**

**PD4104 Design Studio 4**

**Rationale And Purpose Of The Module:**
To effectively experiment, analyse, innovate and plan a design project from inception to completion.

Understand and develop design ideation. Implement a variety of design tools and methodologies.

Engage in multidisciplinary teams.

Collaborate with industry partners.

Improve teamwork skills.

Improve primary design research skills.

Collate, analyse and synthesise research findings for design ideation.

In-depth user testing and analysis.

Improve concept development skills through exploration of idea generation techniques.

Develop an ability to effectively progress concepts through iteration. Critique and evaluate concepts.

Develop an appreciation for design detailing.

Develop knowledge of design manufacturing processes and materials.

Advance design communication skills.

Utilise leading edge technologies in communication of designs.

Develop an ability to reflect on personal design work.

Application of this theory to their own work through project based studio classes.

**Syllabus:**
The following is an outline of topics covered in project based studio classes:

Evaluation and filtering methods for concept selection.

Identification of concept for project.

Implementation of entire design process from research to design development.

Design ideation.

Engagement with industry partners through sponsored design projects.

Visual communication tools.

Advanced design skills development.

Usability principles - testing and analysis.

Graphical user interface interaction.

Product design focused manufacturing techniques and materials.

**PD4124 Contemporary Design Culture (Spring/2)**

3 hours per week; 13 weeks/4th semester; 26L/13LAB; ECTS credits:6

Contextualise their individual works within contemporary and historical practice.

Trace the development of modern design philosophies. Understand the practicalities of working as a professional designer. Debate and discuss design styles, trends, philosophies and ethos. Present design projects which reflect an understanding of the above. Produce an essay exploring a facet of design culture or trend in depth. Discussion and Debate - The Design Soapbox. Contemporary design approaches. International trends.


**PE4112 Production Technology 1 (Spring/1)**

2 hours per week; 13 weeks/2nd semester; 13L/13LAB; ECTS credits:6

Safety in the laboratory; fundamentals of measurement and inspection; process capability, quality, accuracy; basic machining, cutting tool geometry and materials; cutting speeds and feed rates; work holding, positive and frictional restraint, degrees of freedom; joining; mechanical, manual metal welding, oxy-acetylene welding, adhesive bonding; joint design; engineering drawing; communication and visualisation; technical sketching, conventional representation; BS308; projection systems; auxiliary views; sections and sectional views, dimensioning; detail and assembly drawings, surface intersections and developments; limits and fits BS4500.

**PN4002 Technical Graphics 2**

Plane and descriptive geometry problem solving skills. Geometric constructions and theorems, areas of figures, ratios and area conversions. Plane loci incl. the ellipse, parabola as loci, Generating and developing design ideas and strategies. Isometric drawing.

PN4102 Process Technology 1 (Metal)
To introduce the students to a range of metalworking techniques used in the forming and finishing of decorative and functional artefacts. To give the students an opportunity to apply some of the skills studied in PN4111 during the previous semester to simple design and make projects. To develop the knowledge, skills, values and attitudes appropriate to the teaching of technologies.

PN4106 Design and Automation

PN4108 Manufacturing and Service System Design
1. The large picture. International competition and specialisation, the extended enterprise, international supply-chain concept, structure of supply-chains and individual business units. Design questions. Types of flow: information, materials and monetary flows. IT-based enterprise planning and control superstructures. The key importance of the engineer’s talents. 2. What is a product? contemporary concept of a product - product, service and product-service offerings, product and process life-cycles, getting customers what they want: the production-consumption cycle, representation - bill-of-materials, bill of capacities, types of order-fulfilment - make-to-stock, engineer-to-order, make-to-order, configure-to-order, off-the-shelf. Demand-pull versus supply-push, Just-In-Time concept. 3. Objectives - What is meant by High-Performance - Economy, agility, innovation, security/risk. Two concepts of time - machine time, capacity and cost; cycle-time, delay and WIP. Forms of waste and economy of operations. Variabilities in the system. System responsiveness and agility. Service-cost trade-offs. Time-to-market and innovation. System risk and human-tech work. 4. The nervous system of an enterprise: a complex spectrum of enterprise control systems - material flow, information flow, flow, quality, operations scheduling, physical plant, human resources, supply base, markets, proprietary process and product knowledge, finance. 5. The enterprise anatomy: Front-line departments in a business unit - Marketing, Research and Development, Engineering, Manufacturing, Logistics. Drilling-down the hierarchy - global supply-chains, companies, facilities, work-centres, operators and machines. 6. Designing the individual work-centre: what is work? physical work and knowledge work, design of work-centres, functions of machines and operators, fitting the machine to the operator, task analysis and performance prediction, error prediction, standardisation, simplification and minimal workflow, implications of good and bad designs. 7. Designing the factory: process analysis, layout of facilities, space allowances, adjacency desirability, minimal distance, WIP, capacity determination and bottlenecks, safety, hazardous processes and storage, security. Implications of good and bad design. 8. Combining enterprises into supply-chains: supply-make-deliver, location decisions, transportation alternatives, site selection, why companies choose one country over another. Placing inventory - dynamic phenomena in supply-chain control - the beer game. Implications of good and bad design. 9. Operationalising SOA systems improvement - PDCA cycle (plan-do-check-act), motivation and human-centred operations improvement, quality circles. Applications of computer integrated systems in air transportation, six-sigma, lean, future SOA technologies?

PN4206 Process Technology 4 (ED)

PN4306 Design and Communication Graphics 2
Rationale And Purpose Of The Module:
To extend the students applied graphical problem-solving skills and broaden their body of design and communication graphics knowledge
To equip students for the challenges of teaching design and communication graphics topics in final year teaching practice.

To further develop the students’ capabilities and competencies in the use of advanced parametric modelling tools to create increasingly complex product geometries.
To introduce students to the pedagogical applications of 3D CAD in developing teaching resources for design and communication graphics and in solving design problems.
To develop the students’ knowledge of 3D CAD pedagogy.

Syllabus:

PN4308 Design and Communication Graphics 3
Rationale And Purpose Of The Module:
To provide students with the advanced applied graphics knowledge and skills required to teach design and communication graphics.
To further develop the students’ knowledge and understanding of advanced plane and descriptive geometry problems.
Use 3D CAD to develop teaching resources for Design and Communication Graphics
To apply 3D CAD to solve applied graphics and descriptive geometry problems.
To extend the students’ body of knowledge associated with design and communication graphics and its applications.

Syllabus:
Intersection of surfaces, hinged planes. Platonic solids: octahedron, dodecahedron, icosahedron. Advanced
second auxiliary problems. Advanced perspective. Shadow projection. Advanced conics, conjugate
diameters, evolutes. Advanced descriptive geometry of lines and planes including skew lines. Projection of
oblique solids, section planes as a problem solving tool. Advanced plane geometry. Applied 3D-CAD and
associated pedagogy. Generate and solve design briefs. Mechanisms: trochoids, gears, cams. Advanced
Advanced cognitive modelling strategies. 3D CAD tools applied to communicate and solve a range of
gometry and design problems. Designing for sustainability and usability. Examination design and
assessment. Use of 3D CAD to develop teaching resources.

PN4318 Machine Control* (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13LAB; ECTS credits:6

The concept of automatic control; open and closed loop control; the
machine control unit for NC and CNC systems; concepts of position
and velocity transducers; programming languages for CNC
controllers; tool path graphics; information input systems; pneumatic,
hydraulic and electrical power systems for machine control.

PT4001 Sustainable Development
Definitions and contexts for understanding social and human aspects
of sustainable development, critical thinking, challenging
assumptions, examination of knowledge creation, semiotics. Climate
change, the physical science and international politics, energy, energy
use in everyday living, transport, sources of energy and GHG
emissions for different sources, energy dependence, renewable energy
(wind, biofuel, solar, wave), efficiency and conservation, peak oil.
The economics of sustainability, does sustainable innovation enable
sustainable growth? Consumption and production, environmental
impact of everyday things, how marketing influences, life cycle
thinking, behavioural thinking, systems change and intervention,
creativity and innovation, corporate social responsibility, ethical
investment. Food, sustainable food production, energetics of food
production, sustainability of the food chain. Sustainability and public
policy, sustainable development in the national context, the public
policy making process, horizontal policy issues, regional and local,
European Community and the environment. Sustainability metrics,
using scientific analysis to quantify sustainability as guidance for
policy makers, environmental taxes, non-environmental subsidies.
Sustainable communities, building sustainable community action,
bottom up approaches, role of local democracy and environmental and
social movements, local agenda 21.

PT4004 Introduction to Quality Management
Rationale And Purpose Of The Module: The aim of the module is to give an effective and functional overview of
Quality Management. It will: 1. Introduce the student to the basic
concepts of Quality Management; 2. Inform the student about the role
that quality plays in the workplace and impact that quality has on the
organisation as a whole; 3. Make the student aware of the how to
implement a range of quality strategies and tools.
Syllabus:
1. What is Quality and why is it important;
2. Quality Control / Assurance;
3. Quality Management Systems;
4. Development of Total Quality Management;
5. Continuous Improvement;
6. Documentation, Audits, Standards (ISO9000:2000);
7. Human Resource issues,
8. Quality Tools and techniques: Quality Function Deployment,
Failure Mode and Effects Analysis, Statistical Process Control, Six
Sigma; Benchmarking

PT4012 Decision Support Tools
Rationale And Purpose Of The Module: To prepare students to take an active part in developing IT systems
that reflect the needs and priorities from their working perspective.
To apply some elementary programming and information handling
concepts in the context of technology management.
Syllabus:
Spreadsheet basics: MS Excel, cell attributes (number, character
formats), relative/absolute, formulas functions inc arithmetic, trig,
conditional), row/column calculations, configuring charts (category
data line/bar, scatter plots, primary/secondary axes, formatting),
row/column calculations, functions (sum, sumproduct, statistical,
financial), linking between worksheets, add-ins, pivot tables, macros.

Spreadsheet automation: macros, visual basic for applications MS
VBA, conditional looping and branching, vector (list) and matrix
(array) lookup.

Applications to observation and data analysis for building an evidence
base: experimental observations (1) continuous variables (time), work
hard versus work smart experiment, t-test to compare outcomes
(manual and excel function). (2) binary attribute variable
(present/absent, occurrence sampling, confidence intervals, chart on
number line. (3) associative relationship: linear regression curve-
fitting, trendline fit to observed data, extension to non-linear
regression-based models.

Process visualisation: MS Visio, 5S lean process improvement, flow
charts, critical questioning matrix, performance improvement (time).
Standard Time, rating observations: correction to standard time using
linear regression trendline fit for correction and comparison of
observers and methods (trendline function).

Optimisation: MS Solver add-in, most profitable mix of products
subject to constraints of capacity, market, and material availability.

Decision philosophy: continuous improvement PDSA, evidence-
informe decisions, scale of scientific evidence used in healthcare
delivery.

PT4022 Introduction to Quality Management
Rationale And Purpose Of The Module: To prepare students to take an active part in developing IT systems
that reflect the needs and priorities from their working perspective.
To apply some elementary programming and information handling
concepts in the context of technology management.
Syllabus:
Spreadsheet basics: MS Excel, cell attributes (number, character
formats), relative/absolute, formulas functions inc arithmetic, trig,
conditional), row/column calculations, configuring charts (category
data line/bar, scatter plots, primary/secondary axes, formatting),
row/column calculations, functions (sum, sumproduct, statistical,
financial), linking between worksheets, add-ins, pivot tables, macros.

Spreadsheet automation: macros, visual basic for applications MS
VBA, conditional looping and branching, vector (list) and matrix
(array) lookup.

Applications to observation and data analysis for building an evidence
base: experimental observations (1) continuous variables (time), work
hard versus work smart experiment, t-test to compare outcomes
(manual and excel function). (2) binary attribute variable
(present/absent, occurrence sampling, confidence intervals, chart on
number line. (3) associative relationship: linear regression curve-
fitting, trendline fit to observed data, extension to non-linear
regression-based models.

Process visualisation: MS Visio, 5S lean process improvement, flow
charts, critical questioning matrix, performance improvement (time).
Standard Time, rating observations: correction to standard time using
linear regression trendline fit for correction and comparison of
observers and methods (trendline function).

Optimisation: MS Solver add-in, most profitable mix of products
subject to constraints of capacity, market, and material availability.

Decision philosophy: continuous improvement PDSA, evidence-
informe decisions, scale of scientific evidence used in healthcare
delivery.
Special machining processes; injection mould and pressure die-casting design; design of piercing, blanking, cropping and sawing tools; design of specialist tools/tooling systems for above processes. Prerequisite PT4117

PT4424 3D CAD Modelling (Spring/2)
4 hours per week; 13 weeks/4th semester; 52 LAB; ECTS credits:6
The engineering design process and the 3D feature based model as a design database; its relevance to concurrent engineering; design visualisation; creating features; surface, solid and parametric modelling and design; design intent; planning parts for design flexibility; relations and equations; parametric dimensions; modelling for manufacture and assembly; design for manufacturing; assembly models and drawings; drawing documents; BOMs design of simple fixtures, creating design tables using Excel for multiple part and assembly configurations, Library features; importing and exporting files; CAD standards for data exchange; STL files and the FDM rapid prototyping system, linking with CAM. The CAD database and other downstream applications; equation solvers, FEA, simulation software. Prerequisite: PT4424

PT4428 Process Design (Spring/4)
4 hours per week; 13 weeks/6th semester; 26L/26 LAB; ECTS credits:6
Production flow analysis in cellular manufacturing and functional layout. Design of a manufacturing chain using a number of manufacturing cells. Process improvement technique based on process benchmarking and design of experiments using traditional and Taguchi methods. Failure Modes and Effect Analysis (FMEA). Process optimisation using set up time reduction techniques SMED. Product prototyping including hand crafted models and rapid prototyping methods. Prerequisite: PT4427

PT4515 Automation Technology 1

PT4518 Automation Technology 3 (Spring/4)
4 hours per week; 13 weeks/6th semester; 39L/13LAB; ECTS credits:6
Overview of CIM elements; description of role of CAD, CAPP, group technology, CAM; computer techniques - databases; conceptual schemes, logical storage schemes, application of database technology to manufacturing; knowledge-based systems to manufacturing; computer aided production and inventory control; production planning, master production scheduling, the manufacturing system database, materials requirement planning, capacity planning, role of JIT in production, production activity control; enterprise integration. The concept of integrated manufacturing systems; CAD as a data generating system; databases; database management systems, storage of data relational and hierarchical data bases; data modelling expert systems MRP, CAPP, (group coding systems), computer aided production and inventory control; integration of functional areas; MAP, TOP, EDL Prerequisite PT4517

WT4005 Architectural Technology: Heritage and Design
Rationale And Purpose Of The Module:
To develop:
A critical aesthetic awareness of the design of buildings and their relationship with their surroundings
The ability to make informed judgments on aesthetic and other considerations relating to buildings and the built environment
An appropriate vocabulary to discuss issues relating to craft standards, visual impact of buildings, sustainability and environmental considerations and the best use of space
The ability to make value judgments on general best practice relating to buildings and the built environment
Syllabus:

WT4014 Introduction to Geology & Soil Mechanics
This module introduces the most common material encountered in the construction industry by exploring soil mechanics beginning with the fundamentals in civil engineering geology. The course is designed to challenge the student to seek the key concepts in geology and soil mechanics and apply these concepts in projects and self-directed learning to achieve the following key objectives: To provide a clear understanding of the role of geology and soil mechanics in achieving a successful construction project. To form the basis for subsequent modules on Soil Mechanics and Geotechnical Engineering Design. To generate enthusiasm for the subject through field trips, practical experimentation and case histories.

WT4016 Wood Technology and Design 2
Rationale And Purpose Of The Module:
This module will provide students with the opportunity to develop and apply a range of design and processing skills in the context of the senior cycle Construction Studies (Architectural Technology) curriculum.
Syllabus:
Pedagogic approaches to integrating design and manufacturing techniques and processes in senior cycle project work.
Stages and functions of design.
Model making and prototyping.
Materials selection for sustainability.
Material and process carbon footprint.
Design and selection of wood and composite jointing techniques.
Material optimisation.
Design strategies.
Programming and operation of CNC equipment.
Data transfer from CAD systems.
Analysis of the application of these technologies in the school.
Production procedures.
Organisation of work.
Classroom/workshop/laboratory organisation.
Fostering creativity in classroom activities.
Assessment procedures and criteria.
Presentation techniques.
Design portfolios.

WT4018 Advanced Timber Construction
The aims of this module are:* that the student gains an insight into the use of wood in modern building design* that the student develops a confidence and ability to defend, develop and promote the use of wood in competition with other building materials and systems* The objectives of this module are * to introduce the context of current building practice in the use of wood
and wood based components * to integrate new ideas and innovations in the use of wood in construction in a global context * to equip the student with the terminology and concepts involved in analysis and design of wood based constructions * to introduce the concept of end use of construction, particularly for humans using timber based constructions

**WT4102 Wood Science 1** *(Spring/1)*

3 hours per week; 13 weeks/2nd semester; 26L/13LAB; ECTS credits:6

Microscopic and macroscopic structure of wood; chemical composition of wood; wood-moisture relationships; mechanics; physics of wood; conversion of wood; effect of process on structure property relationships.

**WT4104 Wood Science 2** *(Spring/2)*

3 hours per week; 13 weeks/4th semester; 26L/13LAB; ECTS credits:6

Wood; moisture relationships in wood; modification of wood-moisture relationship; air-drying and natural seasonig; steaming, re-moisture, moisture gradient control; kiln drying, fundamentals of kiln-drying, defects, equilibrium; kilns and instrumentation; specialised seasoning methods; physical properties of wood. Prerequisite: **WT4102**

**WT4106 Architectural Technology: Materials Technology & Design**


Designing, planning and managing appropriate learning activities for Materials Technology & Design.

**WT4107 Pulp, Fibre and Board Manufacture 1**

Rationale And Purpose Of The Module:

To integrate the combination of wood and its reconstruction into wood products, in terms of process, properties and end uses.

Syllabus:

- Concepts in modifying wood: deconstruction, combination, chemical and physical changes.
- Commimation: fibres, pulping, mechanical, chemical, physical, chips, particles, veneer, sections.
- Fibre Products:
  - Papers manufacture, types, specification, modification, print requirements.
  - Cardboard, specification, corrugation, packaging.
  - Hardboard, insulation board.
  - Medium and high density fibreboard, manufacture, types, properties, end uses.

**WT4202 Design Studio** *(Spring/1)*

3 hours per week; 13 weeks/2nd semester 13L/13T/13LAB; ECTS credits:6

The process of problem analysis to function and markets; the principle and elements of design relationships, shape, form, and texture; seminars/projects; exploration of design theory through visits and workshop sessions.

**WT4208 Building Services 2**

* 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 biomass.
* Hot and cold water services: Pipe sizing for hot and cold water multi-storey buildings, force and pressure, hydraulics.
* Drainage services: sustainable urban drainage, detention 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.

**WT4304 Machining Technology 2** *(Spring/2)*

3 hours per week; 13 weeks/4th semester; 26L/13LAB; ECTS credits:6

Machine optimisation, analysis of factors governing mass production processing; product design, process and assembly interrelationships; introduction to CNC machining; planned maintenance; practical applications. Prerequisite: **MT4303**

**WT4502 Construction Technology and Management 2** *(Spring/2)*

4 hours per week; 13 weeks/2nd semester; 26L/26Lab; ECTS credits: 6

Site selection and analysis for residential construction. Soil identification, properties and behaviour – factors affecting drainage and foundation choice. Concrete technology and mix design, environmental considerations in residential construction – sustainable technologies for water disposal and energy. Intro to housing estate development and planning applications. Interpretation of construction drawings. Trouble shooting residential building problems via case histories. Irish architectural heritage and conservation. Prerequisite: **WT4401**

**WT4504 Building Services 1**

* 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.

**WT4604 Land Surveying**

Surveying fundamentals, tape & offset surveying; levelling; the theodolite and its use, tension determination, steel taping differential levelling, traversing, angle measurement electromagnetic distance.
and developing value for money solutions. Sharing, negotiations and development of incentives; value engineering, estimating, new procurement methods, tender submission and follow up; impacts of new developments on costs, unit rate pricing, sub contractors, fluctuations; provisional sums, appreciation, enquiries to suppliers and tender preparation.

**WT4804 Estimating and Costing**

Syllabus: Evaluation of initial solution, development and modification of same. Preparation of final brief which includes analysis, developments, solutions and conclusions.

**Learning Outcomes:**

Cognitive (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis)

(i) Demonstrate specialised knowledge in a particular field through concentrated research, design and experiment.
(ii) Demonstrate skills in planning and managing a large project.
(iii) Demonstrate the necessary writing skills and methods for logical organisation of a major report document.
(iv) Develop and improve oral presentation skills and oral defence of their work.
(v) Demonstrate skills in communicating designs with technical staff for manufacture of equipment.

**WT4704 Building Measurement**

Setting down dimensions, alternative systems, applied mensuration, general rules for taking-off; measuring substructures, excavations, formwork areas, various foundation types and measurement; walls, floors, concrete, blockwork, masonry, partitions and suspended ceilings; internal surface finishes, dry linings roofs, structural elements, roof finishes and coverings, waterproofing; internal finishes, windows, doors, staircases, fixtures and fittings; reinforced concrete structures, columns, beams, slabs, formwork, concrete finishes, reinforcement, precast elements; structural steelwork; structural timber, standard joinery components; plumbing, fittings, mechanical and electrical installations; drainage, underground and above ground, external works, roads, pavings, earthworks and groundworks, landscaping; demolitions, alterations and renovations.

**WT4804 Estimating and Costing**

Organisation of the estimating function, estimating methods, project appreciation, enquiries to suppliers and tender planning; resource costs, unit rate pricing, sub contractors, fluctuations; provisional sums, preliminaries, cashflow forecasts, completing the estimate, tender submission and follow up; impacts of new developments on estimating, new procurement methods, target cost estimating, gain share, negotiations and development of incentives; value engineering and developing value for money solutions.

**WT4902 Model Making (Spring/1)**

5 hours per week; 13 weeks/2nd semester; 13L/52LAB; ECTS credits: 6

An introduction to machines, equipment and tools for cutting, shaping, joining and finishing; health and safety in the workshop; model making techniques using wood, metals and plaster of Paris; analysis of shapes and graphic presentation; analysis and selection of applied finishes for various applications and effect.

Prerequisite: ID4811

**WT4904 Design for Teachers**

**Rationale And Purpose Of The Module:**

To develop

The knowledge, skills, values and attitudes necessary to ensure the appropriate management of safety by the teacher in the technology teaching environment at second level.

A deeper understanding of the statutory instruments and other regulations that apply to the management health and safety in the technology teaching environment at second level.

An ability to execute the procedures associated with the creation and maintenance of a safe and healthy learning environment.

**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.

CU4096 After the Revival: Studies in Modern Irish Poetry

Rationale And Purpose Of The Module:

This module will introduce students to a range of twentieth century and contemporary Irish poets writing in English, addressing issues pertaining to nationalism, colonialism, literary modernism and gender. This module provides students with a survey of Irish poetry in English after Yeats and the Literary Revival; from Austin Clarke and Patrick Kavanagh to Seamus Heaney, Michael Hartnett, Medbh McCue and Eilean Ni Chuilleanain, Paul Muldoon, Nuala Ni Dhomhnaill, among others. Matters to be explored include: the cultural politics of the Irish Free State; tradition, modernity and modernism; gender and the Irish poetic tradition, orality and poetic forms; and poetic representations and negotiations of the Northern Troubles.

Syllabus:

Beginning with an assessment of the influence of the poetry of WB Yeats and anticipating the influence of the wider literary revival, the course will move chronologically forward to study the works of major poets such as Denis Devlin, Austin Clarke, Patrick Kavanagh, Thomas Kinsella, Seamus Heaney, Michael Hartnett, Eavan Boland, Paula Meehan and Medbh McCue. The course will consider matters such as the poets relationship to the nation and to the State; and will also measure the significance of landscape, memory, myth and gender in the corpus of twentieth-century and contemporary Irish poetry in English.

CU4112 Cultural Studies 2: Language and Culture (Spring/1)

2 hours per week; 13 weeks/2nd semester; 26L; ECTS credits: 6

To examine some of the key elements of the interaction between language, culture and society. Language as a structured system: semantics and society; language, thought and worldview; language and identity: issues of language, power and conflict.

CU4116 Cultural Theory (Spring/3)

3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS credits: 6

To give students the opportunity to study in depth, the writings of key cultural theorists of the 20th century. Up to three authors will be covered taken from a list which could include Adorno, Barthes, Baudrillard, Benjamin, Bourdieu, Cixous, Derrida, Eco, Foucault, Habermas, Lacan, Marcuse, McLuhan, Warner, and Williams. The lectures will cover the selected authors and also contextualise them into the intellectual movements that they generated e.g. neo-modernism, structuralism and post-modernism.

CU4118 European Cinema (Spring/4)

3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

Students will study films from different countries for the ways in which they inform the European tradition. Lectures will cover different periods of European Cinema; Weimer cinema, Italian neo-realism, French New Wave and New German cinema. The tutorials will study individual films from the weekly screenings and apply theoretical approaches such as genre, auteur and image analysis.

TE4011 English as a Foreign Language Intermediate

4 hours per week; 13 weeks/2nd semester; 39T/13LAB; ECTS credits: 6

Placement test to be done on arrival

English language classes cover the four language skills of listening, speaking, reading, and writing in both general and academic English. Text books and authentic supplementary materials are used in class. Each level will also read a set novel. There are four hours of class each week: two of these are with the class teacher, and two are with trainee teachers, under supervision, doing their Masters in English Language Teaching.

EH4002 Critical Practice II: Renaissance Literature (Spring/2)

4 hours per week; 13 weeks/2nd Semester; 26L/26T; ECTS credits: 6

This module introduces students to genre-based studies in poetry and drama, in this case, to significant ideas and key works from the English Renaissance. The period studied, from the Reformation to the Restoration, sees the closing of the frontier to the present day. Through a selection of texts reflecting the diverse voices of the literature, students explore the physical, cultural, and sociopolitical geographies of America. Reading accounts of the city and town, the urban and suburban, the road, the land, the reservation, or the South, students engage with questions of self and society, class and race, national identity, marginalisation, counterculturalism, and globalisation, as expressed within differing literary movements.

EH4016 State of the Union: American Literature since 1890 (Spring/6)

3 hours per week; 13 weeks/6th Semester; 13L/26T; ECTS credits: 6

This module follows on chronologically from EH4023 The New World: American Literature to 1890, covering the period from the closing of the frontier to the present day. Through a selection of texts reflecting the diverse voices of the literature, students explore the physical, cultural, and sociopolitical geographies of America. Reading accounts of the city and town, the urban and suburban, the road, the land, the reservation, or the South, students engage with questions of self and society, class and race, national identity, marginalisation, counterculturalism, and globalisation, as expressed within differing literary movements.

EH4026 Colonial/Post-colonial Literature in English

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

**EH4038 Study of a Major Author**

**Rationale And Purpose Of The Module:**
This module offers students the opportunity to engage in intensive study of an author whose work has significantly affected the traditions of literature written in English. Students will read an extensive selection of the authors works in order to understand fully his/her individual development and his/her important contributions to literary history.

On successful completion of this module, students will have gained:
- An understanding of the author in his/her political, historical, and cultural contexts;
- Familiarity with a range of the authors works and with a range of his/her thematic, stylistic, aesthetic, and formal concerns;
- An understanding of the authors importance in the literary canon;
- An understanding of different theoretical and methodological ways of interpreting the major author.

**Syllabus:**
This module will function as a critical survey of the work of a major author. Students will study the authors development from early efforts to mature output and will be able to analyze and discuss the authors overall impact on literary history. Students will be able to position the author historically and politically and will understand the authors role as a contributor to intellectual history. Students will be able to position the author in different theoretical and methodological frameworks and will be able to assess and interpret a wide range of the authors work.

**Example One:**
**Virginia Woolf**
This module will trace the development of the modernist novelist Virginia Woolf from early work to mature output. Students will read most of her major fictions as well as a selection of her essays and autobiographical pieces. Students will study Woolf as a theorist and practitioner of modernist narrative form, as a woman writer deeply interested in questions of female creativity and a significant contributor to feminist literary theory, and as a figure increasingly relevant to studies of memory and trauma. Students will also consider Woolf as a cultural icon by considering her work in relation to recent films and novels that deploy her work and life.

**EH4116 Contemporary Irish Writing in English (Spring/3)**

3 hours per week; 29L; ECTS credits 6

The literary texts are read in ways that relate them to discourses surrounding the articulation of diverse modes of identity in contemporary Ireland. Thematically this module looks at areas such as the Northern Irish Troubles, the erosion of the dominant Catholic consensus in the Republic, and the increased attention given to womens writing and experience. In order to do this, the literary texts are supplemented by texts that have engaged in the cultural, political and historiographical debates of this period.

**Rationale And Purpose Of The Module:**
This module introduces students to the academic study of languages, literature and cultural studies, with a specific focus on the theoretical approaches used in languages, literature and cultural studies. The module provides training in essential research skills, equipping participants to pursue self-directed study, to individually research a topic, to apply the appropriate tools and methods of research, to source and use primary archival materials, and to present findings appropriately. The aims of the module are:
- To introduce students to the theoretical approaches used in languages, literature and cultural studies;
- To equip students with the necessary skills to carry out a research project and to present findings appropriately;
- To equip students with the research skills for sourcing, storing and presenting research data;
- To enhance students awareness of the information technology skills necessary to develop the above research skills.

**Syllabus:**
Students undertaking research in languages, literature and cultural studies will be introduced to the theoretical approaches used by researchers in each of these disciplines and will engage in the evaluation of the critical readings of scholars in their discipline in light of such theoretical frameworks. Incorporating a practice-based element, students will be equipped with the necessary skills to design and carry out a research project in their selected discipline. Through small group discussion- and writing-focused workshops, students will be engaged in activities to develop the appropriate skills to collect, interpret and present research data appropriately, and to share their research findings with peers in verbal, visual and written forms.

**FR4142 French Language and Society 2: Introduction to French Studies 2 (Spring/1)**

4 hours per week; 13 weeks/2nd semester; 13L/13T/26LAB; ECTS credits: 6

The module builds on French Language and Society 1 through continuation of oral and written exercises on topics relating to contemporary France and the Francophone community. Continued revision of grammatical structures and introduction of more complex structures. Development of autonomous language-learning skills.

**FR4146 French A5 (European Studies)* (Spring/3)**

4 hours per week; 13 weeks/6th semester; 26L/26T; ECTS credits: 6

In depth study of the Fifth Republic through analysis of a variety of texts from the period; intensive language activities include comprehension, linguistic analysis and translation. **Prerequisite FR4125**

**FR4148 French Language & Society 6 Media/Current Issues (Spring/4)**
The nature of communication and the media industries in France: general language classes will concentrate on text analysis oral presentation and debate in French: translation classes will focus on the study of different registers and discourses: students will study a modern film television broadcasts or work of literature:

**FR4242 French 2A (Applied Languages) (Spring/1)**
4 hours per week; 13 weeks/24th semester; 26L/26T; ECTS credits: 6

The module builds on French A1 through continuation of oral and written exercises on topics relating to contemporary France. Continued revision of grammatical structures and introduction of more complex structures; development of autonomous language-learning skills.

**FR4246 French Language Culture & Society 4 (Spring/3)**
4 hours per week; 13 weeks/6th semester; 13L/39T; ECTS credits: 6

Development of active and receptive language skills key moments in the history of post-war France revolutionary ideals in eighteenth-century France.

**FR4248 French Language Culture & Society 6 (Spring/4)**
4 hours per week; 13 weeks/8th semester; 13L/39T; ECTS credits: 6

Communication and the media in France the written press cinema television and new technologies translation and the audio-visual media principles and practice in conference and bi-lateral interpreting theory and practice of literary translation:

**FR4622 Literature & Culture Twentieth-Century (Spring/1)**
3 hours per week; 13 weeks/2nd semester; 13L/26T; ECTS credits: 6

A study of four literary texts: works by authors such as the following will be included: camus sarte de beauvoir duras ionesco anouilh prevent cezare.

**FR4626 French Literature and Culture 4 19th Century Art (Spring/3)**
3 hours per week; 13 weeks/6th semester; 13L/26T; ECTS credits: 6

The module will concentrate on the mid century to the first world war and will deal with topics selected from the following revolutions realism naturalism industrialisation positivism impressionism symbolism modernism: the module will focus on the representations of Paris during and following the second empire fin-de-siecle France and the period leading up to the first world war: students will study novels poetry and painting of this period: authors could include flaubert zola baudelaire mallarme proust: painters could include courbet manet monet renoir cezanne:

**FR4628 French Literature & Culture 6: Modernity & Genre; The Novel in French**
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 è 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).

**FR4808 French Language and Literature 1**
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 realist/impressionist tradition - reading and studying a selected realist/naturalist novel.

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

**FR4922 French for Business 2A * (Spring/1)**
4 hours per week; 13 weeks/24th semester; 26L/26T; ECTS credits: 6

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; focus on organisational structures of firms, advertising, personnel management. **Prerequisite FR4921**

**FR4924 French for Business 4A* (Spring/2)**
4 hours per week; 13 weeks/4th semester; 26L/26T; ECTS credits: 6

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; focus is in the following areas: Import and Export, The Stock Exchange, Government Taxes.

**FR4928 French for Business 8A* (Spring/4)**
4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits: 6

This module entitled "La politique et la société" looks at present day French politics. It examines French political institutions, the recent presidential elections and the attitudes of the French citizens to politics. Students are asked to take part in simulated debates on current socio-political issues and to write a profile of a political party. The in-depth study of the press and the television provides and ideal base for analysing the treatment of topical issues in the media from a language point of view; in this final module an external oral examination takes place to evaluate fluency and competence developed throughout all the modules **Prerequisite FR4927.**

**GA4105 Irish Folklore 1 (Spring/3)**
4 hours per week; 13 weeks/4th Semester; 26L/26T; ECTS credits: 6

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; traditional custom and belief including calendar customs. A case study in folklore collection based on field recordings made in county Limerick in 1980.

**GA4116 Irish Language 2* (Spring/3)**
5 hours per week; 13 weeks/6th semester; 26L/39T; ECTS credits: 6

A continuation course in communicative Irish based on texts and other materials in use in Irish primary schools; research in Irish place and family names; current position of Irish. [See GA4115 (Autumn Semester) for the Irish language content for students taking Spring Semester only].

**GA4228 Irish Folklore II**
The student will initiate a research project on a topic approved by a supervisor. The student will, by a specific date, submit a 500 word brief which will include a resume of the subject matter, the scope of the project, a review of sources and an outline of the methodology required. The student will start the collection of the necessary data.

**GE4142 German Language and Society 2: Introduction to German Studies II (Spring/1)**
4 hours per week; 13 weeks/2nd semester; 13L/13T/26LAB; ECTS credits: 6

Lecture: Social, cultural and economic trends and institutions in the German-speaking countries in the post-war period; the German regions and regionalism; regional and social variation in the German language. **Tutorials:** a) analysis of literary texts to provide further depth study of the press and the television provides and ideal base for analysing the treatment of topical issues in the media from a language point of view; in this final module an external oral examination takes place to evaluate fluency and competence developed throughout all the modules **Prerequisite FR4927.**

**Language laboratory:** exercises in pronunciation, listening comprehension and grammar utilizing CALL facilities
GE4146  Germany past and present (Spring/3)
4 hours per week; 13 weeks/6th semester; 13L/39T; ECTS credits:6
Lecture: German revolutions, democracy, fascism; cultural institutions, cultural life (book trade, theatres, music, cinema, fine art, media etc.), the cultural and literary heritage. Tutorials: a) reading and discussion of literary texts supporting the lecture; b) conversation class or drama workshop; c) advanced grammar work.

GE4148  Issues and debates in the German speaking countries today (Spring/4)
4 hours per week; 13 weeks/8th semester; 13L/39T; ECTS credits:6
Lecture: political issues in unified Germany, Austria and Switzerland; dealing with the past; nationalism and national identity; economic, cultural and social debates (equality, environmentalism, cultural politics, social reforms, women's movement in Germany); political apathy and extremism. Tutorials: a) discussions of literary texts, newspaper, magazine articles and TV programmes on topical issues focussing on the characteristics of different text types and language registers; b) issues in Austria and Switzerland incl. presentations in the foreign language; c) translation practice: English/German with a particular focus on the problem of registers.

GE4212  German for Beginners 2 (Applied Languages)
Lecture: Postwar German-speaking countries: society and institutions; political, economic, cultural and literary trends; contemporary literature and culture in the German-speaking countries of Europe. Tutorial work: one hour textwork develops skills relating to textual analysis, grammar in use and writing, literary texts relating to lectures will also be discussed in this class and examined in the oral and written exams; one hour grammar/translation consolidates existing grammatical knowledge and introduces more complex structures through contrastive work using English/German translation exercises; German linguistics relates general linguistic course to the German situation, focusing on past and current developments in the German language.

GE4242  German Language, Culture and Society 2 (Applied Languages) (Spring/1)
2 hours per week; 13 weeks/2nd semester; 13L/13T; ECTS credits:6
Lecture: Postwar German-speaking countries; society and institutions; regional/social variations and developments in the German language; political geography; trends in postwar German culture and economy. Tutorial work: one hour textwork develops skills relating to textual analysis, grammar in use and writing, two short literary texts relating to lectures will also be discussed in this class and examined in the oral and written exams; one hour grammar/translation consolidates existing grammatical knowledge and introduces more complex structures through contrastive work using English/German translation exercises; one hour German linguistics relates general linguistic course to the German situation, focusing on past and current developments in the German language.

GE4246  German language, culture and society 4 (Spring/3)
4 hours per week; 13 weeks/6th semester; 13L/39T; ECTS credits:6
Lecture: German revolutions, democracy, fascism; cultural institutions; cultural life; the cultural and literary heritage Tutrial 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); Text analysis & production: analysis & writing of reports and summaries; Translation theory and practice: historical and socio-political texts. Literature reading course: Students will read two pieces of literature related to the theme of the lecture. This will form the basis of 2 weeks' oral discussion work and one essay in German.

GE4248  German language, culture and society 6 (Spring/4)
4 hours per week; 13 weeks/8th semester; 13L/39T; ECTS credits:6
Lecture: cultural-political issues in unified Germany, Austria and Switzerland; dealing with the past; nationalism and national identity; economic, cultural and social debates such as equality, environmentalism, cultural politics, social reforms, political apathy and extremism. Tutorial work: Oral presentation & discussion class: drawing on text and audio-visual materials to develop formal oral skills (presentations, talks, interviews). This hour will be alternated with a class providing an introduction to interpreting; Text analysis & production: analysis & writing of project proposals, evaluations, etc.; Translation theory and practice: advertising, commercial and literary texts. Literature reading course: Students will read two pieces of literature related to the theme of the lecture. This will form the basis of 2 weeks oral discussion work and one essay in German.

GE4622  Text, writer and reader (Language & Cultural Studies) (Spring/1)
2 hours per week; 13 weeks/2nd semester; 13L/13T; ECTS credits:6
Lecture: what is a text? the process of reading; intertextuality; reception of literature; literature and politics, 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, drama and poetry as examples

GE4626  German Literature and Culture 4
Rationale And Purpose Of The Module: To examine major literary and cultural movements of the 19th century through a study of representative authors and various genres. To give students an understanding of the intellectual, artistic and philosophical milieu in 19th century German culture.

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

GE4922  German for Business 2A (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26T; ECTS credits:6
Using authentic materials simulating a business environment, students are asked to deal competently with tasks in specific communicative situations; introduction to the organisational structures of firms in Germany; emphasis on developing telephone techniques and other work-related interactive skills. Students will also continue to learn more about the cultural side of German life and work on improving their language skills with an emphasis on writing and speaking Prerequisite GE4921

GE4924  German for Business 4A (Spring/1)
4 hours per week; 13 weeks/4th semester; 26L/26T; ECTS credits:6
Dealing with commercial correspondence from processing an initial enquiry through to coping with non-payment of invoices; filling in official forms/documentation; introducing the following business areas: advertising, import and export. Preparation of CV's and letters of application. Regular discussion of current affairs to improve awareness of changes in the German economy and society. Prerequisite GE4923

GE4928  German for Business 7 (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits:6
Consolidation of language skills acquired in the course of the previous semesters; examination of the institutions and policies of the EU with particular reference to Germany's role within the EU, Irish-German trade and the implications of the Single Market; presentation of economic and social issues by the German media; revision of the following: business material in general, the skills of translation, and summarisation of texts. In this final module, an oral examination with the External Examiner evaluates fluency and competence developed throughout the German stream; students must pass this examination in order to complete this module successfully Prerequisite GE4927

GY4016  Economic Geography (Spring/3)
3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS credits:6
The economy and economic geography; manufacturing activity and least cost location theory; Weberian location theory; transportation cost as a factor of location; production costs and location; scale and agglomeration; spatial behaviour of large organisations; deindustrialisation and tertiarisation; nature of service activity; market area analysis; central place theory; quaternary activities and office location; location and public policy.

GY4018 Historical Cultural Geography of Modern Ireland (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6
An exploration of Irishness in the landscape, past and present; names of places; signatures and people; signs and symbols; landscape as clue to culture; seeing things; history matters.

GY4023 Geography of Development (Spring/2)
3 hours per week; 13 weeks/2nd Semester; 26L/13T; ECTS credits: 6
Conceptions of Development, unity and diversity with respect to the major physical, social, economic and political characteristics if developing societies; the historical roots of underdevelopment; the bases of contemporary political and economic domination of the developing world by the developed world with particular attention to the role of trade, multi-national corporations, aid and debt and the necessity for balanced interdependence, the position of elites, the role of demography, urban development

HI4062 Court Politics and Culture in the Spanish Monarchy; 1561-1665
Rationale And Purpose Of The Module:
The aim of this final-year undergraduate elective module is to give students a perception of how an early modern state was expected to be governed, and how it actually was governed. On completion, students will have gained an understanding of how personal and family relationships had an impact on high politics; they will have further developed their skills in written expression, and selective analysis of information. It is also anticipated that students will have gained experience in the interpretation of a variety of new primary sources, including artistic and architectural evidence, as well as translations of journals, letters and notarial documents.

Syllabus:
The emergence of Madrid as a capital city from 1561; a society of estates û nobility, clergy, bankers and lawyers in early modern Spain; Philip II as a paradigm of the good ruler, 1559-98; the model undermined û Philip III and the duke of Lerma, 1598-1621; palace construction and design; the household of the king; court ceremony and access to the monarch; Diego de Saavedra Fajardo and ideas of kingship and political theory; Philip IV and Olivares, 1621-1643; the paradigm regained? Philip IV and Don Luis de Haro, 1643-1665; marriage, birth and death within the Spanish elite; Golden-Age painting as a mirror of politics and society; reaching out into the provinces û government by consensus; the Spanish court as a model for Europe.

HI4072 Europe: Imperialism and Decolonisation (Spring/2)
3 hours per week; 13 weeks/3rd semester; 26 L/13T; ECTS credits: 6
The following themes will be examined: the historiography of colonialism and imperialism; understanding the concepts; the economics of colonialism; the framework û emigration, religion, education, culture, sport, economy; Ireland and the wider world 1850-1921; the conduct of empire - France, Britain; women - agents of empire; the retreat from empire; Ireland and the wider world after 1922.

HI4077 Metropolis The German Experience 1900-1945
Rationale And Purpose Of The Module:
The course explores, through text and image, the cultural experience benefits of urban life in Germany during the first half of the twentieth century.

Syllabus:
From the late nineteenth century Germanys cities (and above all Berlin) became synonymous with social and political change, cultural and sexual experiments, becoming also arenas for technological innovation in work and domestic life. These transformations appeared to challenge the structures around which society and politics in Germany had been had been traditionally organized, precipitating a climate of uncertainty and crisis among some sections of society. The responses and efforts of those in authority - reflected in public debates, regulatory, administrative, legal etc., to the challenges posed by this urban modernity, as well as the changes themselves, are the focus of discussion in this course as we explore the meaning and nature of urban modernity and crisis in Germany during the early twentieth century.

HI4082 Europe: Society and Governance (Spring/2)
3 hours per week; 13 weeks; 26L/13T; ECTS credits: 6
War, revolution, restoration 1914-24; democracy/dictatorship and war 1924-44; American money and reconstruction; decadent decade? depression and sobriety; political mobilisation and violence; authority restored; conservatism/fascism/Stalinism; the twenty-year crisis: international relations; the Nazi new order and total war; Holocaust; reconstruction and Cold War; 1945: Europe's zero hour? re-establishing order: the European economy and culture; the 'second sex': youth, political protest and cultural revolt; the post-post war society and state; rebuilding the European house: Thatcher and Gorbachev; race, ethnicity, and memory; after the Wall: the return of 'Europe'.

HI4102 Ireland: Revolution and Independence, 1898-1968 (Spring/2)
3 hours per week; 13 weeks/3rd semester; 26L/13T; ECTS credits: 6
Origins of the modern physical force tradition; resistance to change; Sinn Fein and the Irish Volunteers, 1916 Rising and its aftermath; 1918 Election and the first Dáil; War of Independence, Partition and Civil War, Free State and Stormont; economic unrest; Ireland and the Second World War; Fianna Fáil and the constitution; the Republic, IRA and the Border Campaign; civil rights in Ireland.

HI4107 Conservatives, Patriots and Radicals: Politics and Political Ideology in 18th Century Britain and Ireland
Rationale And Purpose Of The Module:
The aim of the module is to examine the political development of Ireland and Britain in the eighteenth century. Students will examine the main ideologies that shaped the political discourse of Ireland and Britain, namely conservatism, patriotism, and new radical ideas emerging from the Enlightenment.

Syllabus:
a.The Glorious RevolutionÆ of 1688 â success of English protestantism; the idea of liberty and virtue; Jacobitism and Hanoverianism û crisis of succession, Whigery and Torism, and accountÆ v. acountyÆ, 1691-1714; the union with Scotland, 1707, and Irish disappointment; ascendant but divided Whigs; aethe wealth of nationsÆ, war, economy and the emergence of empire and imperial necessity; morals and the nation û religion and its influence: voters, patrons and parties û a place for ideology?; Irish patriotism û the aIrish nationÆ; political exclusion and the politically unconscious; loyal opposition and calls for reform; the power of the press; French and American Revolutions û the growth of radicalism (republicanism) and the conservative reaction; armed and dangerous û the Irish Volunteers; the fall and rise of Irish Catholicism; union and unionists û a conservative victory?

HI4112 Sources for History (Spring/2)
3 hours per week; 13 weeks/3rd semester; 26L/13T; ECTS credits: 6
Historians and their sources; public and private archives; origins, ideologies and holdings: the scope of national, regional and private archives; the range and scope of electronically available source materials; oral, audio, visual, pictorial sources and archives: the identification, location, accession, and critical evaluation and use of sources; forgery, fabrication and the historian; the withdrawal, suppression and destruction of sources; the practicalities of archive use, access, availability, procedure and professional practice: the appropriate citation of sources.

HI4132 Warfare and Diplomacy: Europe in the Seventeenth Century
Rationale And Purpose Of The Module:
This module offers students an overview of the political, social and economic history of continental Europe during the seventeenth century. It is intended as a spring-semester module to complement the autumn-semester module on sixteenth-century Europe, thus providing first-years with a more gentle introduction to the early modern period than has hitherto been on offer.

**Syllabus:**

The Thirty Years War and the military revolution; mercenaries and siege warfare; developments in congress diplomacy at Westphalia, the Pyrenees, Nijmegen and Utrecht; Rastatt; the structure of state building - Cardinal Richelieu and fiscal terrorism; rebellion, civil war and Frondes - the general crisis of the mid-seventeenth century; Dutch economic primacy and world trade; credit systems, deficit-finance, the development of state-funded debt and the stock exchange; the emergence of capital cities - Madrid, Vienna and Turin; court society and the world of the minister-favourite; the decline of Spain; France in the age of Louis XIV; the emergence of absolutist states from the 1660s; aristocratic constitutionalism in Sweden, Denmark and Poland-Lithuania; Austro-Hungarian expansion into the Habsburg Austrian plain; the partition of the Spanish Monarchy in 1713-14.

**Rationale And Purpose Of The Module:**

To examine trends in contemporary Japanese literature through reading recent prose and drama in the target language; to enable students to apply critical skills to the study of current Japanese texts; to develop students skills in communicating in oral and written Japanese.

**Syllabus:**

- Students are introduced to contemporary Japanese literature through reading a selection of recent prose and drama in the target language. Texts are representative of current themes and motifs in Japanese literature as well as language use.
- To develop students skills in communicating in oral and written Japanese.

**JA4246 Japanese Language, Culture and Society 4 (Spring/2)**

6 hours per week; 39L/39T/13LAB; ECTS credits: 6

Listening practice, particularly authentic broadcast news; speaking at various levels of formality and with correct nuances of respect etc; reading authentic essays and news stories or near authentic material relating to contemporary Japanese life; writing descriptions, summaries, memos, faxes and e-mails; use of a further 250 kanji to bring the total up to 500 characters.

**Prerequisite JA4213**

**JA4808 Japanese Language and Literature 1**

Rationale And Purpose Of The Module:

To examine trends in contemporary Japanese literature through reading recent prose and drama in the target language; to enable students to apply critical skills to the study of current Japanese texts; to develop students skills in communicating in oral and written Japanese.

**Syllabus:**

- Students are introduced to contemporary Japanese literature through reading a selection of recent prose and drama in the target language. Texts are representative of current themes and motifs in Japanese literature as well as language use.
- To develop students skills in communicating in oral and written Japanese.

**JA4818 Japanese Language and Literature 2**

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.

**JA4912 Japanese for Business 2 (Spring/1)**

6 hours per week; 13 weeks/2nd semester; 26L/39T/13LAB; ECTS credits: 6

Vocabulary expansion through role-playing and language laboratory exercises; simple telephone conversation skills: invitations, appointments, messages; introduction of a further 100 kanji; basic descriptive writing, such as describing a city; basic grammatical structures including verbal plain forms.

**JA4914 Japanese for Business 4 (Spring/2)**

6 hours per week; 13 weeks/4th semester; 26L/39T/13LAB; ECTS credits: 6

Expansion of verb-following phrases through functional exercises; written exercises focusing on explanations of native customs and society; comprehension of the Japanese cultural context through audio-visual materials; further basic grammatical structures; introduction of a further 100 kanji (total 350)

**JA4918 Japanese for Business 8 (Spring/4)**

6 hours per week; 13 weeks/8th semester; 26L/39T/13LAB; ECTS credits: 6

Preparation for applying for a job in Japan, e.g., interview exercise through role playing; business correspondence and communication, e.g., CV and letter of application; introduction of intermediate grammatical structures including basic polite language, i.e., judging when to be used and how to be adjusted according to whom is being addressed; introduction of a further 100 kanji.

**JM4002 Professional Skills for Journalism 2**

Rationale And Purpose Of The Module:

Professional Skills for Journalism 2 aims to develop students' abilities in finding and developing news stories and small features, to editing and headline writing for print, internet and broadcast, and designing and creating for print and internet.

**Syllabus:**

- Students will generate their own stories, through observation and research, and develop them in regular news and features conferences. They will develop their desktop publishing techniques, analysing the elements of type; writing headlines and standfirsts; editing and handling pictures and developing their skills in layout and proof reading. They will design pages in a wide variety of styles for magazines and newspapers, using material generated in Journalistic Writing 2, and using their own photographs and other illustrations. Speakers from newspapers and magazines will give students an insight into professional design, photography and picture editing. Assessment will be through a portfolio of designs, their own website, some broadcast material and a timed editing and page creation examination.

**JM4004 Magazine Journalism**

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 develop creatively and develop their ideas to help them understand how magazines work and to create a pitch for a new magazine.

**Syllabus:**

- Students will learn how the magazine market works, the differences between the various different kinds of magazine, readership markets among about family and place, also pastimes; study of at least a further 80 kanji; discussion of further aspects of Japanese society.

**Prerequisite JA4411**

28
and revenue streams. Professionals will speak about their part of the industry to give the students a broad understanding. 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 Project Oscar: 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 project 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.

**JM4008 Investigative Journalism**

**Rationale And Purpose Of The Module:**
The Investigative Journalism module aims to give students an insight into how to conceive, research and write a piece of investigative journalism to professional standards.

**Syllabus:**
Students will originate an idea, and under the guidance of the tutor will develop it, research it using printed sources and the internet, compile a list of interview subjects and carry out at least two face to face interviews. The research will end in a 2,000 word investigative news feature, with background fact boxes and other material if relevant. The feature must be aimed at a specific newspaper or magazine, and designed into a spread or spreads appropriate to the style of that publication. A research journal of at minimum of 1,500 words will set out the way the research was carried out, what difficulties were encountered, and will include contacts of the interviewees for checking. Assessment will be by the individual student’s contributions to the final project.

**JM4012 Journalistic Writing 2**

**Rationale And Purpose Of The Module:**
Journalistic Writing 2 follows on from the module in Semester 1. The course aims to develop students’ writing skills in producing short features and reviews for a variety of publications.

**Syllabus:**
Students will extend their knowledge of different journalistic forms, including short features, profiles of each other and visiting speakers, vox pops, and reviews of music, clubs or bars. They will be encouraged to reflect on and analyze each other’s and professional work through a course web forum. Regular news writing workshops will continue, including one on a breaking news exercise and a wrap story exercise. They will be helped to begin writing for student publications, and will be encouraged to write their own blogs. Assessment will be by the production of a portfolio of work completed during the course, and a final timed examination.

**JM4014 Feature Writing**

**Rationale And Purpose Of The Module:**
Feature Writing aims to develop students’ writing skills in producing features of different types for a variety of publications.

**Syllabus:**
Students will learn how to generate ideas for features, pitch feature ideas at mock feature conferences, research using printed and web sources and face to face and telephone interviews, develop their ideas for specific target publications, and write lively material. They will work on feature structure and writing standfirsts. They will produce publishable features of different kinds, including an interview/profile, colour writing or reportage and an analytical researched feature. They will be encouraged and helped to get work published either in a student or professional publication, or on their own websites. Assessment will be by coursework: production of a portfolio of work completed during the course, and contributions to class discussions.

**JM4018 Individual Journalism Project**

**Rationale And Purpose Of The Module:**
The individual project aims to help students in-depth reporting, broadening, writing and design skills through work on a substantial project of their own choice. It aims to help them produce an extended piece of journalism with appropriate research.

**Syllabus:**
Students will choose and research a subject of their choice using all available resources and personal interviewing. They will be guided by a supervisor to ensure their research will be adequate to produce a 4,500 word extended journalistic product, either as one piece, or a group of related pieces. Students will also be required to produce a 30-minute radio documentary or 10-minute television documentary or multimedia project on this or a related topic, or a series of shorter packages. A target publication and broadcast outlet must be identified and justified. The final work will be designed for print / web / edited for broadcast as appropriate and presented as part of a portfolio of work. Assessment will be by a BA student. Students should conduct a series of interviews as appropriate and follow ethical guidelines and use on-the-record sources. Students will demonstrate cognisance of news processes, evidence of research, ethical considerations and sound editorial judgement in the production of the project and portfolio.

**JM4022 Introduction to Social Media**

**Rationale And Purpose Of The Module:**
This module aims to equip students with the web-based research, organisational and value judgement skills necessary to examine and understand critically the power of social media in a globalised world. It aims to enable students to become better critical thinkers and researchers by giving them the skills to understand social media, to question its relevance, its accuracy and its legitimacy; and to construct news in a social media format. It will equip students with communication skills that are appropriate to a first-year level and which will enable them to participate effectively in their university degree.

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

**JM4028 Current Issues in Irish Media**

**Rationale And Purpose Of The Module:**
- To familiarise students with the key contemporary issues in Irish media.
- To give students an overview of the diversity of Irish 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.

**JM4442 Shorthand 2**

**Rationale And Purpose Of The Module:**
To explore different contexts within which professional journalists regularly use shorthand
To develop further the listening skills required for taking shorthand
To develop greater competence in recording notes neatly and accurately, using a recognised form of shorthand
To develop greater competence in reading and transcribing notes fluently and accurately
To refine language skills especially vocabulary, spelling and punctuation.
Syllabus: Building on Shorthand 1, this module will explore the different contexts within which professional journalists regularly use shorthand (such as courts, council meetings, DBU) and the value of shorthand notes as legally acceptable evidence. Through further regular practice, students will develop their listening skills further and deepen their knowledge of a recognised form of shorthand, whilst also learning to read and transcribe their notes fluently and accurately. Students will be encouraged to identify any final challenges they have in relation to language skills and rectify these through independent work. Students will also be expected to look for opportunities outside the contact hours to practise their shorthand skills on a regular basis. Students must be able to achieve a level of 90 words per minute by the end of this module.

LA4002 Jurisprudence LAW
Students will acquire a variety of theoretical perspectives on law through an examination of its nature and operation and an analysis of key concepts and issues. Schools of jurisprudence, positivism, classical and modern. Kelsen’s pure theory of law. Natural law theories. Historical and anthropological theories. Sociological jurisprudence. Legal realism. Marxist theories of law. Critical legal studies. Economic analyses. The operation of the law: precedent; statutory and constitutional interpretation. Theories of adjudication; Dworkin’s rights thesis. Key legal concepts including theories of justice and Hoofd’s analysis. Key issues such as morality and the law and the duty to obey the law.

LA4008 COMPANY AND PARTNERSHIP LAW (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits 6
Corporate formation: types of companies, formalities, advantages and disadvantages of incorporation, corporate personality, piercing the veil, groups of companies; corporate governance; role of shareholders, directors, employees, directors’ duties, AGM, accounts and audits; minority shareholder protection; protection of parties dealing with corporations: creditors, voluntary and involuntary, charges over companies; ultra vires contracts; capital integrity; minimum requirements, distributions out of profits, repayments of capital; corporate termination: liquidation, receivership, winding up, examinership, amalgamations and reconstructions. Partnerships; joint and several liability; formation of partnerships; dissolution of partnerships; limited partnerships.

LA4012 Comparative Legal Systems* (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits 6
The idea of law; legal concepts; historical development of common law; early Irish law; Roman law; civil law; some fundamental concepts: German/French/Spanish / Scottish legal systems - an introduction; how a civil lawyer finds the law; American legal system: other conceptions of law and the social order.
Prerequisite LA 4001 Legal System and Method

LA4022 Commercial Law (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits 6
Review of US anti trust legislation, enforcement mechanisms, the relationship between intellectual property rights and competition abuses; remedies at law and equity; alternative mechanisms for dispute resolution, arbitration, private courts, negotiation; bankruptcy, personal versus corporate, historical evolution, philosophical basis, bankruptcy Act 1988, comparative views for the US.

LA4032 Criminal Process (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits 6

LA4035 Labour Law
Rationale And Purpose Of The Module:
To familiarise the student with the legal regulation of contracts of employment, industrial relations and remedies thereto.
Syllabus:

LA4038 Family 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.

LA4042 Administrative Law (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits 6
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.

LA4044 Law of the European Union 2
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 of Hofeld’s analysis on the animal welfare with specific reference to Treaty developments form the 1960s and the initial connection between animals and agriculture to recognition of the sentience of animals in the Treaty of Amsterdam and Lisbon, recent development including the Cat and Dog Fur Regulation and the Cosmetics Directive.

LA4048 Advanced Lawyering 2
Rationale And Purpose Of The Module:
The aim of this module is to provide a detailed understanding of the operation and practice of the legal system in Ireland, paying particular attention to the necessary skills inherent in the process of law at all levels. It forms part of a sequential number of modules within which this aim is achieved.
Syllabus:
Section A.
Working in small groups with a dedicated faculty advisor, students will complete study and participation in the topics outlined in Section A of Advanced Lawyering I, dealing with such issues as the PIAB and Commercial Court, including collaborative law, mediation and arbitration.
Section B.
Students will continue with their selection from Advanced Lawyering I: Business Law Clinic; e-Journal; Research Article; Conveyancing Problem; Moot Trial; ADR process.

LA4052 Introduction to Lawyering 2 (Spring/1)
LA4082 Law of Evidence
(No description given)

LA4098 Sport and the Law
Rationale And Purpose Of The Module:
To examine the law relating to the governance and regulation of sport.

LA4122 Contract Law 2 (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits:6
Specific torts: trespass (to the person, land or goods); nuisance; Rylands v Fletcher liability; damage by fire; defamation; economic torts (deceit; passing off; injurious falsehood); inducement to breach of contract; conspiracy; remedies: general and special; judicial and extra judicial assessment of damages; limitation of actions.

LA4120 Law of Torts 2* (Spring/1)
3 hours per week; 13 weeks/2nd Semester; 26L/13T; ECTS credits:6
Murder and manslaughter; non-fatal offences against the person: assault and battery; aggravated assaults; false imprisonment; kidnapping; sexual offences: rape; unlawful carnal knowledge of minors and others; indecent assault; offences against property: arson; criminal damage; burglary; larceny; aggravated larcenies; robbery; false pretences; embezzlement; fraudulent confession; handling stolen property; offences against the administration of justice: perjury; contempt of court; offences against the public peace; riot and affray; criminal libel; offences against the State; treason; sentencing; elements of criminal procedure: bail; extradition; police powers.

LA4320 Law of Torts 2* (Spring/1)
3 hours per week; 13 weeks/2nd Semester; 26L/13T; ECTS credits:6
Specific torts: trespass (to the person, land or goods); nuisance; Rylands v Fletcher liability; damage by fire; defamation; economic torts (deceit; passing off; injurious falsehood); inducement to breach of contract; conspiracy; remedies: general and special; judicial and extra judicial assessment of damages; limitation of actions.

LA4218 Company Law (Spring/4)
Semester; 26L/13T; ECTS credits:6
Corporate formation; types of liquidators; types of liquidators; non dividends; company liquidation, receivership, winding up.

LA4440 Constitutional Law 2
Rationale And Purpose Of The Module:
Currently, the School of Law delivers lectures on the Irish Constitution to all our LLB degrees and to a number of FAHSS courses. These modules are entitled Public Law 1 and Public Law 2. The term Public Law is outdated and cumbersome. The two new modules being created will keep the content of the Public Law modules but will use the more commonly used name of Constitutional Law. It will be to the advantage of students, and professional bodies and employers with which they deal, as the term Constitutional Law bears the more commonly used term for the study of this area of law.

LA4450 Company Law 2
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.

LA4918 Company Law (Spring/4)
3 hours per week; 13 weeks/8th Semester; 26L/13T; ECTS credits:6
Corporate formation; types of companies, formalities, advantages and disadvantages of incorporation, corporate personality, piercing the veil, groups of companies; corporate governance; role of shareholders, directors, funcionários, clergy and auditors, AGM, accounts and audits; minority shareholder protection; protection of parties dealing with corporations; creditors, voluntary and involuntary, charges over companies; ultra vires contracts; capital integrity; minimum requirements, distributions out of profits, repayments of capital; corporate termination; liquidation, receivership, winding up, examinership, amalgamations and reconstructions.
Elements of a valid contract: offer, acceptance, consideration, formality, legality; terms and conditions; standard form contracts; enforcement mechanisms and remedies for breach of contract; doctrine of restraints to trade; EU competition law and policy as applied to sport; criminal law and sport; manslaughter, assaults and batteries; public order offences; fraud related offences; sports governance: discipline; tribunals and natural justice; judicial review of sports’ association action.

LA4928 Company and Partnership Law

Rationale And Purpose Of The Module:
To analyse from a business perspective the law governing the principal forms of business association, namely companies and partnerships.

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

LA4938 Administrative Law

(No description given)

LI4212 Linguistics 2* (Spring/1)

3 hours per week; 13 weeks/24th semester; 26L/13T; ECTS credits: 6

Language and world-view; cognitive aspects of language categorisation; linguistic universals - typology; contact phenomena - bilingualism; pidgins, Creoles, second-language learning; ideological issues - language planning, purism, language and power, feminist critiques.

Prerequisite LI4211 Linguistics 1

PA4018 The Public Policy Process (Spring/4)

3 hours per week; 13 weeks/8th semester; 39L; ECTS credits: 6

Policy-making in an organisational society; an overview of organisation theory; organisation theory and the public sector; inter-organisational networks, models of decision-making in government; theories of the state; the state, social forces and the distribution of political power in Ireland; agenda setting and the emergence of issues; the public policy process in Ireland; public management; planning, co-ordination and management on the public policy process.

PA4038 Public Administration in Democratic States (Spring/4)

6 hours per week; 13 weeks/8th semester; 39L/39T; ECTS credits: 6

Overview of the main themes in comparative public administration. Discussion on the role of the state in society. Analysis of models of politico-administrative relations in European countries. Discussion of internal organisation of the administration in different European countries. Review of processes of change and innovation in public management in selected countries.

PO4004 Global Political Economy (Spring/2)

3 hours per week; 13 weeks/3rd semester; 26L/13T; ECTS credits: 6

This module is divided into two sections. The first will look at 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 economy, 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.

PO4008 African Politics: Development and Democracy

Rationale And Purpose Of The Module:
This module will supply an introduction to major political trends in contemporary Africa. Against a brief historical review of African state institutions since the advent of colonialism the course will explore successive efforts to modernise predominantly peasant economies, using Tanzanian experience as a case study. The factors that many critics believe have helped to contribute to the persistence and accentuation of African poverty will be assessed: these include poor macro economic management, weak institutions, and disadvantageous patterns of historically entrenched primary commodity production.

Syllabus:
Modern African State Formation: regional contrasts and Development: from the 1930s (with a Tanzanian case study).

PO4013 Government and Politics of Ireland (Spring/1)

3 hours per week; 13 weeks/2nd Semester; 39L; ECTS credits: 6

Historical introduction to the economic, cultural and social background of Irish politics; economic, social and political change; Irish political culture; constitutional development; development of political parties and evolution of the party system; electoral behaviour; social bases of party support; overview of the principal political institutions, including the Presidency, Oireachtas, Government, Taoiseach and the Civil Service.

PO4015 Government and Politics of the EU (Spring/3)

Examines the development of the EC/EU as a political system from the aftermath of the second World War until the Maastricht Treaty; the institutional system of the EC/EU including the decision-making procedures; the interaction between the EC/EU and the politico-administrative systems of the member states; and the ongoing debate on institutional reform in the EC/EU in the IGC.

PO4032 Russian Politics

Rationale And Purpose Of The Module:
The purpose of this module is to help students explore issues in Russian political development over the last century according to their interests. Students have free choice of which topics they study so that the learning outcomes of the module will be individualized.

In addition to the knowledge gained by students about the USSR and Russia, this module will help students to develop their analytical and research skills. All students, however, will have to search out information on contemporary Russia in their own time and will learn how to locate information in the library and on the WWW, will learn how to judge the merits of different information sources, will learn how to construct arguments from primary materials that they have and how to relate such materials to existing academic literatures. They will also have to learn how to interpret academic literature in changing circumstances, to relate it to a developing polity and judge it against change.

Syllabus:
This module is a reading course, students consult over and decide in consultation with the lecturer over the topics in Soviet and Russian politics that they study and write on. These topics include may include, but are not limited to: Leninism and Bolshevism as political theory.

African poverty: the bottom billion and European Union reform, political, cultural, social and economic change in the EU.
The 1917 revolution
The relationship of Leninism and Stalinism
The development of the Stalinist system
The great terror
Khrushchev and destalinisation
The institutions of the USSR: the party-state system
Theories of the development of the Soviet system
The political economy of the USSR
Soviet foreign policy
The nature of the USSR (various approaches can be studied including totalitarianism, Marxist approaches etc)
The Gorbachev reforms
Why did the USSR collapse?
Soviet legacies and the post-Soviet policy agenda
The theory of economic reform and post-Soviet politics
The post-Soviet struggle for power, 1992-1993
The presidency under Yeltsin
Yeltsin, oligarchy and the corruption of the state
ThePutin programme: reform or retrenchment?
The political economy of the new Russia
Russia and the resource curse
The new Russian political system: Elections
The new Russian political system: political parties
The new Russian political system: parliament
The new Russian political system: the development and dysfunctions of federalism
Russian foreign policy
Russia in comparative perspective
State and democracy in the new Russia

PO4048 Issues in World Politics (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:6
The major theoretical and methodological debates in international relations: the roles of realism, liberalism, critical theory, feminism and postmodernism; global political economy and North-South relations; nationalism, ethnicity and democratisation in global context; post-Cold War security.

PO4067 Studies in Political Thought
Rationale And Purpose Of The Module:
To build on the knowledge gained during earlier modules, especially PO4022 Modern European Political Thought, by exploring the writings of a number of key political thinkers in more depth. This module will be an option in the fourth year, and is intended for those interested in exploring political theory themes in more depth. The class will follow a seminar format.
Syllabus:
The relationship between political action and political philosophy, with particular reference to questions of freedom and virtue, explored through the thought of Plato, Machiavelli, and Foucault; the political thought of Plato as a foundation for Western philosophy; the politics of Machiavelli and his influence on the development of humanism and republicanism; Michel Foucault and the relationship between truth and power.

PO4068 European Studies Project 2
Rationale And Purpose Of The Module:
This module introduces students to the debates over leadership choices, in particular to the issue of the influence of institutional design on political and economic outcomes such as the sustainability and performance of democratic systems.
Syllabus:
The module introduces students to typologies of political leadership and arguments about their outcome and engages students in case studies of different leadership types and their effects.

PO4096 Government and Politics in Ireland
Rationale And Purpose Of The Module:
This course is designed to build on and develop the knowledge gained in earlier politics modules by examining the politics and society of a single country in more depth. The course will apply a range of alternative analytical perspectives from political science and the sub-disciplines of political economy, political sociology, public administration and public policy, to the study of the government and politics of Ireland.
Syllabus:
The module is designed to introduce students to Irish government and politics via the study of three main components: the institutional framework of government and administration; the executive, legislature and bureaucracy; political behaviour - including government, parties, party system, electoral behaviour and political culture; and an analysis of the public administration and policy making - looking at territorial administration and sub-national government, economic policy-making and the advent of partnership government; the welfare state and social policy; plus Ireland’s role in the EU and beyond.

PO4098 Issues in World Politics
Rationale And Purpose Of The Module:
This focus of this module is to study current themes in contemporary global politics and to understand their historical development. Students will be able to locate current global issues and place them in a wider theoretical context.
Syllabus:
The module is divided into a number of subsections that engage with an area of study in World Politics and more prominently upon an issue of structural and functional importance in International Relations. The first part of the course looks at the historical development of the International system and introduces questions such as sovereignty and the concept of 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.

PO4102 Methods and Research in Political Science
Rationale And Purpose Of The Module:
This module will develop students knowledge of research and methods by introducing them to theory building, research design, and methods of data collection and analysis.
Syllabus:
1. The Scientific Study of Politics
2. Theory Building
3. Evaluating Causal Relationships
4. Research Design
5. Measurement
6. Descriptive Statistics and Graphs
7. Statistical Inference
8. Bivariate Analysis
9. Bivariate Regression Analysis
10. Multiple Regression Analysis

PO4108 Multiculturalism and Political Theory
3 hours per week; 13 weeks; 26L/13T; ECTS credits:6
This module examines recent debates about citizenship, pluralism and cultural diversity, from the perspective of political theory. During the course we will critically evaluate a range of alternative justifications for multicultural policies, and explore how they relate to other important political concepts, such as democracy, freedom, equality, justice, pluralism and respect. To that end, we will explore some of the various rights claims and policy proposals that have been called for by (and on behalf of) minority cultural communities, and investigate how these measures challenge traditional political theories and the practices of existing liberal-democracies. Upon completion of the module you should be able to critically evaluate the various justifications that have been offered for minority cultural rights, and understand a range of arguments for and against multiculturalism. Furthermore, you should have a deeper grasp of some important political concepts, including freedom, equality, justice, respect, recognition, tolerance, and identity.

PO4118 Ireland and the EU (Spring/3 or 4)
3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS 6
Historical background to membership, Ireland’s referendum experience, Europeanisation, Factors mediating Ireland’s experience of membership, Adaptation of political institutions and administration. The role of agriculture, economy, environment, foreign policy, social policy, language policy, ICT/Technology. The course will round off with topics related to Northern Ireland and Globalisation. This module aims to examine the nature and impact of Ireland’s 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 Ireland’s political and policy processes.
SO4002 Gender: Sociological Perspectives

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 an 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.

SO4008 Sociology of The Media (Spring/4)

3 hours per week; 13 weeks; 26L/13T; ECTS credits: 6

The purpose of this module is to introduce students to the emerging area of media audiences. It is built around a number of key issues and concerns that exist around studying media audiences and will address the significant theories and debates on media audiences. Emphasis will also be placed on the development of practical audience research skills which students will be asked to demonstrate and apply to the tasks outlined in their course assignments.

SO4032 Introduction to Sociology 2 (Spring/1)

SO4032, 'Introduction to Sociology 2' aims to better acquaint students with the discipline and field of sociology, including the work of contemporary sociologists, and to provide them with strong foundation of knowledge in preparation for further sociology modules. In addition to enhancing student’s awareness and understanding of key sociological theories, concepts and issues, this module is oriented to developing students’ ability to use sociology as an analytical tool. Topics include sociological approaches to deviance, crime and control; migration, recent trends in Irish migration and issues faced by contemporary migrants; concepts of ethnicity and race; contemporary issues in the representation of ethnic minorities in the media; religiosity and secularisation; civil and invisible religion; social class and contemporary debates regarding the continuing relevance of the concept of class.

SO4036 Contemporary Sociological Theory (Spring/3)

3 hours per week; 13 weeks; 26L/13T; ECTS credits: 6

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.

SO4046 Quantitative Methods For Sociological Research (Spring/3)

4 hours per week; 13 weeks; 26L/13T; 26Lab; ECTS credits: 6

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

SO4078 Inequality and Social Exclusion (Spring/4)

3 hours per week; 13 weeks; 26L/13T; ECTS credits: 6

Defining inequality, social exclusion; an examination of different approaches to measuring inequality and social exclusion and the implications of the diversity; locating the issues of inequality and social exclusion within discourses such as citizenship and equality, an analysis of class, gender and racial divisions exploring their continued significance as bases for both social exclusion and inequality.

SO4088 Sociology of Globalisation (Spring/4)

3 hours per week; 13 weeks; 26L/13T; ECTS credits: 6

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 re-think 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.

SO4096 Issues In Contemporary Irish Society (Spring/3)

3 hours per week; 13 weeks; 26L; ECTS credits: 6

Social Inequality in Ireland The Celtic Tiger Economic boom Globalisation and the Celtic Tiger Theoretical Perspectives on Social Change Social Solidarity and Modernity Social Exclusion and Neo-Liberalism Race, Migration and Citizenship in Ireland Feminist Perspectives on Gender and Family Cultural Theory and Irish Consumption Nationalism and Identity Civic Health and Collective Well-being

SO4108 Sociological Approaches to Gender and Multiculturalism (Spring/4)

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

SO4118 Sociology of Gender and Popular Culture (Spring/4)

This module explores the twin themes of bodies and sexualities in the spaces of contemporary Western culture. Utilising a range of popular cultural forms, sites and events which are most accessible, television, cinema, magazines; households, shops and workplaces; and popular understandings of medicine, science and technology, the module involves students in a series of critical engagements. The module addresses a number of issues; why the subjects of sexualities and the body become the focus of so much interest across a broad range of disciplines; how we an de-naturalise and problematic normative gender categories by setting gendered identities in cultural contexts; What important contributions have been made to the field by recent work on masculinities; How the practices of everyday life can be interrogated to yield insights about the relationships between the body, gendered identities and prevailing cultural norms.

SO4158 Sociology of Higher Education

Rationale And Purpose Of The Module:
To understand and to explore key theoretical perspectives on higher education. To critically engage with examples of empirical research on higher education nationally and internationally. To encourage and to enable critical and analytical thinking about the nature and purpose of higher education and its relationship with the state, with industry and with civic society. To understand the processes operating within higher educational institutions.

Syllabus:
This module aims to provide students with an understanding of the sociology of Higher Education internationally and the processes impacting on it, including globalisation, massification; managerialism and masculinisation. It will locate these changes in the context of changing paradigms of Higher Education in Ireland and its nature and purpose. Policies related to Higher Education will be explored in the context of its relationship with the state, the economy and the paradox of gender. The relationship between students social class position; state\_s encouragement of access policies and its perceived elite/non-elite character. Issues related to managerialism versus collegiality; career paths; organisational culture; leadership styles; the gendering of academic and senior management in Irish Universities and internationally; the factors explaining such variation will be explored. Similarities and differences between academic and senior management in Universities and other types of higher education institutions. The future of Higher Education.

**SO4178 The Sociology of the Body**

**Rationale And Purpose Of The Module:**

- 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 body and highlights the case for embodying social theory. 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: 1. Introduce students to the sociological perspective as it applies to the understanding of relationships and familial phenomena. 2. Present various sociological theories regarding love, sexual relationships, marriage and family systems. 3. Familiarise students with the results of empirical research of social scientists who study partnership formation and family behaviour.

**SP4002 Introduction to Latin American Culture/s (Spring/1)**

3 hours per week; 13 weeks/2nd semester; 13L/26T; ECTS credits: 6

This module offers an introduction to the most important events and movements in Latin American culture. It focuses mainly on the cultural impact of the Spanish colonisation, the New Republics, and the development and revision of women’s place in Latin American culture. Through the use of literature, music, film and other forms of culture, the module will serve as a platform for the exploration of up-to-date socio-political issues in Latin America and their effect on cultural production.

**SP4132 Spanish 2 (European Studies) Beg* 2-1-0 (Spring/1)**

3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits: 6

A brief revision and transfer of known structures to new communicative contexts; development of all four language skills and basic translation strategies in the classroom and laboratories; selective reading of short stories. (General lecture: 1 hour) comprising an introduction to Latin America in the twentieth century with lectures on recent history, film, popular culture and literature.

**SP4134 Spanish for Legal Studies (Beginners)**

**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 colonisation, the New Republics, and the development and revision of women’s place in Latin American culture. Through the use of literature, music, film and other forms of culture, the module will serve as a platform for the exploration of up-to-date socio-political issues in Latin America and their effect on cultural production.

**SP4142 Spanish A2 (European Studies)* (Spring/1)**

3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits: 6

General lecture of one hour a week comprising an introduction to Latin America in the twentieth century with lectures on recent history, film, popular culture and literature. A contemporary novel by a Hispanic writer will be read and discussed in class. The course incorporates a brief revision and transfer of known structures to new communicative contexts; development of all four language skills and basic translation strategies in the classroom and laboratories; selective reading of short stories.

**SP4146 Modern and Contemporary Spain (Spring/3)**

3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS credits: 6

Language work on more complex structures; text analysis and exposure to a variety of writing styles; oral discussion and presentations on texts relevant to the topics of the general lecture; post-civil war Spain political societal and economic developments transition to democracy the cultural and literary heritage.

**SP4148 Media and Current Issues in the Spanish Speaking (Spring/4)**

3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

Multi-media based extensive use of press and journal articles video material and films cd ROMs and Internet for language and information purposes; seminars on political economic and social issues in Spain and other Spanish speaking countries; national identity nationalisms welfare state terrorism racism and discrimination religion and today’s society.

**SP4232 Spanish for Beginners 2 *(Applied Languages) (Spring/1)**

3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits: 6

The language of persuasion; expressing opinions; making comparisons, showing agreement and disagreement; improvement of communicative ability in giving information concerning themselves, other people, and about places, timetables, events. (General lecture: 1 hour) Comprising an introduction to Latin America in the twentieth century with lectures on recent history, film, popular culture and literature. Prerequisite SP4234 Spanish I Beginners (Applied Languages)

**SP4242 Spanish 2A (Applied Languages)* (Spring/1)**

3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits: 6

Developments and reinforcement vocabulary pertaining to specific contexts by the use of monolingual and thesaurus dictionaries; emphasis on text structure and analysis of text styles. A contemporary novel by a Spanish writer will be read and discussed. (General
Aims and Objectives: To analyse Latin American literature from the SP4808 Spanish Language and Literature 1
dissidence in coloni
testimony to literature, in order to study the different ways in which
narratives of resistance to power in different textual modes, from

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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.

SP4818 Spanish Language and Literature 2

Rationale And Purpose Of The Module:

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

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

SP4934 Spanish for Law Students (Advanced)

Rationale And Purpose Of The Module:

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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.

SP4808 Spanish Language and Literature 1

Rationale And Purpose Of The Module: Aims and 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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.

SP4818 Spanish Language and Literature 2

Rationale And Purpose Of The Module:

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

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

SP4934 Spanish for Law Students (Advanced)

Rationale And Purpose Of The Module:

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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.

SP4808 Spanish Language and Literature 1

Rationale And Purpose Of The Module: Aims and 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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.

SP4818 Spanish Language and Literature 2

Rationale And Purpose Of The Module:

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

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

SP4934 Spanish for Law Students (Advanced)

Rationale And Purpose Of The Module:

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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.

SP4808 Spanish Language and Literature 1

Rationale And Purpose Of The Module: Aims and 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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.

SP4818 Spanish Language and Literature 2

Rationale And Purpose Of The Module:

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

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

SP4934 Spanish for Law Students (Advanced)

Rationale And Purpose Of The Module:

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), José María Arguedas, Enrique
López Albujar and Nicomedes Santa Cruz (Peru), Lydia Cabrera and
Manuel Cofino (Cuba) among others.
To apply cultural theory to Irish Music and Dance Studies.

Syllabus:
The main subject areas to be addressed are Irish Language Song; Repertoires in Irish Traditional Music and Dance Practice; Contemporary Developments in Traditional Instrumental Music and Dance. These are to be addressed using a thematic approach which will engage theoretical areas such as identity, ethnicity, globalisation and the meaning of tradition.

MD4028 Irish Traditional Music and Dance Studies 5

Rationale And Purpose Of The Module:
The development and completion of a research project in the field of traditional music and/or dance studies.

Syllabus:
In this module students will engage in a self-directed research project concerning an aspect of the music or dance tradition under the supervision of course directors. This will be assessed through two seminar presentations and an extensive written submission. This research project could have a performance orientation.

MD4032 Contextualising and Vocational Studies 2

Rationale And Purpose Of The Module: Contextualizing and Vocational Studies 2

History of Western Art Music and Dance. The aim of this module is to provide an understanding of art music and dance that will not only be especially helpful in primary and secondary teaching contexts but will also introduce students to crucial music-socio-historical concepts and terminology that they will deploy elsewhere.

Syllabus:
This course 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 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.

MD4034 Contextualising and Vocational Studies 3

Rationale And Purpose Of The Module:
This module is designed to help competent musicians and dancers to come to an understanding of what it means to be involved in music and dance education contexts.

Syllabus:
There are three main components: Music and Dance Curriculum studies, Professional Studies and School Based Work. The first priority is to help the development of expertise in a variety of educative situations. These range from classroom activities for various age groups and abilities to instrumental teaching, classroom teaching, ensemble, choral, band and orchestral rehearsals, and the passing on of traditional and/or ethnic and world musics and dance. There is also an introduction to Community Music and Dance which involves the development of acquired skills in a community music and dance context and as community musicians and dancers.

MD4036 Contextualising and Vocational Studies 5

Rationale And Purpose Of The Module:
To introduce students to the important contextualising disciplines of ethnomusicology and ethnochoreology as well as digital audio and visual technologies associated with music and dance performance, with a focus on professional audio and video recording and editing software.

Syllabus:
This module will examine the historical development of the two academic disciplines of ethnomusicology and ethnochoreology over the past 150 years and their main principles and orientations as well as the practical application of fieldwork and the production of ethnographic representations. It will also examine the creative and analytical possibilities of digital technologies associated with music and dance performance, with a focus on editing techniques.

MD4038 Contextualising and Vocational Studies 7

Rationale And Purpose Of The Module:
To introduce the professional disciplines of music psychology and therapy to the students and to develop a vocational project relevant to the potential future professional experience of the student, involving one or a combination of educational, community music / dance, technology, business orientations.

Syllabus:
In the first part of the module an overview of the principles and research base relating to the psychology and sociology of music and dance will be presented through lectures and seminars; in particular, human responses to music and/or dance in affective, physiological, emotional and psychological domains. Current research relating to dance participation and performance, music listening, music preference, music for relaxation, music and dance in public spaces, responses to participation and observation of dance and ambient music, will be presented and critiqued.

In the second part of the module students will engage in a self-directed project relating to the application of vocational aspects of performance that have been addressed through the course (education, community music / dance, technology, business).

MD4042 Performance Studies 2: Research Methods

Rationale And Purpose Of The Module:
To introduce students to research methods developed within performance studies to facilitate study of the performing arts; to engage with discourse and debate around performance as research and research as performance and to encourage students to develop their own approach to the integration of creative and reflective practices.

Syllabus:
An introduction to research methods in performance studies including performance ethnography, ethnographic representative, participatory action research, autoethnography, personal narrative and reflexivity, as well as performance-based strategies including vocal and movement improvisation, performance as dialogue and ritual as research.

MD4052 Native Music and Dance Traditions of Ireland

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:
The syllabus is a development of the existing Introduction to Irish Traditional Music and Dance Studies 1 and 2, offered as part of the first year of the BA Irish Music and Dance programme. Issues addressed in this module will be dance tune types and structure; English language song tradition; instrumentation; traditional music and dance in America in the first half of the twentieth century; the harp tradition to 1800; modern step dancing; ceili dancing; instrumental and dance style; Irish language song tradition; nineteenth-century collections of Irish traditional music; contemporary issues; sean-nós and set dancing. An important part of this module will be the weekly tutorials in Irish traditional music, giving the students a practical engagement with the tradition.

MD4054 Performance Studies 4: Ritual Studies

Rationale And Purpose Of The Module:
To introduce students to research in ritual studies through engagement with its primary research journal, Journal in Ritual Studies, in the form of lecture / seminars, including presentations on relevant articles, performance presentations and the presentation of new research.

Syllabus:
Building on the theoretical foundation of Performance Studies 3, in which students were introduced to the primary principles and research methods of ritual studies, this module will explore the discipline...
further through a more in-depth engagement with its research outputs as exemplified in the Journal of Ritual Studies; presentations of current research will include lecture/ seminar presentations involving analysis of current research, creative performance as research and research generated by students through their own performance practices

**MD4094 Music, Language, Sign and Text**

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

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

**MU4136/MD4022 Irish Traditional Music 2**

4 hours per week; 13 weeks/2nd semester; 26L/26T; ECTS credits 6

To introduce the students to the history and structures (musical and in a wider cultural sense) of traditional Irish music and dance. 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.
FACULTY OF SCIENCE AND ENGINEERING

INFORMATICS & ELECTRONICS

MODULES – Spring

CE4002 Engineering Mechanics

Rationale And Purpose Of The Module:
To provide the student with a foundation in the theory and principles of statics and dynamics. Throughout the course emphasis is placed on the development of sound problem-solving techniques and logical interpretation of results. Application to realistic engineering problems is stressed through the use of examples, demonstrations, and assessment problems.

Syllabus:
- Load paths through structures under vertical gravity load;
- Methods of providing lateral stability shear walls, cores, frames, strut / x bracing;
- Field trip to significant building / structure to investigate / sketch load paths in-situ;
- Structural form of funicular shapes applied to cables and arches;
- Bending moment and shear force diagrams under point and uniform loads, for simply supported and fixed end beams;
- Member forces in pin-jointed trusses;
- Introduction to structural dynamics / resonance;
- Introduction to relationship between bending moment / elastic modulus / bending stress;
- Design, develop and construct small structure to carry 150g load, including trial models and associated calculations to determine main member forces;
- Develop research methods and resources.

Further experience of design as an iterative and creative process subject to constraints;
- Synthesis of ideas from strength of materials, Assembly and Techniques, and Drawing and Representation, in a design task;
- Assignments will typically involve prototype or model construction, as well as material or component testing;
- Presentation for critique of research results and proposals.

CE4004 Mechanics of Solids

Rationale And Purpose Of The Module:
Aims and Objectives
- To provide a foundation for analysing structures.
- To provide the foundations for analysing stress and strain.

Syllabus:
- Inertial strain at a point in a two dimensional stress field and Mohr strain circle. Selection of strain gauges for measurement on metals, thin circular plates. Complex stresses and criteria for failure of isotropic homogeneous materials (Rankine, Tresca and Von Mises).
- Constitutive relations. Temperature stress, Torsion of cylindrical sections, Analysis of stress at a point in 2D, Principal stress and Mohrs stress circle, thin cylinders and thin spherical vessels.

CE4008 VLSI Digital Processing Systems

Rationale And Purpose Of The Module:
Introduce and use advanced algorithms and architectures for the efficient digital implementation of signal processing algorithms.

Syllabus:
- Pipelining and parallel processing. Signal flow graphs, Fine grain pipelining. Block processing. Low power architectures. Fault-tolerant DSP.
- Cyclic and acyclic convolution. Digital filter structures. CSD techniques to distributed arithmetic. Fast convolution algorithms.
- Modular arithmetic. Galois field Architectures for multiplication, division and exponentiation.

CE4014 Hydraulics and Water Engineering

Rationale And Purpose Of The Module:
This module introduces the theory and practice of modern water engineering looking at water in the natural Hydrological cycle and the fundamental concepts in water treatment technologies and water supply.

Syllabus:
- Hydrology: The hydrological cycle; Water balance equation; Hydrologic Budgets; Precipitation; intensity, duration & return periods; Surface run-off and drainage systems; Sustainable urban drainage systems, flow attenuation, Aquifers; Groundwater flow; Measurement and monitoring of stream flow and groundwater; Hydrograph generation, run-off, unit, synthetic; Channel Storage; Mass diagrams; Routing flood, reservoir & channel.
- Water Treatment: Characteristics of water; Water demand rates and peak flows; Distribution systems and service reservoirs; Physical treatment - screening, sedimentation; Clarification and settlement; Filtration with granular media and mechanical; Biological oxidation; Aerobic oxidation plants; Chemical treatment - coagulation, flocculation; Disinfection, chlorine, ozone & other; Fluoridation; Sludge dewatering and disposal; Treatment plant design.
- Applied Hydraulics: Design of water distribution pipe networks, pump types and characteristics, surface profiles and backwater curves, design of hydraulic structures.

CE4024 Structural Steel and Timber Design

Rationale And Purpose Of The Module:
This module introduces the student to the structural design and detailing of elements in steel and timber with the following key objectives:

Key objectives
- To master the concepts of structural design in steel and timber.
- To develop the skill of detailing structural connections in steel and timber.
- To develop an awareness of the structural uses and limitations of steel and timber.

Syllabus:
- Structural Steel
  - Manufacture and composition of steel.
  - Design of fully restrained, partially restrained and un-restrained beams, truss design, design of long and short columns; axial and combined loading conditions, design of pinned and moment connections, baseplate and splice design, structural detailing and fire & durability aspects.
- Timber Design
  - Properties and conversion of timber to a review, beam design, column design; axial and combined loading conditions, 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.

CE4025 Transport Planning and Design

Rationale And Purpose Of The Module:
This module places transport in its wider historical and contemporary context as a major determinant of sustainable human settlement. It addresses current thinking and trends and introduces the main methods of data collection and analysis, transport system planning, appraisal, design and management.

Syllabus:
- History and Contemporary Picture and Trends: Physical, social, political and economic contexts, sustainable transport and settlement, current policies and trends.
- Data Collection and Analysis: Use of demographic data, survey design and implementation.
- Appraisal and Forecasting: Demand drivers, mode choice and behaviour, an overview of multi-modal macro and micro modelling, modelling uses and limitations, demand and capacity forecasting, impact assessment.
- Road Design: Road construction details and geometric guidelines, road junction analysis.

CE4028 Energy Efficient Buildings: Modelling and Design

Rationale And Purpose Of The Module:
Building energy design is now a primary driver of overall building design. Understanding building energy physics is now essential for all design team members. Aims and objectives: Train students how to design and model energy-efficient buildings; Equip students with the knowledge required to quantify the energy-efficiency of preliminary
designs and propose building and material design modifications; predict thermal performance within building zones; understand how building design, occupancy and use interacts with thermal energy systems, solar irradiance and weather conditions as well as their effect on human comfort and energy consumption.

Syllabus: Building design and energy use: historical trends, current status and future trends Building energy policy at national and EU level; factors affecting human comfort; Steady-state and transient thermal physics of buildings; heat transfer mechanisms; performance metrics; typical metric values for building including exemplar low-energy and passive builds; design related and environmental performance drivers; overall form, aspect ratio, surface-to-volume ratio, percentage glazing, orientation, site context, solar irradiance, prevailing winds, shelter, design features including insulation, solar shading, low-e coatings, automated shading and ventilation.

Overview of strategies for modelling building thermal physics; thermal resistance networks; lumped capacitance; steady-state vs. transient; dimensionless scaling parameters and empirical correlations; compiling input data - building fabric, thermal mass, weather data, building use, active, passive and mixed mode ventilation, thermal sources, heating & cooling systems, control strategies and feedback.

Design thermal model, build and digitise model, configure inputs, configure outputs, solve and interpret outputs; describe scope and limits of model; suggest modifications to enhance energy usage, update model, analyse response and appreciate cost benefit of improvements.

CE4034 Building Energy Systems

Rationale And Purpose Of The Module:
This module uses the Dwelling Energy Assessment Procedure (DEAP) as a framework for introducing the fundamentals of building environmental and energy systems so that the learning outcomes are realised:


CE4048 Geotechnical Engineering Design

(No description given)

CE4058 Project Planning and Control for the Built Environment

Rationale And Purpose Of The Module:

The aim of this module is to build on the learning from the module Construction Management and Technology. The module will bring together the management and technology learning to date and provide students with challenges that require both individual and teamwork skills to solve, enabling students to understand the dynamics of project planning and control in the built environment.

Develop a project plan for a significant construction project from concept to completion. Manage integration of project elements. Provide knowledge of goal seeking, coordination, reporting, risk assessment. Practice control on emulation projects; emulate changes in resources, unexpected discoveries, client modification expectations.

Practical experience controlling a construction project.

Syllabus: Planning: Developing Goals and Requirements, evaluating resources, estimating timelines, risk assessment, project partitioning, interface management, developing test requirements and procedures, data management. Control: Monitoring progress, calculating critical and near critical paths, change control, change notification, Managing third party suppliers/contractors, reporting.

CE4068 Procurement and Contracting II

Rationale And Purpose Of The Module:
This module builds on the construction contracting and procurement topics provided in Procurement and Contracting I and further develops the procurement and contracting fundamentals as they apply to the various aspects of the construction industry; including civil, structural, mechanical, electrical and plant elements. In particular the causes and remedies for construction disputes are covered such that the following key objectives are met: To become familiar with the relevant terminology as it applies to the construction industry. To develop a strong understanding of the standard forms of construction contracts in use in the industry, both domestically and internationally and making specific reference to the work carried out under the aegis of the various multilateral development banks. Create an understanding of the role of the construction manager as an agent for the prevention and successful management of disputes. Develop an ability within aspiring construction managers to appreciate and take full account of the ramifications of their, and other parties', actions in the context of successfully leading and managing complex construction projects. To reflect the role of ethics in professional practice.

Syllabus: Construction contracts: formation, tendering, conditions, standard forms; areas of dispute and liability; certification process, claims and the importance of the programme in the management of time-related claims; dispute resolution: traditional forms, dispute boards, adjudication, alternative dispute resolution; design liability of professionals and contractors.

CE4206 Operating Systems 2* (Spring/3)
5 hours per week; 13 weeks/6th semester; 26L/13T/26LAB; ECTS credits: 6
Process communication; memory management; file systems to support multi-tasking; deadlock; input/output; computer security and protection; analytic modelling; case study; project. Prerequisite CE4204

CE4218 Real Time Systems (Spring/4)
5 hours per week; 13 weeks/8th semester; 26L/13T/26LAB; ECTS credits: 6
Introduction to language features; operating system features; design approach; design and modelling using petri nets; design and analysis; real-time program verification; formal techniques; case study.

CE4518 Computer Architecture (Spring/4)
5 hours per week; 13 weeks/8th semester; 26L/13T/26LAB; ECTS credits: 6
Review of Von-Neumann architecture; computer performance measurement; floating point arithmetic; instruction set design and architecture; processor implementation techniques; pipe lining; memory hierarchy design.

CE4608 Computer Networks (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

CE4702 Computer Software 2 (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6
Overview of C; comparison of C and other procedural languages; C program development environments; format studies and good practices; constants and variables; operators and expressions; functions and program structure; C preprocessor; type definitions; programming practice; coding, style, documentation.

CE4704 Computer Software 4 (Spring/2)
4 hours per week; 13 weeks/4th semester; 26L/26LAB; ECTS credits: 6
Introduction to C++; introduction to computer graphics; primitive graphics operations; graphical user interfaces; overview of the object-oriented and other programming paradigms.
CE4708 Artificial Intelligence  (Spring/4)
5 hours per week; 13 weeks/8th semester; 26L/13T/26LAB; ECTS credits:6

Logic programming in prolog; state space search; heuristic search; game-playing programs; alternative knowledge representation formalisms; expert systems.

CE4717 Language Processors

Rationale And Purpose Of The Module:
To introduce the theory of compiler design and show its application in a simple compiler. An important part of the module is the implementation of a compiler for a simple, Pascal-like, language.

Syllabus:

CS4004 Software Testing and Inspection (CSI  2-1-1)
On successful completion of this module students will be able to take a program specification, write corresponding test cases; given a specification and an implementation of a program, write the tests, run them, and report on the errors found. Brief syllabus: introduction to testing; limitations of testing; test types and their place in the software development process; program reading and comprehension; refactoring code; inspections, walkthroughs and desk-checking; programming with assertions; using a debugger for white-box testing; reporting and analysing bugs; test case design; test case execution and regression testing; requirements for white-box and black-box testing tools

CS4005 Perceptual Systems and Multimedia

Rationale And Purpose Of The Module:
Creating an awareness and understand how our senses work in order to perceive the world around us.

Syllabus:
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 (CSI  2-1-1)
To familiarise students with a targeted subset of the principles and methods of Intelligent Systems, and distinguish between Cartesian artificial intelligence (AI) and intelligent systems. Brief syllabus: To provide students with an understanding of the basic principles, methods and application domains for Artificial Intelligence. To introduce students to the development of Intelligent Systems, Knowledge Representation, and Machine Learning. The course includes the history and development of Intelligent system concepts through AI and Expert Systems to Cognitive Science and issues in representation, reasoning and machine learning.

CS4014 Software Development Project
Rationale And Purpose Of The Module:
This module is intended to provide the student with an opportunity to undertake a semester long software development project. A student will gain experience of working in a team and the confidence to tackle a large software system.

Syllabus:
A substantial semester-long software project is set. Students, working in teams, produce a complete implementation. A partially specified project is presented. Students complete the requirements and then take the project through the design, coding and testing stages. The language and technology of implementation depends on the type of project specified but will generally allow students as much free choice as possible. (Lectures and labs will run from weeks 1 to 5 inclusive). These along with tutorials during this period will build on existing modelling, design and programming skills required to achieve the proposed system. During the remainder of the semester students will meet with their assigned supervisor to discuss their work to date in a tutorial setting on a regular basis.)

CS4016 Directed Study for MMPT 3
Rationale And Purpose Of The Module:
The development of research skills.

Syllabus:
In this module the knowledge is structured in the form of small group tutorials. The research themes include: Natural, Stochastic & Algorithmic Processes in music and video (e.g. the music of Cage, Xenakis and Martiriano, Generative and Algorithmic Video, Fractals, Visualiser algorithms and software, Algorithmic animation) and Interactivity in Digital Art - Gesture & Haptics (e.g. NIME, Stein, MediaLab) and Distributed Systems (e.g. The Hub, Ircam, Brain Opera).

CS4022 Digital Instrument Fundamentals
Rationale And Purpose Of The Module:
To provide the student with an understanding of music fundamentals, instrument design and basic notation skills and to introduce concepts of music software sequencing and its underlying protocols and technologies.

Syllabus:
Music notation, traditional instrument design and electronic music interfaces; Understanding notation, rhythm, time signatures, key signatures, dynamics and articulation; The development of cross platform hybrid music interfaces and the establishment of digital instrument protocols.

CS4024 Directed Study for MMPT 2
Rationale And Purpose Of The Module:
The aim of this module is to give students the skills required to perform a research-based, literature review in a specific area and to critically appreciate media representative of this area.

Syllabus:
Students are exposed to a range of music and video technology, from the 1940s to the present day: Musique Concrète - Paris, Milan, United States, and Elektronische Musik - the work of the Cologne School and Milan, early live electronic music, John Cage, David Tudor, development of film, Italian Neo-realism, Hollywood, digital cinema and video. They select their specific area of interest from this range of material and carry out an individual, faculty-supported research review in this area.

CS4026 Digital Media Software and Systems 4
Rationale And Purpose Of The Module:
To undertake a series of laboratory projects concerned with both audio and video.

Syllabus:
Software algorithms and systems for composition. Design and programming implementation of interactive systems. Software and hardware based performance interfaces and controllers.
CS4034 Digital Media and Software Systems 3

Rationale And Purpose Of The Module:
Students will develop their knowledge and competence of digital media systems through the use of specialised software.

Syllabus:
Audio: Implementing sound synthesis algorithms; Statistical Models; Video: Non-linear video editing; Chroma and luminance processing algorithms; Video effects algorithms; Synchronisation systems; Rendering algorithms;

CS4036 Advanced Digital Audio and Video

Rationale And Purpose Of The Module:
To advance practical methods to artistic practice.

Syllabus:
Advanced approaches to composition and structure; The phenomenology of time; Collaborative and service logistics; Installation and real-time interactive systems; Real-time performance software for video and audio; Analysis of software systems and key works.

CS4038 Directed Study for MMPT 5

Rationale And Purpose Of The Module:
The development of research skills.

Syllabus:
Contemporary approaches and issues in technology & aesthetics; Relationship of Materials and Aesthetics; Objective and Subjective creative approaches; Serialism vs. spectralism; Deterministic vs. improvisational vs. stochastic; Spatialisation and acoustematics; Augmented and Virtual Reality.

CS4043 Games Modelling Design

Rationale And Purpose Of The Module:
The aim of the module is to provide students with knowledge to use an appropriate methodology in order to develop a digital game. On successful completion of the module the student will be able through use of appropriate tools and techniques to construct a model, design a digital game prototype and document it.

Syllabus:
The game idea: starting points, intended audience, limitations; The elements of a game play: non-linearity, game mechanics, controls and inputs, output and feedback, modelling reality; game elements: characters, items, objects and their behaviour, functionality, mechanisms; Challenge, Fantasy, Fun, Depth and Focus; Gaming genres; Linear storytelling character versus non-linearity of the game play: places for storytelling, story scripting; The Game Development Life Cycle: Conceptual phase: base architecture, base game play and story lines, game mechanics and flow, conceptual game model; Detailed Game Design phase: game play, scenes and screens, game flow and progression, levels in different games (order, components, and goals), navigation, user interface, interactivity and immersion, game technology (hardware, software and limitations, tools and techniques to integrate props, media objects, special effects, storage and retrieval), platform and genre-specific design issues of 3D games; Development phase and playtesting, refining and aesthetics; Game Documenting phase: the Design Document and its elements; CS4052 Foundations of Interaction Design

Rationale And Purpose Of The Module:
This module provides an overview of the discipline of Interaction Design, and of its origins and conceptual and methodological basis. The topics discussed include:
- Overview of literature dealing with issues related to designing interaction (multidisciplinarity, variety of conceptual approaches, etc.).
- Exploration and analysis of various approaches to interaction design as a discipline.
- In depth discussion of notions of interactivity and interaction, and of the role of the interaction designer.
- Discussion of notions of narrative and narrativity.
- Analysis of different media and their interaction capabilities.
- Discussion of interaction design methodologies (data analysis, concept generation and development techniques, interaction design communication).

Syllabus:
This course will provide the student with an understanding of the key elements required for the design of interaction. After a consideration of basic principles of design, the key features of narrativity and interactivity will be explored and analysed. The potential of different kinds of media to support interactivity will be studied. Methods of involvement of participants in the creation of new media will also be covered.

CS4056 Mobile Application Design

(Rationale And Purpose Of The Module:
This module will encourage students to develop standards-compliant web applications. Students will learn how different capabilities can be provided by competing technologies. A substantial web development project will be undertaken by students - the nature of the application domain of this undertaking will depend on the students chosen programme of study.

Syllabus:
- Categories and characteristics of web applications;
- Similarities and differences between the development of traditional, not web-based applications and the development of web applications;
- Modelling web applications: content, hypertext, presentation and customization modelling;
- Modelling methods such as OOWS model driven approach, OOADM, UML, IDM approach, WebML, WebRATIO, HERA, WSDM, MDA;
- Web application architecture: categorizing architectures, layered architectures, data-aspect architectures;
- Web application design: information design and software design; presentation, interaction and functional design;
- Technologies for web applications: hypertext and hypermedia; client/server communication; client-side technologies; document-specific technologies; server-side technologies; current concepts, methods, techniques and tools;
- Security for web applications: encryption, digital signatures and certificates; secure client/server interaction; client security issues; service provider security issues;
- Semantic web: roles of software agents, semantic markup and ontologies; semantic web applications; semantic web services;

CS4065 Web Infrastructure

Rationale And Purpose Of The Module:
This module is intended to familiarise media students with computer networks. Students will learn how different capabilities can be provided by competing technologies. A substantial web development project will be undertaken by students - the nature of the application domain of this undertaking will depend on the students chosen programme of study.

Syllabus:
- Reading from and writing to text files; string manipulation;
- Computer graphics;
- Computer networks;
- Online communities;
- Personal computing;
- Ubiquitous and mobile computing;
- Virtual reality.
CS4074 Audio and Video Production

Rationale And Purpose Of The Module:
To provide the student with an understanding of:

(1) the techniques for recording, processing and dissemination of audio and video
(2) audio and video processing on both the temporal and spectral domain.

Syllabus:
Advanced making techniques.
Advanced mixing techniques.
Principles of audio reinforcement systems.
Surround sound mixing, time code and synchronization.
Digital video non-linear editing system.
Advanced video editing techniques.
Compositing and effects.
Visual treatments.
Finishing and disc authoring.

CS4076 Event Driven Programming

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.

CS4078 Applied Interaction Design

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.

CS4081 Introduction to Web Development

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

Syllabus:
Introduction to the world wide web: web browsers, web servers and clients, uniform resource locators, the hypertext transfer protocol (HTTP), processing HTTP requests and responses, world wide web consortium (W3C), static and dynamic content.
Document content and structure, mark-up languages, elements and attributes, document type definition (DTD), hypertext and hypermedia.
Hypertext 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 loops 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.

CS4084 Mobile Application Development

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 consideration: performance and memory management; performance and threading; graphics and user interface performance; use various facilities for concurrency.
Security considerations: encryptions, authentication, protection against rogue applications.
Location based application; location API.
Packing and deploying applications for mobile devices.

CS4092 Programming 2

Rationale And Purpose Of The Module:
To continue with the design approach in Programming 1, through a series of design exercises given in tutorials. To introduce some classical algorithmic, data structures, and other programming constructs, in the design and implementation of more complex programs. To place an emphasis on functional abstraction.

Syllabus:
a. A more detailed (from Programming 1) examination of functions and parameter types.
b. Introduction to two-dimensional arrays and their manipulation.
c. Sorting and searching techniques; problem solution considerations.
da. A more detailed (from Programming 1) examination of classes, objects and encapsulation.
e. Introduction to common data structures: Stacks, linked lists, queues.
f. Introduction to abstract data types
g. Recursion: defined; iterative and recursive solutions; recursion as a problem solving technique; designing recursive algorithms; implementations of recursion.
h. An introduction to file processing; file design considerations; streams; file types; file processing algorithms.

CS4112 Computer Science 2* (Spring 1)
5 hours per week; 13 weeks/2nd semester; 26L/13T/26LAB; ECTS credits: 6

Aims: To introduce students to formal ways of thinking about programs, in terms of their syntactic structure, their design, and formal assertions about the progress of a computation. On successful completion of this module the student should be able to:
- recognise the equivalence of mathematical functions and computer programs;
- construct assertions about a program, and combine them into an inductive proof concerning the programs behaviour;
- understand underlying mathematical structures of such structures as record-structures, arrays and enumerated types, as well as constructs such as the assignment statement, the conditional expression, and formalise the signatures of operations on these structures; given an informal definition of a construct, to define its syntax as a set of productions in one of the common metalanguages, to parse strings of text to determine if they are syntactically correct, and to ascertain whether static semantic constraints have been satisfied;
- understand the mathematical basis of common patterns, such as inducing of an n-ary operator from a binary operator, and to apply these patterns to different problems; specialise and combine simple design patterns, so as to derive a single inductive definition of a program implementing the evaluation of several functions, and to derive functional recursive and iterative programs. Brief syllabus: set theory, functions; propositional logic; constructing assertions about individual program statements; Inductively defined functions; recursive and iterative implementations of inductively defined functions; proof by induction of assertions about simple while programs; structural induction and it's use in describing the syntax of arithmetic and boolean expressions; regular and context free grammars; BNF, EBNF, syntax charts; composite types such as records and arrays in terms of Cartesian products, disjoint unions, finite maps and power sets; type completeness. copy semantics; Array merging and sorting algorithms; and implementations - selection, exchange, insertions sort; implementations of search; insert and delete on ordered and unordered tables, hash tables, stacks, queues and binary trees using arrays and linked lists; recursive algorithms. Prerequisite CS4111

CS4115 Data Structures and Algorithms (CSI 2-1-1)
To provide a uniform theoretical treatment of the data structures and algorithms used in systems and applications programming. This course includes a practical component to reinforce learning and to encourage students in the practical use of theoretical material. On successful completion of this module students should be able to select appropriate data structures given requirements for data storage and data retrieval patterns. In addition, students should be able to identify the trade-offs of various graph representation schemes. Brief syllabus: mathematical review, binary trees, linked lists and networks; recursion; divide and conquer algorithms; quicksort, heapsort, merge sort and bin and radix sorting; tree searching; graph algorithms.

CS4148 Health Informatics Project 2
Rationale And Purpose Of The Module:
The rationale for this module, and the preceding module (CS4148) to which it is bound, is to allow students, through the medium of undertaking a substantial individual project, to integrate and apply their previous learning and to deepen their knowledge of some particular application or research area relevant to the course. A secondary objective is to allow students to exercise, and hone, their writing and presentation skills by requiring them to write a substantial report documenting the project and to produce number of presentations describing the project to their supervisors, the general public, and their peers.

Syllabus:
The project takes two semesters and includes such activities as literature review, field-work, modelling, design, programming, testing, and evaluation and report writing. Seminars/Lectures will be held on the following topics: research methods, project planning, report planning, formal and informal presentation techniques and report writing.

CS4152 Health Systems: Directed Studies
Rationale And Purpose Of The Module:
This module serves to provide students when an introduction to health care systems and the health informatics landscape (paying particular attention to Ireland) as well as the evaluation of information technology based systems and solutions within health care.

Syllabus:
What constitutes a health care system; goals of health care systems; what is a good health care system; funding models; health care systems models. Analysis of health care systems; organisation, international agencies involved, policies and practice, financing and delivery of services, impact on sociological values; non-governmental organisation; regulations governing health care. Health informatics landscape: organisations, agencies, companies, authorities; products and services. Philosophical basis for performance measurement; analysis and interpretation; what is measurable versus what is important; typology of performance measures; what do we need, why do we need it and how do we build it; choice of indicators. Evaluation of information technology based systems and solutions within health care, measurement of health and health services processes.

CS4157 Software Quality
Rationale And Purpose Of The Module:
To provide an understanding of the processes and techniques used to develop and maintain quality software.

Syllabus:
Software quality assurance and standards; Software Inspections; Process versus Product quality and quality characteristics; Software testing techniques and strategies; Software Maintenance; Quality metrics; Evolution of software process; Introduction to ISO15504; Configuration Management.

CS4162 Virtual Worlds
(No description given)

CS4172 E-Health Systems
(No description given)

CS4174 Performance Technology 1
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.

CS4212 Computer Organisation 2* (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/13T/13LAB; ECTS credits: 6

Introduction to low level programming; assembly language programming; interrupts, the principle of interrupts; interfacing; installation and testing of CPU and peripheral components; the microarchitecture of computer system; advanced computer architectures; introduction to computer networks. To provide an elaboration on, and extension of topics in computer hardware and software as introduced in Computer Organisation 1. To introduce the student to programming in low level languages. Brief syllabus: extension and elaboration of topics from Computer Organisation 1; a high level view of a working computer; design of a CPU arithmetic/logic unit to implement a set of specified functions;
programming in assembly language, improving program performance; introduction to microarchitectures. Prerequisite: CS4211

CS4358 Interactive Multimedia (CSI 2-1-0)

CS4416 Database Systems (Spring/3)
3 hours per week; 13 weeks/6th semester; 26L/J3T; ECTS credits: 6
Large-scale data management is a critical activity within modern organisations. The goal of this module is to explain the relevance and explore the fundamental principles of database technology. On successful completion of this module students will be able to write programs that use static and dynamic embedded SQL, cursors, triggers and so forth. Brief syllabus: The concept of a DBMS and DB Architectures are introduced. This module will build upon the notion of a database as introduced in CS4513 and as such contains a revision of those concepts previously introduced, i.e. the relational data model, including issues, such as, Integrity Constraints, Relational Algebra, Relational Calculus, SQL, and Views. Normalisation. Time will be spent discussing the various technologies behind a DBMS, such as, transactions, security, data storage, triggers, and query optimisation as well as writing programs incorporating these. Object DBs, Object Relational DBs and their relevance to the OOP paradigm are discussed. Concepts of Data Warehousing, Data Mining and Decision Support are introduced followed by discussions on the Emerging Technologies of Database Systems. Prerequisite: CS4213

CS4457 Project Management and Practice
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 projects; the tools and techniques for controlling projects; the various phases of project development; the stakeholders involved in project management; the role of stakeholders.

CS4458 Computer Support Cooperative Work (CSI 2-0-2)
This course 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 do a project in the course

CS4558 Leveraging Legacy Applications (CSI 2-0-2)
This course will provide students with the knowledge and skills required to integrate legacy applications into next generation business systems. Brief syllabus: Software Re-engineering of COBOL programs, Integrating Legacy Systems using Object Wrappers, Web enablement and GUI front ends. Interfacing with middleware (CORBA, DCOM, ODBC, COM etc).

CS4566 Requirements Engineering* (Spring/3)
4 hours per week; 13 weeks/6th semester; 26L/J3T/3LAB; ECTS credits: 6
The Requirements Engineering Process; methods and techniques for the elicitation and discovery of system and software requirements; the modelling and analysis of requirements; the communication of requirements, tools for the management of requirements; the validation and agreement of requirements; organisational and social issues surrounding these tasks.
To give students the knowledge and skills to be able to elicit, specify, document, communicate, manage and validate the requirements for software-based systems, along with an awareness of the organisational and social issues surrounding this important aspect of software engineering. Brief syllabus: the requirements engineering process; methods and techniques for the elicitation and discovery of system and software requirements; the modelling and analysis of requirements; the communication of requirements, tools for the management of requirements; the validation and agreement of requirements; organisational and social issues surrounding these tasks.

Rationale And Purpose Of The Module:
Syllabus: The Requirements Engineering Process; methods and techniques for the elicitation and discovery of system and software requirements; the modelling and analysis of requirements; the communication of requirements, tools for the management of requirements; the validation and agreement of requirements; organisational and social issues surrounding these tasks. Required - Systems Analysis and Design.

CS4815 Computer Graphics
Rationale And Purpose Of The Module:
Given the role of graphical user interfaces in the computing devices today this programme should include at least one module relating to computer graphics.

Syllabus:
Physical devices for graphics systems: Input and Output devices, Raster Scan devices, RGB colour systems, Video Memory Models; Implications of these for interactive graphics systems.

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

CS4818 Professional Issues in Software Engineering (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits: 6
Professional Issues in Software Engineering (PISE) is concerned with the ethical and social impact issues surrounding computer science. The primary aim of this module is to encourage students to develop the ethical foundations of good professional practice in computing. Ethical theories and their role in maintaining good practice in the development and implementation of computer systems will be explored. Legal issues associated with professional behaviour will also be examined. Brief syllabus: PISE focuses on the moral, ethical and legal issues that will confront a computer professional in his or her work. Using case studies and scenarios different potential areas of legal and moral conflict will be examined. Prerequisite: CS4817

CS4826 Human/Computer Interaction (Spring/3)
4 hours per week; 13 weeks/6th semester; 26L/26T; ECTS credits: 6
The objective of this course is to develop an understanding of the issues involved in the increasingly important area of human-computer interaction. The course 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”. Brief syllabus: the nature of HCI; understanding the user; human information processing; perception; interfaces and interaction; input and output devices; use & design; the design process; requirements; valuation; usability methods and tools; empirical and analytical methods; standards & guidelines; mobile technology; information appliances; social and organizational constraints; intelligent agents; future trends.

CS4911 Introduction to Information Technology
Rationale And Purpose Of The Module:
This module is designed to give 1st and 2nd year students from disciplines other than Computing a historical and theoretical introduction to information technology: concepts, terminology and possible future developments; together with practice in standard productivity software.

Syllabus:
This module is designed to give 1st and 2nd year students from disciplines other than Computing a historical and theoretical introduction to information technology: concepts, terminology and possible future developments; together with practice in standard productivity software.

- Concepts of information technology.
- Data and information.
- Software: general purpose applications, operating systems features, programming development languages, HTML; proprietary software and Open Source Software.
- Hardware: types of computers, input/output devices, CPU, memory and secondary storage ù disks and solid state memory.
- Development of the PC.
- Communications and connectivity: modern, communications channels, networks; LAN, WAN.
- The Internet and the Web: access, browsers, URLs, search engines, multi-media.
- Security issues: viruses, firewall, proxy server.
- Computers and society: dependence of society on computers, development of WP, e-commerce, the WWW impact on the media and advertising.
- Future hardware and software developments.
- Word Processing and spreadsheet practice.
- Data representation.
- HTML exercises.

CS4925 Business Information Technology 1

Rationale And Purpose Of The Module:
This module has two key objectives: 1) to introduce students to Information Technology/Information Systems in the overall business/social context and 2) to develop a more critical perspective on the role of IT/IS in society.

Syllabus:
- Business Information Technology/Systems: Brief Historical Perspective; Review of Terminology; Taxonomy of Information Systems.
- Social Context: Socio Technical Environment; Defining the Socio Technical Environment (Individual, Group, Organisation and Society); Understanding and Capturing the Socio-Technical Environment.
- Organisational Context: Information Systems Planning and Strategy; Developing an Information Technology Plan; The Role of Managers in Technology Planning; Planning as Emergent.
- Market Context: High Technology Customer Behavior; Customer Decision Process; Lead Users; Business Information Technology Adoption; The Origins and Development of Innovation Diffusion Theory; Technology Adoption Life Cycle.

EE4008 Avionics (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits:6
Introduction to navigational, communications and air traffic control systems; radio wave propagation and radiation; introduction to radar; basic radar principles; pulse radar; radar transmitters and receivers; radar displays; doppler radar; secondary radio; navigation aids for aircraft; aircraft guidance and control, collision avoidance systems; instrument landing systems; satellite navigation systems.

EE4012 Circuit Analysis 1
(No description given)

EE4013 Computer Networks
(No description given)

EE4014 Electric Energy
(No description given)

EE4018 Engineering Management (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:6
The firm and its environment; introduction to economic, managerial, behavioural and social responsibility theories of organisational objectives; present market trends and business in the 21st Century; general external analysis (national, international and global) industry analysis, internal analysis; specific functional activities; finance; human resource management; information technology; operations management.

EE4022 Semiconductor Device Fundamentals
(No description given)

EE4023 Distributed Systems
(No description given)

EE4024 Electrical Energy (Electrical Machines)
Syllabus:
Review of electromagnetism, Faradays, Amperes and Lezs laws, MMF, flux, flux density, magnetic field intensity and reluctance, self and mutual inductance, magnetic materials, BH curves, core losses. Magnetic circuits, electric circuit analogies, analysis of simple magnetic circuits. Transformers: Construction and principles, ideal transformer, voltage and current transformers, power transformers, single/3 phase, equivalent circuits, open and short circuit tests, application in power systems, per unit system.

EE4004 Electrical Engineering 2 (Spring/2)
4 hours per week; 13 weeks/4th semester; 26L/26LAB; ECTS credits:6
Electromagnetic induction; energy storage elements; sinusoidal signals; three phase systems; tuned circuits; coupled circuits.


Learning Outcomes:
Cognitive (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis).
Perform calculations in analysing magnetic circuits.
Describe the construction and operation of electrical machines and use specification/nameplate data and equivalent circuits to determine electrical and mechanical performance.
Apply phasors and complex power theory in the analysis of single-phase and three phase transformers.
Calculate required passive power factor correction on simple power systems.
Describe the construction, operation and equivalent circuit of single phase and three phase transformers.
Derive the equivalent circuit of an induction machine from machine test data.
Analyse induction machine behaviour under load conditions.

EE4028 Telecommunication Network Architectures 2
(No description given)

EE4034 Telecommunications Fundamentals
(No description given)

EE4102 Electrical Science 2* (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits:6
Electromagnetic induction; energy storage elements; sinusoidal signals; three phase systems; tuned circuits; coupled circuits. Prerequisite EE4101

EE4128 Optimal Communication Systems
Rationale And Purpose Of The Module:
This module provides the student with a comprehensive introduction to optical fibre communications technology and design.

**Syllabus:**
- **INTRODUCTION TO OPTICAL COMMUNICATIONS:** Historical development and relevance today.
- **OPTICAL FIBRE WAVES:** Ray theory of light transmission through an optical fibre. Acceptance angle, numerical aperture, step and graded index optical fibre characteristics, fibre modes. Optical fibre attenuation, material and chromatic dispersion.
- **OPTICAL SOURCES:** Light emitting diode, semiconductor diode laser. Laser diode characteristics. Laser modulation.
- **OPTICAL DETECTORS:** Detection principles. p-n and p-i-n photodiodes, avalanche photodiodes. Optical receivers.
- **ACTIVE OPTOELECTRONIC COMPONENTS:** Lithium-Niobate modulator. Erbium doped fibre amplifier. Semiconductor optical amplifier and applications.
- **OPTICAL FIBRE COMMUNICATION SYSTEMS:** Analog and digital communications. Signal-to-noise ratio, Bit-error-rate. Optical power budget. Examples of optical communication system design.
- **CURRENT DEVELOPMENTS:** All-optical networks. Optical time-division multiplexing. Wavelength division multiplexing. Novel laser structures. All-optical signal processing, optoelectronic integration

**EE4214 Control 1** *(Spring/2)*

5 hours per week; 13 weeks/4th semester; 26L/13T/26LAB; ECTS credits:6

Actuators and dynamic system modelling; system time response; system frequency response; frequency domain compensation; transducers. **Prerequisite EE4113**

**EE4216 Control 2**

Rationale And Purpose Of The Module: This module extends fundamental Control principles with much more emphasis placed on the application of linear analytical techniques to control system design.

**Syllabus:**
- **LINEAR SYSTEM ANALYSIS:** Bode, Nyquist, and root locus, transfer function of plant with delay and non-minimum phase systems. Stability and Performance analysis using Bode, Nyquist, Routh-Harwitz, and Root Locus methods. Design techniques for system compensation using Bode diagrams, Nichols charts and Root Locus. Lead and lag compensation, the application of these using op-amps as an example, internal compensators. Introduction to Modern Control methods using State Space Techniques, PROCESS CONTROL. Terminology and practice, application and use of three term control, PID design in the frequency domain, integral wind-up and similar problems, Benchmark methods for tuning PID controllers, (Ziegler-Nichols, Haualm etc.).

**EE4218 Control 2** *(Spring/4)*

3 hours per week; 13 weeks/8th semester; 26L/13LAB; ECTS credits:6

Optimal control; adaptive control; predictive control. **Prerequisite EE4217**

**EE4314 Active Circuit Design 2** *(Spring/2)*

5 hours per week; 13 weeks/4th semester; 26L/13T/26LAB; ECTS credits:6

Operational amplifiers characteristics; op-amp linear applications; feedback; op-amp non-linear applications; AC coupled amplifiers; tuned amplifiers; active filters; probes. **Prerequisite EE4313**

**EE4317 Active Circuits 4**

Rationale And Purpose Of The Module: This module introduces students to integrated circuit design, to the limitations that apply to chip-level components, and to IC design methods.

**Syllabus:**
- IC technologies and components: Processing methods. Semiconductor Junctions. Passive (R and C) components and their limitations. Integration of BJTs, JFETs and MOSFETs. Device characteristics. Analogue bipolar design methods: mirrors, high-gain stages, output buffers. Analogue CMOS design methods: mirrors, high-gain stages, output buffers. Digital logic families, an overview. Analogue building blocks: overview of op-amps, comparators and PLLs.CMOS and BiMOS technologies. Review of some analogue ICs, bipolar and MOS.

**EE4318 Active Circuits 5** *(Spring/4)*

5 hours per week; 13 weeks/8th semester; 26L/13T/26LAB; ECTS credits:6

Low-noise Amplifier Design; fundamental noise; semiconductor noise; low noise amplifiers; measurement techniques; switched mode power supply design; power switches; DC-to-DC converters; DC isolated powered supplied; soft-switching techniques. **Prerequisite EE4317**

**EE4328 Power Electronics**

Rationale And Purpose Of The Module: This module will give students (electronic, Robotic, Control and Energy students) an underestanding of modern power electronics both at the device . products level and at the renewable energy generation and distribution level.

**Syllabus:**
- **INTRODUCTION:** Examples of 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).
- Modelling and simulation of converter in steady state (SIPLIS) Overview conversion topologies (non-isolating buck, boost, buck-boost) Three phase full wave uncontrolled rectifier with inductive loads: circuit diagram, waveforms, output voltage, input current, input harmonics. Single phase full wave thyristor controller rectifier: circuit diagram, waveforms and calculations. Inverters , main concepts, square wave inverters, Sine PWM inverters: circuit diagram, Circuit waveforms, Amplitude modulation index, Frequency modulation index. Variable Speed Drive: Fixed frequency induction motor torque speed characteristic, V/F operation, torque speed capability with V/F drive, typical V/F drive circuit diagram. Continuous v discontinuous conduction mode. Converter dynamics and control (overview small signals models, example topology, transfer functions). Key skill which can be applied broadly. Energy storage and energy transfer components and magnets (capacitive, inductive, uncoupled, coupled). Modern rectifiers (topologies, harmonics). High power resonant inverters 
- **HVAC / HVDC Power systems and conversion basic understanding.**
Digital Mobile and Personal Communications Systems: general configuration of cellular systems; comparison with fixed communications systems. Characterisation of the common air interface and design of suitable modulation and coding techniques. Efficient spectrum utilisation techniques. Key concepts in the dynamic management of resources: call control, switching, wireless access and channel allocation, handoff, roaming, HLR and VLR. Evolution of mobile systems: analogue systems, digital systems (GSM, DECT), future systems (wireless LANs, Universal Mobile Telecommunications Systems, Personal Communications Networks).

EE4617 Communication Theory 1 (Spring/4)
3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6
Information source encoding theory and techniques; communication channels; m-array discrete memory less channels, binary symmetric channels; Shannon-Hartley theorem and the possibilities and limits to error free transmission; channel coding; interleaving principles; linear block coding; cyclic codes; convolutional codes. Prerequisite: EE4616

EE4816 Signals & Systems 1 (Spring/3)
4 hours per week; 13 weeks/6th semester; 26L/26LAB; ECTS credits:6
Systems signals; signal representation; system response; sampling discrete time systems.

EE4004 TCP/IP Networking
Rationale And Purpose Of The Module:
The aim of this module is to provide a detailed study of the TCP/IP model and the internet. The module also covers advanced topics in multimedia communications.

Syllabus:
The internet and TCP/IP model: Evolution of internet; TCP/IP model (layers description and functions, PDU encapsulation, protocol architecture); TCP/IP internetworking principles. Network layer: Internet protocol (IP) mobile IP, addressing (IPv4 vs. IPv6); NAT operation (static vs. dynamic); subnetting and supernetting; address resolution with ARP and RARP; routing protocols (RIP, OSPF, BGP), Quality of Service (DiffServ vs. IntServ); control and assistance mechanisms (ICMP); IP multicasting (MBone operation) and group management (IGMP) Transport layer: Unreliable datagram transport with UDP; real-time transport with RTP and RTCP; reliable connection-oriented transport with TCP and SCTP; wireless TCP. Application layer: Review of client-server model; domain name system (DNS); TCP/IP configuration; static (BOOTP) vs. dynamic (DHCP); terminal networking with Telnet; file transfer with FTP and TFTP; email service (SMTP, POP, IMAP); browsing with HTTP; network management with SNMP. Multimedia communications: streaming audio, internet radio, VoIP (SIP v H323), video on demand, IPTV.

ET4006 Electronics (ED)
Rationale And Purpose Of The Module:
To provide the students with the knowledge and skills required to specify and manage classroom based projects using analogue and digital electronic devices and equipment available in schools. To develop the knowledge, skills, values and attitudes appropriate to the teaching of technologies.

Syllabus:
Transistor switch and operational amplifier circuits (op-amps) with output devices; lamp, buzzers, LED, speaker, motor, relay. Operational amplifier circuits (op-amps) assembled as comparator, amplifier, and oscillator. Simple timing circuits. Logic Circuits, basic logic gates AND, OR and NOT NAND, truth tables for each. The main logic families (TTL and CMOS). The use of logic gates with sensors and output devices. Inputs and Outputs, buffers (transistors, amplifiers, paralleled outputs), Schmitt trigger. Binary inputs. Counters, clock circuits, de-bouncers, counters, seven segment displays and display drivers. Circuit Design and Assembly of Pre-designed Circuits. Printed circuit boards (PCBs) Use of prototyping boards for initial assembly and testing of circuits. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area.

ET4014 Data Security
Rationale And Purpose Of The Module:
To introduce the concept of security services such as authentication, integrity and confidentiality. To introduce the role of digital signatures and their implementation using cryptographic ciphers. To introduce basic security protocols that provide security services. Attacks against security services: Replay attack, man in the middle attack.

Syllabus:
[Introduction to Security Services:] Security attacks, OSI model, security services: concepts of confidentiality, data origin authentication, entity authentication, data-integrity, access control, availability. [Digital Signatures:] The role of signatures, MACs, Hash functions, digital signatures, public key certificates, X509 certification authorities, e-mail security: PGP. [Security Protocols:] Introduction to key management, peer-to-peer distribution protocols and identification protocols. Secure web (https/ssl), secure shell (ssh) etc. [Identification techniques:] Identification tokens and smart cards. Biometric identification: finger prints, retina scan, face recognition, voice recognition. [Attacks:] Definition of attacker and capabilities of attacker, introduction to attacks on protocols, such as replay attacks, man in the middle attack.

ET4018 Mobile and Wireless Communications
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 fixed communications systems; systems overview: Fixed wireless Access, cellular, WLAN, Wireless Personal Area Network (WPAN), satellite. Celluar Concepts: Frequency reuse; channel assignment; capacity; sectoring. Review of wireless transmission; Signals, propagation issues, coding, modulation, multiplexing, spread spectrum. Medium access control: SDMA, TDMA, CDMA, WCDMA, effects of Multiple Access Interference and ISI. Mobile telecommunications systems: GSM, GPRS, EDGE, UMTS, HSUPA, 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
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 accidently 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.

Syllabus:
Computer Forensics: Definition; Evolution of Computer Forensics; Need for Computer Forensics in the digital age.
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, spooling, 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

ET4048 Electronics for Built Environment 2

Rationale And Purpose Of The Module:
Gain an in-depth knowledge of host and network security.
Assess the security of a network.
Recommend and implement measures to prevent security threats.
Research and develop security audits. Conversant in current trends and methodologies.

Syllabus:
[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.

ET4122 Analogue Electronics 2

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.

Syllabus:

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.

ET4142 Computer Systems Architecture 1 (Spring/2)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits:6
Use of a microprocessor in a computer; relationship between hardware, software and operating system; Microprocessor concepts: von Neumann computer, block diagram of microprocessor, fetch-decode-execute cycle. Memory, I/O and microprocessor, read/write cycles. Programmer’s model of a simple microprocessor, using simplified 8086 as example. Registers, addressing modes (simplified) and instruction set of an 8086, including unconditional and conditional jump and branch instructions, status bits, the stack and subroutines. Evolution of Pentium from 8086. Example of an embedded system and comparison with a PC. Intro to the PC, its bus structure and relevance of the BIOS. Project work: writing simple assembly and C programs and verifying their operation; exploration of PC using ‘My Computer’ and other PC based tools.
Prerequisite: ET4151 Digital Electronics 1

ET4224 Robotics 1 : Sensors and Actuators (Spring/4)
5 hours per week; 13 weeks/4th semester/26L/26Lab/13T ECTS credits: 6
Introduction to Physical Phenomenon: SI Units; Principles of sensor operation (mechanical, thermal, sound, light). Sensors and Transducers: concept of transducer action as signal conversion with particular emphasis on an electrical signal as the output; the ideal transducer: resolution, accuracy, linearity definitions and relevance; review of some physical phenomena that result in electrical parameter variations. Sensor Interfacing Circuitry Intro: review of Op-Amp as applied to sensing systems, instrumentation amplifiers, diff amps, etc; simple DACs, ADCs successive approximation and integrating, operating principles and suitability for industrial applications; overall concepts of accuracy, drift, resolution and common mode rejection applied to a measurement system, complete system composed of a transducer, amplifier and ADC. Actuators : Magneto Motive Force & magnetic circuits, transformers, DC generators and motors; Motors : DC machines with permanent magnet and field windings, Induction motors, Stepper Motors, Stepper drives; Motor Drive Circuits.

ET4243 Web and Database Technology 2
Rationale And Purpose Of The Module: This module will introduce the students to the concepts of database design, management and applications, such that they will gain a working knowledge of how to design and build a database and...
database-driven web sites that meet given business requirements, using industry standard database management systems.

Syllabus:
* Data models & database architectures
* Database Management System (DBMS): typical functions/services and major components
* The relational database model: introduction & additional concepts
* Database design methodology: conceptual, logical and physical database design phases
* Introduction to Structured Query Language (SQL): Data manipulation and Data definition
* Approaches for integrating databases into the web environment; client-server architectures
* Introduction to Microsoft Web Solution Platform: Active Server Pages (ASP) and ActiveX Data Objects (ADO); Introduction to scripting languages
* Web database programming case study

ET4725 Operating Systems 1 (Spring/3)
4 hours per week; 13 weeks/5th semester; 26L/26LAB; ECTS credits:6

MA4002 Engineering Mathematics 2* (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/26T; ECTS credits:6
The indefinite integral; the definite integral; areas, lengths, surface areas, volumes and moments of inertia; numerical integration; ordinary differential equations; laplace transform; application of the method to the solution of linear ordinary differential equations; functions of several variables and partial differentiation. Prerequisite MA4001

MA4004 Engineering Mathematics 4 (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/26T; ECTS credits:6
Variables - disrupt and continuous; the distribution of a variable; basic concepts of probability; Baye's Theorem; discrete and continuous random variables; special discrete probability distributions; moment generation functions; transformations; statistical inference - estimation and hypothesis testing; properties of estimators; maximum likelihood, method of least squares, linear regression.

MA4006 Engineering Mathematics 5* (Spring/3)
3 hours per week; 13 weeks/6th semester; 26L/26T; ECTS credits:6
Laplace transforms; transform theorems; convolution; the inverse transform; Fourier Series; Fourier transforms; linear partial differential equations; solution by separation of variables, and by integral transform methods; numerical methods; finite differences and finite elements; vector calculus; maxima and minima lagrange multipliers; line, surface and volume integrals Prerequisite MA4002

MA4102 Business Mathematics 1 (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/26T; ECTS credits:6
Algebra: Linear equations and inequalities, real numbers, function and their graphs, exponential and log, polynomials; laws of indices, matrices and linear systems, linear programming, mathematics of finance, present value, sinking funds; deferred and complex annuities; data reduction and representation; coefficient of variation, probability concepts, discrete and continuous probability distributions; sampling and sampling techniques; relationship between sample data and population.

MA4104 Business Statistics (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/26T; ECTS credits:6
Hypothesis testing for large and small samples using proportions and averages; simple linear regression and an introduction to multiple linear regression; dummy variables in regression and regression analysis for prediction utilising confidence intervals; test of variances; non-parametric hypothesis testing, chi-square and contingency tables, time series and index numbers - seasonal cyclical and irregular component analysis; forecasting techniques trend - bases and regression based methods; introduction to Box-Jenkins forecasting. Prerequisite MA4102

MA4128 Advanced Data Modelling (Spring/4)
3 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits:6
Cluster analysis, principle component analysis, factor analysis, discriminant analysis, the generalised linear model, maximum likelihood estimation, logit and probit regression, log linear models for categorical data. Prerequisite: MA4125

MA4302 Applied Statistics for Accounting
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. Discrete probability distributions - the binomial distribution. Expected values.
4. Continuous probability distributions, the normal and Pareto distributions - relevance to natural and economic phenomena.
5. Applications of the central limit theorem - interval estimation.
6. Hypothesis testing - one and two sample tests for population proportions and means. Tests of association.
7. The Pearson and Spearman correlation coefficient and simple linear regression.
9. Use of a statistical package (SPSS) for data input and transformation, as well as carrying out the statistical methods described above.

MA4602 Science Mathematics 2* (Spring/1)
3 hours per week; 13 weeks/2nd semester; 26L/26T; ECTS credits:6
Functions of the calculus; curve sketching; integration and applications; series; partial derivatives. Prerequisite MA4601

MA4604 Science Mathematics 4* (Spring/2)
3 hours per week; 13 weeks/4th semester; 26L/26T; ECTS credits:6
Modelling with differential equations. Derivation of differential equations of exponential growth and decay. Application to population growth, radioactive decay and other problems from science and engineering. Ordinary differential equations First order equations of variables separable, homogeneous and linear types; Second order homogeneous equations with constant coefficients. Numerical solutions of ordinary differential equations by Euler's method and Runge-Kutta methods. Fourier Series - Review of periodic functions; Fourier Series of functions of period and arbitrary periods; Fourier series of even and odd functions; applications to solving second order linear constant coefficient ordinary differential equations with periodic input. Laplace and Fourier Transforms definition of Laplace transform; transforms of elementary functions; tables of transforms;inverse Laplace Transform; convolution; solution of linear constant coefficient ordinary differential equations with applications to physics and chemistry (e.g. LCR circuits, damped mass spring, reaction rates); Heaviside unit step function and transforms of piecewise continuous functions; Fourier transform and its relation to the Laplace transform. Prerequisite MA4613
Functions of the calculus; curve sketching; series; integration and applications; partial derivatives.

Prerequisite MA4701

MA4704 Tech Mathematics 4* (Spring/2)

3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits: 6

Variables; representation of variables; introduction to the fundamentals of probability; Baye's theorem; special distributions; binomial, Poisson, geometric, uniform, exponential, normal; statistical inference; non-parametric tests; correlation and regression.

Prerequisite MA4701

MA4708 Quality Control*+ (Spring/4)

3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

History and development of quality control; cost of quality; statistical process control; attribute data; machine capability tests; acceptance sampling; introduction to design of experiments and analysis of variance.

Prerequisite MA4704

MB4002 Algebra 2* (Spring/1)

3 hours per week; 13 weeks/2nd semester; 26L/13T; ECTS credits: 6

Mathematical logic; sets; set operations; relations; mappings; matrix representation; algebra of sets; simple applications to switching theory.

Prerequisite MB4001

MB4004 History and Foundations of Maths* (Spring/2)

3 hours per week; 13 weeks/4th semester; 26L/13T; ECTS credits: 6

Contribution of early civilisations; the Hindus and Arabs; Hindu number system, zero, place value; early and medieval Europe; renaissance mathematics, 1500 - 1800; development of algebra, logarithms, co-ordinate geometry, calculus 1800-present; logic; proof and proof techniques; axiom systems; sets; transfinite arithmetic; real number system; complex numbers; groups; basic ideas.

Prerequisite MA4702

MS4014 Introduction to Numerical Analysis (Spring/2)

3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6

Basic concepts; problem solving and modelling; differential equations as models; classical mechanics; Newton's laws; simple harmonic motion; projectile motion; first order differential equations; applications; second order differential equations; trial solutions; operator techniques; applications; numerical solution techniques.

Prerequisite MA4702

MS4018 Dynamical Systems

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.


The applications of R will be explored by considering several case studies in statistics. Each case study is motivated by a scientific question that needs to be answered, and full background material is presented. The cases are grouped by broad statistical topics: data analysis; applied probability; statistical inference; regression methods.

MS4024 Numerical Computation

Rationale And Purpose Of The Module:

To introduce students to MATLAB and R as tools for mathematical and statistical computation.

Syllabus:


The applications of R will be explored by considering several case studies in statistics. Each case study is motivated by a scientific question that needs to be answered, and full background material is presented. The cases are grouped by broad statistical topics: data analysis; applied probability; statistical inference; regression methods.

MS4028 Stochastic Differential Equations for Finance

Rationale And Purpose Of The Module:
Methods of stochastic dynamics applied to finance, and with reference to problems involving stochastic differential equations from physics and engineering.

**Syllabus:**


**MS4111 Discrete Mathematics 1**

*Rationale And Purpose Of The Module:*
The aim of this module is to introduce students to some of the language of Discrete Mathematics, and to show its relevance, particularly in the context of Computer Science. It is taught at a level that is appropriate to first year students, i.e. without an excess of formality. The module should re-inforce the development of the students "thinking" skills, and should enable them to undertake further study in the various applied areas of Discrete Mathematics (coding, graphs, logic and formal systems etc.)

**Syllabus:**
Review of sets and operations on sets, power sets. Propositional logic, truth tables, propositional calculus, equivalence. Predicate logic, quantifiers, equivalence, application to (mathematical) proof. Cartesian product of sets, relations, equivalence relations, matrix representation of relations, composition of relations, functions, types of functions. Number systems, natural numbers, integers, rationals, reals, axioms for N, proof by induction, recursive definitions and algorithms, recurrence relations. Representations of N (binary, octal, etc), other number "fields". Introductory combinatorics, permutations, combinations.

**MS4212 Introductory Data Analysis** *(Spring/1)*
3 hours per week; 13 weeks/2\*4 semester; 26L/13T; ECTS credits:6

Collecting data: sampling; experimentation; measurement. Descriptive Statistics: frequencies; histogram; percentiles; mean, median, mode; range, interquartile range, standard deviation, boxplot. Cross-classification: row percentages, column percentages, Simpson’s Paradox. Scatterplots: least squares line, transforming to linearity, correlation. The Normal Curve: using a normal curve to approximate a histogram, calculations using the normal curve, normal probability plot, transforming to normality. The Sampling Distribution of a mean: illustrate by Monte Carlo, use for sample size determination, confidence intervals and hypothesis testing.

**MS4218 Time Series Analysis**

*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.

**MS4303 Operations Research 1** *(Spring/2)*
3 hours per week; 13 weeks/3\*4 semester; 26L/13T; ECTS credits:6

Model building and the methods of operational research; linear programming transportation and assignment algorithms; linear programming in practice; critical path analysis; decision analysis.

**MS4327 Optimisation**

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

**Syllabus:**

The module will include at least one computer-based project requiring students to select and implement a suitable algorithm for the solution of a non-trivial optimisation problem using either Fortran or Matlab.

**MS4404 Partial Differential Equations** *(Spring/2)*
3 hours per week; 13 weeks/4\* semester; 26L/13T; ECTS credits:6

Introduction to PDEs, Wave equation, Laplace's equation, Diffusion equation, first order PDEs.

**MS4408 Mathematical Modelling**

*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.

**MS4414 Theoretical Mechanics** *(Spring/2)*
3 hours per week; 13 weeks/4\* semester; 26L/13T; ECTS credits:6


**MS4528 Mathematical and Statistical Models of Investments**

*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 of interest rate products, credit default swaps, as well as to analyse the risk and return of individual assets and portfolios.

**Syllabus:**
[Models of Fixed Income Securities and Interest Rate Options:] Interest rates, LIBOR, zero rate, forward rates, yield curve, duration, convexity; forwards and futures on currencies; immunization; interest rate swaps; boot-strapping the yield curve; currency swaps; interest rate derivatives; bond options, caps and floors, caplets and swaptions; Black\_s models. [Credit Derivatives:] Credit default swaps; hedge-based pricing. Collateralised debt obligations. Credit spreads and implied default probabilities. Bond based pricing of credit derivatives. Spread curves. [Time Series models of equity returns and volatility:] Analysis of return series; tests for skewness and excess kurtosis; stationarity, ACF and PACF; brief survey of AR and MA models; models of volatility: ARCH and GARCH: kurtosis, forecasting; brief survey of variations on GARCH such as f-GARCH, M-GARCH; leverage effect and EGARCH.
[Portfolio selection models:] diversification; minimum variance and the Markowitz problem (vector treatment of n-asset problem); market portfolio; CAPM; systematic risk; CAPM as a pricing model; weaknesses of CAPM.
Faculty of Science and Engineering – Spring

BC4002 Introductory Biochemistry
Rationale And Purpose Of The Module:
* To provide an understanding of the structure and function of the major biological molecules
* To provide an understanding of the principles of metabolism
* To provide an understanding of the biochemistry of blood and basic immunology

Syllabus:

BC4008 Immuno and DNA Diagnostic Techniques
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:

BC4408 Bioprocess Technology 2* (Spring/4)
2 hours per week; 13 weeks/8th semester; 26L; ECTS credits: 6

BC4705 Industrial Biochemistry 1
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 critical analysis of issues/topics pertaining to these themes and to provide scope for a measure of student self-directed learning.

Syllabus:

BC4718 - INDUSTRIAL BIOCHEMISTRY 2
3 hours per week; 13 weeks/8th semester; 26L/13T ECTS credits: 6
To present an overview of (a) animal cell culture and (b) pharmaceutical biotechnology in the context of underlying 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.

BC4904 Biochemistry 2* (Proteins and Nucleic Acids) (Spring/2)
7 hours per week; 13 weeks/4th semester; 26L/26T/39LAB; ECTS credits: 6
The 3D structure of proteins; strategies of protein purification; enzyme kinetics and catalysis; protein sequencing; the structure of DNA; DNA sequencing; replication, transcription and translation; mutagenesis and DNA repair; gene expression, the lac and try operons. Prerequisite BC4903

BC4907 Cell Biochemistry
Rationale And Purpose Of The Module:
To introduce current advanced topics in cell and molecular biology and utilise these to probe modes of intervention in developing targeted approached to future diagnoses, pharmaceuticals and biopharmaceuticals. To show how an in-depth understanding of molecular biochemistry can aid this.

Syllabus:

BC4938 DIAGNOSTIC TECHNIQUES
3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6
To familiarise the student with established and novel developments in the field of nucleic acid-based diagnostics and therapeutics. To develop the students’ awareness of laboratory techniques specific to immunology. To familiarise the student with biomolecules which have clinical significance as disease markers.

BY4002 Biology 2* (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6
Cellular reproduction; plant structure and function; 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; regulation of gene activity; recombinant DNA and biotechnology; evolutionary theories; introduction to taxonomy; principles and scope of sociology. Prerequisite BY4001

BY4004 Horticulture 1 (Spring/2)
Composts, growing media and substrates in horticulture, seed propagation, vegetative propagation, seedbed preparation, horticultural crop rotation, vegetable crop production & fertilising, climatic factors associated with plant growth, micropropagation & genetic modification of plants.

BY4008 Genetic and Molecular Biology* (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26LAB; ECTS credits: 6

Extensions of Mendelian genetics; linkage; multiple alleles, multiple genes and epistasis; chromosome structure, meiosis / mitosis, the biochemistry of protein synthesis.; mutation causes and effects at the gene chromosome and organism levels; basic principles of plant and animal breeding; human genetics; introduction to population genetics; microbial genetics; genetic exchange mechanisms, plasmids; immune system function; allergy; immune surveillance immune deficiency, AIDS; monoclonal antibodies.

BY4104 Ecology 1* (Spring/2)
4 hours per week; 13 weeks/4th semester; 26L/26LAB; ECTS credits: 6
Woodland ecosystems; vegetation sampling; freshwater ecosystems; marine ecosystems; rocky shores; brief consideration of sandy, muddy and estuarine ecosystems.

Prerequisite BY4002

BY4204 Principles of Human Physiology
Rationale And Purpose Of The Module:
To introduce students to the basic concepts and principles of human physiology
On completion of the module students will be able to: demonstrate a knowledge of the structure and function of major human physiological systems. Additionally, the influence and relationship between various human physiological conditions and metabolism of nutrients will be considered.

Syllabus:
This module will examine the structure and function of the major human physiological systems. Physiology of the blood, circulation and lymphatic systems. The nervous system: central, peripheral and autonomic. Physiology of skeletal, muscle and integumentary systems. The respiratory system: mechanical properties of breathing, pulmonary and bronchial circulation, the transport of oxygen and carbon dioxide. The digestive system: the gastro-intestinal tract, intake and absorption of nutrients. The renal system: kidney structure and function, osmoregulation and homeostasis, regulation of acid balance. The endocrine system: regulation of calcium and phosphate metabolism. Reproductive system. Sensory system: perception of taste and aroma. The influence of physiological conditions on nutrient absorption will be considered e.g. inborn errors of metabolism on iron metabolism. The impact of food constituents on physiology will be examined e.g. ingestion of toxins.

BY4208 Agriculture 2 (Spring/4)
4 hours per week; 13 weeks/8th semester; 26L/26LAB; ECTS credits: 6
Dairy herds; sheep production, principles of prod; Principles of beef production; conventional versus intensive production; calf rearing, diseases of cattle; production of milk; markets for dairy products; management of ducting, housing and management.

BY4214 Principles of Human Nutrition
Rationale And Purpose Of The Module:
To introduce students to the basic concepts and principles of Human Nutrition

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

BY4505 Pollution Biology (Spring/2)
4 hours per week; 13 weeks/4th semester; 26L/2T; ECTS credits: 6
To familiarise students with the main types of environmental pollutants, their origins exposure routes and impacts. To equip students with skills in methodology monitoring the impacts of selected pollutants.

CG4008 Process Troubleshooting
Rationale And Purpose Of The Module:
To provide the student with skills and knowledge in the field of chemical biochemical process troubleshooting.

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. Practical methodologies: recognising patterns, cause-effect, reasoning, and selection of valid diagnostic actions; process trouble shooting rules of thumb; formulation of realistic solutions to process problems. Selected process trouble shooting case studies in the chemical and biochemical industries. Process trouble shooting simulation lab.

CH4002 Physical Chemistry 1*(Thermo-dynamics and Kinetics) (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6
Introduction to chemical thermodynamics; heat; work; reversible and irreversible systems; state functions; first law of thermodynamics; internal energy; enthalpy; standard enthalpies; second and third laws of thermodynamics; entropy, Clausius inequality; Gibbs and helmholz free energies; chemical equilibrium; variations with temperature and pressure; introduction to chemical kinetics; zero, first and second order rate laws; activation energy and the Arhenius equation; accounting for the rate laws; steady state approximation,Michaelis-Menten equation.

Prerequisite CH4701

CH4004 Physical Chemistry 3*(The Liquid State) (Spring/2)
6 hours per week; 13 weeks/4th semester; 26L/13T/39LAB; ECTS credits: 6

Prerequisite CH4003

CH4008 ORGANIC PHARMACEUTICAL CHEMISTRY 2
6 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits: 6
To build on the functional group chemistry covered in CH4102, CH4103, CH4104 and CH4007. To extend the studentsÆ comprehension and working knowledge of functional group chemistry; to expand the range of reagents, reactions and associated mechanisms; detail how structure and reactivity can be quantitatively correlated; to detail quantitative aspects of acid and base catalysis.

CH4012 General Chemistry 2
Rationale And Purpose Of The Module:
To introduce students to the general principles of Energetics, Electrochemistry, Kinetics and Structure, building on what they have done in General Chemistry 1.

Syllabus:
Energetics: Enthalpy, entropy and free energy; first two laws of thermodynamics; thermochemistry; equilibrium constants and free energy. Electrochemistry: Free energy and cell potential; emf cells and the Nernst equation; electrochemical series; electrolysis cells and FaradayÆs laws; batteries and fuel cells. Kinetics: Rate equation; rate laws and orders of reaction; factors affecting rates of reaction; activation energy and reaction profile; Arhenius equation; catalysts. Structure and bonding: Types of chemical bonding, classification of solids and properties. Bonding in relation to the Periodic table.
CH4017 Chemical Nanotechnology

Rationale And Purpose Of The Module:
To provide a specialist module in chemical nanotechnology.

Syllabus:
Chemical and physical properties from the macroscale through to the nanoscale. Quantum confinement, surface energy, thermodynamics and capillarity in nanocrystals. Chemical synthesis and modification including OD, 1D and 3D incorporating II-VI colloidal nanocrystal growth (organic, aqueous and supercritical fluids), semiconductor nanowire growth by vapour liquid solid (VLS), carbon nanostructures synthesis and other methods. Polymer formation at the nanoscale including self-assembling block copolymers, conducting polymers. Hybrid nanocrystal conducting polymer solar cells. Kinetics of nanocrystal growth and the organic/inorganic interface. Chemical functionalisation of inorganic nanostructures with organic molecules and the bio/nano interface. The hierarchical assembly of nanomaterials using Langmuir Blodgett, electric field and supercrystallisation methods will be reviewed, including collective properties and difference to bulk. A study of microscopy and spectroscopical methods of measurement at the nanoscale will be introduced to include electron microscopy, vibrational and photoelectron spectroscopies, and X-ray diffraction. Industrial applications of nanochemistry, nanosizing of pharmaceuticals, lab on a chip, and liquid crystals. Synthesis and characterisation of a range of colloidal semiconductor, metal and polymer nanocrystals.

CH4054 Introductory Physical Chemistry (Spring/2)
5 hours per week; 13 weeks/4th semester; 26L/13T/26LAB; ECTS credits: 6
The first and second laws of thermodynamics; chemical equilibrium; ions in aqueous solution; electrochemical cells; electrolytic conductivity; reaction kinetics and enzyme kinetics. Prerequisite: CH4071

CH4102 Organic Chemistry 1 (Spring/1)
5 hours per week; 13 weeks/2nd semester; 26L/39LAB; ECTS credits: 6

CH4104 Organic Chemistry 3* (Spring/2)
5 hours per week; 13 weeks/4th semester; 26L/39LAB; ECTS credits: 6
Amino Acids: structure, stereochemistry, acid ionization, methods of synthesis Gabriel and Streeker synthesis and modification malonic ester and Gabriel synthesis. Peptides: strategy for synthesis, use of protecting groups and activating agents, solid phase synthesis using Merrifield resin. Proteins: primary, secondary and tertiary structures, enzymes as catalytic proteins, DNA, transcription and translation. Carbohydrates: structure and stereochemistry of monosaccharides, mutarotation, oxidation and reduction reactions, synthetic transformations of disaccharides and polysaccharides, structure and function, chemical and enzyme degradation products, chemically modified polysaccharides—cellulose acetate, nitrate and xanthate cyclodextrins. Prerequisite CH4102, CH4103

CH4152 Introductory Organic Chemistry 1B (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6

CH4202 Inorganic Chemistry 1* (Spring/1)
4 hours per week; 13 weeks/2nd semester; 26L/26LAB; ECTS credits: 6
Covalent bonding; valence bond treatment, molecular orbital treatment; resonance and electron delocalisation. Comparison of valence bond and molecular orbital approaches. Polarity in bonds. Molecular Crystals. Ionic crystals estimation of ionic radius, radius ratio and its importance. Madelung constants and estimation of lattice energies, the Born-Haber Cycle. Structure of metals, Band theory as applied to conductors, semiconductors and insulators. Bonding in transition metal complexes, crystal field theory, molecular orbital approach, bonding ligands. Cluster compounds, multiple metal to metal bonds. The influence of bonding on the physical properties of materials is emphasised throughout the module. Prerequisite CH4701

CH4252 Inorganic Chemistry 1B* (Spring/1)
5 hours per week; 13 weeks/2nd semester; 26L/13T/26LAB; ECTS credits: 6
Covalent bonding; comparison of valence bond and molecular orbital approaches; ionic crystals; lattice energies; structure of metals; band theory; bonding in transition metal complexes; crystal field theory; cluster compounds. Prerequisite CH4701

CH4304 Analytical Chemistry 2* (Spring/2)
6 hours per week; 13 weeks/4th semester; 26L/39LAB; ECTS credits: 6
The structure of crystalline solids; crystal lattice, lattice points, crystal structure; application of X-ray methods including diffraction, fluorescence and electron microprobe analysis; structure determination by X-ray methods; solid state reactions including corrosion and cement chemistry; relationship between chemical and mechanical properties, application of group theory, including point and space groups. Prerequisites CH4603, CH4303

CH4306 ANALYTICAL CHEMISTRY 4
3 hours per week; 13 weeks/6th semester; 26L/13T; ECTS credits: 6
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.

CH4354 Analytical Chemistry for the Environment* (Spring/2)
6 hours per week; 13 weeks/4th semester; 26L/13T/39LAB; ECTS credits: 6
Survey of analytical methods; electrometric methods; chromatographic methods; spectroscopic methods; mass spectrometry; thermal analysis; water analysis; gas analysis.

CH4404 Process Technology 1 (Spring/2)
6 hours per week; 13 weeks/4th semester; 26L/13T/39LAB; ECTS credits: 6
of employer and employee liability. Codes of practice. The role of management and unions in safety. Introduction to process control: basic control modes eg. PI, PID; control system architecture and dynamic behaviour for SISO processes; controller tuning; control system hierarchies for chemical/biochemical processing plants. Equipment and instrumentation used in chemical and biochemical processing operations: sensing and measurement: signal transmission; controllers; final control elements. Process modelling; application of material and energy balances in the formulation of quantitative process models; process characteristics and dynamic response behaviour of first and second order systems.

CH4554 Environmental Chemistry* (Spring/2) 6 hours per week; 13 weeks/4th semester; 26L/13T/39LAB; ECTS credits:6
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 aqeous 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. Biochemical cycles for Prerequisite CH4701.

CH4608 Plant Process Management (Spring/3)

EQ2002 Horsemanship 2 (Spring/1) 5 hours per week; 13 weeks/2nd semester; 26L/39LAB; ECTS credits:6
Principles of training with reference to exercise physiology and its application to the horse. Riding techniques and specific training methods.

EQ2102 Horsemanship 2A (Spring/1) 5 hours per week; 13 weeks/2nd semester; 26L/39LAB; ECTS credits:6
Principles of training with reference to exercise physiology and its application to the horse. Riding techniques and specific training methods Teaching the beginning and novice riders; pupil/teacher interactions. Safety considerations.

EQ3006 Problem Identification & Practical Solutions
This module develops the material included in the module advanced riding techniques and problem analysis through practical and exploitation of the principles and practices promoted there: emphasis will be placed on the importance of identifying root causes of incorrect performance, resistance and evasion; methods of teaching advanced riding techniques.

EQ4002 Equine Exercise Science 1 (Spring/1) 5 hours per week; 13 weeks/2nd semester; 26L/39LAB; ECTS credits:6
Principles of training with particular reference to exercise physiology and its application to the equine athlete. Riding techniques and specific training methods. Analysis and evaluation of the physical parameters associated with the different types of sport horse competition. Riding theories.

EQ4004 Equine Management (Spring/2) 5 hours per week; 13 weeks/4th semester; 26L/39LAB; ECTS credits:6

EQ4008 Equine Teaching Principles 2 (Spring/4) 5 hours per week; 13 weeks/8th semester; 26L/39LAB; ECTS credits:6
Knowledge of the requirements and rules of various types of 'competition' disciplines. Methods of improving the skills of horse and rider. Methods of producing the mental and physical preparedness needed for competition by horse and rider. Sports Psychology. The communication triangle - coach, pupil, horse.

EQ4014 Foundations of Equine Performance
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, heat 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.

EQ4018 Equine Competition 2 (Spring/4) 5 hours per week; 13 weeks/8th semester; 26L/39LAB; ECTS credits:6
Study of the different international schools of dressage training and trainers. Evaluation of different international events, trainers and their methods. Analysis of different types and levels of show jumping competition and the specialist training needed. The theory and practice of course building and fence structure.

EQ4032 Equestrian Skill Analysis (Spring/1) (No description given)

ER4404 Managing the Environment (Spring/2)
Environmental management systems; environmental monitoring, environmental auditing.

ER4408 Environmental Management 2 (Spring/4)
Global, EU and Irish law policy and structures concerning environmental management; Environmental Protection Agency: structure and functions; the reasons why industry is increasingly embracing environmental management, and ways in which this is achieved within corporate organisations; case studies of environmental management as a planning tool within economic development.

ER4508 Pollution Control 2 (Waste Management) (Spring/4)
Waste minimisation; hazardous waste management; waste to energy systems: incineration, landfill, composting; leakage control and gas capture; waste recycling techniques and economics; reuse of waste materials; component recovery: biogas, algae, weed and fish production; novel waste management techniques.

ER4606 Clean Technology
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.
EV4013 Equine Physiology

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:
- Conditions of the airways and their impact on athletic performance of the healthy horse so that signs of ill health and disease are recognised and sources of information on drugs. Drug dosage forms and routes of administration. Processes of drug absorption, distribution, metabolism and excretion. Basic principles of pharmacokinetics. Pharmacological effects, mechanism of action and fate of therapeutic agents that affect various systems of the body (equine), with particular emphasis on drugs affecting the musculo-skeletal and respiratory systems; Antimicrobial drugs; Non-steroidal anti-inflammatory drugs;

EV4014 Equine Nutrition* (Spring/2)

4 hours per week; 13 weeks/4th semester; 26L/26LAB; ECTS credits:6

Principal feedstuffs, composition, analysis and energy values; feeding principles; nutrient requirements of barren, pregnant and lactating mares; nutrient requirement of horses/ponies in training, convalescent, etc. Nutrient requirements of the orphan foals. Prerequisite EV4001

EV4015 Equine Health and Disease

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

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

Rationale And Purpose Of The Module:
To provide the student with the opportunity to carry out research To enable the student to develop a specialist understanding of a chosen topic

Syllabus:
The project is of two semesters duration through the final academic year. Normally the student will select a single project subject, which may be pertinent to a problem encountered during his industrial training. It may involve practical work or may be of the nature of a design or feasibility study. In certain cases a student may be allowed to research an entrepreneurial activity, and if there is a scientific basis to the enterprise, then this kind of project will be encouraged.

FT4428 Advanced Food Chemistry (Spring/4)

4 hours per week; 13 weeks/8th semester; 26L/26LAB; ECTS credits:6

Detailed treatment of the biochemistry of lipids, carbohydrates and proteins in food systems; analytical techniques; relationships between structure and function; industrial modification of lipids; oxidative rancidity and its control; emulsification; non-enzymatic browning and caramelisation reactions; natural and chemically modified polysaccharides; roles of proteins in gelation, dough formation, foaming, texture formation, etc.; effects of processing and storage.

FT4438 Food Microbiology (Spring/4)

4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits:6

Roles of major families of micro organisms in food preservation/spoilage, food fermentation and public health; isolation and characterisation; microbial testing and control in food products; HACCP and quality systems; foodborne pathogens of current concern including listeria monocytogenes, psychrophilic C. botulinum, aeromonas, yershina, bacillus cereus, salmonella.

FT4458 Food Production Systems (Spring/4)

3 hours per week; 13 weeks/8th semester; 26L/13T; ECTS credits:3

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.

FT4468 Food Biotechnology (Spring/4)

4 hours per week; 13 weeks/8th semester; 26L/26T; ECTS credits:6

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

HS4105 Occupational Hygene 2

Rationale And Purpose Of The Module:
To familiarise the student with a broad range of occupational hygiene issues currently pertinent to the workplace environment. To further develop the students’ awareness of the occupational hygiene approach to hazard recognition, evaluation, monitoring and control in respect of key areas of ionising and non-ionising radiation, light and lighting, thermal environment and biohazards.
To develop the students' knowledge of appropriate measuring equipment and evaluation of findings in the context of occupational exposures.

**Syllabus:**
- [Non-ionising Radiation] electromagnetic spectrum, wavelength, frequency, energy, isotopes, alpha, beta, gamma, x-ray radiation, half-lives, penetration power, units of radioactivity, radiation dose, biological effects, radiation monitoring techniques, radioactivity & industry, control measures in the workplace.
- [Thermal Environment] heat, thermoregulation, temperature extremes, thermal comfort, predicting and controlling thermal stress, thermal surveys, cold stress
- [Biological hazards] classification system, infection, control measures, sterilization, disinfection, physical methods, chemical methods.

**HS4108 Health and Safety Systems 2 (Spring/4)**
4 hours per week; 13 weeks/8th semester; 39L/13T ECTS credits; 6 credits
To further develop student awareness of the multifaceted approach necessary to ensure protection of the individual worker in his/her employment setting. To serve the purpose of bringing together the focus and contents of a number of previous modules in the areas of safety systems, hazard, risk assessment and industry.

**HS4208 SAFETY TECHNOLOGY (Spring/4)**
3 hours per week; 13 weeks/8th semester; 26L/13T ECTS credits; 6 credits
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.

**PH4008 Hydrocarbon Fuels**
Syllabus:
- Fundamentals of coal, oil and natural gas and their conversion to useful energy products.
- Hydrocarbon resource terminology - proven reserves, indicated reserves inferred reserves.
- Coal formation, reserves. Coal extraction and production. Use of coal, combustion, gasification and use in blast furnaces, coke formation.
- Coal composition, properties, analysis and classification - ranking of coal from sub-bituminous to anthracite. Coal combustion, liquefaction and gasification.
- Electricity production from coal combustion. Clean coal technology - gasification with combined cycle.
- Origins and geology of oil and gas. Oil and gas reserves. Non-conventional sources of petroleum - oil shale, tar sands and heavy oil deposits. Liquid petroleum fuel and its classification, distillate, non-distillate fuels etc. Oil refining and products. Petroleum hydrocarbon structures, the refining process - distillation (fractionation), reforming, alkylation, polymerisation, hydrocracking and sulphur plants. Oil from coal and gas. Oil and gas engines, spark ignition engine, compression ignition engine and sterling engine.

**PH4012 Physics for Engineers 2 (Spring/1)**
5 hours per week; 13 weeks/2nd semester; 26L/13T/26LAB; ECTS credits: 6
Heat; laws of thermodynamics; heat capacities; Carnot cycles entropy; heat transfer; Stefan-Boltzmann law; wave motion; Doppler effect; sound; light; electromagnetic spectrum; source of light, UV, visible and IR; geometrical optics; physical optics; optical systems.
**Prerequisite:** PH4011

**PH4018 Medical Instrumentation**
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.

**PH4032 Physics for General Science 2**
Rationale And Purpose Of The Module:
To introduce the student to the scientific basis of the well known radiological equipment commonly in use in our hospitals and medical research institutes.

**PH4038 Energy Storage**
Syllabus:
- Ultrasound: Doppler effect, high frequency ultrasound, limitations. MRI/MRS: Magnetic Resonance basics, the hydrogen nucleus, proton spin and quantum mechanics; 3D map of hydrogen atoms and hence content of the sample volume, Properties and amount of water in tissue, distinction between contrast and content imaging.


PH4042 Thermal 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 Joule's 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; chemical, 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 quantum 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.

PH4062 Nanotechnology 2

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 nanomaterials and to develop an understanding of the importance of mechanical and electro-optical properties in applications of nanostructured materials.

Syllabus:

PH4072 Electromagnetism

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 students to the unified theory of electromagnetic waves and its application in matter and simple physical systems.

Syllabus:
- Vector methods: div, grad, curl, line, surface and volume integrals; Electric field E; electric charge, Coulomb's law, electric field E, Gauss's law, divergence of electric field, the Dirac delta function; Magnetic field: magnetic field B, Biot-Savart law, Ampere's law, Lorentz force; Electromagnetic induction: emf, Faraday's 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; Dipoles and multipoles: electric dipole p, magnetic dipole m, electric multipoles; Conductors: conductivity, Ohm's law, Hall effect; Dielectrics: polarisation P, displacement D, permittivity, electric susceptibility, dielectric constant; Magnetic materials: diamagnets, paramagnets, ferromagnets; magnetic intensity H, magnetisation M, magnetic susceptibility, inductance, transformers; Maxwell's equations in matter: Maxwell's equations in terms of H and D; Boundary value problems: Poisson's equation, Laplace's equation, uniqueness theorem, images; Circuits: transients, reactance, power, and impedance.

PH4088 Energy Project 2

Syllabus:
- Students will gain further experience in core energy topics; theory included in the programme will be consolidated and applied to practical problems in an industrial or academic research environment.

PH4092 Semiconductor Devices

Rationale And Purpose Of The Module:

i. To introduce the student to the physics of solid state electronic devices and to their application
ii. 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 diodes and applications, Zener diode, the bipolar transistor; transistor action, applications of the emitter amplifier, early effect; the field effect transistor, JFET, MOSFET, characteristics and application in simple circuits.
- Combinational Logic: Binary Logic, Logic functions; AND, OR, NOT; Truth table; Boolean Algebra; Boolean postulates and theorems, De Morgan; Logic gates - complete set; NAND and NOR implementations of logic functions; Multiple-input gates. Sequential Logic: Memory, feedback, synchronous/asynchronous, Flip-flops, Latches; basic SR latch, gated SR Latch, D-type, Master-slave latch, JK Latch; Shift Registers; Counters, UART (block diagram). Operational and Instrumentation amplifiers: desirable characteristics, comparators, voltage reference, virtual earth, voltage follower, Nyquist/Shannon sampling theorem.

PH4102 Waves/Light/Modern Physics

Rationale And Purpose Of The Module:
- To introduce the student to general wave motion, optics and acoustics and to provide the student with a general introduction to special relativity and to atomic and nuclear physics.

Syllabus:
- Oscillations and simple harmonic motion: transverse and longitudinal waves, superposition, speed, reflection, harmonic waves. Sound: sound waves, sound intensity, Doppler effect. Light: EM Spectrum,
Sources of light, Geometrical optics; reflection, refraction, dispersion, achromatic optics; Physical optics; interference, diffraction, diffraction gratings, polarisation; Optical systems; the microscope, the telescope, the eye. Special Relativity: Einstein's Postulates, time dilation, length contraction, the Lorentz Transformation, relativistic momentum and energy conservation. Atom: Classical models, Planck's quantum hypothesis, the Bohr atom. The photoelectric effect; quantized energy; the de Broglie wavelength. The nucleus: nucleons; isotopes; nuclear structure; binding energy. Radiation: X rays, alfa, beta and gamma radiation, the law of radioactive decay. fission and fusion; nuclear reactors. Detection, dosage.

PH4111 Semiconductors 2
Rationale And Purpose Of The Module:
The purpose of the module is to introduce advanced CMOS process technology and the problems associated with device fabrication as the technology moves towards 30 nm features and below.

Syllabus:

PH4132 Modern Physics
Rationale And Purpose Of The Module:
This module will develop the student's understanding of fundamental concepts and ideas in modern physics, specifically the use and application of the Schroedinger equation, and the principles of special relativity.

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

PH4608 Solid State Physics 2
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:

PH4908 Applied Physics Project 2
Rationale And Purpose Of The Module:
* To allow the student to study a topic in Applied Physics and to apply his/her theoretical knowledge to a practical situation.

* To provide the student with an opportunity gain further experience in the research environment and to develop the skills necessary for research.

Syllabus:
Students will gain further experience in core physics topics; theory included in the programme will be consolidated and applied practical problems in an industrial or academic research environment.

NS4002 Science Foundation 2: Genetics
Rationale And Purpose Of The Module:
The aim of this module is to enhance students understanding of the causes of hereditary linked disorders.

Syllabus:
Cell biology: Prokaryote and eukaryote cells. Biological basis of heredity, Mendelian inheritance in humans - nature of DNA, genes, chromosomes, how genes function, autosomal dominant, autosomal recessive, X linked recessive disorders, X linked dominant disorders, chromosomal disorders - autosomal abnormalities, sex chromosomal abnormalities, genetics of common mental and physical disorders, polygenic inheritance, some basic concepts in population genetics. Factors influencing teratogenesis. Genes and cancer. Genetic counselling.

NS4022 Pharmacology for Nurses and Midwives
Rationale And Purpose Of The Module:
The purpose of this module is to provide the student with a knowledge and understanding of the principles of pharmacology with application to the role of the nurse and midwife in safe and effective medication process.

Syllabus:

NS4072 Midwifery Practice and Normal Birth
Rationale And Purpose Of The Module:
The module will give students the knowledge and skills to assess, plan and implement midwifery care for women and their families experiencing normal childbirth.

Syllabus:
Assess, plan and implement midwifery care for women and their families experiencing normal childbirth throughout the antenatal intratal and postnatal period, physiology and care of women in the 1st, 2nd and 3rd stage of labour, care of the pelvic floor antenatally, intrapartum and postnatally, pain relief and comfort in labour, physiology and care in the puerperium, bereavement and loss in childbirth. Clinical skills: Assessment of a woman on admission. Assessment of a woman in labour.
Demonstrates the normal mechanism of labour
Demonstrates positions for birth
Assessment of a woman and her baby in the postnatal period

NS4074 Sexual and Reproductive Health in Midwifery

Rationale And Purpose Of The Module:
This module will enable the student to promote gynaecological and reproductive health and well-being and care for women with related problems.

Syllabus:
Gynaecological health and well being and care for women with related problems, fertility/infertility and its impact on women's well-being, preconception care, sexuality and childbearing, sexual and reproductive health needs of diverse groups eg teenagers, travellers, cultural issues which impact on sexuality, fertility and childbearing eg female genital mutilation, health promotion strategies appropriate within maternal health, use of complementary therapies in childbirth, the role of the midwife in family planning and contraception, sexually transmitted infections, consequences of childbearing including morbidity and mortality, pregnancy and domestic violence

NS4084 Care of the at-Risk and Neonate

Rationale And Purpose Of The Module:
This module will enhance the students' role and responsibilities in relation to the care of the at risk and ill neonate.

Syllabus:
Systematic care for the at risk and ill neonate eg, management of cardiovascular and respiratory disorders, neonatal jaundice, metabolic transient disorders, endocrine disorders and congenital anomalies, midwifes' role within the multidisciplinary team, breastfeeding management under difficult circumstances, infections in the neonate, trauma in the neonate, complications arising with low birth weight, preterm and post term infant, neonatal resuscitation and rapid midwifery intervention, perinatal and infant morbidity and mortality, adoption and fostering, child protection issues, support in the context of bereavement and loss

CLINICAL SKILLS: Introduction to the 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
Phototherapy
Administration of medication to the neonate

NS4202 - BIOLOGICAL SCIENCES 2, ANATOMY, PHYSIOLOGY AND EMBRYOLOGY
4 hours per week; 13 weeks/2nd semester; 26L/26; ECTS credits 3

The aim of this module is to provide students with the foundation for understanding normal human anatomy and physiological functioning and embryology so as to assist in the study of the effects of illness and disease on the individual. Structure and function of the Circulatory system. Structure and function of the Respiratory system. Structure and function of the lymphatic system. Contribution of each system to the maintenance of homeostasis. Embryology: pre-embryonic, embryonic and foetal development and growth; congenital abnormalities.

NS4204 Research for Nurses and Midwives

Rationale And Purpose Of The Module:
The module aims to develop knowledge and skills to critically review research literature and apply to practice so that an understanding of the contribution of research to nursing and midwifery practice is promoted.

Syllabus:
Ways of knowing in nursing, midwifery and health care practice.
Accessing sources of knowledge: searching, reading, critiquing literature. Philosophical and theoretical underpinnings of research: philosophy and research, paradigms. Ethical issues. The research process: developing a research concept; statement; design. Introduction to methodologies: qualitative, quantitative, action research. Data collection and analysis, writing up research.

NS4212 Communications and Therapeutic Relationships

Rationale And Purpose Of The Module:
The module will introduce the skills and knowledge necessary for the development of effective communication in nursing and midwifery practice.

Syllabus:
Self-awareness and assertiveness. Bridges and Barriers in the therapeutic relationship
Communicating with persons with disability/impairments. Transcultural issues in communication. Communication in conflict management. Bereavement. Communicating in special circumstances e.g. breaking bad news.

Communicating nursing information

Clinical Skills Syllabus:
Communication skills: self-awareness, verbal, non-verbal; listening, explaining, questioning, assertiveness, interviewing skills
Group communication and group dynamics
Communication with persons with a disability/impairment
Communication: Breaking bad news, conflict situations
Admission, assessment and documentation
Transcultural Awareness
Relaxation Skills

NS4214 Endocrine and Reproductive Nursing

Rationale And Purpose Of The Module:
The purpose of this module is to facilitate student understanding of endocrine and reproductive disorders so that they may provide appropriate nursing of an individual with such condition(s).

Syllabus:
Nursing assessment and management of endocrine disorders: eg. diabetes, thyrotoxicosis and hypothyroidism.
Nursing assessment and management of reproductive disorders: eg. benign/malignant breast disorders, dysfunctional uterine bleeding, cervical carcinoma; menopause, sexual health problems: eg. infertility, endometriosis, and sexually transmitted infections.
Nurse:Es role and responsibilities in investigative and diagnostic procedures.

Clinical Skills Syllabus:
Blood Glucose Monitoring, techniques of insulin administration.
Women's Health - Breast Awareness, Cervical Screening, STI Screening, Contraception, Osteoporosis Screening.
Men:Es Health - Testicular Examination.

NS4222 Respiratory and Circulatory Nursing

Rationale And Purpose Of The Module:
This module will address the nursing care and management of individuals with respiratory, circulatory, blood and lymph disorders. The nurse:Es role in the supportive-educative process will be explored in respect of acute or progressive respiratory and circulatory disorders. The aim of this module is to facilitate student:Es understanding of respiratory, circulatory, blood and lymph disorders so that they may provide appropriate nursing of an individual with such condition(s)

Syllabus:
Nursing care and management of individuals with respiratory disorders e.g. infection, chronic obstructive pulmonary disorders, asthma, carcinoma, airway obstruction.
Nursing care and management of a patient with a tracheostomy.
Nursing care and management of individuals with cardiovascular disorders e.g. hypertension, myocardial infarction, congestive cardiac failure, shock.
Nursing care and management of a patient receiving a blood transfusion.
Disorders of blood and lymph: anaemia, leukaemia.
Nurse:Es role in the collaborative process of care with individuals and the family/carer.
Nurse:Es role and responsibilities in investigative, diagnostic and surgical procedures.

Clinical Skills Syllabus:
Oxygen therapy
Suctioning techniques
Nebulisers/inhalers, peak flow
Active and passive limb exercises.
Tracheotomy management: dressings, removal, cuff inflation/deflation, emergency
Intra pleural drainage: postural drainage, underwater seal drain
Intravenous Infusion: equipment types, regulation & changing IV solutions
Blood transfusion
NS4224 Neurological, Sensory and Musculo-skeletal Nursing

Rationale And Purpose Of The Module:
This module will enhance students' knowledge and understanding of the general care and management of individuals with acute or progressive neurological, sensory or musculo-skeletal disorders. The process of assessing/identifying needs, planning, prioritising, implementing and evaluating nursing care will be explored.

The purpose of this module is to facilitate students understanding of neurological, sensory and musculo-skeletal disorders so that they may provide appropriate nursing care to an individual with such condition(s).

Syllabus:
Neurological disorders: e.g. head injuries, increased intracranial pressure, cerebral vascular accident, epilepsy, meningitis, multiple sclerosis, Alzheimer's and Parkinson's disease; nursing care and management. Auditory and visual disorders: e.g. otitis media, mastoiditis, cataract, strabismus, eye trauma; nursing care and management. Musculo-skeletal disorders: e.g. fractures, arthritis, osteoporosis, amputation, spinal injuries; nursing care and management. Nurse/Es role and responsibilities in investigative and diagnostic procedures. Clinical Skills Syllabus:
Eye care Stroke positioning Positioning a person after orthopaedic surgery Fracture management and care e.g. Cast care, Traction, External fixator, Limb elevation Glasgow coma scale and other neurological assessments Assisting patients with mobility e.g. walking, sitting, mobility aids

NS4324 Nursing the Individual with Multiple Needs

Rationale And Purpose Of The Module:
The aim of this module is to introduce the student to the care and management of persons with an intellectual disability with associated physical and sensory impairment.

Syllabus:
The nursing care and management of acute and chronic physical illness. Senses and their functions and sensory impairment: care and management. Physical disability, nursing care and management. Preparation and care of persons with an intellectual disability undergoing investigative and diagnostic procedures. Functions and promotion of sleep. Clinical Skills Syllabus:
Breast awareness, testicular examination, cervical screening, Monitoring of blood glucose and administration of insulin Postural drainage Wound management and associated dressing techniques

NS4222 Mood and Emotional Disorders and Mental Health Nursing

Rationale And Purpose Of The Module:
The module introduces the student to nursing care and management of individuals experiencing mood and anxiety related disorders.

Syllabus:
Theories/Models of stress, anxiety and mood disorders. Disorders related to stress anxiety and mood disturbance Precipitating and pre-disposing factors Coping mechanisms and resources Effects of Stress, anxiety, and mood disorders, e.g. physical, cognitive, emotional, social, etc. Nursing care of persons experiencing mood and emotional disorders. Introduction to cognitive and behavioural therapies. Application of the principles of behavioural and cognitive therapy in mental health nursing. Behavioural and cognitive therapies and the nursing process. Role of the nurse in Somatic Therapies e.g. Electro-convulsive Therapy. Clinical Skills Syllabus:
Communication skills: mood and emotional disorders, Interview and assessment skills, and documentation Relaxation training Peri-operative care in relation to ECT. Suctioning technique Positioning of patients

63

NS4424 Neurological, Sensory and Musculo-skeletal Nursing

Rationale And Purpose Of The Module:
This module will enhance students' knowledge and understanding of the general care and management of individuals with acute or progressive neurological, sensory or musculo-skeletal disorders. The process of assessing/identifying needs, planning, prioritising, implementing and evaluating nursing care will be explored.

The purpose of this module is to facilitate students understanding of neurological, sensory and musculo-skeletal disorders so that they may provide appropriate nursing care to an individual with such condition(s).

Syllabus:
Neurological disorders: e.g. head injuries, increased intracranial pressure, cerebral vascular accident, epilepsy, meningitis, multiple sclerosis, Alzheimer's and Parkinson's disease; nursing care and management. Auditory and visual disorders: e.g. otitis media, mastoiditis, cataract, strabismus, eye trauma; nursing care and management. Musculo-skeletal disorders: e.g. fractures, arthritis, osteoporosis, amputation, spinal injuries; nursing care and management. Nurse/Es role and responsibilities in investigative and diagnostic procedures. Clinical Skills Syllabus:
Eye care Stroke positioning Positioning a person after orthopaedic surgery Fracture management and care e.g. Cast care, Traction, External fixator, Limb elevation Glasgow coma scale and other neurological assessments Assisting patients with mobility e.g. walking, sitting, mobility aids

NS4324 Nursing the Individual with Multiple Needs

Rationale And Purpose Of The Module:
The aim of this module is to introduce the student to the care and management of persons with an intellectual disability with associated physical and sensory impairment.

Syllabus:
The nursing care and management of acute and chronic physical illness. Senses and their functions and sensory impairment: care and management. Physical disability, nursing care and management. Preparation and care of persons with an intellectual disability undergoing investigative and diagnostic procedures. Functions and promotion of sleep. Clinical Skills Syllabus:
Breast awareness, testicular examination, cervical screening, Monitoring of blood glucose and administration of insulin Postural drainage Wound management and associated dressing techniques

NS4222 Mood and Emotional Disorders and Mental Health Nursing

Rationale And Purpose Of The Module:
The module introduces the student to nursing care and management of individuals experiencing mood and anxiety related disorders.

Syllabus:
Theories/Models of stress, anxiety and mood disorders. Disorders related to stress anxiety and mood disturbance Precipitating and pre-disposing factors Coping mechanisms and resources Effects of Stress, anxiety, and mood disorders, e.g. physical, cognitive, emotional, social, etc. Nursing care of persons experiencing mood and emotional disorders. Introduction to cognitive and behavioural therapies. Application of the principles of behavioural and cognitive therapy in mental health nursing. Behavioural and cognitive therapies and the nursing process. Role of the nurse in Somatic Therapies e.g. Electro-convulsive Therapy. Clinical Skills Syllabus:
Communication skills: mood and emotional disorders, Interview and assessment skills, and documentation Relaxation training Peri-operative care in relation to ECT. Suctioning technique Positioning of patients

NS4424 Nursing the Older Person with Intellectual Disability

Rationale And Purpose Of The Module:
To module aims to develop students knowledge regarding the ageing process and the specific needs of older persons with an intellectual disability.

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 the older person with an intellectual disability and the concept of quality of life in older adulthood. Nursing process applied to the older person with an intellectual disability associated with age related illness. 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. Clinical Skills Syllabus:
CNS examination Facilitative communication skills: reality orientation, reminiscence and art therapy Assisting clients with mobility and engagement in activities of living, Environmental comfort and last offices

NS4434 Psychotic and Personality Disorders and Mental Health

Rationale And Purpose Of The Module:
The purpose of this module is to develop the student's knowledge and understanding of the role of the nurse in the care and management of an individual experiencing personality and psychotic disorders.

Syllabus:
Disorders related to alteration of cognition and perception; e.g. schizophrene, aetiology, types, classifications, epidemiology, and sociocultural aspects. Predisposing precipitating factors. Presentation and manifestations of thought disorders. Personality disorders; theories, classifications, characteristics. Nursing care and management of a person with a disorder of cognition, perception, or personality. Milieu Management; effects of institutionalisation, the principles of Normalisation Role of the nurse in rehabilitation, e.g. occupational, recreational, art therapy, etc. Clinical Skills Syllabus:
Skills of engagement and facilitation when communicating with persons with psychotic and personality disorders. Skills of observation, recording and eliciting information in the assessment of persons with psychotic disorders Introduction to CBT and dialectic behaviour therapy for persons with personality disorders

NS4444 Psychotherapeutic Engagement in Mental Health

Rationale And Purpose Of The Module:
This aim of this module is to develop student’s knowledge and understanding of communication skills within a therapeutic context.

Syllabus:
- Therapeutic relationship in mental health nursing;
- The use of ‘self’ as a therapeutic tool, managing a therapeutic impasse.
- Group processes and therapeutic interventions.
- Managing interpersonal conflict.
- Introduction to models and theories of counselling.
- The counselling process in mental health nursing.
- Facilitative communication skills and processes in mental health care practice;
- Interview skills and techniques.
- Crisis intervention;
- Modalities, types, nursing care and management.
- Clinical Skills Syllabus:
  - Facilitation of group therapy;
  - Counselling skills and processes;
  - Crisis intervention strategies.
- CNS examination;
- Active and passive limb exercises;
- Assisting patients with mobility.

NS4902 Infection Prevention and Control in Healthcare

Rationale And Purpose Of The Module:
Infection prevention and control is a critical concern for patients, clients, health care employees, health care administrators and government agencies. Infection control measures are necessary to prevent and manage everything from the spread of illnesses such as the common cold to potentially life-threatening illnesses.

The Health Information and Quality Authority (HIQA) (2009) issued evidence-based National Standards relating to infection prevention and control. The National Standards are key to improving the quality of health and social care services in Ireland in the interest of patient safety. Standard four stipulates that all staff receive mandatory theoretical and practical training in infection prevention and control. Furthermore, infection prevention and control staff are required to engage with continuous professional development on the subject and health care students are required to become competent in all core principles of infection prevention and control. This module seeks to provide health care staff with an opportunity to meet the HIQA Standards.

Appropriate infection control measures may range from something as simple as following proper hand hygiene techniques to co-ordinated policies involving employee health screening, immunisation and treatment. All these measures should be incorporated into synchronised, organisation wide infection control programmes at healthcare facilities of all sizes and types. The clinical and financial consequences of healthcare associated infections are increasingly recognised (Cunney et al., 2006). There is evidence that there is a significant shift in health care workers compliance with infection prevention practices and guidelines, following educational programmes (Creedon, 2006). In 2007, the Health Service Executive (HSE) outlined a National Infection Control Action Plan for 5 years which included a 20% reduction in healthcare associated infections, a 30% reduction in MRSA infections and a 20% reduction in antibiotic consumption. Evidence would suggest that identified targets are not being met and a significant variation in practices still exist increasing the risk of health care associated infections (Corrigan, 2008).

Therefore there is considerable rationale for investing in this component of health service delivery both at local, regional and national levels. In order to deliver on the vision of infection prevention and control there needs to be a focus on the development of a culture of quality of care, process and outcome measurement, education and high quality research.

All healthcare employees working with patients in any healthcare setting should have an intimate knowledge of the infection prevention and management processes involved in caring for patients. Developing an education module for healthcare professionals on infection prevention and control is vital for the achievement of identified targets in the reduction of healthcare associated infections and excellence in patient care in Primary, Acute, Community and Continuing Care settings.

Syllabus:
- Microbiology: Chain of infection, infection control standards and guidelines, modes and mechanisms of transmission of pathogenic organisms in the healthcare setting;
- Communicable diseases and multi resistant organisms. Antibiotic use and resistance;
- Strategies for prevention and control of infection;
- Invasive medical devices and care bundles;
- Creation and maintenance of a safe environment for patient care in all healthcare settings through application of infection control principles and practices for cleaning, disinfection and sterilisation;
- Audit, surveillance and research. Includes sourcing up to date information, surveillance of healthcare associated infection and how surveillance is used to improve patient care.

BM4001 Knowledge of Health and Illness 1

Rationale And Purpose Of The Module:
An in-depth knowledge of the structure and function of the human body both in health and in illness is essential for the practice of medicine. Such knowledge is provided through this module.

Syllabus:
- This module provides and understanding and an ability to manage a comprehensive range of health problems using the scientific principles that underpin medicine. It comprises learning units covering different learning units:
  - Life Structure: musculo-skeletal system, rheumatology, orthopaedics, traumatology, plastic surgery, skin and dermatology;
  - Life Cycle: reproduction and development, child health (paediatrics), obstetrics and gynaecology, sexual health, ageing, death;
  - Life Maintenance: alimentary system including liver, gastroenterology, endocrinology, renal medicine, urology, nutrition;
  - Life Protection: immunology, infection, haematology, oncology, preventative medicine, genito-urinary medicine;
  - Life Support: cardiology/cardiovascular surgery, respiratory medicine, ENT;
  - Life Control: nervous system, neurology/neurosurgery, vision and ophthalmology, psychiatry, psychology.

These units are also contained in the ‘Knowledge of Health & Illness’ domain in Year 1 of the programme (BM4001). In Year 2, these units are again visited but in far greater depth than in Year 1. This approach ensures that the programme in the first two years is vertically integrated.

BM4004 Medicine

Rationale And Purpose Of The Module:
This module is based predominantly on an apprenticeship model in the clinical setting aims to develop students knowledge of common medical conditions and clinical presentations in the area of Medicine. The module builds on the foundation modules in Knowledge of Health & Illness 1, 2 & 3 and Clinical & Anatomical Skills 1, 2 & 3. In addition to the acquisition of new knowledge in a clinical setting and to provide an opportunity to revise learning objectives from previous units. It also provides a stimulus to integrate mechanisms learnt in different modules to explain a new clinical scenario.

These are supplemented by an Introductory unit at the start of the year which introduces students to PBL and a multi-systems unit at the end of year one which provides an opportunity to revise learning objectives from previous units. It also provides a stimulus to integrate mechanisms learnt in different modules to explain a new clinical scenario.

BM4102 Knowledge of Health and Illness 2

Rationale And Purpose Of The Module:
Knowledge of the structure and function of the human body both in health and in illness is essential for the practice of medicine.

Syllabus:
- This module provides and understanding and an ability to manage a comprehensive range of health problems using the scientific principles that underpin medicine. It comprises learning units covering different learning units:
  - Life Structure: musculo-skeletal system, rheumatology, orthopaedics, traumatology, plastic surgery, skin and dermatology;
  - Life Cycle: reproduction and development, child health (paediatrics), obstetrics and gynaecology, sexual health, ageing, death;
  - Life Maintenance: alimentary system including liver, gastroenterology, endocrinology, renal medicine, urology, nutrition;
  - Life Protection: immunology, infection, haematology, oncology, preventative medicine, genito-urinary medicine;
  - Life Support: cardiology/cardiovascular surgery, respiratory medicine, ENT;
  - Life Control: nervous system, neurology/neurosurgery, vision and ophthalmology, psychiatry, psychology.

64
This list of conditions has been derived from two related 2003 publications: Objectives for the Qualifying Examination produced by the Medical Council of Canada and Anthology of Medical Conditions produced by the Australian Medical Council. There are a number of specific objectives for each of these 100 clinical medical conditions and these span items of knowledge, clinical skills and attitudes. As clinical conditions often overlap a number of different clinical specialties, students will encounter many of the 100 medical conditions elsewhere in their clinical training. Revisiting curricular material during their placement in Medicine and Related Specialties allows for "vertical integration" with students being able to elaborate on their earlier learning. The clinical placement in Medicine & related Specialties occurs in Year 4 during which students will undergo 9 weeks of clinical training which will focus on General Medicine. A further 9 weeks will focus on Sub-specialty Medicine. During this 9 week period students will rotate through a block of sub-specialties: General medicine (‘core’, educational opportunities) Respiratory Cardiology Geriatrics Renal Endocrine Neurology Rheumatology Dermatology Infectious disease Sub-specialty Medical Rotations (‘core’, educational opportunities): Block 1: Haematology, Nephrology, Dermatology Block 2: Palliative Care, Rheumatology, Infectious Disease Block 3: Oncology, Respiratory, Neurology Each block includes a) a specialty with ‘end of life’ & cancer focus, b) Specialty with significant general component and c) a highly specialised area. Sub-specialty Medicine will also consist of ‘elective’, educational opportunities: Acute Medical Assessment Unit Endoscopy suite (GI & Bronchoscopy) Interventional & non-interventional Cardiology Dialysis unit Dermatology clinic Ophthalmology clinic Radiology unit (involvement in CT/USS/MRI & interventions)

PI4024 Philosophy and Ethics in Health Studies

Rationale And Purpose Of The Module:
The module does to introduce students to standard philosophical and ethical approaches that guide nursing and midwifery practice.

Syllabus:
Contemporary Philosophical theories enlightening nursing practice with particular reference to developments in such schools as Existentialism; Phenomenology; Philosophy as therapy; Understanding the body, the person (holism vs. dualism), relationships and desire; Critical thinking and ethical decision-making. Theoretical approaches to ethics: Deontological, Utilitarian, and Rights-based views. The role of Oaths, Declarations and Codes in medical ethics; Key principles: patient: autonomy, beneficence and primum non nocere, truth-telling, confidentiality and justice; Traditional distinctions for example, between acts and omissions and ordinary and extraordinary means; the Double-Effect Criterion; Selected Issues in nursing practicefor example, the definition and medical management of death; Abortion; Challenging care: Physical and Intellectual Disabilities, those in need of intensive care; the elderly. Health, the goal of therapy.