



UNIVERSITY *of* LIMERICK

OLLSCOIL LUIMNIGH

GUIDE TO MODULE SELECTION BOOKLET

Academic Year

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Spring

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DEPARTMENT OFFICES

Room No.	Department Office
EO001	Admissions Office / Study Abroad Office
KB3-22	Accounting and Finance
B3046	Chemical and Environmental Sciences
B3027	Civil Engineering and Material Science
CS1004	Computer Science and Information Systems
EO005	Co-operative Education
SR3025	Design and Manufacturing Technology
KB3-22	Economics
D2030	Electronics and Computer Engineering
EO030	ERASMUS/SOCRATES/International Education Office
C1078	Government and Society
Library	Information Technology
IWG-03	Irish World Academy of Music and Dance
MC1-002	Languages and Cultural Studies
C1090	Law
SR2038	Life Sciences
KB3-018	Marketing and Management
D2034	Mathematics and Statistics
L1034	Mechanical, Aeronautical and Biomedical Engineering
KB3-035	Personnel and Employment Relations
CO064	Physics and Energy
P1025	Physical Education and Sports Science
DO033	Plassey Campus Centre (Accommodation)
E1006	Print Room
ER3015	School of Architecture
S109	Second Level Education
EO002	Student Academic Administration

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



UNIVERSITY *of* LIMERICK

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

Kemmy Business School

SPRING SEMESTER MODULES

These are exciting times for the **Kemmy Business School (KBS)**, which is home to 2,900 students and 100 faculty and staff. Founded in 1972 and renamed the KBS in 2003 the School consolidated its locational future in a new state-of-the-art building in September 2008 at the Limerick City end of the main UL campus. The new building incorporates a Wall St. style trading room, specialist HRM and Marketing laboratories, executive education teaching rooms, breakout rooms and a self-contained conference centre. We offer a wide range of business and management education opportunities at undergraduate and postgraduate levels that are of particular interest to international students. As a Study Abroad student at the Kemmy Business School you will join a welcoming, vibrant and exciting community of students and faculty. You will enjoy world class facilities during your stay with us and an academic environment that is second to none.

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.
2. Acquire an overview of ethical theories and their potential for engagement with business.
3. Explore the elements of a professional judgement as an approach to making ethical decisions in business.
4. Understand that corporate compliance is fundamental to corporate social responsibility.

Syllabus:

Corporate governance functions of responsibility, accountability and transparency. The role of the corporate board. Corporate architecture and mechanisms for governance and financial transparency. Understanding transparency mechanisms as instrumental in providing credibility to corporate reporting. Framing business ethics: Corporate responsibility, ethical decision-making. Normative ethical theories: utilitarianism, ethics of duty, rights and justice, virtue ethics, feminist ethics, discourse ethics and post-modernism. Professional independence and professional judgement and the distinction between the terms truth and truthful. Governance role of financial accounting information: impact on economic performance: project selection, information asymmetry. Threat of moral hazard: Agency

theory, resource dependence, stakeholder theory. International and cultural dimensions to business ethical behaviour. Recognise business ethics as an element of corporate citizenship and sustainability; appreciating that corporate compliance is a cornerstone for corporate social responsibility. Bushman on corporate transparency, Bentham and Kant on utilitarianism, Loneragan on professional judgement. Roarty on language, Blackburn on truth.

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.

AC4418 - 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/1st/2nd 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/1st/4th 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 EC4004.*

EC4018 - MONETARY ECONOMICS (SPRING/4)

3 hours per week; 13 weeks/1st/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 EC4004.*

EC4102 - MACROECONOMICS (SPRING/1)

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

Introduction (national income; business cycle; inflation; unemployment; balance of payments); the theory of income determination: basic model; fiscal policy: the Irish experience, 1973 - 93; money and banking; monetary policy; monetary versus fiscal policy, crowding-out, quantity theory of money, IS/LM model in closed economy; the balance of payments and exchange rate theory: fixed and floating exchange rates: fixed exchange rate systems; road to EMU, costs and benefits of EMU to Ireland, enlarged community, EFTA, eastern Europe and the EU.

EC4108 - CONTEMPORARY ISSUES IN THE GLOBAL ECONOMY

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

Economic versus Human Development; Economic Performance of Less Developed Countries, Population and Economic Development; Income Distribution and Poverty; Migration patterns and their effects; Globalisation and International Trade; The effects of trade on wages and labour standards; International financial movements; The role of outsourcing and offshoring; The role of the US Dollar and US Current Account Deficits in the world economy.

EC4112 - MACROECONOMICS (FOR NON-BUSINESS) (AUTUMN/1)

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

National income; business cycle; inflation; unemployment; balance of payments; income determination; basic model; fiscal policy; the Irish experience, 1973-93; money and banking; monetary policy; monetary versus fiscal policy; crowding-out, quantity theory of money, IS/LM model in closed economy; the balance of payments and exchange rate theory; fixed and floating exchange rates; fixed exchange rate systems; road to EMU, costs and benefits of EMU to Ireland, enlarged community, EFTA, Eastern Europe and the EU.

EC4408 - PUBLIC FINANCE**(SPRING/4)***3 hours per week; 13 weeks/8th semester;
26L/13T; ECTS credits:6*

Market possibilities and prescriptions; evaluating public finance policy; collective decision making; market failures and government intervention; searching for the public good; evaluation of public production and bureaucracy and public expenditure; tax theory - basic concepts; income (re) distribution; fiscal aspects of macroeconomic theories; international issues in public finance; public failure and public expenditure growth; 'normative' optimal taxation; 'positive' optimal taxation; the 'traditional' versus the public choice approach - public finance analysis and the policy-makers.

EC4711 - EU ECONOMIC ENVIRONMENT (SPRING/1)*4 hours per week; 13 weeks/1st semester;
26L/26T; ECTS credits:6*

Theory of Economic Integration and Customs Unions; The European Monetary System; Economic and Monetary Union. Monetary integration theory and evidence of convergence within the EC. Prospects for 'widening' the European Union; regional Integration-global trends.

FI4008 - EMPIRICAL FINANCE**3 hours per week; 13 weeks/8th semester;
26L/13L; ECTS credits:6*

Introduction to the theory of empirical finance – the study of financial market decision-making using sample data. Applications in financial modelling: forecasting and simulation. Applications in portfolio management: evaluating the risk-return trade-off and the measurement of portfolio risk. Applications in derivative security valuation: simulated trading and risk-management in an interactive virtual financial markets environment. Applications in risk management: calculation of portfolio value-at-risk under 'event-driven' simulated market conditions. *Prerequisite FI4407 Financial Institutions and Markets and FI4007 Investments: Analysis and Management.*

IN4004 - INSURANCE LAW AND CLAIMS (SPRING/2)*3 hours per week; 13 weeks/4th semester;
26L/13T; ECTS credits:6*

This module provides the student with insights into the law of insurance and the assessment of all classes of losses. It deals with the investigation of losses and incidents for the purpose of preparing cases for court, confirming cover under the contract and ascertaining how losses can be prevented. *Prerequisite IN4003.*

IN4008 - REINSURANCE/ART**(SPRING/4)***3 hours per week; 13 weeks/8th semester;
26L/13T; ECTS credits:6*

Principles and functions of reinsurance/ alternative risk transfer. Technical analysis of major product types - quota share: surplus; spread loss; loss stabilisation; operational features of managing the reinsurance/ alternative risk transfer function - reinsurance accounting; accumulation control. Statistical analysis of pure risk exposures, including computer based simulations of possible loss scenarios; selection of relevant risk transfer measures; underwriting techniques - exposure analysis; use of market indices; exercises in reinsurance/alternative risk transfer programming.

IN4014 - LIFE INSURANCE*Rationale And Purpose Of The Module:*

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

Syllabus:

The module includes an analysis of term insurance, whole of life insurance and endowment insurance. The health insurance market in Ireland is studied, as is the Irish social insurance system with specific focus

on the retirement and pensions market. The module covers the nature and purpose of a variety of life insurance contracts and students gain knowledge of life insurance underwriting. With regard to life insurance underwriting, particular attention is paid to underwriting of a variety of diseases that affect human anatomy, theories of mortality and morbidity risk, formulation of mortality tables, and the calculation of premium for term, whole life, endowment and annuity.

IN4418 - RISK CONTROL AND UNDERWRITING*Rationale And Purpose Of The Module:*

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

Syllabus:

The students will gain a general understanding of risk analysis and produce some in-depth analysis

IN4738 - INTERNATIONAL INSURANCE*Rationale And Purpose Of The Module:*

1. To develop in the student an understanding of and insight international insurance. 2. To examine the nature of the interface between regulation and insurance. 3. To allow students to comprehend the nature of cross-border business in insurance

Syllabus:

The students will gain a general understanding of international insurance and produce an some in depth analysis of specific examples

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

Practitioner and consultant management methodologies, e.g. strategy projects, inductive hypothesis testing, option evaluation and solution selling. This module is contingent in terms of content and will likely vary from year to year, depending on the contemporary issues in management at time of delivery. Current examples would be managing lean organizations, structuring businesses for unstable markets, turnaround management and managing in developing countries.

MG4604 - AIR TRANSPORTATION (SPRING/2)

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

History of air transport, national and international regulations for civil aviation and the deregulation of the environment; overview of the world-wide industry; air transport, airports, aerospace manufacturing, maintenance, financial and other aviation services; airline planning ,scheduling, pricing, fares, passenger demand ,costs, aircraft and route selection; current issues and future prospects of the air transport industry.

MI4408 - KNOWLEDGE MANAGEMENT AND STRATEGY (SPRING/4)

3 hours per week; 13 weeks/8th semester; 26L13T; 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; 26L13T; 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; 26L13T; 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 marketings contribution in the creation of sustainable competitive advantage

for different business contexts 3. To investigate the importance of marketing within the firm and the challenges surrounding the management of the marketing function 4. To provide students with an understanding of the role of marketing planning and implementation.

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 communications and culminates 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 is 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

Motivation for the development of relational approaches to marketing. Relationship life-cycle models. Interaction and Relationships in service contexts. Intra-organisational and inter-organisational interaction and relationships. Relationships success variables including trust, commitment and shared values. Cultural dimensions to relationships. Collaborative and competitive networks. Relationship marketing strategy and Customer Relationship Management.

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 in 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; disciplinary and

interdisciplinary nature of the field; dominant methodologies for understanding the social world. Personality: Defining personality; sources of personality difference; the nature/nurture debate. Perception and Cognition: The nature of perception; perception and perceptual influences; the process of perception. 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/8th 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 relief, meaning 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 reliefs; 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.



UNIVERSITY *of* LIMERICK

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

**Department of Education
and Health Sciences**

SPRING SEMESTER MODULES

The **Department of Education and Health Sciences (EHS)** is an exciting development at the University of Limerick. The Faculty was newly created in January 2008 as part of a substantive academic restructuring at the University. This has resulted in bringing together in a new Faculty a number of related disciplines in the Department of Education and Professional Studies, Department of Physical Education and Sports Sciences, Department of Physiotherapy, Department of Psychology, Department of Nursing and Midwifery, Department of Occupational Therapy, Department of Speech and Language Therapy and the School of Medicine (Graduate Entry). Those interested in post primary teaching as well as those interested in working in the health sector will find some of the most progressive programmes in these applied fields of study in the country. There are opportunities for clinical and educational placements as well as dedicated supervision from faculty members committed to the highest standards of teaching and quality research.

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*

EN4014 - TECHNOLOGY AND SOCIETY (SPRING/2)

4 hours per week; 13 weeks/4th semester; 13L/26T/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.

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 Second level; Curaclam 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 PEDAGOGICS 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 PEDAGOGICS 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 PEDAGOGICS 1
(GEOGRAPHY)**

(No description given)

**EY4036 SUBJECT PEDAGOGICS 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.

**PS4034 - EMPIRICAL PSYCHOLOGY II
(SPRING/3 AND 4)**

*2 hours per week; 13 weeks; 3rd semester; 26T;
ECTS credits: 6*

This modules is design 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 to understanding behaviour and mental processes. This lab based module introduces students to the shortcoming associated with the traditional experimental approach and familiarises them 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.

**PS4037 - COGNITION 1
SPRING/2 AND 3)**

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

The module will cover the major topics of cognitive psychology. The lecture is designed to provide you with a broad overview of cognition research. Cognition deals with the basic psychological processes such as: encoding, storing, and retrieving information, forming judgments, and decision making. This course will consider to a large extent how the social situation interacts with human information processing in constructing social reality. You will learn about theories, and how these can be translated into research questions (hypotheses) that are tested (e.g., with experimental designs) and modified. You will also learn to critically evaluate merits and limits of scientific findings. Assessment on the module is via coursework and exams. The final exam will make up 50% of your grade. Two written assignments will accompany the module and contribute 25% each to the final grade for the module. More specifically, you are required to write a critical review on a published article and a report on empirical research undertaken in labs.

**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 theoretical 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 in-depth knowledge of the core topics of social psychology, but also to put these topics in their socio-political and historical context and to critically evaluate psychological research from different epistemological and methodological grounds. Topics will include: advanced group processes; intergroup conflict; discursive social psychology; measurement in social psychology; critical perspectives in social psychology.

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 through the use of selected examples. Students are encouraged to become increasingly familiar with SPSS for coding of data and simple inferential statistics are introduced.

**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.

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 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 in-depth 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 sports 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; forms 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.

PY4034 - PHYSIOTHERAPY IN CLINICAL NEUROLOGY

Pathology and mechanisms of recovery from the following conditions: Stroke, Parkinsons, Multiple Sclerosis, Spinal Cord injury, Spina Bifida, Cerebral palsy, Peripheral Nerve Lesions, Guillan 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/ Coordination. 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 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.

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.

PY4046 - DANCE AND GYMNASTICS

This module offers the opportunity for you to extend your practical and theoretical knowledge of dance/gymnastics and dance/gymnastics in education. The learning outcomes will enable students to experience more complex choreographic crafting processes and technical skills needed to develop these

strands for second level pupils. Aesthetic appreciation will be further explored through a range of frameworks and education models including a continued development of Laban's concepts and the midway model of dance education. The module will be predominantly practically based. Students will have the opportunity to explore a range of choreographic and performance approaches to develop a range of teaching and learning scenarios that will help them plan for final teaching practice. The content will include: workshops on a range of compositional and thematic elements; an examination of starting points and stimuli for dance, different choreographic styles and types of dance; examine the use of equipment in a gymnastics lesson and the importance of challenging students; an analysis of your own and professional works; critical evaluation of a range of professional resource packs; exploring a range of different teaching and learning styles; responses to set readings.

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:

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

Practical: APA programmes, organisations and resources. Activity adaptation; adapted ball games, swimming, functional exercises and stimulus based movement. Adapted physical activity programme prescription and implementation for different disabilities. Through interaction with children/adults with a disability, plan and implement an individualised APA Programme. Visits to schools and centres, which cater for individuals with disabilities.

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 - Perceptions 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
 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)
-

PY4058 - APPLIED STUDIES IN AESTHETICS/OUTDOOR ADVENTURE EDUCATION

Rationale And Purpose Of The Module:

Purpose of the Module

Students choose between either Athletics or Outdoor Adventure

Athletics

Designed to provide information and promote discussion on athletics issues while allowing students to explore athletics from both teaching and coaching perspectives.

Outdoor Adventure

Designed to prepare students to set up, teach, supervise, facilitate, and personally enjoy a variety of adventure and outdoor activities. This is a 'hands-on' experience in which you will have the major responsibility for your own learning.

Syllabus:

Athletics

Three distinct strands guide this module: theory, teaching, and coaching.

Outdoor Adventure

It is essential in outdoor adventure settings to be able to work collaboratively. With this in mind, you will be given opportunities to demonstrate your personal abilities in addition to your abilities to work in a team-oriented environment. Throughout the course, we will focus on both the 'science' of good teaching and leadership (honing your delivery of information, planning lessons/events making decisions, and dealing with conflict) as well as the 'art' of teaching and leadership (developing trust, communicating with sensitivity, finding your own niche within a team of leaders, balancing intellect with intuition, and inspiring those you lead).

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 cardiorespiratory system. To enable students to understand the structure and function musculo-skeletal framework of the lower extremity, pelvis and the cardiorespiratory 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 module also enables students to appreciate the interrelationships of the individual constituent parts of the upper extremity to the body as a whole.

PY4072 - PEDAGOGY OF INVASION GAMES 1

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

For field invasion games, with this in mind, you will be given opportunities to demonstrate your personal abilities in addition to your abilities to work in a team-oriented environment. Throughout the course, we will focus on both the science of good teaching and leadership (honing your delivery of information, planning lessons/events making decisions, and dealing with conflict) as well as the art of teaching and leadership (developing trust, communicating with sensitivity, finding your own niche within a team of leaders, balancing intellect with intuition, and inspiring those you lead).

PY4074 - PEDAGOGY OF INVASION GAMES 2

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

For field invasion games, with this in mind, you will be given opportunities to demonstrate your personal abilities in addition to your abilities to work in a team-oriented environment. Throughout the course, we will focus on both the science of good teaching and leadership (honing your delivery of information, planning lessons/events making decisions, and dealing with conflict) as well as the art of teaching and leadership (developing trust, communicating with sensitivity, finding your own niche within a team of leaders, balancing intellect with intuition, and inspiring those you lead).

PY4094 - TEACHING & LEARNING FOR INDIVIDUALS IN PHYSICAL EDUCATION

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

The aim of this module is to acquaint preservice teachers with how learning by individual pupils can be facilitated by provision of appropriate environmental factors (e.g., safety, facilities, equipment, teacher information) and the setting of tasks that are appropriate to individual learners. It will introduce preservice teachers to several instructional models (active/direct- instruction, task/station teaching, reciprocal teaching, cooperative learning) and teaching strategies (managerial and instructional) that may be used with choice of pupil learning experiences within various curriculum models. Preservice

teachers will consider how material can be selected and developed for teaching and pupil learning experiences.

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 pupils' 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. *Prerequisite SS4203*

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, skiing, 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, graphing data and analysis of graphs. Exporting data to Excel and Word.

SS4318 - NOVEL METHODS IN BIOMECHANICS

Syllabus * Methods to examine variability in human movement: single subject analysis, considerations of movement variability. * Methods to examine coordination and stability in human movement: Applied Dynamics systems theory for analysis of movement, measures of coordination and variability in gait patterns. * New and developing methods for Data analysis of human movement: applications Power spectrum analysis, notational analysis, Wavelet analysis in biomechanics of Kinematic Kinetic and EMG Data.

SS4402 - SPORTS & EXERCISE APPLICATIONS 2 (SPRING/1)

5 hours per week; 13 weeks/2nd semester; 65LAB; ECTS credits:6

Exercise: Phases & components of exercise to music, weight training and circuit training classes. Content & purpose of each phase.

Safe exercise selection for cardiovascular endurance, muscular endurance, muscular strength & flexibility. Adaptations & progressions. Application of training principles. Safety guidelines. Pedagogy: Role of the teacher in exercise classes. Safety & screening procedures. Instruction experience in exercise to music, weights & circuits. Observation, analysis, correction & feedback. Class management & class plans for each of the different types of exercise classes. Use of music. Monitoring of clients. Exercise prescription. Self evaluation. First Aid: Principles of first aid and action at an emergency. Assessment of the situation. Examining a casualty. Respiratory system, asphyxia, CPR for adult/child/baby theory & practical, recovery position. Circulatory system, wounds, bleeding, shock, dressings & bandages. Disorders of consciousness. Soft tissue & bone injuries. Treatment of burns, scalds, chemicals/poisons & electric shock. Medical emergencies. Crush & spinal injuries. Causality transportation

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.



UNIVERSITY *of* LIMERICK

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

**Faculty of Arts, Humanities
Social Sciences**

SPRING SEMESTER MODULES

For students whose talents and interests lie in subjects such as languages, history, sociology, cultural studies, music, politics and law this Faculty is an excellent choice. **The Faculty of Arts, Humanities and Social Sciences** is a vibrant centre of critical thought and a generator of national and international scholarship. It prides itself on the quality of its teaching and its commitment to research within a context where debate and discussion are an integral part of developing those analytical skills which are much sought after in the workplace. The research objective of the Faculty is to create a vibrant centre of critical thinking and to be a generator of national and international scholarship. It strives to facilitate postgraduate and post doctoral students to undertake research, and encourages them to be actively involved in the dissemination of their work.

CU4014 - ANALYSING MEDIA DISCOURSE (SPRING/)

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

Students will acquire knowledge about the linguistic features of media texts; Students will acquire skills to enable them to engage critically with a range of media texts; Students will be exposed to both qualitative and quantitative methods of analysing media texts; Students will acquire specific skills in Critical Discourse Analysis and Corpus Analysis and multimodal discourse analysis.

CU4026 - HOW TO READ A FILM: INTRODUCTION TO FILM STUDIES (SPRING/3)

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 McGuckian, Eilean Ni Chuileanain, 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 McGuckian. 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

TE4021 - ENGLISH AS A FOREIGN LANGUAGE UPPER-INTERMEDIATE

TE4031 - ENGLISH AS A FOREIGN LANGUAGE ADVANCED

EF6001 - ENGLISH AS A FOREIGN LANGUAGE PROFICIENCY

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 introduction into England both of new philosophies, such as humanism, and new literary forms, such as the sonnet. Therefore, the module aims to place the literature in those cultural, social, and political contexts which inform and affect its interpretation, and, through an account of the poetic and dramatic developments of the period, to equip students with the skills to identify and critically analyse poetic forms and dramatic conventions.

EH4006 - VICTORIAN TEXTS AND CONTEXTS

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

taking the module will be asked to participate in a group-based research project.

EH4008 - BRITISH LITERATURE SINCE 1945

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

EH4012 - RESTORATION AND AUGUSTAN LITERATURE (SPRING/2)

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

English literature 1660-1750; political and cultural contexts of the novel, essay and pamphlet literature; classical models in the

Augustan age; the form of the couplet, verse-essay and pastoral; the concepts of stability, decorum, morality and manners.

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.

EH4018 - CONTEMPORARY IRISH LITERATURE

Rationale And Purpose Of The Module:

This module aims to introduce students to a range of Irish narrative texts written in English since 1980 and in doing so: Explore the engagement of these texts with contemporary historical, social and political contexts.

Consider the contemporary writing of cultural and social identities in, and about, Ireland. Evaluate literary responses to the Northern Troubles and consider the ways in which literary/cultural constructions of Northern Ireland are reproduced at home and abroad. Examine the representation of community and political activism in Irish writing. Address the construction of gender and sexuality in contemporary Irish writing. Explore the writing of the Irish diaspora as well as that of its immigrant communities. Evaluate a range of theoretical approaches which have been, or might be, applied to this literature.

Syllabus:

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

Learning Outcomes:

Cognitive (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis) On successful completion of this module, students should be able to: Demonstrate an ability to analyse the formal qualities of individual texts, their linguistic diversity and range of meanings. Analyse the texts under discussion in relation to the cultural, political and social contexts in which they

were produced and appraise the diverse reactions of literary and other writers to key ideological questions of the period. Assess ways in which these texts have contributed to, and disrupted, constructions of the Ireland in the contemporary period. Critique different theoretical approaches to the study of Irish literature, including postcolonial, Marxist and feminist standpoints. Select relevant primary and secondary readings to produce well-written and well-documented research papers and essays, appropriate to the final-year degree level.

How the module will be taught and learning experiences:

The module will be taught by lecture, seminar discussion and by research-based critical material. Students will learn by listening to and engaging with lectures, reading primary and secondary sources (both assigned and recommended). As this is a final-year module, a significant proportion of the workload involves self-directed research, which is graded by continuous assessment.

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.

EH4125 - FEMINIST THEORY AND LITERARY TEXTS (SPRING/4)

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

Modern feminist literary theory; literary, psychoanalytic, philosophical and political perspectives; the way in which interconnections between these disciplines have been given primacy in feminist literary theory.

EH4126 IMAGINED SPACES: IRISH CULTURAL TEXTS (SPRING/2)

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

This module will provide a critical and a theoretical examination of Irish culture (both literary and media), ranging from early twentieth century efforts to create an 'Irish national culture' to contemporary ways of imagining contemporary Irish identities within culture. The module provides a thorough grounding in theory and method that will enable the student to analyse a complex range of cultural texts as well as incorporating practice-based elements such as script writing.

AW4006 - PEER-TUTORING IN ACADEMIC WRITING

Rationale And Purpose Of The Module:

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

Syllabus:

Students will develop an awareness and command of the metalanguage to discuss their own writing process. This will be developed through reflecting on existing and past writing assignments. Through small group discussion and writing-focused workshops, students will be engaged in activities to develop themselves as writers and writing tutors, including critical and reflective evaluation of their own writing; familiarity with the conventions honoured and the criteria used by other disciplines for the

evaluation of writing therein; development of tutoring strategies; observations of experienced peer-tutors; engagement in regular peer-tutoring activity; managing diverse tutoring situations; and professional development. Students will read, write and talk about argumentation, arrangement of ideas, coherence, discipline-specific style conventions and values, grammar, and ethical concerns.

RM4002 - RESEARCH METHODS IN LANGUAGE, LITERATURE AND CULTURAL STUDIES 2

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/2nd 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 prevert cesare.

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 - 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/2nd 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 an 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 postprimary 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 access to the period while at the same time introducing reading techniques, principles of textual analysis and text discussion in oral and written form; *b) Contrastive grammar work continued. Language laboratory: exercises in pronunciation, listening comprehension and grammar utilizing CALL facilities

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 class 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.

Tutorial work: Oral presentation & discussion class: drawing on text and audio-visual materials to develop formal oral skills (note-taking, structuring presentations, summarising and reporting content); 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'; poetic realism (1850-1890) in its social context - industrialisation, urbanisation, growth of the middle classes; and impressionism as an expression of the mood of pessimism at the turn of the century and its role in the 'Wilhelminische Zeit' prior to World War I.

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 of 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

HI4068 - IRELAND AND THE WIDER WORLD, 1919-73

Irish foreign policy in 1919; origins of Irish foreign policy; the diplomatic service in 1919; Anglo-Irish relations: Anglo-Irish treaty 1921, from empire to commonwealth, dominion status, imperial conferences, Statute of Westminster 1931; External Relations Act 1936, 1937 Constitution; Ireland and the United States – Wilson and peace 1918-1920, relief aid and recognition, immigration legislation; disarmament, normalisation; FDR and Ireland; the Spanish Civil war 1936; Emigration: the diaspora, the missionary movement; World War Two: neutrality, the role of foreign diplomats in Ireland, 'benevolent neutrality', the balance sheet in 1945; the Marshall Plan, 1947-58; the Cold War and the North Atlantic Treaty Organisation; Ireland and the European Economic Community; multilateral organisations: League of Nations, the United

Nations; the developing world – South America, Africa and Asia 1945-74.

HI4081 - EARLY MODERN IRELAND

Defining Ireland – Anglo-Irish and Gaelic lordships; the Nine Years' War and the Flight of the Earls, 1593-1607; the Thirty Years' War, 1618-48; 'matters of Grace and Bounty' – Wentworth and Charles I; crisis and rebellion in the British kingdoms, 1637-53; a catholic King and protestant kingdoms: 'Glorious' Revolution and Williamite conflict.

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-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 Féin 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.

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 compliment 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; Austrian expansion into the Hungarian plain; the partition of the Spanish Monarchy in 1713-14.

HI4148 - HISTORY OF MODERN AUSTRALIA

'Terra Nullius' and the choice of Botany Bay; the French reconnaissance; hulks and prison ships; convictism; Aborigines; the Irish Plots of 1800 and Castle Hill revolt of 1804; Governors Bligh, Macquarie, Darling and Bourke; the Bigge Report; 'Black War'; Anti-Transportation League; Gold, Squatters; the Kelly Outbreak, new colonies; Federation; ANZAC and Australia during the First World War.

JA4212 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 2 (SPRING/1)

6 hours per week; 39L/39T; 2nd semester; ECTS credits: 6

Listening exercises dealing with street directions descriptions of places, abilities and family; speaking practice emphasising talk about one's own and others' families, descriptions of places; reading descriptions of towns in Ireland and Japan, and passages about Japanese sport, and pastimes; writing more complicated passages about family and place, also pastimes; study of at least a further 80 kanji; discussion of further aspects of Japanese society.

Prerequisite JA4211

JA4246 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 4 (SPRING/2)

6 hours per week; 39L/39T/3rd semester; ECTS credits: 6

Listening practice, particularly authentic broadcast news; speaking at various levels of formality and with correct nuances of regret 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

JA4248 - JAPANESE LANGUAGE, CULTURE AND SOCIETY 6

6 hours per week; 4 hours private ; ECTS credits: 6

Prerequisite Modules: JA4247

Rationale And Purpose Of The Module:

To consolidate students' previous acquisition of Japanese and to bring them to an upper intermediate level of language use in listening comprehension, speaking, reading and writing; to continue the study of Japanese culture and society.

Syllabus:

Listening practice using authentic materials. Further practice in the use of polite language. Vocabulary consolidation; presentations, practice for interviews. Reading practice of authentic news stories, and authentic passages relating to Japanese society and modern literature. Translation of authentic passages, literary or business-related. Writing of summaries, descriptions, letters, and passages expressing opinions. Study of a further 200 kanji, to bring the total up to 750 characters.

Learning Outcomes:

On successful completion of this module, students should be able to: summarise facts and opinions in a broad range of authentic and near-authentic spoken and written texts in Japanese; explain their own opinions of these texts and propose alternative solutions

Affective (Attitudes and Values)

On successful completion of this module,

students should be able to: defend coherently their opinions on a range of issues in Japanese culture and society; conform to minimal levels of politeness appropriate to various situations in which they will use

Psychomotor (Physical Skills)

On successful completion of this module, students will be able to: demonstrate the ability to write and speak Japanese to an upper intermediate level demonstrate the ability to read and write 200 more kanji translate passages of literary and other authors.

How will the module be taught and student experiences:

Class time will be spent practicing various tasks in listening comprehension, reading, writing and speaking Japanese. There will also be discussions of issues relating to Japanese society and culture.

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 think 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 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 projected magazine to the class, tutors and a magazine professional. Assessment will be by coursework: production of a portfolio of work completed during the course, and contributions to class discussions.

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 analyse 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, broadcasting, 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 publications produced while 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, Dáil) 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 Hohfeld'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

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

LA4035 - LABOUR LAW

Rationale And Purpose Of The Module:

To familiarise the student with the legal regulation of contracts of and for employment, industrial relations and remedies thereto.

Syllabus:

Nature of Labour law, legal classification of the provision of labour, the role of statute

in Labour Law. Protective legislation and conditions of employment, health and safety at work, sex discrimination, equal pay. Termination of employment, redundancy, minimum notice and unfair dismissal. Trade unions, legal regulation thereof, worker participation, EC developments. Courts and tribunals in Labour Law.

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 on the impact of European Law on the animal welfare with specific

reference to Treaty developments from 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)

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

The objective of this module is to ensure that upon successful completion, students have begun to deal with core issues in the practice of law including logical reasoning, questioning, option generation, problem solving, oral argument and advocacy, together with client interviewing. The syllabus will focus extensively on self-directed learning and active exercises. In addition, students will be expected to explore the role of ethics and professional responsibility in the legal system, paying particular attention to comparative approaches.

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.

Syllabus:

Sport and the Law will examine the interaction between the law and sport. The course will examine a number of topics, including what is sport and the law, violence in sport, drug testing, contract and employment issues,

administration and judicial review, commercial and competition law, arbitration and alternative dispute resolution.

LA4122 - CONTRACT LAW 2 (SPRING/1)

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

Vitiating factors; mistake; misrepresentation; fraud; duress; undue influence; discharge of obligations: by performance; by agreement; by breach; by frustration; remedies for breach of contract: specific performance; damages; rectification; recession; assignment of contract obligations; agency; quasi-contracts.

LA4126 - CIVIL LIBERTIES (SPRING/3)

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

Fundamental concepts of human rights and civil liberties, police powers, freedom of assembly and public order, emergency powers, immigration and asylum rights, due process and access to justice, freedom of expression, freedom of information and government secrecy, protection of privacy, freedom from gender and racial discrimination, the Human Rights Act 1998 and the European Convention on Human Rights, other international mechanisms for the protection of human rights.

LA4222 - CRIMINAL LAW 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.

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.

Syllabus:

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

LA4540 - 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.

Syllabus:

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

LA4620 - LAND LAW 2 (SPRING/4)

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

The concept of public control on the use, transfer and development of real property, methods of real property transfer of ownership, public restrictions on the use of real property; landlord and tenant law, nature and creation of the relationship, determination of the relationship, statutory control of tenancies, public welfare codes; the laws relating to succession, statutory control of the right to devolve property upon death, wills and intestacies.

LA4828 - EQUITY AND TRUSTS 2* (SPRING/4)

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

The trust, classifications of trusts, express, implied, resulting, constructive and charitable trusts; the requirements of a trust, the constitution of trusts; general principles relating to trustees, their obligations and duties, powers of trustees, variations in a trust, fiduciary responsibilities of trustees; breach of trust and remedies thereof.

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, employees, director' 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.

LA4922 - SPORT AND THE LAW (SPRING/1)

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

Elements of a valid contract: offer, acceptance, consideration, formality, legality; terms and conditions; standard form sports 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 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.

LA4938 - ADMINISTRATIVE LAW

(No description given)

LI4212 - LINGUISTICS 2* (SPRING/1)

3 hours per week; 13 weeks/2nd 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

PA4011 - THE CIVIL AND PUBLIC SERVICE (SPRING/1)

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

Constitutional and legal position of the public service; growth of the public service; the structure of the public service; the civil service; 'ministerial responsibility'; government departments; the civil service and the policy process; co-ordination and control; the profession of government; recruitment and promotion; staff development; rights and duties of civil servants; ethical dilemmas in the civil service; the civil service in comparative perspective.

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 deal with the theories used to explain the GPE (mercantilism, liberalism and critical theory) and how they interact

and contribute towards the changing nature of global politics. The second will look at the institutional and governmental workings of the global economic, and discuss the context and impacts such governance has had. By the end of the course students should be able to grasp the linkages between politics and economics at the global level and be able to critically evaluate key concepts such as globalisation, the relationship between states and markets, the emergence of multinational economic actors and the role and purpose of institutions such as the World Bank, International Monetary Fund and World Trade Organisation

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

Development from the 1930s (with a Tanzanian case study)
African poverty: 'the bottom billion'
Urbanisation and urban politics: Lagos
Structural adjustment and market reform (Zambian case study)
Democratisation in the 1990s (Ghanaian case study)
Democratisation in the 1990s (South Africa)
The developmental consequences of democratisation
War and peace in Africa: Sierra Leone
'The politics of the belly': the patrimonial politics in Central Africa
New social movements

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
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
The Putin 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; the new 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 main focus of this module is to study current themes in contemporary global

politics and to understand their historical development. Students will be able to locate current global issues and place them in a wider theoretical context.

Syllabus:

The module is divided into a number of subsections that engage with an area of study in World Politics and more prominently upon an issue of structural and functional importance in International Relations. The first part of the course looks at the historical development of the International system and introduces questions such as sovereignty and the concept of 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 political 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, toleration, and identity.

PO4118 - IRELAND AND THE EU (SPRING/3 OR 4)

3 hours per week; 13 weeks/6rd 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 policy topics are 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 MEDIA AUDIENCES (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/3rd semester; 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/5th semester; 26L/26Lab; ECTS credits: 6

This module considers quantitative research in relation to sociology. This module aims 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/8th semester; 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/8th semester; 39L; 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.

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 can de-naturalise and problematise 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.

SO4178 - THE SOCIOLOGY OF THE BODY

Rationale And Purpose Of The Module:

Aims:

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

Objectives:

- 1) Locate sociological interest in the body/embodiment within its larger social context.
- 2) Describe and critically assess the main theoretical approaches for studying human embodiment and bodily practices.
- 3) Ground theoretical discussion on human bodies in empirical work from sociology and the social sciences.

Syllabus:

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

SO4208 - SOCIOLOGY OF LOVE AND ITS DARK SIDE (SPRING/4)

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

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.

SO4188 - SOCIOLOGY OF RELATIONSHIPS, MARRIAGE AND THE FAMILY (SPRING/4)

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

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 legal system and basic legal terminology. Students will compare the Irish legal system to the Spanish legal system and will acquire basic knowledge of Spanish legal terminology.

Syllabus:

Extracts from newspapers and magazines, dealing with topical issues specifically related to the field of law in the Hispanic world- will be selected for reading comprehension and other related language work, developing a critical view through discussion.

A selection of audio and video material will be used for oral and aural skills facilitating integration of all language skills.

Practice of new grammatical aspects of Spanish will also be included.

A class will be devoted to introducing, practising and improving the use of specific grammatical areas such as the past tenses and the introduction of the subjunctive in Spanish.

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 SP4231 Spanish 1 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 lecture: 1 hour) Comprising an introduction to Latin America in the twentieth century with lectures on recent history, film, popular culture and literature. *Prerequisite SP4221*

SP4246 - SPANISH LANGUAGE, CULTURE & SOCIETY 4 (SPRING/3)

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

The theory and practice of translation concentrates on political and legal texts and summary writing is practised, the cultural and literary heritage of Post-Civil War Spain is examined, as are political, societal and economic developments of this period, including Spain's transition from dictatorship democracy.

SP4248 - SPANISH LANGUAGE, CULTURE AND SOCIETY 6 (SPRING/4)

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

Advanced Spanish grammar is practiced and text analysis and production continued, students tackle legal translation, further deepen their knowledge of translation theory and practice consecutive interpreting, through debate and discussions, students perfect their spoken Spanish and prepare for the oral examination as well as gain an insight into current Hispanic controversial issues including nationalisms, the welfare state, terrorism, racism and discrimination and religion.

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

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.

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 Albuja 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 within the BA in Law and European Studies who take Spanish as their foreign language benefit from a module that gives them an overview of the Spanish legal system and basic legal terminology. This module will help students :

- To consolidate and further develop productive and receptive language skills at an advanced level.
- To facilitate students' understanding of legal terminology used within the Spanish legal world.
- To develop basic translation skills of legal documentation from Spanish into English: contracts, wills, powers of attorney, etc.

Students will compare the Irish legal system to the Spanish legal system and will acquire certain knowledge of Spanish legal terminology.

Syllabus:

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

TW4116 - TECHNICAL WRITING 2*(SPRING/3)

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

Forms of technical communication. Writing online documentation. Hypertext and hypermedia. Interviewing skills for technical authors; ethical issues in technical communication; consumer protection law; health and safety legislation; intellectual property laws.

Prerequisite TW4115 Technical Writing 1

TW4118 - TECHNICAL WRITING 4*(SPRING/4)

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

Economics of text production (estimating, cost control, planning quality control); information design; desk-top publishing; image and text processing; conventional print.

Prerequisite TW 4116 Technical Writing 2

THE IRISH WORLD ACADEMY OF MUSIC AND DANCE

MD4022 - INTRODUCTION TO TRADITIONAL MUSIC AND DANCE STUDIES 2

Rationale And Purpose Of The Module:

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

Syllabus:

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

MD4024 - IRISH TRADITIONAL MUSIC AND DANCE STUDIES 2

Rationale And Purpose Of The Module:

To expose the students to a deeper understanding of the history and nature of the Irish music, song and dance traditions.

Syllabus:

This module involves a deeper examination of key issues and moments in the historical development of traditional music and dance practice and their study, particularly relating to the position of the song tradition in the past century, the acquisition of the forms of dance music and the documentation of dance in Ireland.

MD4026 - IRISH TRADITIONAL MUSIC AND DANCE STUDIES 3

Rationale And Purpose Of The Module:

To provide a deeper understanding of the historical development of these Irish traditions. 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:

Contextualising 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 second level teaching contexts but will also introduce students to crucial musico-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.

MD4048 - PERFORMANCE STUDIES 6

Rationale And Purpose Of The Module:

To introduce students to independent research in performance studies through engagement with its primary research journal, TDR: The Journal of Performance Studies, in the form of lecture / seminars, including presentations on relevant articles, performance presentations and the presentation of new research.

Syllabus:

An engagement with current scholarship in performance studies, primarily through an exploration of relevant articles in TDR: The Performance Studies Journal, as well as engaging in independent research, through scholarship, performance and reflection.

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, Bahktin, Kristeva, Lakoff, Turner and Foucault, in the contexts of understanding roles of meaning and the interaction of sign, text and language in musical and musicological contexts. Students will be encouraged to examine these theoretical constructs in the constructs of their own performance practices.

Students will be provided with written feedback according to BA Irish Music and Dance policy.

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.



UNIVERSITY *of* LIMERICK

OLLSCOIL LUIMNIGH

Faculty of Science and Engineering

SPRING SEMESTER MODULES

The Faculty of Science and Engineering offers exciting opportunities for career and personal development in an environment that supports a high quality undergraduate and post graduate experience. The faculty prides itself on the quality of its teaching and learning personnel and programmes having three world-class research institutes in the areas of Materials and Surface Sciences, Software Engineering and Mathematics which are underpinned by well established links with industry. Cooperative Education (work placement in industry or teaching practice as appropriate) is an integral part of all our undergraduate programmes and we continually keep all programmes under review to ensure they meet the requirements

of employers as well as national and international bodies. Emphasis is placed on easing the transition from second level to third level by providing special guidance and care for first year students entering our programmes. The Mathematics Learning Centre and the Science Learning Centre offer one-to-one support, additional tutorials and a supervised study area. Access to personal tuition and additional learning resources is open to all students. We value the participation and contribution that students from different backgrounds and cultures make to campus life in particular through their involvement with the many University sport and recreational clubs and societies that are on Campus.

ARCHITECTURE MODULES

PLEASE NOTE: Architecture modules can only be taken by students enrolled in Architecture programmes in their home institution.

For further information on Architecture modules, please contact Jan.Frohburg@ul.ie.

AR4002 - DESIGN STUDIO 1B

The aim of First year Design Studio is to enable the student to become an active participant in the architectural design process. The field of architecture is broad and the methodologies used to work within it varied. In addition, architecture interacts closely with a number of related disciplines. First year Design Studio exposes the student to the types of thinking and acting inherent in this process with the objective of helping the student become conversant with the process and capable of developing initial architectural projects.

Syllabus:

Design Studio is the backbone of study in Architecture. Study is organised around design 'problems' or projects, a number of which are given each term. By working through the project, the student will become exposed to the architectural design process, a new and complex process for most first year students. Each project introduces a different aspect of

the architectural design process in order to help the student develop a range of methods of working. Each project also introduces a new programmatic theme so that students understand and become conversant with the many fields of operation of an architect. Themes include space and light explorations through model making, understanding the process of abstraction and transformation through model making/two dimensional work, building full scale structures in timber to explore architectural concepts such as scale, framing, section and thresholds, developing observational skills through sketching on site, learning how to make a site plan by developing a pattern of occupation on an open site, learning how to develop a building design grounded in this context. Studio work is organised so that close contact is maintained with the student. Work is analysed and discussed with the student on an individual basis and within the group. The student is taught to recognise the design process and to value and catalogue their own work. As the year progresses the student is encouraged to become increasingly responsible for organising and developing their own work process. The studio is co-ordinated with the content of parallel course modules and integration between studio work and course module work is a vital and innovative component of the studio structure.

AR4004 - DESIGN STUDIO 2B

The focus of this term is housing: through

analysis, research, visits, lectures, and project work students will explore the problem of housing conceptually, functionally, and spatially, as a basic human need, as a social construct, as an economic system, and as a physical thing. * Spatial model study of housing in a specific cultural context.

* Aspects to be studied: spatial relation to land, territory, climate, privacy, social interaction, interior spatial organisations * Means of study: intuitive and structured modelling in mix, studies in situ and sketching * histories, characteristics, contemporary situations, investigations through site visits, lectures, mapping, free sketching, birds eye perspectives

* Land, structure, climate and materials:

* a. Spatial logistics and spatial politics.

Geometry and human occasion. Types, patterns, and spatial logistics: The maisonette, the dwelling unit, patterns of repetition, link to Irish house and housing traditions.

* b. Reconstructing Space. Parallel to first year program: Drawing of works by various architects -The essence of the detail and its influence and relation to character of the whole. The design studio is co-ordinated with the content of parallel course modules and integration between studio work and course module work is a vital and innovative component of the studio structure.

AR4006 - DESIGN STUDIO 3B

The principal aim of Third-Year Design Studio is to enable the student to demonstrate a first

synthesis of the disparate influences that go to make up an architectural project using the range of skills and tools an architect is required to use. The emphasis in the second term is on developing a project to a high level of detailed design. The pedagogical focus is on developing, in each student, a capacity to interrogate the project through different inputs and to push the project ahead. At the end of the semester the student should have developed an architectural project by interrogating a range of inputs through disparate means and successfully resolved these.

Syllabus:

An agenda will be set in Design Studio. The basis for all propositions will have stated intent relative to societal ideas of place, collectivity and socio economic (or political) meaning. The architectural project brief will have inherent complexity, embodying personal space together with public space. Through the detailed study of architectural references, a concept of 'now' relative to the past history of societal and architectural ideas will inform each student's proposition since both will be researched and presented in parallel. The material realisation of these social and cultural concepts is capable of conveying meaning in a contribution that the strictly functional provision of buildings does not make. The architectural proposition will move through a series of studies where the student is taught to use different scales, modes of operation and reference points. The emphasis will be on the mastery of investigative skills through a range of media on an ongoing basis.

AR4008 - DESIGN STUDIO 4B

In order to facilitate more extensive and, at the same time, more focused design projects and adequately comprehensive thesis projects, credits awarded to Design Studio 4a and 4b increase to 18 credits while the number of parallel modules is reduced.

Syllabus:

In Y4 students start a personal pursuit; they must - through their design projects and their research work - relate to the world of architecture in their own personal way. Students are expected and asked to voice their position in architecture, to find their direction through architectural design. Students will develop a method of research and allocate significant time to the research part of the curriculum. The architectural project will be tightly allied to construction and the physicality of building; construction technology will be an important part of the years work. In the spring semester students are expected to measure their design ability against tightly drawn demands and complex programmatic issues within a sophisticated cultural and architectural framework - to create a complex architectural object. Design Studio will facilitate more inventive/experimental work, leveraging the knowledge of what students are already able to do. Design projects require an integrated technological proposition in terms of structure, construction, materials, and environment at an advanced level.

Learning outcomes:

Cognitive (Knowledge, Understanding, Application, Analysis, Evaluation, Synthesis)
Conduct research in a precise way, collecting information and analysing it through drawings with insight; Express through plans a clear spatial idea that is well resolved in terms of its architectural qualities; Demonstrate through sections a clear understanding of space, structure, and environment; Evidence through detail drawings a clear understanding of material, structure and environment in their relation to architectural space
Affective (Attitudes and Values)
Resolve a design problem with complex societal demands; Demonstrate technological competence within the development of the project, and high level of technical resolution; Psychomotor (Physical Skills)
Create careful and precise analytical drawings; Describe a project fully through drawings (scale 1:500;1:50), well-made and accurate models, perspectives, and other three-dimensional information; and Produce (sectional) drawings at scale 1:20 that competently define the proposed building and the related understanding of building technology.

AR4012 - GRAVITY AND REACTION 2

Give students an understanding of a small number of useful structural concepts using experiment, intuition and formal learning.
Give students a strong conceptual and formal

grasp of these concepts, that are applicable to actual conditions.

Syllabus:

Continued Introduction to structural concepts. Topics covered will be Pin jointed frames, Parallel chord cantilever truss multiple point load. Parallel chord cantilever truss: uniformly distributed load Pitched roof truss, Internal Forces in Beams, Axial, shear bending definitions, corresponding internal stress states, simplified models of stress states. End load cantilever with uniformly distributed load, Simply Supported Beam: mid-span point load with deflection, Simply Supported Beam: 2 point loads, Simply Supported Beam: uniformly distributed load with deflection, Supported Beam: partial uniformly distributed load, 3 Pin frame with vertical point load, 3 Pin frame with horizontal point load., 3 Pin frame with uniformly distributed load, Qualitative analysis: Frames, deflected shapes, tension zones in bending, axial force, shear force. Students will Construct: (a)* A cantilever truss with 1.0kg point load and a slender braced bottom chord. 1.0m long 200mm deep (2 groups). (b)* A simply supported beam and a fixed ended beam (same section) with mid span point loads 1.0kg approx. * Measure deflections (2 groups). (c)* A cantilever beam 1.0m long with a 1.0kg end point load. A cantilever beam (same section) 2.0m long with a 1.0kg end point load measure deflections (1 group).

AR4014 - GRAVITY AND REACTION 4

Give students an understanding of structural models using experiment, project work and formal learning. Give students a strong conceptual and formal grasp of materials used in structural design, which are applicable to actual conditions.

Syllabus:

Continued Introduction to structural concepts. Topics covered will be portal frames, crane structure; RC beam design; timber truss design in qualitative process; shells, membranes. Introduction to materials used in structural design; concrete, reinforced concrete; timber; laminated timber; glulam timber; steel; models to describe failure modes in structures. Students will research: * Materials in the studio and in a site context. * Materials used in structural design and their relevant components * Design and build in model form a bridge with calculated design loads and span.

AR4016 - GRAVITY AND REACTION 6

Give students an understanding of structural models using experiment, project work and formal learning. Give students a strong conceptual and formal grasp of materials used in structural design, which are applicable to actual conditions.

Syllabus:

Continued Introduction to structural concepts. Topics will be studied directly in the laboratory will be portal frames, crane structure; Introduction to materials used in structural design; concrete, reinforced concrete; timber; laminated timber; glulam timber; steel; models to describe failure modes in structures. Students will research: (d) Materials in the studio and in a site context. (e) Materials used in structural design and their relevant components (f) Design and build in model form a bridge with calculated design loads and span.

AR4022 - REPRESENTATION/ DRAWING 2

Syllabus:

To establish drawing as a tool of observation, a tool of thinking and a tool of representation, this course consists of three different types of drawing exercises: Studio based exercises will, by degrees shift their focus from training the craft of technique in drawing toward using drawing as an analytical and representation technique. Colour, composition, documentation of different sites - with some visits to specific sites - , typography and basics of graphic design will be subjects of the course. Ink and pastels will be introduced as drawing materials, wood, plexiglas and metals as model making materials. The idea of transformation introduced in the first semester of the course will be extended to include digital media.

Learning how digital media operates and is distinct and different from activities of drawing and model making photoshop and powerpoint will be the first steps into digital representation. Architectural drawing, line-drawings of floor plans, sections and details, will become more concrete, will develop from freehand to hard line drawings following the convention of architectural drawing in respect of line types, hatching, representing materials, dimensioning, lettering and grade of detailing depending on scale.

AR4024 - REPRESENTATION/ DRAWING 4

In this module students hone skills in drawing through practising, and form an understanding through application.

Syllabus:

To establish drawing as a tool of observation, a tool of thinking and a tool of representation, this course consists of three different types of drawing exercises: Surveying using the sketchbook, pencil and the body to observe and record buildings, proportions, scale, and distances of objects. Surveying using careful notation of dimensions through careful observation, and detailed measuring using a tape measure and triangulation. Drawing, with pencil, the results of the survey carefully bringing all information to the same level of detail and consistency on a well organised composed drawn document.

AR4026 - REPRESENTATION/ DRAWING 6

In this module students develop skills in 3-dimensional modelling using the computer, in conjunction with continuing studies in physical modelling. Switching between digital and analogue modes of representation, e.g. models, drawings, digital photography, FormZ, Rhino, and SketchUP, programmes will be explored as tools of transformation and spatial, logical, and structural exploration.

Syllabus:

Widening the pallet of modes of representation that the student must master, 3-dimensional modelling is taught as a tool of spatial investigation and representation, this course consists of three different types of drawing exercises: Moving actively between analogue and digital modes of representation, students will develop their ideas between media, exploiting the most powerful aspects of each in terms of their design. Students will develop in parallel their model making skills.

AR4032 - HISTORY AND THEORY OF ARCHITECTURE 2

to expand students' horizons of knowledge about architecture while teaching the foundational skills in reading and writing in the discipline. Even though students at the School of Architecture are expected to be literate and articulate, entering into a

new field, such as architecture, is a difficult intellectual transition to make. Students will need to develop specific cognitive skills to address the new territories they will have to map. The first year program sets out to help students attain a basic literacy in the discipline while introducing contemporary ways of thinking about the field.

Syllabus:

The theme for the spring workshop is Building. Just as students need to learn to describe a site and objectify their reactions to it, as architects it is essential that they also learn to discuss buildings at a high level. Seminars will address Skin, Program, Circulation, Structure, and Codes, introducing both historical and contemporary material to challenge students. Throughout, students will explore architecture's intersection with the material and social realms. As in the first semester, students will undertake close readings of the most significant works in modern and contemporary architecture. Projects likely to be discussed will include Joseph Paxton's Crystal Palace, Otto Wagner's Postparkasse, Mies van der Rohe's 860-880 Lake Shore Drive and Seagram Buildings, Le Corbusier's La Tourette, Eero Saarinen's IBM Headquarters, Bernard Tschumi's Parc de la Villette, FOA's Yokohama Terminal, MVRDV's WoZoCos Housing Project. Readings by authors such as Robin Evans, Colin Rowe, Anthony Vidler, Otto Wagner, Alan Colquhoun, Le Corbusier, and Walter Gropius will explore the diverse ways by which buildings can be discussed. We will visit

nearby sites first-hand in order to learn how to read buildings. Afternoon workshops will focus on describing these sites. The writing projects introduced in the fall semester will be built upon in order to ensure that students have a high degree of skill in thinking about architecture through writing by the end of the term. This course will be teamed with a series of workshops by Elizabeth Hatz that will introduce students to ways of attaining close readings of buildings through drawing.

AR4034 - HISTORY AND THEORY OF ARCHITECTURE 4

The second year program in Architectural Research provides students with a comprehensive survey of the history of architecture and urbanism. In the second semester students will continue to hone the specific cognitive skills required to address the field, deepening their knowledge of the local and global built domain while reading, writing, and researching architecture. The second year program revolves around intensive workshops and seminars.

Syllabus:

Continuing the survey from the first term, the period covered will be from 1945 to the present day, course will survey not simply the history of modern architecture, but the history of environmental, structural, and social systems in such terms. The course is composed of Lectures, seminars, writing workshops, together with research papers.

AR4036 - HISTORY AND THEORY OF ARCHITECTURE 6

The third year program in Architectural Research continues the comprehensive survey of the history of architecture and urbanism in the programme curriculum. This module exposes students to urban history.

Syllabus:

Through lectures, discussion seminars, field trips, and writing the course will survey urban history from prehistory to the present day. The course is a broad introduction to urbanism throughout the ages, from the Paleolithic to the present day both in critical texts and first hand. Students will be exposed to the complexity of collective human inhabitations throughout the ages, both in Ireland and abroad.

AR4042 - ASSEMBLY AND TECHNIQUES 2

Study of building elements and their design origins. Introduction to constructional detail in drawings and models

Syllabus:

This course will consider the physical realisation of design aspirations through the detailed study of various building elements; structure roof window, entrance etc. This study will be formed by a combination of case study seminars, site visits, as well as the individual students detailed developed of some aspects of

their design studio project. The students will be introduced to methods of describing and analysing constructional assembly through drawings and model at scales 1:10 to 1:1.

AR4044 - MATERIALS 1

The aim is to introduce students to the properties and uses of groups of materials, such as timber, glass, plastics, mineral materials, stone, metals, fabrics, others in architecture, to give students a physical, technological, and analytical basis from which to approach materials in architecture.

Syllabus:

The content of the course is focused on material research, practical tests, experimentation with built works, and lectures/seminars by renowned individuals. A wide-ranging collection for students' use and inspiration will be built in the studio, working together to develop a system to show and organize this collection in the studio. Studio exercises are construction based project work, build a skin for 1m² space out of different materials, one from each group, understanding the characteristics by touching and assembling different materials, analysing the models. There is a lecture series from external architects and artists known for dealing with one specific material, fabrics, wooden constructions. Second block: Lectures with focus on the physical characteristics of materials, together with a review of the research results of the students so far. Exercise: Material tests of

samples in respect of light, heat, and other physical stresses Third block: Lectures with focus on assembling techniques of different materials

AR4046 - ASSEMBLY AND TECHNIQUES 5

The aims of this class are: • to introduce students to making a comprehensive set of working drawings of a third year design studio project. • to develop further the student's own intuitive skills in technique alongside knowledge of available construction technology today. • to introduce students to the Irish Building Regulations • to carry out a dissertation on a construction system of personal interest

Syllabus:

Developed principles of assembly and techniques will be further studied concurrently with the production of a full set of working drawings. DRAWING EXERCISE: Each weekly exercise will concentrate on developing one technical aspect of a building. The culmination of the term will be that each student would have completed a comprehensive set of working drawings. LECTURE COURSE: A weekly lecture will introduce students to developed construction principles, systems and methods. Students will be asked to choose a construction system/method at the start of the year. Each student will complete a short dissertation on the chosen topic for the end of the module.

DIARY OF A BUILDING: Students will be assigned a building of appropriate complexity at the start of the year. Fortnightly supervised visits will be made to the building site.

AR4052 - ENVIRONMENTAL SYSTEMS AND FORCES 2

Continuation of first term's work, to give students a basic understanding of physical backgrounds and interconnections for a sustainable development

Syllabus: Sustainable development is a base for the future of human society on our planet. Architects as the designer for the built environment have a key position in this approach. Therefore a basic understanding of the physical backgrounds and interconnections is necessary. This lecture content spans from global to local and micro climate, to energy and it's different forms and sources towards materials and their properties. Parallel and interconnected to the teaching of design basics like space, light, boundaries students will learn the physical backgrounds and properties by handling and personal experiences. - Burning your finger at a hot stainless steel surface while missing the heat radiation - and understand why this happened - is a much deeper experience, than just calculating heat conductivity on a piece of paper.

AR4054 ENVIRONMENTAL SYSTEMS AND FORCES 4

Development of sustainable principles in design with particular emphasis placed on the house, and achieving balanced solutions in relation to energy and sustainability. Understanding comfort in terms of the cultural and social relations that influence its affect.

Syllabus:

Study of all environmental systems required to create a built environment that is in-balance with nature, with particular emphasis placed on the energy and sustainability needs of housing. Students will conduct experiments, research, and learn methods to analyze, design, and text the environmental aspects of the built environment including, U-Values, building envelope integrity tests, daylight tests. Students will construct from actual data (weather data, etc.) models realistic assessments of a buildings environmental performance.

AR4055 - CULTURE PLACE AND ENVIRONMENT 1

In most cases nowadays, one cannot simply go out and start building. Things must be planned, consents sought, materials organised. The overall architectural project will take time, and will move through a series of modes, and a series of technological, regulatory and economic inputs. The module offers a critique

of this ;parts-based; approach, which, it seems, interferes with and determines our capacity to generate spatial, or pictorial, order through a greater understanding of visual world as operated upon by artists, with a particular focus on their means of engagement.

Syllabus:

In the history of art and architecture, there are moments when a new order emerges. This module, through an examination of drawings, built work and work practices, traces the links between the emergence of a new order and the practice of the person who brings it into being. This module investigates in some detail the work of several practitioners through time, and as a specific example, will also examine the relationship of three practitioners, the painter Bridget Riley, the sculptor Donald Judd and the architect Kazuyo Sejima, to the progress of their work and situates this in the context of the work of Ludwig Mies van der Rohe.

AR4058 - PROFESSION AND SOCIETY

No description given.

AR4068 - ADVANCED CONSTRUCTION 2

An extended and clearly structured curriculum in construction design to induce a more innovative and imaginary approach to materials and details. In order to ensure the

expected high level of competency in advanced building construction (at an industrial scale and with respect to contemporary and innovative technologies) SAUL introduces a set of Advanced Construction modules throughout Y4 and Y5 in close relation to and in support of the Design Studio projects.

Syllabus:

Architecture students learn best by imagining, developing and realising (full-scale) prototype structures through which ideas can be tested, documented and communicated. Through actual engagement in all the stages of making and building, students have a unique opportunity to develop a rich phenomenal understanding of architecture. Closely related to Design Studio, Advanced Construction informs and supports the students individual design studio projects; directed and independent research on advanced construction is applied to these projects. Students test radical and experimental alternatives to the conventional processes of building because architecture is facing unprecedented pressure to reinvent itself in response to a new set of economic and environmental realities. The responsibility to preempt the needs of future built environments demands new approaches. The modules provide an overview of advanced building construction at an industrial scale and with respect to contemporary, emerging and innovative technologies. Students study the design implications of new construction technologies, and investigate precedents and potential applications.

AR4310 - ADVANCED CONSTRUCTION 4

An extended and clearly structured curriculum in construction design to induce a more innovative and imaginary approach to materials and details. In order to ensure the expected high level of competency in advanced building construction (at an industrial scale and with respect to contemporary and innovative technologies) SAUL introduces a set of Advanced Construction modules throughout Y4 and Y5 in close relation to and in support of the Design Studio projects.

Syllabus:

The series of modules in Advanced Construction expands the scope of students competencies in building technologies and construction beyond traditional methods and their related familiar scale. In the final year, students engage in a tested dialogue with concerns of design, structure, environment, history and theory, representation, digital media, and other related areas and interests. Students undertake a Technical Design Thesis, contextualised as part of a broader dialogue in which the technical and architectural agendas that arise within the year are synthesised. The constructional or technological proposition is pursued critically and developed imaginatively through case studies, material experiments, extensive research and consultation.

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ENGINEERING MODULES

IE4112 - 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/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; Gantt, 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.

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 timing, 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 treatments; surface treatments; 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

Kinematics of Simple Mechanisms and Linkages. Analysis of Four Bar Linkages. Analysis of landing gear systems, ailerons and wing spoilers. Cams: Kinematic analysis of follower motion, velocity and acceleration of cams, construction of cam profiles, Forces analysis of cams. Gears: Torque and power transmission, helicopters rotor gearboxes

Balancing: Balancing of aircraft engines, static and dynamic balance Gyroscope: Gyroscope analysis and gyroscopic effects on wings. Gyrocompasses.

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 homo; materials (rankline, tresca 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:

Materials for hard tissue orthopaedic materials, survey of applications (TJR, substitution, fixation) alloys bone cements, substitutes (bioactive and resorbable). Dental implant applications and materials Dental restorative materials Regulatory affairs: 93/42/EEC, MDD, FDA, EN46000, AIMDD, IVDD and related standards.

ME4328 - AIRCRAFT MAINTENANCE (SPRING/4)

4 hours per week; 13 weeks/8th semester; 26L/26T; 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

The Derivation of the Three-Dimensional Viscous, Steady, Compressible Equations of the Conservation of Mass, Momentum and Energy. The Distinction between Differential and Integral Solutions. Differential Solutions for Simple Pipe Flow with Heat Transfer and Couette Flow. The Von-Karman Integral Solution of Flat Plate Flow with Heat Transfer. Dimensional Analysis for Free and Forced Convection: the Non-dimensionalised Differential Equations. Shear Stress Drag and the Reynolds Colburn Analogy. Theories of Turbulence: The Prandtl - Mixing Layer Theory, the K-E Model. The Effect of Turbulence on Drag and Heat Transfer: The Elements of a Turbulent Boundary Layer

ME4516 - THERMODYNAMICS 1* (SPRING/3)

4 hours per week; 13 weeks/6th 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 Lumped 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 Lumped 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

ME4616 - FINITE ELEMENT ANALYSIS* (SPRING/3)

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

Introduction; general concepts; truss analysis; two-dimensional field problems; plane stress and plane strain; implementation of the finite element method; mesh design; pre-processing and automatic mesh generation; pre-solution checks; solution methods; ill-conditioning; post-processing and computer graphics; validation of the finite element software; interpolation functions and the convergence of the solution.

ME4714 - INSTRUMENTATION AND CONTROL (SPRING/2)

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

Sensors, transducers and transmitters; instrument specification; standard

instrumentation signal levels; signal transmission; dynamic errors; open and closed loop control systems; control systems components; block diagrams and transfer functions standard process inputs; dynamic response of first order systems.

ME4718 - FLUID PROCESS CONTROL (SPRING/4)

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

Advanced control strategies control of multi-input-multi-output (MIMO) processes development of discrete-time models; dynamic response of discrete-time systems; analysis of sampled-data systems; design of digital controllers. *Prerequisite: ME4714*

ME4726 - FLIGHT MECHANICS* (SPRING/3)

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

Atmospheric models, standard atmosphere, thrust and drag characteristics; aircraft performance: steady flight, climbing, turning, range and endurance, takeoff and land; energy methods, specific excess power; longitudinal static stability: stick fixed and stick stability margins; longitudinal control, hinge moments, manoeuvre margin; lateral and directional static stability and control; dynamic stability: equations of motion, stability derivatives, stability modes, flying qualities; in-flight

assessment of aircraft performance and stability characteristics in an instrumented aircraft.

Prerequisite ME4424

ME4736 - PHYSIOLOGICAL FLUID MECHANICS 1

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. Properties of physiological fluids and constitutive relations; Newton's law of viscosity, non-Newtonian rheology and time dependant viscoelastic behaviour. The derivation of the conservation relations for fluid transport, dimensional analysis and scaling. Introduction to Mass Transfer, Fick's law of diffusion. Transport of Gases between blood and tissues: oxygen-haemoglobin equilibria and the dynamics of oxygenation of blood in lung capillaries

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 design; 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 allowable, 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.

MF4728 - 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)

4 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 MA4004.

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.

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.

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

Metals: Casting. Forming: extrusion, forging, rolling, sheet metal work. Joining: mechanical, welding, adhesion, brazing. Polymers. Processing Techniques.

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

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 thorough 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.

Idea generation techniques. Implementation of entire design process from research to design detailing. 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. Design Philosophy, Sociology and Psychology. Trend forecasting. Professional Practice. Defining Roles. Forecasting and Trends. Practitioner Lectures and Workshops. Market focus and business development. Field trips and Exhibitions.

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, isometric scales. Basic transformations and mappings. Surface developments and package design. Scaled drawing. Technical sketching. Pedagogic strategies. Using the SolidWorks user interface. File management. Online help. Visualising objects and selecting the best sketching profile. Introduction to robust sketching for design intent. Sketch relations. Basic part modelling using extruded and revolved features. Open and closed profiles. Thin features. Feature end conditions such as blind, through all and mid plane. Capturing design intent through dimensioning and relations. Applied features including chamfers, fillets and shelling. Basics of bottom-up assembly modelling. Basic mates. Creating basic Part and Assembly drawings. Methods of visualisation and communication of CAD entities.

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

Components of an automated system, controllers, servo motors and feedback. A/D and D/A conversions. Binary and analog outputs and inputs to devices. Interfacing with, and control of devices using CircuitWizard software. Robot classification and control, degrees of freedom, programming techniques. Peripheral Interface Controllers (PICs) and their applications to simple automation projects. Design of working PIC circuits incorporating Input and Output devices. Compressors, receivers, valves and cylinders. Use of pneumatic simulation software. Design and construction of pneumatic circuits. Design, analysis and testing of planar linkages for Generation of a straight line motion by linkage mechanism. Reproduction of a path traced by one point at another tracing point with a change in scale. Transfer of torque and motion between non-coaxial shafts with changing relative alignment. Automotive steering mechanisms and suspension mechanisms. Indexing: Intermittent timed motion.

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, 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 work-flow, implications of good and bad design. 7. Designing the facility: 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 'soft' systems improvement - PDCA cycle (plan-do-check-act), motivation and human-centred operations improvement, quality circles, ASRS reporting systems in air transportation, six-sigma, lean, future 'soft' technologies?

PN4206 - PROCESS TECHNOLOGY 4 (ED)

Multistart thread cutting in the lathe. Precision surface grinding techniques. Grinding wheel technology. Correct use, handling and storage of grinding wheels. ISO standards for tooling. Grade selection criteria for tungsten carbide tooling. Taylors equation for tool life. Optimum speeds and feed rates to maximise tool life. Engineering materials in machine design, materials selection, specification and identification for bearings,

shafts, gears, housings and other machine components Bearings, ball and roller bearings. Selection of bearings, bearing mounting arrangements. Machine joint design, fasteners, rivet cotters, keys and welded joints. Stress on machine joint components, Twisting of Shafts, Deflection of Beams. Basic treatment of Shear Force and Bending moment diagrams. Factor of safety. Revision on basic concepts of machine design Forces on screw threads. Design of cams. Design of work holding and clamping systems involving screw threads and cams. Consideration of the impact of selected processing methods on the work environment.

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:

Freehand sketching of geometry problems. Dynamic mechanisms: involutes and spirals, cycloidal curves, gears, cam profiles, helix and helical applications. Structural forms: singly and doubly ruled surfaces, hyperbolic paraboloid, hyperboloid of revolution, geodesic domes, plane directors. Geologic geometry: dip, strike and thickness of ore strata, road geometry, cuttings and embankments for level and inclined constructions, skew boreholes. Surface geometry: dihedral angles, surface developments of transition pieces, intersection of oblique surfaces. Assemblies: sectional views, surface finish and texture symbols. Apply 3D CAD to the design process, geometric principles and problems. Multibody part design techniques. Sweep, loft and boundary features. Splines and 3D sketches. Advanced 3D CAD modelling tools. Reference geometry. Toolbox and part configurations. Top-down assembly modelling approaches. Creating sub-assemblies. Advanced mates. Working with drawing views. Alternate position and detail views. Assembly mechanisms. Assembly analysis. Surface and hybrid modelling techniques. Sheet metal, weldment, mould and die tools. Animation and simulation analysis of 3D CAD assemblies. 3D CAD pedagogy.

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 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 structural forms. Advanced geologic geometry. Advanced surface geometry. Advanced assemblies. Advanced cognitive modelling strategies. 3D CAD tools applied to communicate and solve a range of geometry 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-informed 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, formating), 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-informed decisions, scale of scientific evidence used in healthcare delivery.

PT4112 - MANUFACTURING TECHNOLOGY 2* (SPRING/1)

1 hour per week; 13 weeks/2nd semester; 13LAB; ECTS credits:6

Precision measurement and inspection; process capability; quality and accuracy; machining; fundamental treatment of the shear plane; work holding; welding techniques; mechanical joining.

Prerequisite PT4111

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: PT4423

PT4428 - PROCESS DESIGN (SPRING/4)

4 hours per week; 13 weeks/8th 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

Definition of open and closed loop control. Boolean Algebra, logic elements, counters, scalars and shift registers, basic circuitry, input-output signals. Programmable logic controller hardware and software, applying programmable logic controllers to the control of manufacturing equipment. Field bus technology. Pneumatics pneumatic control, pneumatic circuit design, electro-pneumatics. Hydraulics hydraulic control, hydraulic circuit design. Interfacing Basic signal types A/D D/A conversion. Data transmission. Sensors digital and analogue: proximity switches, photoelectric sensors, resistive, capacitive and inductive sensors, bar codes and vision systems. Fault finding Standard Fault finding techniques. Concepts, Production Flow Analysis, Cellular layout/Batch Definition Elements of Cellular manufacture, AGV and AGV systems, Co-ordinate Systems, Robot Grippers, LabVIEW Software.

PT4518 - AUTOMATION TECHNOLOGY 3 (SPRING/4)

4 hours per week; 13 weeks/8th 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, EDI. *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:

Humans and shelter. Social, cultural and traditional aspects of providing shelter. Historical development and diversity. Built heritage: significance of old buildings, site visits, recording heritage, builder as designer and artisan. Vernacular architecture: Evolution of Irish vernacular architecture. Congruence of building and landscape. Aesthetics of vernacular buildings.

Formal architecture: Design, scale and proportion of formal buildings. Formal architectural styles. Streetscapes. Organisation of urban spaces. Conservation: Restoration and reconstruction of rural and urban buildings. Design influences and considerations. Site selection: environmental, ecological and safety considerations. Design of domestic dwellings: light, space, comfort, privacy, energy, universality. Architectural modelling. Strategies for teaching Architectural Heritage & Appreciation at second level. Designing, planning and managing appropriate teaching and learning activities for Architectural

Heritage & Appreciation.

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 seasoning; 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

Properties and characteristics of various materials: wood and wood based products, metals, polymers, ceramics and glass, composites (cement and concrete), adhesives. Sustainability and materials. Ecological impact of materials and processes. Environmental issues associated with the manufacture and disposal of materials. Testing of materials; tensile, compressive, shear tests. Cube test/slump test of concrete. Moisture content of aggregate. Silt content of sand. Bulking test of sand. Bonding of bricks, blocks and stone. Advanced processing techniques: shaping, jointing, finishing. Jigs and templates. Safe use of tools, equipment and fixed machinery. Finishing and protecting surfaces. Project management for the coordination of design and make activities for senior cycle students. Communication of design and associated elements for senior cycle students. Strategies for teaching Materials Technology & Design at second level. 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. Commination: 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 bio-mass. * Hot and cold water services: Pipe sizing for hot and cold water multi-storey buildings, force and pressure, hydraulics. * Drainage services: sustainable urban drainage, retention tanks, oil separation, green roof, grey water recycling * Electrical services: electrical terms and installations, supply and distribution of electricity, supply controls, protection, conductor and cable rating, methods of wiring and distribution systems, single phase power circuits; electrical installations in large buildings; site electricity, electric space heating * Access services: lifts, escalators and service ducts, automatic control. * Lighting services: integration with electric light, natural lighting, artificial lighting, design of lighting, lighting controls * Safety services: classification of fire risks, safety devices, heating and flues; sprinklers, risers and hose reel installations, dry and wet risers; portable and fixed extinguishers, automatic fire detectors, alarms and dampers, pressurisation of escape routes, automatic fire ventilation fire detection, security systems. * Electrical services: supply to non domestic buildings micro generation (solar and wind) * Data services; audio visual, broadband and telephony.

WT4302 - WOOD TECHNOLOGY 2

Wood processing techniques and procedures. Decorative process for wood. Wood turning, veneering, marquetry, laminating, inlaying, pyrography, carving and shaping of wood. Manufactured boards, Wood Adhesives.

Finishing of wood. Material preparation, finish selection, techniques and procedures. Selection of tools/equipment, processes and fittings to meet specific applications. Safe use of electrically powered hand tools and equipment. Hazard analysis and risk assessment. Safe demonstration techniques and procedures. Introduction to the process of design. Factors influencing project design and realisation in technology subjects at second level. Critical appraisal of design projects. Communication of design: freehand sketching, working drawings modelling. Assessment models for design projects. Promote individuality and creativity. Presentation and demonstration techniques related to technology teaching at second level. Compilation and presentation of design reports.

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 waste 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 convective 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 measurement, satellite positioning systems, survey methods, analysis & adjustment of measurements, areas & volumes, setting out, curve ranging, topographic surveying, construction control surveys, geographic information systems, global positioning systems, construction applications, field coding, automatic target recognition, typical field operations. Practical case studies and fieldwork.

WT4608 - PROJECT 2 WOOD SCIENCE

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

Design process. Principles and elements of design. Shape, form, colour and texture. Problem definition and analysis. Topic and Task analysis. Flow diagrams and flow charts. Interpretation of design briefs. Formulating design briefs suitable for junior cycle technology subjects. Research and investigation techniques. Problem solving

capabilities. Product development. Design communication techniques. Proportion. Aesthetics. Anthropometry. Model making. Design and realisation of a solution to a particular problem. Compilation and presentation of design reports. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area.

WT4968 - SAFETY IN TECHNOLOGY CLASSROOMS: LEGISLATION AND PRACTICE 2

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:

Regulatory framework: safety legislation, regulations and standards that apply to technology education at second level. Human

factors and safety behaviour. Safety promotion strategies in the classroom. Safety culture and safety climate. Safety statements for technology learning environments. Risk assessment for teachers and students. Classroom safety auditing. Accident/ Near Miss/ Dangerous Incident reporting and investigation. Safe handling and storage of materials and chemicals. Specific hazards: wood dust extraction, noise, electricity etc. Working alone in safety. Teaching strategies to facilitate safe learning. Teaching hazard recognition skills.

INFORMATICS & ELECTRONICS MODULES

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; horizontal loads from wind / stability.
Methods of providing lateral stability; shear walls, cores, frames, strut / x-bracing;
Field trip to significant building / structure to investigate / sketch load paths in-situ;
Structural form; funicular shapes; applied to cables and arches;
Bending moment and shear force diagrams under point and uniform loads, for simply supported and fixed end beams;
Member forces in pin-jointed trusses;
Introduction to structural dynamics / resonance;
Introduction to relationship between bending moment / elastic modulus / bending stress;
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:

Infinitesimal 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). Linear elastic fracture mechanics. Fatigue. Unsymmetrical bending of open and closed thin walled beams: shear centre.
Constitutive relations. Temperature stress, Torsion of cylindrical sections, Analysis of stress at a point in 2D, Principal stress and

Mohr's 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, Distributed arithmetic, Fast convolution algorithms. Parallel FIR filters. Multidimensional convolution. Sampling-rate converters. Cooley-Tukey FFT, Goertzel algorithm. Bounds on multiplicative complexity. Multidimensional transforms.
Modular arithmetic. Galois field Architectures for multiplication, division and exponentiation.
Trellis and tree searching with the Viterbi algorithm, VLSI structures for the Viterbi decoder. Berlekamp Massey Algorithm for Toeplitz Systems.

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, watersheds, evaporation and transpiration, infiltration, runoff and subsurface flow, instrumentation and monitoring, hydrometry, hydrograph generation, hydrological data analysis and interpretation, aquifers, mass diagrams, reservoir routing, flood analysis.
Water Treatment: Characteristics of water; water demand rates and peak flows; water treatment legislation, distribution systems and service reservoirs; physical treatment - screening, sedimentation; chemical treatment - coagulation, flocculation; clarification and settlement; filtration, adsorption processes; disinfection - chlorine, ozone & other; fluoridation; Sludge treatment and disposal; treatment plant design.
Applied Hydraulics: hydraulic profiles, open channel flow 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 - a review, section properties tables, design of fully restrained, partially restrained and unrestrained beams, truss design, design of long and short columns; axial and combined loading conditions, design of pinned and moment connections, baseplate and splice design, structural detailing and fire & durability issues.

* Timber Design

Properties and conversion of timber - 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 limitations 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:

Syllabus:

Dwelling Energy Assessment Procedure DEAP
Heat: Introduction to energy, thermal insulation, heat loss calculations, principles of air conditioning.

Lighting: sources, efficiency and control.

Ventilation: ventilation, air filters, heat recovery systems.

Hot Water: Hot water supply, low, medium and high pressure hot water heating, district heating.

Noise: managing noise.

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 1 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*

CE4208 - DISTRIBUTED SYSTEMS

This module is designed to provide students with a framework for comparing

emerging distributed systems, as well as an understanding of the algorithms necessary to support a distributed system. Computing models and data communications will be studied, as well as software development issues relating to the development of distributed applications.

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.

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.

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:

Compiler structure: Definition of terms. Source, object and executable files. Symbols, definition and resolution. Phases of a compiler and their functions. Single and multi-pass compilation. Cross-compilation, interpreters and pseudo-machines.

Grammars: Mathematical grammars for language definition. BNF and EBNF notations. Parse trees. Properties of grammars. The Chomsky hierarchy. Syntax diagrams. Restrictions on grammars.

Parsing: Top-down parsing. Lookahead. Recursive descent. LL(l) grammars. First, follow and predict sets.

Syntactic error detection and recovery for recursive descent parsers.

Semantic processing: The symbol table. Handling semantic errors.

Code generation for a simple stack machine: Translation of expressions to reverse-Polish form. Procedure calls and block structure. Static and dynamic scope. Storage management for modern languages.

Scanning: Regular expressions. State machine implementation. Nondeterministic automata and translation to deterministic automata. The use of a scanner generator such as LEX.

Table-driven parsing techniques: LL(l) table-driven parsers. Shift-reduce parsers. LR parsing. The LR(0) Characteristic Finite State Machine. LR(l). SLR. LALR(l). The use of a parser generator such as yacc.

Code generation for register architectures.

Introduction to code optimisation techniques.

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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

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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.

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Syllabus:

Fundamentals of physical dimensions used by human sensation and perception - light, sound, heat, pressure;

Fundamentals of the senses of hearing, seeing and touch: physiology and function;

Psychophysical measures and correlates of perception;

Introduction to Signal Detection Theory;

Theories of perception, perceptual organisation, attention, object recognition, depth perception and motion perception;

Navigation and Spatial Cognition;

Multimodal integration;

Memory and training; introduction to theories of mind and their relationship to theories of mediation, communication and perception.

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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.

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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.)

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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, Steim, 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.

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

(No description given)

CS4064 DIRECTED STUDY DMD 2

Rationale And Purpose Of The Module:

Students will extend their knowledge and the approaches needed to undertake: A research based literature review of a given theme. A critical appreciation based in listening and seeing works representative of a theme.

Syllabus:

- Developments in technology and design post 1945.
- Multimedia.
- Digital Video.
- Interactive environments.

- Digital and interactive art.
- Computer graphics.
- Computer networks.
- Online communities.
- Personal computing.
- Ubiquitous and mobile computing.
- Virtual reality.

CS4065 WEB INFRASTRUCTURE

Rationale And Purpose Of The Module:

This module will encourage students to develop standards-complaint 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, OOHD, 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;

CS4072 - MEDIA PROGRAMMING 2

Rationale And Purpose Of The Module:

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

Syllabus:

- Vector and bitmapped image formats;
- Drawing simple shapes and drawing text on existing images;
- How we digitize/encode sounds; Nyquist theorem; manipulating samples;
- Using iteration and selection constructs to

increase/decrease sound, normalizing sound;
 - Creating sound clips, splicing sound, reversing and mirroring sound;
 - Composing and blending sounds;
 - Encoding, manipulating and creating movies;
 - Reading from and writing to text files; string manipulation;

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 miking 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.

CS4082 - 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 serves and clients, uniform resource locators, the hypertext transfer protocol (HTTP), processing HTTP requests and responses, world wide web consortium (W3C), static and dynamic content.
 Document content and structure, mark-up languages, elements and attributes, document type definition (DTD), hypertext and hypermedia.
 Hypertext Markup Language (HTML); standard HTML document structure, HTML syntax, tags, text formatting, colours,

images, hypertext links, absolute and relative referencing, list, tables, frames and forms. Considerations when including audio, video and graphics; differentiating between file formats.

Embedding PHP in HTML; assigning and using variable values, saving form input in variables, simple data types, detecting the data type of a variable, using operators: arithmetic, relational, logical; string operators, auto increment/decrement operators, operator precedence; selection and looping constructs. Sessions and cookies: creating a session and registering session variables, destroying a session; setting cookies, retrieving cookie data, deleting cookies.

File manipulation: reading data from and writing data to files.

Introduction to relational databases: tables, records, fields, primary keys and foreign keys. Introduction to Structured Query Language (SQL); creating tables: specifying field data types, retrieving, inserting, editing and deleting records.

Connecting to a database in PHP and executing SQL commands.

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.

Packaging 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 algorithms, 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.
- d. 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 computations. 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 its 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 powersets; 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)
To understand the principles and techniques of Interactive Media. Content creation, processing and management. High-level authoring. Distribution methods. Intellectual Property Rights. Brief syllabus: Introduction to Digital Media: Cognitive Models: Interaction Design: Image, Video and Sound Processing: Authoring: Interfacing high-end authoring systems: Distribution: formats; Intellectual Property Rights.

CS4416 DATABASE SYSTEMS (SPRING/3)

3 hours per week; 13 weeks/6th semester;
26L/13T; 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 information systems development projects; from project initiation to systems implementation; the tools and techniques applicable to planning, monitoring and controlling a project.

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/13T/13LAB; 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 documentation 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.

Prerequisite – 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.

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 - disks and solid state memory.
 - Development of the PC.
 - Communications and connectivity: modems, communications channels, networks: LAN, WAN.
 - The Internet and the Web: access, browsers, URLs, search engines, multi-media.
 - Security issues: virus, firewall, proxy server.
 - Computers and society: dependence of
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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 Behaviour; 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.

Machines - DC motors and generators: construction and principles, separately excited, series, shunt and compound machines. Voltage and torque equations. Equivalent circuits, Power flow. Machine characteristics: open circuit/magnetization, speed, torque and dynamic characteristics. Which configuration for which application. DC machines in modern power generation and motion control.

AC machines, rotating magnetic fields, alternators, 3 phase generators, salient pole/ cylindrical rotor, derivation of equivalent circuit from open circuit and short circuit tests, synchronous reactance, the phasor diagram (of cylindrical rotor machine) and the Power Angle Curve. Synchronising to an infinite busbar. Steady state stability limit. Induction machines (motors and generators) single phase, 3 phase. Derivation of equivalent circuit, determination of torque speed characteristic. Locked-rotor and no-load tests. Induction generator. Introduction to V/F control. Starting methods and protection. Electrical machines developments for renewable energy generation. AC power real and reactive power calculations. Power factor correction, balanced 3 phase systems analysis, star and delta connected loads, advantages of 3 phase systems, the per

unit system.

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

EE4117 - ELECTROMAGNETICS

To provide the student with an understanding of electromagnetic theory and application using vector calculus as the mathematical background.

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-Hurwitz, and Root Locus methods. Design techniques for system compensation using Bode diagrams, Nichols charts and Root Locus. Lead and lag compensation, the application of these using op-amps as an example, internal compensators. Introduction to Modern Control methods using State Space Techniques.

PROCESS CONTROL: Terminology and practice, application and use of three term control, PID design in the frequency domain, integral wind-up and similar problems, Benchmark methods for tuning PID controllers, (Ziegler-Nichols, Haalman etc.,).

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.

EE4328 - POWER ELECTRONICS

Rationale And Purpose Of The Module:

This module will give students (electronic, Robotic, Control and Energy students) an

understanding of modern power electronics both at the device . products level and at the renewable energy generation and distribution level.

Syllabus:

Introduction (examples of typical power conversion applications e.g. a complete computer power supply system block diagram/ space craft system, importance of efficiency, comparison linear vs switching supplies, overview key components utilised in power conversion)

Switch realisation: semiconductor switches: diodes, Power MOSFETs, Thyristors, GTOs, IGBTs, properties, circuit symbols, comparative characteristics and application areas, power losses in switches.

The ideal switch, ripple and switching frequency, conduction losses, switching losses.

Switch mode power conversion: basic concepts; role of inductors, capacitors and transformers.

Analytical treatment of converters in equilibrium (steady-state converter analysis).

Modelling and simulation of converter in steady state (SIMPLIS)

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 magnetics (capacitive, inductive, uncoupled, coupled).

Modern rectifiers (topologies, harmonics)

High power resonant converters
HVAC / HVDC Power systems and conversion basic understanding.

Harmonics/Flicker/Reactive Power Control.

Modelling of power convertors.

Low voltage ride-through (wind application)

EE4408 - ASICS 2 (SPRING/4)

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

Analogue simulation using spice, analogue asic layout techniques; asic operational amplifiers; asic d-a converters and a-d converters.

EE4512 - DIGITAL SYSTEMS 2 (SPRING/1)

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

Counters; MSI devices; sequential MSI; registers; logic arrays; register transfer language and introduction to simple computer organisation; simple processor operations.

Prerequisite EE4513

EE4514 - DIGITAL SYSTEMS 4* (SPRING/2)

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

Bus buffering and de-multiplexing; bus cycle timing; the memory interface; drums; I/O interfacing; the centronics and RS 232 interfaces; the P.C. expansions bus; IEEE 488 bus; typical peripheral interfaces.

Prerequisite EE4513

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-ary 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.

ET4004 - 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); internet 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, buzzer, LED, speaker, motor, relay. Operational amplifier circuits (op-amps) assembled as comparator, amplifier, and oscillator. Simple timing circuits. Logic Circuits, basic logic gates AND, OR and NOT NAND, truth tables for each. The main logic

families (TTL and CMOS). The use of logic gates with sensors and output devices. Inputs and Outputs, buffers (transistors, amplifiers, paralleled outputs), Schmitt trigger. Binary inputs. Counters, clock circuits, de-bouncers, counters, seven segment displays and display drivers. Circuit Design and Assembly of Pre-designed Circuits. Printed circuit boards (PCBs) Use of prototyping boards for initial assembly and testing of circuits. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area.

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 a with fixed communications systems; systems overview: Fixed wireless Access, cellular, WLAN, Wireless Personal Area Network (WPAN), satellite.

Cellular Concepts: Frequency reuse; channel assignment; capacity; sectoring.

Review of wireless transmission; Signals, propagation issues, coding, modulation, multiplexing, spread spectrum.

Medium access control: SDMA, TDMA, FDMA, CDMA, WCDMA, effects of Multiple Access Interference and ISI.

Mobile telecommunications systems: GSM, GPRS, EDGE, UMTS, HSDPA, future generation (4G)

Key concepts in the dynamic management of resources; call control, switching, wireless access and channel allocation, handoff, roaming, HLR and VLR.

Wireless network issues: MAC, QoS, ad-hoc networks, MANET.

Example systems: Bluetooth, IEEE 802.11, Ultra-wideband (UWB).

Mobile IP, mobile TCP issues. Support for mobility at higher communications layers.

ET4027 - COMPUTER FORENSICS

Rationale And Purpose Of The Module:

This module aims to give the student a firm understanding of the problems associated with computer forensics in relation to data recovery from digital media, whether the data was

accidentally lost or deliberately destroyed. The student will learn to extract information from a computer which might be of relevance at a crime-scene using a variety of forensic techniques, tools and commands.

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

Rationale And Purpose Of The Module:

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

Syllabus:

[Security Fundamentals] Basics of host and network security: threats, vulnerabilities and risk, risk assessment, business continuity and disaster recovery, security policies, defence in depth.
[Firewalls] Packet filters, stateful firewalls, proxy firewalls. DMZ concept, layout and design.
[Auditing and Intrusion Detection] Audit trail features, user profiling, intruder profiling, signature analysis, network IDS, host IDS, distributed IDS, combining firewalls and IDS.
[Wireless Security] Wireless standards and technologies: IEEE 802.11, WEP Bluetooth, BlackBerry, wireless applications. Wireless network threats: wireless packet sniffers, transmission alteration and manipulation, denial-of-service attacks.
[Designing Secure Networks] Host hardening: anti-virus software, host-centric firewalls and IDS. Installing and managing firewalls and IDS. VPN integration. Creating a security policy.
[Assessing Network Security] Assessment techniques, maintaining a security perimeter: system and network monitoring, incident response, accommodating change. Network log analysis, troubleshooting defence components, importance of defence in depth. Design under fire: the hacker approach to attacking networks.

ET4048 - ELECTRONICS FOR BUILT ENVIRONMENT 2

(No description given)

ET4088 - ENERGY MANAGEMENT AND TECHNOLOGY

Design, Installation of control systems. Thermal Energy systems, renewable energy sources. Lighting Systems, Efficiency and power management. Demand side management, automation, synchronisation of electrical energy consumption with lowest tariffs. Real Time Control. Robust control. Multi objective and multivariable control.

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:

SINUSOIDAL SIGNALS: Single phase generation by coil rotating in magnetic field. Trigonometric representation, amplitude, frequency and phase concepts. Voltage and current relationships for resistor, inductor and capacitor. Reactance. Response of R-C, R-L and L-C circuits to sinusoidal signals. Impedance. Phasor diagrams. Power topics;

distinction between power and VA, power factor.

COMPLEX ANALYSIS: Analysis of circuits using complex notation, derivation of amplitude and phase data from complex representation of signals and impedance. Transfer functions, frequency response, corner frequency, Bode diagrams for simple R-C circuits. Power dissipation in complex impedance. Maximum power transfer theorem for complex source and load impedances. TUNED CIRCUITS: Series and parallel R-L-C circuits, resonance, Q, bandwidth, dynamic impedance. Circulating current in parallel tuned circuit. COUPLED CIRCUITS: Inductively coupled coils, induced e.m.f., mutual inductance, coupling coefficient. Reflected impedance for loaded coupled circuit for $k < 1$. Input and output equivalent circuits. Properties of ideal voltage and current transformers. The auto transformer.

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

ET4204 - ANALOGUE ELECTRONICS 4

The aim of this module is to introduce the structure and uses of the operational amplifier for a range of electronic voltage signal conditioning and instrumentation applications.

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

Processes: Concurrency, states, queues, scheduling, real-time scheduling. Process Communication: Mutual exclusion, race conditions, busy-waiting solutions, TSLs, semaphores, monitors, simple message passing, classical problems. Memory Management: Swapping, virtual memory, paging, segmentation, performance and protection issues. File systems to support multitasking: File sharing, file protection, performance issues. The UNIX i-node system, file I/O management. Security & Protection: User

authentication, protection matrix; ACL. Deadlock: Conditions for deadlock and solutions. Input/Output: I/O devices for multi tasking environments.

MA4002 - ENGINEERING MATHEMATICS 2* (SPRING/1)

3 hours per week; 13 weeks/2nd semester; 26L/13T; 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/13T; 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 estimates; maximum likelihood, method of least squares, linear regression.

MA4006 - ENGINEERING MATHEMATICS 5* (SPRING/3)

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

Algebra: linear equations and inequalities, real numbers, function and their graphs; exponential and logs, 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/13T; 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/13T; 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.
8. Time Series Analysis. Trends and Seasonal Variation. Use of moving averages. Prediction.
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/13T; 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/13T; 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

MA4702 - TECHNOLOGICAL MATHS 2* (SPRING/1)

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

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

MB4008 - GROUP THEORY (SPRING/4)

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

Sets and operations; groupoids and semi-groups; groups; Lagrange's theorem; Sylow's theorems; group of isometries; group of similarities; rings; integral domain, fields.

Prerequisite MB4001

MB4018 - DIFFERENTIAL EQUATIONS* (SPRING/4)

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; d-operator techniques; applications; numerical solution techniques.

Prerequisite MA4702

MS4014 - INTRODUCTION TO NUMERICAL ANALYSIS (SPRING/2)

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

Propagation of floating point error. Zeros of non-linear functions; bisection method, Newton's method, secant method, fixed point method, convergence criteria, rate of convergence, effect of multiplicity of zero, introduction to the use of Newton's method for systems of non-linear equations. Systems of linear equations; Gauss elimination, LU and Cholesky factorisation, ill-conditioning, condition number, iterative methods, Jacobi, Gauss-seidel, SOR, convergence criterion. Interpolation and Quadrature; Lagrange interpolation, error formula, Newton-Cotes and Romberg quadrature. Numerical solution of ordinary differential equations; initial and boundary value problems, Runge Kutta and Adams Moulton methods, and application to systems of ordinary differential equations.

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.

MS4022 - CALCULUS 2 (SPRING/1)

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

Mclaurin and Taylor series, order notation bit 'oh', little'oh', asymptotic equivalence, Taylors theorem and remainders, applications indefinite integral, integration of standard functions, techniques including integration by parts, substitution and partial fractions definite integrals the limit of a riemann sum, fundamental theorem of calculus, leibniz's rule for differentiating under the integral sign introduction to ordinary differential equations. Definition of an ODE, linearity, homogeneity, first order variables separable solution technique by integration first order linear equations by integrating factor, basic second order linear homogeneous odes introduction

to functions of two real variables continuity, partial derivatives and their geometrical interpretation, conditions (without proof) for maximum, minimum, saddle-point.

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 Matlab language: Introduce Matlab command syntax - Matlab workspace, arithmetic, number formats, variables, built-in functions. Using vectors in Matlab - colon notation. Arrays- array indexing, array manipulation. Two-dimensional Graphics: basic plots, axes, multiple plots in a single figure, saving and printing figures. Matlab commands in 'batch' mode: script m-files, saving variables to a file, the diary function. Relational and logical operations: testing for equality/inequality, and/or/not. Control flow: for, while, if/else, case, try/catch. Function M-files: parameter passing mechanisms, global and local variables. Applications of Matlab - topics to be taken from:

Numerical Linear Algebra - norms and condition numbers, solution of linear equations, inverse, pseudo-inverse and determinant, LU and Cholesky factorisations, QR factorisation, Singular Value Decomposition, eigenvalue problems. Polynomials and data fitting. Nonlinear

equations and optimisation. Numerical solution of ordinary differential equations.

The R language:

[Language essentials] Objects; functions; vectors; missing values; matrices and arrays; factors; lists; data frames. Indexing, sorting, and implicit loops. Logical operators. Packages and libraries. [Flow control] for, while, if/else, repeat, break. [Probability distributions] Built-in distributions in R; densities, cumulatives, quantiles, random numbers. [Statistical graphics] Graphical devices. High level plots. Low level graphics functions. [Statistical functions] One- and two-sample inference, regression and correlation, tabular data, power, sample size calculations. Applications of R - case studies in statistics: 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:

Introduction to Monte Carlo simulation:

Numerical simulation of paths; ensemble averaging and connections to partial differential equations. Examples from Finance and Physics. Stochastic differential equations and Langevin equations. Fokker-Planck/ Kolmogorov equation and relation to Black-Scholes equation. Numerical methods for SDEs and Langevin equations: Euler-Maryuma method and higher-order schemes. Pricing barrier options and first-passage problems, including multiple stochastic factors.

Trinomial trees and finite difference methods: Pricing on trinomial trees. Analytical methods for partial differential equations. Explicit, implicit, Crank-Nicholson, and ADI implementations for numerical solution of partial differential equations, including options on multiple assets.

Modelling markets with stochastic differential equations: Comparison of modelling methods for stochastic dynamics problems in Finance, Physics, and Engineering. The Ito/Stratonovich dilemma. Non-Gaussian distributions and fat tails in the markets. Long-memory effects. Coloured noise and the Ornstein Uhlenbeck process. Autocorrelation functions and spectra of noise sources. Wiener-Khinchin theorem.

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/2nd 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/3rd 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:

Criteria for Optimality. Conditions for linear equality- and inequality-constrained problems. First-order and second-order Karush-Kuhn-Tucker (KKT) conditions for general non-linearly constrained problems.
Unconstrained Optimisation. Univariate Functions: Line Searches.
Multivariate Functions: Steepest Descent and Newton's Method,
Modifications of Newton's Method including Levenberg-Marquardt Method.
Conjugate Gradient Methods.
Constrained Optimisation. Penalty and Barrier Function Methods.

Computational limitations of penalty function methods - ill-conditioning. Exact Penalty Function Methods.

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/4th 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/4th semester;
26L/13T; ECTS credits:6

Kinematics. Dynamics. Work, Energy, Power, Systems of particles, Rotational Dynamics, Oscillatory Motion and Waves, Mechanical Properties of Matter. Prerequisite Vector Calculus, ODEs

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 I-GARCH, M-GARCH; leverage effect and EGARCH.

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; bootstrapping the yield curve; currency swaps; interest rate derivatives: bond options, caps and floors, caplets and swaptions; Black-Scholes models.

[Credit Derivatives:] Credit default swaps; hedge-based pricing. Collateralised debt obligations. Credit spreads and implied default

[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.

RE4006 - SPATIAL ROBOTICS

This module covers a broad range of the necessary enabling and advanced technologies required for the design, integration and operation of Modern Robots including industrial robotic arms and mobile robots.

RE4017 - MACHINE VISION

This module introduces students to one of the key enabling technologies that is necessary for modern robotics design, machine vision. At the end of this module students will be able to use common techniques for the design, specification and practical implementation of modern vision systems.

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:

The structure and biological function of proteins: Amino acids, peptides and the peptide bond. Polypeptides. Overview of protein function; catalysis, transport, structural, regulatory and defence functions. Case study; structure and function of muscle proteins; myosin, actin and muscle contraction. The structure and biological functions of carbohydrates: Monosaccharides, disaccharides, polysaccharides. Storage and structural functions. The structure and biological functions of lipids: Fatty acids. Storage and structural lipids. Biological membranes. Nucleic acids: DNA and RNA. Genome structure. Transcription and gene regulation. Translation. Basic metabolic principles; metabolic pathways, catabolism versus anabolism. Overview of stage I, II and III catabolic pathways. Summary overview of carbohydrate catabolism; glycolysis and

the TCA cycle. The generation and uses of ATP; oxidative phosphorylation and electron transport. The biochemistry of blood: Blood; composition and major functions.

Haemoglobin and gas transport. Blood and pH regulation.

Introductory immunology: Humoral immunity; antigens and antibodies. Cellular immunity. Cytokine based regulation of immune function.

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:

Overview of the immune system. Development and diversity of the system. Cellular and humoral responses. Passive vs. active immunity, vaccination. Complement system. T cell structure and differentiation. Memory. Antibody structure and function. Polyclonal vs. monoclonal. Bacterial, insect and eukaryotic expression system used for protein production, especially those applied for antibodies production. Crystallisation of proteins. Usage of monoclonal antibodies for membrane proteins crystallisation. Introduction to crystal structure determination.

Interpretation of 3D structure of antibodies. Immuno- and nucleic acids diagnostics (diagnosis for infectious and genetic diseases), for instance PCR and PCR variants, Real-time PCR, RAPDs, RFLPs, DNA profiling and DNA fingerprinting.

BC4608 - BIOPROCESS TECHNOLOGY 2* (SPRING/4)

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

Downstream processing in biotechnology. Cell disruption techniques, Homogenisation, bead milling, lysis. Purification of fermentation broths], filtration and centrifugation. Membrane separations, microfiltration, ultrafiltration, nanofiltration, reverse osmosis. Membrane materials and performance. Equipment conformation and operation. Process scale chromatography. Affinity purification techniques. Case studies in bioprocess technology eg. Biopharmaceutical purification via affinity techniques-the interferons-large scale culture of mammalian cells. *Prerequisite Process Technology 1 & Bioprocess Technology 1*

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:

Practical Aspects of Pharmaceutical Manufacture: International Pharmacopoeia. GMP in the Pharmaceutical Industry. The Pharmaceutical Facility; Clean Rooms, Cleaning Decontamination and Sanitation. Generation of Water for Pharmaceutical/ Biopharmaceutical Processing. Product Flow Through the Facility and Associated Documentation. The ISO series of quality standards. Laboratory accreditation. Validation of methodology and industrial processes in biotechnology. Environment and Industry, the Environmental Protection Agency (EPA) and IPPC Licensing for biotechnology. Industrial enzymes and proteins; range, applications and selected case studies. Stabilizing proteins for industrial use.

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 underlining science and industrial/medical applications. To present an overview of patenting as applied to biotechnology. To provide the scope for a

measure of student self-directed learning and problem-based learning.

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 trp 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 approaches to future diagnoses, pharmaceuticals and biopharmaceuticals. To show how an in-depth understanding of molecular biochemistry can aid this.

Syllabus:

Review of cell structure, organisation and the concept of signalling and trafficking. Signal transduction and cell communication. Cell signalling pathways. Receptor biochemistry in cell signalling- Oncogenes and the molecular

basis of cancer and its relationship to cell signalling. Apoptosis and programmed cell death.

The eukaryotic chromosome- structure and the nature of eukaryotic DNA. Repetitive DNA. Control of transcription in eukaryotes. The transcription machinery and role of eukaryotic transcription factors. Splicing in eukaryotes. Microarrays to examine gene expression. Posttranslation modification of proteins.

Protein folding, protein targeting via glycosylation, protein transport and destruction. Pharmacological interventions in cell signalling. RNA interference.

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 be discussed as well as special needs during pregnancy, lactation and aging. The impact of nutrition and food on the promotion of health and the prevention of disease will be fully explored. Topics covered include: energy requirements, carbohydrates, protein, lipids, absorption, digestion and metabolism of nutrients, vitamins, minerals, water, dietary standards, heart disease, cancer, obesity, maternal nutrition/lactation, infant/childhood/teenage nutrition

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 the 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 and 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 Arrhenius 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

Second and third laws of thermodynamics, entropy changes, free energy terms. Fundamental equations of thermodynamics. Activity and fugacity. Simple mixtures, Gibbs-Duhem equation. Solubility, Real Solutions, Activity Coefficients, Electrolytic Solutions. Ionic solvation, ion transport in solution, conductivity. Dynamic equilibrium, electrochemical cells(1)Galvanic (2) Electrolytic. Thermodynamics of cell reactions, Nernst equation, free energy changes in cells, electrochemicseries.
Prerequisite CH4003

CH4008 - ORGANIC PHARMACEUTICAL CHEMISTRY 2
3 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 students' comprehension and working knowledge of functional group chemistry; to expand the

range of reagents, reactions and associated mechanisms; to detail how structure and reactivity can be quantitatively correlated; to detail quantitative aspects of acid and base catalysis.

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 Faraday's laws; batteries and fuel cells.

Kinetics: Rate equation, rate laws and orders of reaction; factors affecting rates of reaction; activation energy and reaction profile; Arrhenius equation; catalysts.

Structure and bonding: Types of chemical bonding, classification of solids and properties. Bonding in relation to the Periodic table.

- molecular compounds: Lewis structures, VSEPR and molecular shape, polarity; nature of the covalent bond, types of covalent bond - sigma and pi, single, double and triple.
- ionic compounds: nature of the ionic bond; unit cells; lattice energy; factors affecting the

strength of ionic bonds.

Solubility: Factors affecting the solubility of molecular and ionic compounds - energetics, kinetics and structure.

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 microscale to the nanoscale. Quantum confinement, surface energy, thermodynamics and capillarity in nanocrystals.

Chemical synthesis and modification including 0D, 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

Alkanes; cycloalkanes: structural formulae, nomenclature, isomerism, conformational analysis, free radical reactions. Alkenes; alkynes; nomenclature, geometric isomerism, electrophilic additions reactions, carbonium ions and Markovnikov's rule.

Haloalkanes: nomenclature, substitution and elimination reactions-Sn1, Sn2, E1, E2. Alcohols; ethers; epoxides: methods of preparation and typical reactions. Aldehydes; ketones: methods of preparation, typical carbonyl group reactions-nucleophilic addition, keto-enol tautomerism, reactions at the α position, enolate anions, Aldol condensation, Grignard and Wittig reactions, use of simple protecting groups eg. Acetals. Synthetic methodology- elementary retrosynthetic analysis.

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 Strecker 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

Alkanes cycloalkanes: structural formulae, nomenclature, isomerism, conformational analysis, free radical reactions. Alkenes alkynes: nomenclature, geometric isomerism, electrophilic additions reactions-Sn1, Sn2, E1, E2. Alcohols; ethers; epoxides: methods of preparation and typical reactions. Aldehydes; ketones: Structure, nomenclature, methods of preparation. Nucleophilic addition reactions (addition of derivatives of NH₃, Grignard reagents). Hydride reduction reactions, oxidation. Wittig reaction. Keto-enol tautomerisation, reactions at the α position. Aldol condensation. Synthetic methodology-elementary retrosynthetic analysis.

Prerequisite CH4701

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 radii, 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/13T/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 CH4003, 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 in-depth 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

Health and safety at work: types of factory environment and their physiological and psychological risks. Current legislation in the area of employer and employee liability. Codes of practice. The role of management and unions in safety. Introduction to process control: basic control modes eg. P, PI, PID; control system architecture and dynamic behaviour for SISO processes; controller tuning; control system hierarchies for chemical/biochemical processing plants. Equipment and instrumentation used in chemical and biochemical processing operations: sensing and measurement: signal transmission; controllers; final control elements. Process modelling; application of material and energy balances in the formulation of quantitative process models; process characteristics and dynamic response behaviour of first and second order systems.

CH4554 - ENVIRONMENTAL CHEMISTRY* (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 aqueous systems, distribution diagrams; water pollution. The lithosphere: composition and structure; weathering; leaching and soil chemistry ;mineral resources and pollution; geochemistry; solubility, pH; E-pH diagrams. The atmosphere: composition, chemical processes in the atmosphere, solubility in water; chemistry of acid deposition, greenhouse effect, ozone depletion, photochemical smog. The biosphere: composition, major and minor elements; sources, utilisation and disposal; toxicology of heavy metals and organics, bioaccumulation. Biochemical cycles for *Prerequisite CH4701*

CH4608 - PLANT PROCESS MANAGEMENT (SPRING/3)

Principles of accident prevention; legal, humanitarian and economic reasons for action. Management Responsibilities Accident causation modes. Definitions of hazard and risk. Risk identification ,evaluation and control. Accident investigation, job safety analysis. Safe system of work, emergency procedures Occupational Health. dermatitis, Respiratory diseases, solvents, chemicals, gases. Noise and vibration, Heat and Cold; radiation. Human error Occupational hygiene Recognition ;evaluation; control. Accident case studies. Costing of chemical plant; stages of costing, methods of cost prediction, exponential, factorial etc. Cost updating. Economic evaluation of chemical projects; pay-back, ROI,NPV DCFROR etc. Alternative projects. Sensitivity analysis.

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

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:

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

**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 students to make informed decisions about the necessity for veterinary intervention. To acquaint students with disease conditions

of toxicological origin and with the causes, management and prevention of infectious diseases. Topics covered include parasitic, bacterial and viral diseases of the horse.

Diseases of metabolic and degenerative origin are also discussed, including degenerative orthopaedic diseases and osteoarthritis. Disease conditions of the airways and their impact on athletic performance of the horse are discussed from the perspectives of contributing environmental factors and prevention.

EV4017 EQUINE PHARMACOLOGY

Rationale And Purpose Of The Module:

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

Syllabus:

To acquaint students with the classes of drugs which are of relevance to equine medicine and to provide an insight to the factors that determine species differences in drug response. Classification of drugs and sources of information on drugs. Drug dosage forms and routes of administration. Processes of drug absorption, distribution, metabolism and excretion. Basic principles of pharmacokinetics. Pharmacological effects, mechanism of action and fate of therapeutic agents that affect various systems of the body (equine), with particular emphasis on drugs affecting the musculo-skeletal and respiratory

systems; Antimicrobial drugs; Non-steroidal anti-inflammatory drugs; Anthelmintic medication; Applied toxicology; Drug assay methodology; Drug licensing, registration and legislation. Performance enhancing drugs, mechanism of action and current legislation; Doping, current doping problems in the equine industry; international trends; diagnostic assays and their sensitivities.

EV4024 EQUINE REPRODUCTION

(No description given)

**EV4032 THE HORSE INDUSTRY
(SPRING/1)**

(No description given)

FT4204 FOOD CHEMISTRY (SPRING/2)

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

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

**FT4408 PROJECT 2 FOOD
TECHNOLOGY**

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.

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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, yershinia, bacillus cereus, salmonella.

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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.

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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

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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:

[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 [Non-ionising radiation] including light; ultraviolet, infra-red, visible light, illuminance, definitions, accommodation, adaptation, visual acuity, colour, sensitivity, radiofrequency spectrum, microwaves, lasers, assessment and 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.

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HS4108 - HEALTH AND SAFETY SYSTEMS 2 (SPRING/4)

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

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

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

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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, hydrotreating 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.

Syllabus:

Introduction to regulatory bodies in the EU and US: CE, FDA etc.; 21 CFR, 510k, Medical Device Directive, Investigational Device Exemptions; Electrical isolation standards, implementation options; Laser Safety - EN 60825. Measurements in biological systems: obtaining a reference, ratiometric analysis, clinical requirements, Physiological monitoring; Invasive/non-invasive, Probes - Electrical, fibre optic, non-contact. Vital signs monitoring: ECG- Electro cardio gram, electrical function of the heart; EEG- Electro encephalo gram, electrical function of the brain; EMG- Electro myelo gram, electrical function of the muscle; Pulse Oximetry, optical measurement of arterial blood oxygen saturation; MAP- mean arterial pressure. Introduction to radiation transport in tissue: absorption/scattering theory (Mie, Rayleigh Gans), bulk scattering and bulk absorption, anisotropy, typical values for radiation transport properties, Monte Carlo

modelling.X-RAY/CT: X-RAY generation and propagation, Introduction to tomography, Computed Tomography - Slicing the living human body.

Ultrasound: Doppler effect, high frequency ultrasound, limitations.

MRI/MRS: Magnetic Resonance basics, the hydrogen nucleus, proton spin and quantum mechanics; 3D map of hydrogen atoms and hence content of the sample volume, Properties and amount of water in tissue, distinction between contrast and content imaging.

PH4022 - PHYSICS FOR ENVIRONMENTAL AND BIOSCIENCES

Rationale And Purpose Of The Module:

To provide an understanding of the basic principles of mechanics, heat, fluids, waves, optics, sound, the atom and nucleus, and how these are relevant to our daily life.

Syllabus:

Measurement and units: The SI system, basic and derived.

Mechanics: Displacement, velocity, acceleration, Newton's laws of motion, force, mass momentum, work, energy, power.

Heat: Temperature, calorimetry, specific heat capacity, latent heat, heat transfer, thermal conductivity, u- value. Properties of Fluids: density, pressure due to a liquid and gas, Boyle's law, Charles Law, fluid flow and viscosity, Pascal's Principle, liquid flow in pipes. Optics: Geometrical optics, properties

of optics, reflection, laws of reflection, refraction, laws of refraction, mirrors, lenses, total internal reflection, critical angle, optical instruments. Waves: Properties of waves, wave nature of light, Huygen's principle, double-slit experiment, diffraction, interference, diffraction gratings, Young's polarization of light, the electromagnetic spectrum, ultraviolet, visible light, x-rays, infrared radiation.

Sound: Nature of sound, The speed sound, speed of sound in different media, the temperature dependence of the speed of sound in air frequency spectrum, audible region, ultrasonic region, infrasonic region, sound intensity level, the decibel scale, sound phenomena. The atoms and Nucleus: Sub-atomic particles, nuclear radiation, radioactivity measurement of radiation, radiation and health.

PH4032 - PHYSICS FOR GENERAL SCIENCE 2

Rationale And Purpose Of The Module:

To introduce the student to general wave motion, optics and acoustics. To introduce the student to the mechanical and thermal properties of matter.

Syllabus:

Review of the basic concepts of force and energy. Oscillations and simple harmonic motion: transverse and longitudinal waves, superposition, speed, reflection, harmonic waves, sound waves, sound intensity, Doppler

effect. Light: EM spectrum, sources of light, Geometrical optics, reflection, refraction, dispersion, achromatic optics. Physical optics: interference, diffraction, diffraction gratings, polarisation. Optical systems: the microscope, the telescope, the eye. Elasticity: Hooke's law. Fluids. Heat: temperature, laws of thermodynamics, heat capacities. Heat transfer: conduction, convection and radiation. Kinetic theory, the ideal gas. Heat engines.

PH4038 - ENERGY STORAGE

Syllabus:

Fundamentals of advanced energy conversion and storage. Electrochemical energy storage. Review of electrochemical cells. Electronic and ionic conductivity. Overpotential and ohmic losses. Types of cells. Batteries, fuel cells and supercapacitors. Primary, secondary and redox flow batteries. Lead-acid, nickel-cadmium, nickel-metal-hydride and lithium ion batteries. Vanadium redox flow batteries. Solid oxide, molten carbonate and proton exchange membrane (PEM) fuel cells. Water electrolysis. Hydrogen storage. Gravimetric and volumetric energy density and power density. Energy efficiency and coulombic efficiency. Grid and local energy storage. Batteries for electric vehicles. Environmental and safety considerations. Flywheel energy storage. Principles. Components: rotor, magnetic bearings. Parasitic losses: Friction, hysteresis and eddy currents. Energy efficiency and energy density.

Hydroelectric energy storage. Principles. Fundamentals of hydroelectricity. Reversible hydroelectric turbines. Reservoirs and storage capacity. Comparison of storage by conventional hydroelectric plants, tidal hydroelectric plants and pumped storage. Response times. Compressed air energy storage. Adiabatic, diabatic and isothermal systems. Heat exchangers. Energy density and efficiency. Mobile, underground and underwater storage.

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; mechanical, magnetic & electrolytic systems. [Change of phase]: chemical potential; Clausius-Clapeyron equation; nucleation; Gibbs phase rule. [Microstates and macrostates]: statistical weight of a macrostate; Boltzmann definition of entropy; entropy and disorder. [Equilibrium of an isolated system]: magnetic dipole lattice; Schottky defects. [Equilibrium of a system in a heat bath]: the partition function and the Boltzmann distribution; equivalence of thermodynamic and statistical quantities; the classical gas; heat capacities of solids; perfect quantal gas; Planck's law; thermodynamics of black body radiation. [Equilibrium of a system with variable particle number]: Gibbs distribution; Fermi-Dirac and Bose-Einstein distributions; Bose-Einstein condensation; Fermi energy; density of states; electrons in metals.

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

Syllabus:

Nanotribology and Materials Characterization

Studies Using Scanning Probe Microscopy: Description of AFM/FFM, Friction and Adhesion, Scratching, Indentation and wear, Phase, electrostatic and related scanning probe microscopies. Surface Forces: Types of Surface Forces; Methods Used to Study Surface Forces; Adhesion and Capillary Forces; Different Modes of Friction and the Limits of Continuum Models. Friction and Wear on the Atomic Scale: Friction Force Microscopy in Ultra-High Vacuum, The Tomlinson Model, Friction Experiments on Atomic Scale, Thermal Effects on Atomic Friction, Geometry Effects in Nanocontacts. Nanomechanical Properties of Solid Surfaces and Thin Films: Modes of Deformation, Thin Films and Multilayers. Mechanics of Biological Nanotechnology: Scales at the Bio-Nano Interface, Viruses as a Case Study. Optical Properties of Nanostructures: Collective oscillation (Gustav-Mie explanation), surface plasmon polaritons, subwavelength optics, nonlinear optical properties, Electron Transport in Nanostructures: Electronic transport in nanostructures, density of states in nanocrystals. Electronic Nanodevices: Quantization of resistance, single-electron transistors, resonant tunnelling diodes, organic molecular electronics. Magnetic Nanodevices: Spintronics. Photonic Nanostructures: Photonic crystals, metamaterials, disordered photonic media.

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 matters 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' 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.

PH4092 - SEMICONDUCTOR DEVICES*Rationale And Purpose Of The Module:*

- To introduce the student to the physics of solid state electronic devices and to their application
- To introduce the student to semiconductor devices, electronic logic and digital devices

Syllabus:

Conduction in solids: elementary band theory of conductors, semiconductors and insulators, doping; donor and acceptor impurities, intrinsic and extrinsic conduction, majority and minority charge carriers. The PN junction: junction diode and applications, Zener diode, the bipolar transistor; transistor action, applications, the emitter amplifier, early effect; the field effect transistor, JFET, MOSFET, characteristics and application in simple circuits. Combinational Logic: Binary Logic, Logic functions; AND, OR, NOT; Truth table; Boolean Algebra; Boole Boolean postulates and theorems, De Morgan; Logic gates - complete set; NAND and NOR implementations of logic functions; Multiple-input gates. Sequential Logic: Memory,

feedback, synchronous/asynchronous, Flip-flops, Latches; basic SR latch, gated SR Latch, D-type, Master-slave latch, JK Latch; Shift Registers, Counters, UART (block diagram). Operational and Instrumentation amplifiers: desirable characteristics, comparators, voltage reference, virtual earth, voltage follower, Nyquist-Shannon sampling theorem.

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, alpha, 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:

CMOS process flow: CMOS fabrication steps, active region formation, shallow trench isolation, n and p well formation. Gate formation: threshold voltage, control of V_{th} in n and p channel MOS devices, tip or LDD formation (hot electrons), side wall spacer. Source and drain formation: contact and interconnect formation, multilevel metal formation for ULSI, RC time delay. Surface contaminants: particles, metallic contaminants, organic contaminants, native/chemical oxide, moisture. Cleaning processes: surface characteristics, wet cleaning, dry cleaning, supercritical fluid cleaning, lamp cleaning-surface refreshing. Cleaning /Etching Chemistries]: contamination reduction, gettering (intrinsic and extrinsic). Chemical Mechanical Polishing (CMP): SiO₂ inter-level dielectric layers

planarisation, tungsten plug formation and shallow trench isolation. Dual Damascene: trench first approach, via first approach, optical proximity correction. High and low K dielectrics: silicon on insulator, ultra thin oxides, gate dielectrics, degradation mechanisms, nitroxides, fluorinated oxides, shallow junction formation, transient enhanced diffusion. Electrostatic discharge (ESD): basics of ESD, principles of ESD control. Semiconductor Metrology: CD and overlay measurements, electrical and optical measurements. Assembly: frontend assembly, backend assembly. Semiconductor failure analysis: implant metrology, interconnect process metrology, ellipsometry, reflectometry, sheet resistance measurements.

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:

Magnetism: paramagnetism, diamagnetism, exchange interaction and ferromagnetism, Weiss model of ferromagnetism, Neel model of antiferromagnetism, domains and Bloch walls, giant magnetoresistance. Insulators: dielectrics and susceptibility, pyroelectrics, ferroelectrics and piezoelectrics. Quantum transport: ballistic transport, tunnelling and Coulomb

blockade. Low dimensional systems: two dimensional electron/phonon gas, density of states, quantum Hall effect. Superconductivity: Type-1 and Type-2 superconductors, magnetic properties, thermodynamics of superconducting transition, London equations, energy gap and Cooper pairs, tunnel junctions and Josephson effect.

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:

Pharmacology: Definitions; drugs, pharmacology, pharmacokinetics, therapeutics, pharmacodynamics. Drug dosage forms and routes of administration. Sources of drugs; Classifications and pharmacological effects (including adverse reactions) of commonly prescribed drugs, psychopharmacology. Factors modifying drug response. Bioavailability, disposition, antimicrobial susceptibility, and dosage of antimicrobial drugs. Concept of bioequivalence. Controlled - release dosage forms. Therapeutic drug monitoring. Misuse of Drugs Act 1977/1984
Clinical Skills: Policy and guidelines, (ABA and local) and application to practice
Medication safety procedures
Drug calculations
Administration routes and techniques
Preparation and care of the patient/client receiving intravenous therapy
Care and management of women with epidural/ spinal anaesthesia

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 intranatal 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, pre-conception 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 e.g. management of cardiovascular and respiratory disorders, neonatal jaundice, metabolic transient disorders, endocrine disorders and congenital anomalies, midwives 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 modules aims to develop knowledge attitude 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:

Communication: theories, models, processes, styles. Communication skills: verbal, non-verbal. Group Communication. Therapeutic and Professional relationships in nursing Self-awareness and assertiveness. Bridges and Barriers in the therapeutic relationship Communicating with persons with disability/ impairments. Trans-cultural 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: e.g. diabetes, thyrotoxicosis and hypothermia.

Nursing assessment and management of reproductive disorders: e.g. benign/malignant breast disorders, dysfunctional uterine bleeding, cervical carcinoma; menopause, sexual health problems: e.g. infertility, endometriosis, and sexually transmitted infections.

Nurse's 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's 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's 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 facilitate student's

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's role in the collaborative process of care with individuals and the family/carer.

Nurse's 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 MUSCULA-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's 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

NS4322 NURSING THE CHILD WITH INTELLECTUAL DISABILITY

Rationale And Purpose Of The Module:

This module discusses the nature and manifestations of conditions associated with intellectual disability. The module aims to introduce students to the bi psycho social and educational developmental needs and interventions required to support children with an intellectual disability.

Syllabus:

Peri-and post natal development; screening tests at birth and premature reflexes. Intellectual disabilities: incidence, causation, manifestations nursing care and management of a child presenting with an intellectual disability e.g. Down syndrome, cerebral palsy, autism, genetic conditions, hydrocephalus. Complex and continuing health care needs e.g. epilepsy, contractures and restriction in movement. Communication and language needs of the child. Play and music as a developmental process and therapeutic activity. The function and role of movement and physical fitness in the acquisition of social skill and self-help development. Education and integration into mainstream facilities. Concept of child

protection; recognition and consequence of child abuse, procedures and guidelines for reporting abuse.

Clinical Skills Syllabus:

Assess levels of consciousness.
Use and care of nebulisers, peak flow measurement, inhalers/chambers, oxygen therapy, and suctioning technique.
Assist babies/children at mealtimes and bathing.
Principles in performing active and passive limb exercises
Basic instrumental/music skills

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

NS4422 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. schizophrenia, aetiology, types, classifications, epidemiology, and socio-cultural 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 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 health care 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 health care 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 health care 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 health care 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 body organs and clinical disciplines:

- 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 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

BM4002 - 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

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 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 students will apply their existing knowledge of health & disease to the solution of clinical problems. Though the emphasis in this module is on the clinical sciences, there will also be a continuing exposure to and integration with the basic sciences.

Syllabus:

The Core Curriculum in Medicine is 'outcome focused', being centred on 100 clinical conditions relevant to medicine that all

students must be able to manage by the time of their graduation (see Appendix C). 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 specialities, students will encounter many of the 100 medical conditions elsewhere in their clinical training. Revisiting curricular material during their placement in Medicine and Related Specialities allows for 'vertical integration' with students being able to elaborate on their earlier learning.

The clinical placement in Medicine & related Specialities 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-speciality Medicine. During this 9 week period students will rotate through a block of subspeciality:

General medicine ('core' educational opportunities)

Respiratory

Cardiology

Geriatrics

Renal

Endocrine

Neurology

Rheumatology

Dermatology

Infectious disease

Subspeciality 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 speciality with 'end of life' & cancer focus, b) Speciality with significant general component and c) a highly specialised area.

Sub-speciality 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 distinction; for example, between acts and omissions and ordinary and extraordinary means; the Double-Effect Criterion; Selected Issues in nursing practice; for 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.