



UNIVERSITY *of* LIMERICK

OLLSCOIL LUIMNIGH

40 *years of Innovation*
1972 - 2012

GUIDE TO MODULE SELECTION BOOKLET STUDY ABROAD STUDENTS

Academic Year
2013/2014
Autumn Semester

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 for modules from different faculties and departments. Acceptance on these modules is subject to academic prerequisites, timetabling constraints and ceilings on enrolments.

MODULE CODES:

The letters in a module code refers to the subject area e.g.

EC4101 = Economics and **LA**4101 = Law

The first number (4) stands for an undergraduate module (5) stands for postgraduate.

The second number (1) stands for the year (1st Year)

The final number (1) indicates the semester in which the module would normally run (1st semester). Modules ending in digits 1-2 would run in the 1st year of a course, modules ending in digits 3-4 would run in the 2nd year of a course, modules ending in digits 5-6 would run in the 3rd year of a course and modules ending in digits 7-8 would run in the 4th year of a course. These codes should be used as a guide to the level of each course.

MODULE TITLES:

The codes used in the details under the module title represents the number of corresponding lectures (L), Tutorials (T) and laboratory hours (in this order).

L = Number of Lectures per semester.

T = Number of laboratory/seminars/language classes per semester.

LAB = Number of laboratory based classes per semester.

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

Normal course load is 5 modules per semester. Each module is awarded 6 ECTS credits and the normal work load per semester is 30 ECTS credits.

DEPARTMENT OFFICES

ADMINISTRATION:

ROOM NUMBER	DEPARTMENT OFFICE
E001	Admissions
D0035	Accommodation Office
E0007	Co-operative Education
E0030	International Education Division
GLG020	Information Technology
D0033	Plassey Campus Centre
E1006	Print Room
CM060	Student Health Centre
E001	Student Academic Administration
GL0014	Disability Officer Administration
SU-101	Alumni Office

EDUCATION & HEALTH SCIENCES:

ROOM NUMBER	DEPARTMENT OFFICE
PI-024	Physical Education & Sport Sciences
CS2-031	Psychology
EI-025	Graduate Entry Medical School
DM-043	Education & Professional Studies
HS3-041	Nursing & Midwifery
HS3-041	Clinical Therapies

ARTS, HUMANITIES & SOCIAL SCIENCES:

ROOM NUMBER	DEPARTMENT OFFICE
CI-076	History
IWI-10	Irish World Academy of Music & Dance
MCI-002	Languages, Literature, Culture & Communication
FI-013	Law
FI-017	Politics & Public Administration
FI-004	Sociology

SCIENCE & ENGINEERING:

ROOM NUMBER	DEPARTMENT OFFICE
ER3-024	Architecture
BS-046	Chemical & Environmental Science
BS-027	Civil Engineering & Materials Science
CSI-004	Computer Science & Information Systems
SR-3025	Design & Manufacturing Technology
E2-014	Electronic & Computer Engineering
SR-2038	Life Sciences
D2-034	Mathematics & Statistics
LI-034	Mechanical, Aeronautical and Biomedical Engineering
CO-064	Physics & Energy

KEMMY BUSINESS SCHOOL:

ROOM NUMBER	DEPARTMENT OFFICE
KB3-22	Accounting & Finance
KB3-22A	Economics
KB3-018	Management & Marketing
KB3-035	Personnel & Employment Relations

**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.**



UNIVERSITY of LIMERICK

OLLSCOIL LUIMNIGH

Kemmy Business School

40 1972 - 2012 years of Innovation

AUTUMN 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.

DEPARTMENT/FACULTY INFORMATION

The Kemmy Business School comprises four departments that jointly run the Bachelor of Business Studies Degree. The departments are: Accounting and Finance, Economics, Management and Marketing, Personnel and Employment Relations.

The courses of the Kemmy Business School are designed to provide a challenging third level educational experience, offering considerable opportunities for personal development. A priority of the School is that its teaching programmes are relevant and applied to the economic and social development of Ireland in a highly competitive international global context. Through the adoption of varied teaching methodologies, students become professionally competent in their chosen areas of study. The KBS commitment to quality enhancement of the BBS programmes is reflected in continuous updating of course materials, an increasing use of e-learning and other new methods of delivery and close industry links which provide for a shorter lead-time from business change to classroom response. Through the emphasis on experiential learning and project work students develop a number of key lifelong skills such as teamwork, decision-making skills, time management, conflict management presentation and communication skills.

UNDERGRADUATE DEGREE PROGRAMMES OFFERED

LM050 - Business Studies
 LM052 - Business Studies with French
 LM053 - Business Studies with German
 LM055 - Business Studies with Japanese
 LM037 - Economics and Mathematical Sciences
 LM036 - Economics & Sociology
 LM058 - Financial Mathematics
 LM056 - International Business
 LM043 - International Insurance & European Studies
 LM020 - Law & Accounting
 LM063 - Technology Management

DEPARTMENTS/ FACULTY

Accounting & Finance (A&F)
 Economics (ECON)
 Management & Marketing (M&M)
 Personnel & Employment Relations (P&M)

AC4001 - PRINCIPLES OF ACCOUNTING (AUTUMN/1)

*3 hours per week; 13 weeks/1st semester;
 26L/13T; ECTS credits:6*

A&F

This module introduces the student to the fundamental concepts and practices of financial accounting. Accounting is presented as a manifestation of various social and political pressures, which required that techniques be developed to account for trading and wealth. The topics covered include accounting in its political, regulatory, historical, social, economic, corporate governance and international contexts; introduction to the theoretical, conceptual and regulatory frameworks of accounting; traditional accounting model; capital, income and profit and measurement; principles of double entry bookkeeping; books of prime entry, ledgers, trial balance, internal controls, use of computers in recording and control of data, construction of final accounts for sole traders, partnerships and limited companies; accruals, prepayments and adjustments; depreciation and stocks; distribution of profits; profit and loss accounts and balance sheets, cashflow statements; nature, purpose, scope and framework of auditing.

AC4007 - ADVANCED FINANCIAL REPORTING (AUTUMN/4)

*3 hours per week; 13 weeks/1st semester;
 26L/13T; ECTS credits:6*

A&F

This module considers accounting principles and policies that apply to certain international accounting standards, from the perspective of external users of financial information (including equity holders). The pedagogic approach adopted here is the joint application of a theoretical and practical exploration of these specific international accounting standards. These advanced financial accounting issues include lease agreements, the cost of retirement benefits, earnings per share, group financial statements, accounting for provisions, contingent liabilities and assets, and the treatment of events after the reporting date. The complex accounting treatment of financial instruments is also examined, along with its continuous revisions. The accounting treatment of deferred tax is analysed to demonstrate how accounting rules differ from tax rules when calculating profit for tax purposes. These international accounting standards and issues are studied in light of their historical development and students are encouraged to critically examine current accounting regulations. *Prerequisite AC4014*

AC4213 - FINANCIAL ACCOUNTING (NON-BUSINESS) (AUTUMN/2)

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

A&F

This module introduces the non-specialist student to the fundamental concepts and practices of financial accounting. Accounting is presented as a manifestation of various social and political pressures, which required that techniques be developed to account for trading and wealth. The topics covered include accounting and auditing in their political, regulatory, historical, social, economic and international contexts; introduction to the theoretical, conceptual and regulatory frameworks of accounting; corporate governance; traditional accounting model; nature, purpose, scope and framework of auditing; the impact of information technology on accounting systems; capital, income and profit measurement; accruals, prepayments and adjustments; depreciation and stocks; distribution of profits; profit and loss accounts and balance sheets, cash flow statements; reconciliation of operating cash flows to operating profits; financial statements analysis, financial ratios and performance analysis. This module is designed to be a prerequisite for the module AC4204 Management Accounting and Finance, offered in the spring semester.

AC4305 - FINANCIAL INFORMATION ANALYSIS (AUTUMN/3)

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

A&F

User needs, corporate report, decision-usefulness approach; accounting information and capital markets, efficient markets hypothesis; accounting information and security prices; financial market information; presentation of accounting information; companies acts, EU directives; analysis of financial statements; recognition and measurement issues; substance over form; performance indicators; ratio analysis; uses and limitations, of-balance sheet financing, creative accounting; corporate social reporting; forecasts and budgets. *Prerequisite AC4204*

AC4417 - MANAGEMENT ACCOUNTING 1 (AUTUMN/4)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

A&F

Objectives, scope and framework of management accounting; management accounting and organisation control; cost accumulation for stock valuation and profit measurement; product costing systems; application of cost-volume-profit techniques; marginal costing and non-routine decision making; accounting information for pricing decisions. *Prerequisite AC4204*

CM4203 - COMMUNICATIONS (AUTUMN/2)

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6*

M&M

Communications in its social, economic and cultural context: information society; role of new technologies; media; postmodernism; argument analysis, reasoning, structuring and defending arguments; persuasion: psychology of persuasion and motivation; advertising as persuasion, including codes of visual communication; persuasion and the spoken word; style: effective writing strategies for various contexts (academic, journalistic, informative, persuasive etc.); presentation.

EC4003 - INTERMEDIATE MICROECONOMICS (AUTUMN/2)

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

ECON

This module builds on the introductory microeconomics module. It extends the analysis of producer and cost theory. It also extends the analysis of market structures (focusing on imperfect market structures) and introduces the issue of pricing and allocation of the factors of production. The latter part of the module looks at the economics of information and how choices are made under conditions of uncertainty. Finally, the student is introduced to the notion of general equilibrium and welfare. Using this

framework, market failure and the rationale for government intervention (government sector) are examined. Theory of production and costs. Models of imperfect competition and game theory. Factor markets. The economics of information and choice under uncertainty. General equilibrium and welfare.

EC4027 - THE EUROPEAN ECONOMY (AUTUMN/4) TAUGHT WITH EC4333

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

ECON

This module examines the economic, political and social aspects of the European Union, from the perspective of the Union as a whole, and from an Irish perspective. An understanding of the economic motives driving European integration and the effects of greater fusion of European national economies requires knowledge of markets in their microeconomic and macroeconomic aspects. This module is policy- rather than theory-based. The limitations of markets and the institutional initiatives and policies taken by the EU to modify market processes, in order to ensure spatial and social cohesion, are among other themes addressed in this course.

EC4035 - ECONOMICS OF INTEGRATION (AUTUMN/2)

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

ECON

The European Union in the World. Theory of Economic Integration; Stages of Economic Integration in Europe. Monetary Integration. The EC/EU Budget. The Common Agricultural and Fisheries Policy. The Common Commercial Policy. Regional and Social Cohesion. Industrial and technological Policy. External economic relations of the EU; EU Integration in a Comparative Perspective. *Prerequisite: EC4101 and EC4102.*

EC4045 - ECONOMICS OF NATURAL RESOURCES (AUTUMN/2)

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

ECON

Nature, scope and key concepts of natural resource economics; market efficiency and sustainability; Optimal level of pollution; Public policy instruments (Tax, subsidy, emissions, trading, command and control); Economics of renewable resources (forestry and fishing); Economics of non-renewable resources (coal, oil and gas; uranium); Economics of bio-diversity wild life preservation; Natural resources and economic growth.

EC4101 - MICROECONOMICS (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

ECON

Scope and method economics; the theory of consumer choice; individual and market demand; theory of production; the costs of production; profit maximisation and the competitive firm; monopoly (including multivalent and price discrimination models).

EC4111 - MICROECONOMICS (NON BUSINESS) (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

ECON

Introduction: scope and method of economics; the theory of consumer choice; individual and market demand; theory of production; the costs of production; profit maximisation and the competitive firm; monopoly (including multivalent and price discrimination models)

EC4307 - ECONOMETRICS (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

ECON

Introduction; regression analysis, estimation, method of ordinary least squares, measuring 'goodness of fit'. The Classical Linear

Regression Model, Properties of OLS estimators; Gauss-Markov theorem. Interval estimation and hypothesis testing. Multiple regression analysis. Heteroscedasticity; autocorrelation; multicollinearity. Dynamic econometric models; autoregressive and distributed-lag models. Simultaneous-equation models. Time series econometrics.

EC4333 - ECONOMICS OF EUROPEAN INTEGRATION (AUTUMN/2)TAUGHT WITH EC4027

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

ECON

Introduction: member states' major economic indicators; theory of economic integration (new international trade theories), and stages of economic integration; monetary integration - the road to economic and monetary union; the EU budget; the common agricultural policy; regional and social cohesion (polarisation trends; convergence; employment issues; impact of structural funds); industrial and technological policy; external economic relations of the EU; Lome Convention and EU-Asia relations; conclusion; current issues in European economic integration; diversity, flexibility and coherence of economic policies.

EC4407 - IRELAND IN THE WORLD ECONOMY (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 39L; ECTS credits:6

ECON

International demographic trends; labour force analysis - employment and unemployment trends; industrial change and industrial policy; Irish fiscal policy in an international context; Ireland and the European community - performance and prospects; sectoral developments in the international economy - effects for Irish employment and output; discussion on international economics; trade theories.

EC4417 - INDUSTRIAL ECONOMICS (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

ECON

Scope and method of industrial economics; a new version of the firm; the structure - conduct - performance paradigm and its limits, (structuralisms - contestable markets - game theory); market structures in the European community, (concentration, entry barriers...); firms restructuring in the EC, (integration, diversification, merger, take over); technological and product innovation; performance of firms; aspects of industrial policy, (merger control, abuse of dominant positions in the EC...); inter-actions between corporate integration and regional integration;

case studies, (machine-tools, textile, pharmaceuticals).

EC4427 - MANAGERIAL ECONOMICS 1 (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

ECON

Constrained and unconstrained optimisation techniques; demand analysis, demand estimation (including introduction to econometrics); demand forecasting, decision-making under uncertainty, pricing models to account for production relationships, capacity relationships, demand relationships; transfer pricing, mark-up pricing; decision making in the public sector introducing the rationale and means of government intervention in the case of market failures, cost-benefit analysis; capital budgeting and investment decisions.

EP4013 - ENTERPRISE, CREATIVITY AND INNOVATION (AUTUMN/2)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

ECON

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 intrapreneurial characteristics and the creation of an entrepreneurial spirit within a corporate environment. This leads to the application of creative thinking to identify venture opportunities, business planning, market entry strategies, marketing new inventions and technology transfer.

EP4315 - ENTERPRISE FORMATION (AUTUMN/3)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

M&M

Mode of Instruction is lecture and tutorials workshops. Knowledge is structured in two main sections, theory and application of theory to real life economic conditions. Initially the concepts and factors affecting the entrepreneurial process are imparted to students, following which students work together in teams engaging in experiential learning in assessing the feasibility and viability of their business idea.

EP4407 - ENTERPRISE DEVELOPMENT (AUTUMN/4)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

M&M

The module will address the following topics- Understanding the role and importance of the small firm sector to the Irish economy. The entrepreneur/owner/manager characteristics and classifications; identification and evaluation of business opportunities; product/service development; market research; industry analysis; market/sales strategies; management structure; manufacturing/operations; sources of start-up finance; financial projections (projected cashflow, profit and loss and balance sheet); managing the new business (people and process management) and exit strategies for a new business.

FI4003 - FINANCE (AUTUMN/2)

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

A&F

Students are introduced to and learn to use and evaluate a range of discounted cash flow techniques, Qualitative aspects of capital Budgeting and investments are also covered. The concept of market efficiency and of the link between risk and return are illustrated by reference to historical returns. Basic issues around share valuation are also discussed, and the students are introduced to derivative instruments, and how they may be used both defensively and aggressively.

FI4005 - ADVANCED CORPORATE FINANCE (AUTUMN/3)

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

A&F

The course covers the more advanced capital budgeting, taking into account inflation, uncertainty and tax. Simulation and scenario analysis are covered. The concept of a real option is introduced. Agency theory, dividend policy and capital structure are all covered in some detail. The capital markets are introduced, and approaches to share valuation are discussed. Portfolio theory is covered as a means of reducing risk. *Prerequisite FI4003.*

FI4007 - INVESTMENTS: ANALYSIS AND MANAGEMENT (AUTUMN/4)

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

A&F

The topics covered include an introduction to the investment environment: equity securities, fixed income securities, derivative securities; Financial markets: primary and secondary markets; the efficient market hypothesis; risk and return: measures of risk and returns; Portfolio and capital market theory: dealing with uncertainty, portfolio risk and return, analysing portfolio risk, the role of diversification, modern portfolio theory; Portfolio selection: efficient portfolios and diversification; Asset Pricing Models: risk-return trade-off, capital market line, security

market line, Capital Asset Pricing Model (CAPM), Arbitrage Pricing Theory (APT); Equity valuation: dividend discount models, technical analysis, the role of sentiment; Fixed income valuation: bond yields and prices, the term structure, bond strategies; Option valuation: both the binomial model and the black-scholes model; Evaluation of investment performance.

FI4407 - FINANCIAL INSTITUTIONS AND MARKETS* (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

A&F

Overview of the financial system, financial markets; bond and equity markets, money markets, Euro markets, futures and options markets; introduction to financial institutions, theory of the banking system, bank regulation; bank asset and liability management, bank liquidity management, bank credit risk management; financial innovations; securitisation, EU financial services and single market legislation; issues in portfolio management; transaction costs, regulation of investment services, active versus passive portfolio management, indexation, portfolio performance measurement.

Prerequisite FI4305

IN4003 - PRINCIPLES OF RISK MANAGEMENT (AUTUMN/2)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

A&F

Concepts of risk, pure and speculative risk; actuarial mathematics and elementary risk theory; perceptions of risk; risk in the economic and legal environment; models of risk management; risk management as a decision making process, identification, analysis, evaluation, control, financing of risk; risk management in an organisation and in the public sector; formulation and implementation of risk management strategies; quality and risk management.

IN4005 - RISK ANALYSIS (AUTUMN/3)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

A&F

The students will gain a general understanding of the role of risk analysis in resolving risk management problems; Apply a suitable decision making paradigm to situations with a minimal probability data set; Design the parameters of a risk retention strategy; Analyse the financing dimension of a risk control decision within a stochastic context; Understand the behavioural aspects of work safety amelioration; Implement a range of risk analytics to an illustrative occupational hazard.

IN4007 - GOVERNANCE AND RISK (AUTUMN/4)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

A&F

The students will gain an understanding to: Adequately define the concepts of governance and risk; Explain role of risk management in the private and public sectors; Demonstrate an understanding of the risk management function; Discuss the relationship between risk and governance; Evaluate the utility of risk management systems; Discuss the relationship between risk management, ethics and the law.

IN4015 - RISK AND INSURANCE (AUTUMN/3)

(TAUGHT WITH IN4725)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

A&F

The module details the historical development of insurance industry and more generally the discipline of risk management. The theoretical framework used by insurance companies to internalise risk and attribute a price to that risk are discussed in detail. The module details the development and implementation of a risk management strategy by both private corporations as well as public sector bodies.

IN4427 - INSURANCE ORGANISATIONS AND MARKETS (AUTUMN/4)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

A&F

The students will gain a general understanding of how to: Describe the nature of the interface between insurance organisations and regulators; Explain the differences between European insurance markets; Demonstrate an understanding of the economics of insurance; Discuss the management of an insurance organisation in the current economic and legal environment; Evaluate the nature of risk faced by insurance companies Identify typologies of insurance and reinsurance; Discuss the driver of insurance demand and supply.

IN4725 - RISK AND INSURANCE (AUTUMN/2)

4 hours per week; 13 weeks/3rd semester; 52L; ECTS credits:6

A&F

Risk theory and insurance; risk analysis; classification of risk, liability, property, personal and financial risk; the economic function of an insurance organisation; insurance as a means of risk financing; pure premium models; economics of insurance, the supply and demand for insurance; development of insurance in the economy; the theory of insurable risks; a typology of insurance and reinsurance; models of compulsory insurance.

IN4735 - INSURANCE**ORGANISATIONS (AUTUMN/4)**

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

A&F

The structure of the insurance industry;
the functions of an insurance organisation;
insurance organisation accounts and costing;
the use of information technology; quality and
insurance; captive management.

**MG4031 - MANAGEMENT PRINCIPLES
(AUTUMN/1)**

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6*

M&M

Management concepts and evolution,
the business environment, functions of
management, planning, organising, staffing,
leading and controlling, decision making,
organisation structure and design leadership,
motivation, work design, organisational
control introduction to ethics and social
responsibility, change management.

**MG4035 - INTERNATIONAL
MANAGEMENT (AUTUMN/3)**

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

M&M

The domain of international management
concepts of industry, location and firm

specific advantage models of cross-border
business, managing multinationals mergers
and acquisitions and strategic alliances,
international business networks, coordinating
international value chains, extended supply
chain management, technology diffusion,
subsidiary initiatives, political and cross-
cultural issues, managing in developing
countries.

**MG4045 - CHANGE MANAGEMENT
(AUTUMN/3)**

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

M&M

Nature of organizational change context
specific change, managerial skills of change
agents, change options and variables
contextual analysis formulating and formation
of implementation paths, mobilizing for
change, change levers and interventions,
strategic change frameworks, monitoring,
control and resourcing change.

**MI4007 - BUSINESS INFORMATION
MANAGEMENT (AUTUMN/2)**

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

M&M

The course provides an historical perspective
on the area of Information Management;
the information society; the importance
of databases for modern business; the

implications of integrated databases to support
enterprise-wide and intra-organizational
business processes; developing information as a
corporate resource; the firm as an information
processing entity; types of business systems
platforms in support of- managerial and
executive-level decision making, coordination
of business processes; information
management in functional areas of business:
accounting, marketing, human resources,
operations; managing ethical issues.

**MI4305 - DATA AND DECISION
MAKING IN ORGANISATIONS
(AUTUMN/3)**

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

M&M

This module introduces the business student
to a perspective of the organisation as an
information processing system. It introduces
organisational decision-making principles as
a foundation for the design of Information
Systems. It studies the role of data and
database management as a corporate resource
for decision making and the business systems
that support this; data mining, ERPs, CRMs.
It covers corporate responsibility for data
integrity and protection.

**MI4407 - SOCIAL & ORGANISATIONAL
ASPECTS OF INFORMATION
MANAGEMENT (AUTUMN/4)**

*5 hours per week; 13 weeks/7th semester;
26L/13T/26L; ECTS credits:6*

M&M

Provide a social and economic framework
for understanding the nature and interaction
of information, technology, people, and
organisational components. Explain how IS
can both constrain and enable organisations
and explore the relationship between IS
and organisational structure. Drawing
on Structuration Theory and Institutional
Economics the students will be provided with
an understanding of the characteristics of the
information economy. Consider the role of
the Internet and networking technology in
modern organisations. The above concepts will
be reinforced and developed through the use
of web and collaborative software.

**MK4005 - MARKETING
INTELLIGENCE (AUTUMN/3)**

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

M&M

Sources and Use of Marketing Intelligence;
The Role of Research and Intelligence in the
Marketing Organisation; Role of Marketing
Information and Composition of Marketing
Information Systems; Research for Marketing
Decision Making; Approaches to Data
Capture – Databases, EDI and Point-of-Sale;

Marketing Research in Different Contexts; Research Methods; Commissioning and Evaluating Marketing Research.

MK4007 - APPLIED MARKETING 1 (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

M&M

Through the management of an extensive project students will be exposed to and should develop skills in relation to developing research objectives, creating a research design, and assembling a research proposal. Further, students will gain experience in data collection, interpretation and both in terms of primary and secondary sources. Finally, students will be expected to present research findings.

MK4017 - MARKETING LEADERSHIP (AUTUMN/4)

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

M&M

Marketing vision, marketing planning, the marketing management process, the relationship between marketing and the other functional areas, the role of marketing in the boardroom, value-based marketing, internal marketing, organisational renewal through marketing.

MK4025 - MARKETING COMMUNICATIONS (AUTUMN/3)

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

M&M

Role of communications; communications theory; audiences; how advertising works; the management of marketing communications; the advertising industry; creative aspects of advertising; media aspects of advertising; ethics and advertising standards; the role of the media; communication vehicles; integrated marketing communications; the effects and effectiveness of marketing communications.

MK4603 - MARKETING (NON-BUSINESS) (AUTUMN/2)

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

M&M

Marketing in society; strategic market planning; marketing information systems; new product development; pricing; promotion; channels of distribution; competition analysis; consumer behaviour services marketing; market segmentation, consumer research methods, identifying marketing information requirements; formulating research projects, the scientific method - its characteristics and practices, experimental research designs, attitude measurement, questionnaire design; marketing research applications: product research, advertising research, corporate image research, market testing; ethical issues in marketing research.

MN4007 - PROJECT MANAGEMENT THEORY AND PRACTICE (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

M&M

The primary objective of this module is to provide students with the knowledge, skills and understanding necessary to apply Project Management principles, tools and techniques to help initiate change to achieve specific pre-determined project objectives in line with organisational goals and strategies. The module will prepare students for the workplace by developing their understanding of Project Management knowledge areas and Project Management processes. The student will benefit from understanding how projects are Initiated, Implemented, Monitored and Controlled and Closed within a change environment.

PM4013 - PRINCIPLES OF HUMAN RESOURCE MANAGEMENT (AUTUMN/2)

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

P&M

The syllabus covers core issues surrounding managing people at work. In so doing, the module starts with a consideration of key labour market issues in Ireland and how these affect the nature of HRM in organisations. Arising from a labour market analysis, core

HR activities are next explored including the processes of human resource planning, recruitment and selection. The module next examines critical elements of managing and rewarding performance, designing jobs and developing people at work. The nature of work is set down and finally, the regulatory environment for HRM in Ireland is indicated.

PM4017 - HUMAN RESOURCE PRACTICE (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

P&M

This purpose of this module is to develop practical skills/capabilities considered essential for HR practitioners. These skills are primarily in the key areas of selection, appraisal, discipline and grievance and applying regulations governing HR to all processes and activities. Another core purpose of the module is to increase the knowledge and skill and overall capability of the participants in key operational areas of HR such as rewards, performance management, health and safety, employment regulation, employee welfare issues, motivation and retention

PM4027 - SOCIAL PSYCHOLOGY OF ORGANISATIONS (AUTUMN/4)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

P&M

Approaches to the study of social psychology; Culture, Society, Socialisation and Individual Freedom; The Construction of Attitudes, Values and Ideologies; The Landscape of Organisational Form in the Social World; Beyond Bureaucracy and the Rise of Modern Organisational Hegemony; The Boundaryless Organisation; Organisational Citizenship; Future Directions in the Social Psychology of Organisations.

PM4035 - THE PSYCHOLOGY OF WORK (AUTUMN/3)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

P&M

Exploring the reality of work; The meaning of work; Work Orientation; Employment and Unemployment; The psychological contract and the work socialization process; The changing context of work; Workforce Management; Changing Workforce Composition; Career Re-conceptualisation; Work Life Balance and Work Family Conflict.

PM4045 - THEORETICAL PERSPECTIVE ON EMPLOYMENT RELATIONS (AUTUMN/3)

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

P&M

Collective and individual approaches to studying and managing the employment relationship. The role and function of trade unions and employer organisations in a societal and organisational context. The roles of employment relations actors: full-time officials, shop stewards, line managers, specialist HR functions and supervisors. The role and operation of state institutions. Voluntarism and legalism in Irish employment relations. The role of rules, especially procedure agreements, including the practical operation of discipline and grievance procedures. The practical operation of dismissals and equality legislation in the workplace. Collective bargaining and individual alternatives. Conceptual frameworks and management approaches to employment relations. Public sector employment relations. The nature of conflict in employment relations, including strikes. National and workplace partnership, including the role and performance of national pay agreements. Recent legislation on trade disputes and trade unions, especially the Industrial Relations Act 1990. The impact of the 1937 Constitution. Contemporary developments in employment relations.

PM4067 - CONTEMPORARY ISSUES IN ORGANISATIONAL BEHAVIOUR (AUTUMN/4)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

P&M

Introduction: Revisiting OB: what it is, what it is not, and how we might alternatively conceptualise it; Dimensionalising the Healthy Organisation; Gender in Organisations, communications, progression, and balance; Diversity in Organisations, perspectives and dilemmas; Emotion in Organisations, nature and consequences; Trust in Organisations, Antecedents, Forms, Conditions and Breaches; Justice in Organisations, Types, Range and Consequences; Organisational Citizenship Behaviour, Individual, situational & affective explanations; Ethics and Ethical Behaviour, Implications for HRM

PM4603 - EMPLOYEE RELATIONS FOR ENGINEERING/SCIENCE (AUTUMN/2)

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

P&M

The employment of relationship; the individual and work groups; the basics of recruitment and selection; motivation techniques; effective supervisory and man management; industrial relations; communications in employee relations; the role of management and trade unions; line management and shop stewards; labour law;

the basics of negotiation; national and local pay bargaining.

TX4305 - TAXATION THEORY AND PRACTICE (AUTUMN/3)

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

A&F

Tax theory, basic concepts; public failure and public expenditure growth; cannons of taxation; structure and administration of the taxation system, assessment, appeals, collection, audit and penalties; computation of personal income tax liability; efficient employee remuneration, benefits in kind, employee share schemes, the PAYE system; taxation of investment income, from financial instruments, dividends and real property; the business expansion scheme; tax planning, review of the tax based incentives; the Irish/ UK double taxation treaty.

Prerequisite AC4203



UNIVERSITY of LIMERICK

OLLSCOIL LUIMNIGH

**Department of Education
and Health Sciences**

40 *years of Innovation*
1972 - 2012

AUTUMN 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.

UNDERGRADUATE DEGREE PROGRAMMES OFFERED

EDUCATION

- LM090 - Physical Education with concurrent Teacher Education
- LM096 - Science Degree with concurrent Teacher Education - Physics and Chemistry
- LM092 - Science Degree with concurrent Teacher Education - Biological Sciences with Physics or Chemistry
- LM094 - Technology Degree in the teaching of Materials & Architectural Technology
- LM095 - Technology Degree in the teaching of Materials & Engineering Technology

HEALTH SCIENCES

- LM101 - Medicine (Graduate Entry)
- LM156 - Midwifery
- LM157 - Midwifery - Mature Entry
- LM150 - Nursing (General)
- LM151 - Nursing (General) - Mature Entry
- LM154 - Nursing (Intellectual Disability)
- LM155 - Nursing (Intellectual Disability) - Mature Entry
- LM152 - Nursing (Mental Health)
- LM153 - Nursing (Mental Health) - Mature Entry
- LM100 - Physiotherapy
- LM102 - Psychology
- LM038 - Psychology and Sociology
- LM089 - Sport & Exercise Sciences

DEPARTMENT/COLLEGE INFORMATION

Physical Education & Sport Sciences (PESS)

Psychology (PSY)

Education & Professional Studies (ED)

Nursing & Midwifery (N&M)

Clinical Therapies (CT)

EN4006 - CURRICULUM STUDIES (AUTUMN/)

26L/26T; ECTS credits 6

ED

The definitions of curriculum as content and experience as well as hidden curriculum; the philosophical and ideological foundations of curriculum are considered from the perspectives of knowledge, society and the individual; the relationship between curriculum and education policy; external influences on curriculum policy and policymaking; partnership approach; recent curriculum policy developments; core curriculum; the work of the NCCA and their proposals for senior cycle reform; curriculum change, reform, innovation and development; curriculum design; key factors associated with the adoption, implementation, dissemination and evaluation of curriculum reform; impact of school and teacher culture on curriculum reform efforts; case studies of recent curriculum reforms e.g. ICT for teaching and learning; the pedagogy and assessment of the curriculum; purposes, modes and techniques of assessment; assessment for learning; contemporary national and international curriculum issues; some radical alternatives.

EN4023 - PLANNING FOR TEACHING AND LEARNING 1 (AUTUMN)

ECTS credits 6

ED

This module supports the development of knowledge, skills, and attitudes which will support student teachers in preparing for their teaching practice placement in semester 4. It introduces them to the importance of good practice when planning and preparing learner-centred, active learning experiences, including the development of learning resources. Students will have the opportunity to implement these plans in a small group setting with young pupils (START Teaching) and to reflect on their own learning from this experience. The module also addresses key issues in relation to the management of the learning environment, assessment for learning, mixed ability teaching and the effective use of ICT to support learning. A strong focus will be placed upon essential child welfare issues, the Teaching Council Code of Professional Conduct and the implications for student teachers. The module also provides the student teacher with an insight into educational provision in modern Ireland.

PS4011- SOCIAL PSYCHOLOGY 1 (AUTUMN/2)

26L; ECTS credits 6

PSY

Social psychology is a field of psychology that considers the nature, causes, and consequences of human social behavior. The module will cover theories, models, key concepts and issues related to attitudes and behaviour, social influence, intra and inter group processes, pro-social behaviour, and affiliation, attraction and love.

PS4021 - PSYCHOLOGY: THEORY AND METHOD 1 (AUTUMN/1)

26L/26T; 1st semester; ECTS credits 6

PSY

The aim of this module is to provide students with a broad introduction to the historical evolution, issues, debates, themes and theories in psychology. The course will provide a good grounding in a range of theoretical perspectives in psychology. This module is the first of two modules which provide a broad introduction to the discipline of psychology. This module will begin with a brief historical and philosophical overview of the roots of psychology and then move on to cover the psychodynamic perspective, behaviourism and learning theory, the biological basis of behaviour, and cognitive psychology. Within the biological perspective the focus will be on motivation and emotion, and within cognitive psychology the focus will be on memory.

Assessment includes a final exam (2 hours, 2 essay questions), accounting for 70% of the final grade, and 2 written reports reviewing a book or an article, accounting for 15% each.

PS4027 - APPLIED PSYCHOLOGY (AUTUMN/4)

2 hours per week; 13 weeks/7th semester; 26L; ECTS credits: 6

PSY

This module examines how major theories and core areas of psychology can be applied in professional practice. Students will be introduced to key area of psychological practice such as clinical psychology, occupational psychology, ergonomics, artificial intelligence and health psychology. For students to develop an understanding of the way psychology is applied in practice and to introduce students to the range of areas in which professional psychologists work and practice in community, educational, health care and business settings. The assessment for this module consists of 25% coursework and 75% a final exam. The coursework is a CV/cover letter assignment and the exam includes two essay questions.

PS4031 - PSYCHOLOGY AND EVERYDAY LIFE (AUTUMN/1)

2 hours per week; 13 weeks/1st semester; 13L/13T; ECTS credits: 6

PSY

This module will introduce students to a range of fundamental theoretical perspectives and issues in general psychology through examining their relevance in everyday life. Through exploring everyday issues students will not only learn about theoretical perspectives but will also gain a basic knowledge of how psychology may be applied. In addition, through exploring some key studies in psychology, students will gain a basic understanding of the main investigative techniques used by psychologists. The range of topics will include; definitions of psychology; attachment; sleep, eating, aggression and biological basis of behaviour. Assessment consists of coursework (25%) and a final exam (75%). The coursework is a paper on students' experience in a psychological study and the final exam contains multiple choice questions. Numbers are limited on PS4031. The module is subject to availability on arrival at the University of Limerick.

Numbers are limited on PS4031. The module is subject to availability on arrival at the University of Limerick.

PS4035 - BIOLOGICAL BASIS OF HUMAN BEHAVIOUR (AUTUMN/2)

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

PSY

Students will learn about the role of the brain and the central nervous system in human behaviour. This module addresses the structure

and function of the mammalian nervous system with an emphasis on specialized topics, including the biological bases of the chemical senses, sleep and dreaming, learning and memory, emotions, sexual behaviour, stress, and psychiatric disorders. Coursework: You will be assessed with two writing assignments. For each paper select one of two topics offered, and write an essay on that topic between 2000 and 2500 words. Each essay is worth 50% of your grade: The average of both papers will be your final grade.

PS4087 - POLITICAL PSYCHOLOGY (Autumn/4)

26L/13 ; 13 weeks; 7th semester; ECTS credits 6

PSY

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

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

political structures on behaviour.

Prerequisite Modules: LM102

PY4001 - HUMAN ANATOMY 1 – UPPER EXTREMITY (AUTUMN)

26L/52Lab; ECTS credits 6

CT

Introduction & usage of anatomical terminology; Introduction to general anatomy of the musculoskeletal system; Classification of bones, joints and muscles; Introduction to the regional anatomy; Structural, functional & applied Anatomy of the upper limb; Detailed structure and function (to include bones, articular surfaces, joint stability, support, plane and range of motion, factors affecting range of motion; synovial membrane, ligaments, blood and nerve supply, lymphatic drainage, and muscle attachments) of the shoulder girdle, shoulder joint, elbow joint, radio-ulnar joints, wrist, hand and finger joints; Analysis of basic functional activities involving upper limb; Introduction to peripheral nerves [causes & consequences of injuries to upper limb nerves]; Introduction to injury and repair [fractures & healing]; Introduction to development of limbs / developmental defects.

PY4003 - HUMAN ANATOMY 3 (AUTUMN)

26L/52Lab/1T; ECTS credits 6

CT

Functional & Applied Anatomy of:

Vertebral column; the head, neck, face (temporomandibular joint), brain and spinal cord is studied. Detailed structure and function (to include bones, articular surfaces, ligaments, muscles, joint actions and ROM) of the cervical, thoracic and lumbar spine, pelvis and thorax (sternum, ribs and thoracic vertebrae). General functional & applied anatomy of the brain & spinal cord / the central and peripheral nervous system of cerebrum, basal nuclei and cerebellum is explored. It also incorporates functional & applied anatomy of somatosensory system, somesthetic pathways / pain; afferent and efferent control of muscle tone and posture.

PY4005 - PHYSIOTHERAPY STUDIES: THEORY AND CONTEXT 1 (AUTUMN)

52L/13Lab; ECTS credits 6

CT

The teaching programme is organised in three-week blocks. During each block there will be lectures, seminars, guest speakers and directed study to guide the student in identifying appropriate treatment and patient management strategies for each case scenario. In addition during the three-week block the students will work together to research specified topics. At the end of the three-week block the students will present the prioritised evidence based information to their peers in a self-selected format, to address the learning needs of the students relating to the case study.

Prerequisite Modules

PY4021, PY4044, PY4014, PY4033, PY4034.

PY4013 - PHYSIOTHERAPY THEORY AND PRACTISE 2 (AUTUMN)

26L/52Lab; ECTS credits 6

CT

Principles of history taking and patient examination (The Maitland Concept); pain physiology and pain mechanisms; the assessment of pain; musculoskeletal assessment and treatment of the upper limb (shoulder, elbow, wrist and hand), musculoskeletal assessment and treatment of the lower limb (hip, knee ankle and foot); common presentations and pathologies of the upper and lower limbs; clinical reasoning in the management of upper and lower limb musculoskeletal disorders.

Prerequisites PY4001, PY4012, PY4003, PY4062

PY4015 - RESEARCH METHODS FOR PHYSIOTHERAPY 1 (AUTUMN)

52L/39Lab; ECTS credits 6

CT

Students will learn about the different research designs and will examine current peer reviewed papers to gain an appreciation of how research informs practice. In addition, students will gain practical experience of undertaking two small scale research projects. The module will also build on skills that have students have previously acquired such as critical appraisal and literature searching.

PY4017 - IMPAIRMENT AND DISABILITY 1 (AUTUMN)

26L/26T; ECTS credits 6

CT

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

Prerequisite Modules PY4005, PY4006

PY4031 - FOUNDATIONS OF TEACHING AND LEARNING PHYSICAL EDUCATION

2 hours per week; 13 weeks/1st semester; 26L/52LAB/26T; ECTS credits: 6

PESS

The module will examine possible models of pedagogy and identify how each can be justified within contemporary Irish physical education. Students will teach individuals and small groups within their own class and then in a school context where they will work as an assistant teacher within a structured context.

Discussion will focus on teaching and learning physical education in Irish post-primary schools, teaching episodes with school students and observations of teaching and learning. Students will be encouraged to acquire prerequisites for reflective teaching.

PY4033 - ESSENTIAL RESPIRATORY CARE (AUTUMN)

26L/26Lab/13T; ECTS credits 6
CT

To provide students with the clinical skills and an understanding of the principles of management of people with respiratory problems. Teaching uses a case-based, problem solving approach, with emphasis on the research evidence underpinning clinical practice.

Clinical features of people with common acute and chronic respiratory disorders; assessment and evaluation of respiratory patients, interpretation of clinical investigations; techniques of airway clearance; use of adjuncts in respiratory care; effect of positioning on lung volumes, secretion clearance, ventilation/perfusion, work of breathing; management of respiratory and ventilatory failure; basic paediatric respiratory care; pulmonary rehabilitation; introduction to general and thoracic surgery and the role of physiotherapy
Prerequisite Modules: PY4062, PY4052, SS4204

PY4041 - PEDAGOGY OF HEALTH RELATED ACTIVITY / AQUATICS

26L/39Lab; ECTS credits 3
PESS

Health Related Activity: Structure, phases and components of cardio-vascular endurance (walk/jog, exercise bikes, treadmills, steppers, rowers, cross-country skiers, etc.) and resistance (body, machine and weights) training classes/sessions. Safe selection, structuring and teaching of appropriate exercises. Adaptations and progressions. Application of training principles. Safety guidelines. Pedagogical aspects of class management. Designing and implementing programmes. Basic weight training schedules (priority and circuit). Monitoring intensity. Use of music. Aquatics: Effects of being in water on balance, propulsion and resistance; observation of differences in buoyancy; entering water safely in a variety of ways; analysis of concepts outlined above and understanding of efficient movement related to stroke technique.

PY4043 - APPLIED STUDIES IN ATHLETICS/AQUATICS

39Lab; ECTS credits 6
PESS

Introduction to athletics via specific events and 'athletics related activities', both derive from the learning of fundamental motor skills (namely running, jumping & throwing) and all are taught with an emphasis on safety.

The aquatics element concentrates on stroke work, lifesaving skills and other water-related activities. There is an equal emphasis on the student as learner and student as teacher, teaching points & ideas will be stressed throughout the course.
Numbers are limited on PY4043. The module is subject to availability on arrival at the University of Limerick.

PY4045 - APPLIED STUDIES IN DANCE/GAMES

13L/52Lab; ECTS credits 3
PESS

Games: Skills and rules/concepts of games will be addressed from the perspective of developmental physical education. The skills, initially fundamental and then sport specific related to net and fielding games will be examined. Attention will be given to the developmental of tactics and individual/team plays in a game context.
Dance: Content will include the theoretical context of dance, planning dance material, stimuli, observation and the process of making, rehearsing and performing a dance.

Numbers are limited on PY4045. The module is subject to availability on arrival at the University of Limerick.

PY4051 - PEDAGOGY OF OUTDOOR ADVENTURE / NET GAMES

ECTS credits 3
PESS

PY4055 - SOCIOLOGICAL CONCEPTS OF TEACHING AND LEARNING IN PHYSICAL EDUCATION

26L/26T; ECTS credits 3
PESS

The module will introduce socialisation into and through physical education and sport. Theoretical paradigms in the sociology of sport will be examined. Social development through physical education will also be examined and inequality issues arising within school physical education. Content related to the body, culture and physical activity, the games ethic, media and commercialisation will be examined in relation to how such issues have affected, and are currently affecting, the teaching of school physical education and games.

Numbers are limited on PY4055. The module is subject to availability on arrival at the University of Limerick.

PY4063 APPLIED STUDIES IN DANCE / GYM

5T; ECTS credits 6

PESS

An understanding of how tasks for teaching are compiled and developed in both movement forms will be pursued. Students will be given opportunities to select and develop appropriate movement stimuli for use in teaching, applying principles of composition to the themes of unison/canon, assisted balance, rhythmic patterns, counter tension and assisted flight. Also in gymnastics students will develop themes including locomotion, transference of weight, flight, body shape, levels and directions and partner work. *Numbers are limited on PY4063. The module is subject to availability on arrival at the University of Limerick.*

PY4065 - INTEGRATED AND INCLUSIVE PHYSICAL EDUCATION

39L/26T; ECTS credits 6

PESS

Introduction to Integration and Adapted Physical Activity (APA). Terminology, definition, history aims and objectives of the APA movement. Legislation and disability. Categories of disability. Overview of Aetiology and incidence of disabilities. Integration and inclusion in schools and the community. Adapted physical activity programming, principles, content and implementation. Integration problems. Public facilities

adaptations for disabled individuals. Sport and disability. Adapted Physical Activity infrastructure in Ireland.

Growth, Posture and Development: The growth and physical development of the normal child. Injury and injury rehabilitation: Role of exercise in rehabilitation. Aetiology of injury, common types of injury. Immediate first aid. Care and prevention of injury. *Numbers are limited on PY4065. The module is subject PY4201*

SS4035 - FUNDAMENTAL CONCEPTS OF HUMAN RESEARCH AND THEIR APPLICATION (AUTUMN/3)

ECTS credits 12

PESS

The emphasis in this module is placed on applying scientific principles to sport and exercise through mini projects carried out in groups. The projects will investigate questions (and/or problems) arising in applied sport, health and/or exercise situations. As much as possible the projects will be multidisciplinary and/or interdisciplinary in nature and in themselves will determine the syllabus content of the course. There is a structured component of the course which focuses on the fundamentals of human research; including scientific reading and writing (methods of acquiring appropriate scientific literature; how to search for research information in the sports and exercise sciences; how to read and critically evaluate scientific information) and research planning and design (steps in the

human research process; experimental designs for human research).

SS4105 - ANALYSIS OF MOTOR SKILL PERFORMANCE AND LEARNING (AUTUMN/3)

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

PESS

Review of the motor skill performance and the motor learning processes. Measuring motor skill performance and learning; retention and transfer tests; novice and expert differences. Scientific evidence for changes due to learning. The scientific method; observation, formulation & testing of laws & principles, Hick's Law, Fitts's Law; theories to explain observations, principles & laws; Adams's closed loop theory, Schmidt's schema theory, dynamical systems theory. Roles of vision and proprioception in the control of movement; visual search; open loop and closed loop systems of control; motor programmes. Dynamical systems theory of motor control. The structuring of practice (e.g. frequency & spacing, variability, random & blocked) and its effects on learning. Implicit learning. Demonstration and learning. Instruction and learning. Feedback for learning. Whole-part practice. Learning from a dynamical systems perspective. Application of principles and of research findings. Role of practice and related factors in achieving excellence/expertise *Prerequisite SS4102*

SS4127 - APPLIED EXERCISE AND HEALTH PSYCHOLOGY (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

PESS

The aim of this module is to provide students with current knowledge and a sound understanding of psychological issues pertaining to exercise and physical activity behavior. This module will deal with the psychological theory and practice of increasing physical activity. Finally, the psychological benefits of physical activity are important health benefits which will be explored in this module.

SS4202 - INTRODUCTION TO THE MAJOR PHYSIOLOGICAL SYSTEMS (AUTUMN/1)

5 hours per week; 13 weeks/1st semester; 26L/26LAB/13T; ECTS credits:6

PESS

A thorough understanding of how the body functions underpins all subject areas in the study of sport, exercise sciences and physiotherapy. Physiology (from Greek *Physio* meaning nature and *-logy* meaning the study of) deals with the coordinated activities of cells, tissues, organs and systems. In this module students are introduced to the basic structures and functions of human physiological systems and the integration of these systems to maintain homeostasis.

SS4203 - PHYSIOLOGY OF MUSCLE IN MOVEMENT

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

PESS

Skeletal muscle structure at the tissue and cell level. The process of muscle contraction at the ultrastructural and whole muscle level. The Physiology and energetics of the muscle contraction process and cross bridge cycle. Motor units and muscle fibre types. Functional properties of the different muscle fibre types. Sources and consequences of skeletal muscle fatigue. Muscle training; neural and physiological adaptations to strength and endurance training. Muscle damage and muscle repair. Muscle disease and injury. Treatments for muscle injury and recovery. *Prerequisite SS4202*

SS4205 - NUTRITION, EXERCISE, METABOLISM AND SPORTS PERFORMANCE (AUTUMN/3)

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

PESS

Fundamentals of nutrition and energy balance. Energy expenditure of sporting activities. Power and capacity of metabolic pathways. Fuel selection during exercise. Current Topic: Tipping the Energy Balance Against Obesity. Metabolic limitations to endurance performance. Critical role of muscle and liver glycogen. Dietary manipulation and

glycogen supercompensation. Carbohydrate feeding during the event and replacement after the event. Effect of endurance training on fuel selection, fat and carbohydrate oxidation. Ergogenic aids : - caffeine feeding and endurance performance. Exercise and metabolism in relation to obesity and insulin resistance Protein metabolism during endurance exercise. Role of branched chain amino acids. Current topic : the central fatigue hypothesis. Neurochemical basis of fatigue. Muscle protein synthesis (MPS). Current topic: amino acid stimulation of MPS Fluid balance during and in the recovery from prolonged exercise. Metabolic limitations to high intensity exercise 1: Critical role of phosphocreatine Ergogenic aids : - creatine feeding Metabolic limitations to high intensity exercise 2: Critical role of pH and muscle buffering Ergogenic aids : - bicarbonate feeding and L-alanine Oxidative stress during exercise. Free radical production and their detection. Antioxidant defence and the effects of training. Ergogenic aids : nutritional antioxidant supplements. *Prerequisite BC4002*

SS4217 - EXERCISE AND HEALTH 1 (AUTUMN/4)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

PESS

This is a module which brings together the knowledge you gained in the last three years to investigate aspects of exercise and health. These include sport performance, lifestyle and

general well being. Included in this module are examples of how exercise may be used prospectively to improve the quality of life and also as an adjunct therapy to clinical medicine in the treatment of life-threatening disease.

SS4301 - FUNCTIONAL ANATOMY

ECTS credits 6

PESS

This module introduces the student to the anatomical structures involved in human movement, as well as providing an understanding of their mechanics in the production of functional and sporting activities. To consolidate students understanding human biology by more advanced functional anatomy. Apply an understanding of human anatomy to the measurement and assessment of movement. Functional anatomy terminology. Planes and axes of movement. Skeletal system: axial, appendicular, bone types, modelling. Articular system: joint types, function. Musculo system: fibre properties, contraction types, actions, components. Neuromuscular system: CNS, PNS, axons, propagation, synapses, proprioceptors, exercise effects. Shoulder. Elbow & radioulnar. Wrist & hand. Hip & upper leg. Knee. Trunk & vertebrae. Pelvis. Foot & ankle. Muscle & bony palpation, origins and insertions. BMI, skinfolds. Range of motion. Posture.

SS4305 - QUANTITATIVE BIOCHEMICAL ANALYSIS (AUTUMN/3)

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

PESS

Theoretical Content Overview of measurement techniques in biomechanics. Data smoothing techniques and criteria for their optimisation; residual analysis. Inertial properties of the human (or animal) body. Free body diagram analysis of the human frame. Calculation of angular momentum; local and remote terms and total H. Mechanical properties of biological materials. Introduction to human simulation theory. Practical Content Force plate data capture and subsequent analysis. Advanced data analysis using spreadsheet solutions. Butterworth filter design and optimisation. Introduction to simulation. *Prerequisite SS4304*

SS4401 - COACHING SCIENCE AND PERFORMANCE 1 (AUTUMN/1)

*4 hours per week; 13 weeks/1st semester;
13L/39LAB;ECTS credits:6*

PESS

Sports: Students will be required to select one individual/dual sport from three offered during the semester. The sports offered will be chosen from track & field athletics, swimming and tennis. In addition to sport specific content (skills and tactics), common elements of pedagogy and applied physical conditioning

will be included. Pedagogy: Criteria for effective coaching, philosophy and role of the coach, coaching styles, communication, group organisation and management, demonstrations, safety and ethics in sport
Exercise Prescription 1: Introduction to health related fitness (HRF). Introduction to and personal experience of field tests for HRF; introduction to principles of training; warm-up and cool-down procedures; health appraisals and screening.

SS4403 - COACHING SCIENCE AND PERFORMANCE 2 (AUTUMN/2)

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

PESS

Students will be required to select one invasion game from four offered during the semester. The sports offered will be chosen from Soccer, Camogie/Hurling, Gaelic Football, Hockey, and Rugby. In addition to the sports specific content, common elements of pedagogy and applied physical conditioning will be included. Exercise Prescription 3: Classification of sports. Sports needs analysis in terms of physical, technical, tactical and mental demands. Planning the training year - training units, micro, meso and macro cycles. Pedagogy includes: coaches' decision making, reflective practice, performances, ethics in coaching and the development of 'expert' coaches. Physical Conditioning 2: Structure and phases of circuit training, flexibility and advanced resistance training sessions. Safe selection,

structuring, adaptations and progressions for appropriate activities. Different types of circuit training sessions, organisation and safety concerns. Devising and implementing programmes. Flexibility development through static stretching (active and passive) isolated and assistive and PNF. Development and demonstration of specific lifting techniques, spotting, progressions for plyometric training, medicine ball work. Weight training to develop speed and power. Advance schedules and systems of training for sports specific and body builders. *Prerequisite SS4402*

SS4417 - HUMAN PERFORMANCE EVALUATION (AUTUMN/4)

*4 hours per week; 13 weeks/7th semester;
26L/26LAB; ECTS credits:6*

PESS

This is a final year integrative module that aims to complement research skills gained in the sport and exercise science final year project with practical skills and experience in sport and exercise evaluation. The course will consist of lectures on the theory and practice of performance evaluation in an integrative format to make the students critically aware of appropriate testing for different populations and the On an individual basis students will prepare a comprehensive piece of written work on effective evaluation processes pertaining to human performance and functioning in the context of sport and health. In a team-based exercise, students will make a seminar presentation on an effective evaluation process

for a specific scenario in the sport and health domain. *Prerequisites SS4205, SS4305, SS4105*

NURSING MODULES;

NS3201 - MICROBIOLOGY, IMMUNOLOGY AND INFECTION CONTROL

26L/26Lab;13weeks; 1stsemester; ECTS credits:3

Rationale and Purpose of the Module:

The aim of this module is to provide the student with a knowledge and understanding of microbiology with application to nursing and midwifery practice.

Syllabus: Nature of microorganisms and their growth, basic understanding of bacteria, fungi and viruses, general pathogenesis, portals of entry; cycle of infection, basic epidemiology and how an infectious agent is transferred through a population; control of spread of infection, cultivation and identification of pathogens. Pathogenesis in key infections. Infection control in the hospital and community setting, guidelines in isolation precautions. Carrier status amongst health care professionals: practice and developments. Disinfection and sterilisation of equipment. Antibiotics: mode of action in relation to specific diseases; antibiotic resistance; public health measures to ensure antibiotic efficacy: Directly Observed Therapy; reserved drugs; public and professional awareness. Microbiology in relation to nursing and midwifery care and public health awareness: such as HIV, Cl. diff., TB, and MRSA.

Immunology: the immune response reviewed; antibody diversity; allergy and anaphylactic shock; the immuno-suppressed patient; immunisation in current public health programmes.

NS4013 - HEALTH STUDIES

26L/13T; 13weeks; 3rd semester; ECTS credits 6

Rationale and Purpose of the Module:

To provide nurses and midwives with the necessary foundation to develop competence in health education and health promotion.

Syllabus: Concepts and definitions of health and ill-health; Health belief models; Measuring health; Determinants of and influences upon health (Bio-Psycho-Social, cultural, gender, environmental, spiritual, political, educational and economic factors affecting health) ; Life styles; Health education and health promotion; Models and approaches of health education and health promotion; Assessing needs and programme planning; Ethical issues; inequalities, disadvantage and empowerment; Settings for programmes; health policy and politics, including Local, national and international strategies for achieving health. The role of the nurse and midwife regarding health education and health promotion in different settings e.g. primary, secondary and tertiary care.

NS4037 - PROMOTING SUPPORTING AND PROTECTING BREASTFEEDING

26L/26Lab; 13weeks; 7th semester;
ECTS credits 6

Rationale and Purpose of the Module:

To enable the student to critically consider the promotion, support and protection of breastfeeding. Fulfil the requirements of the Baby Friendly Hospital Initiative including the provision of safe artificial feeding.

Syllabus: Fulfil the requirements of the Baby Friendly Hospital Initiative including the provision of safe artificial feeding. Theoretical content: Social, cultural, psychological and political influences on aspects of infant feeding; National and International Breastfeeding policies and their management including BFHI; The importance of breastfeeding to mother and baby, Health care practices that support breastfeeding and artificial feeding; Counselling skills to support breastfeeding; Anatomy and physiology of lactation, Biochemistry of human milk, Impact of birthing practices on breastfeeding; Breastfeeding facilitation for healthy mothers and newborns; Breastfeeding management under difficult circumstances; breastfeeding management when the mother is ill; Infants with special needs; Alternative methods of infant feeding when breastfeeding is not possible; infant nutrition and weaning practices; Hospital and community support; Drug therapy and breastfeeding, maternal nutrition during lactation, maternal employment and breastfeeding.

NS4047 - PREPARATION FOR PARENTHOOD

26L/26Lab; 13weeks; 7th semester;
ECTS credits 6

Rationale and Purpose of the Module:

To provide students with the knowledge and skills to work in partnership with parents to support them in their adaptation to parenthood.

Syllabus: Philosophy and historical development of childbirth education, Principles of adult education, teaching and learning strategies for pregnancy childbirth and transition to parenthood, health promotion strategies, sexuality and cultural perspectives on childbearing, culturally connected teaching strategies, childbirth education for specific social groups e.g. teenagers, travellers. Teaching relaxation in parent education classes. Curriculum development for parenthood education. Tutorials: micro teaching, presentation strategies and skills, class planning, evaluation of teaching, giving feedback, relaxation techniques.

NS4055 - OBSTETRIC COMPLICATIONS AND EMERGENCIES

26L/26Lab; 13weeks; 5th semester;
ECTS credits 6

Rationale and Purpose of the Module:

To enable students to recognise and initiate appropriate management action when deviation from the norm occurs in collaboration with other health care professionals.

Syllabus: The midwife's role in the assessment, planning, implementation and evaluation of obstetric complications within the multidisciplinary team, cardiotocography, malpositions and malpresentation, disproportion, obstructed labour and uterine rupture, rhythmic variations of labour, shoulder dystocia, amniotic fluid embolism and other obstetric complications, postpartum haemorrhage and other third stage complications, treatment of maternal sepsis; operative and assisted birth, Principles of perioperative skills; Psychosocial and cultural needs of women experiencing complicated childbirth, maternal mortality and morbidity. Medication management.

NS4061 - INTRODUCTION TO MIDWIFERY

26L/26Lab; 13weeks; 1st semester;
ECTS credits 6

Rationale and Purpose of the Module:

To introduce students to the philosophy, knowledge and skills underpinning midwifery practice.

Syllabus: Philosophy, history and regulation of midwifery practice - professional identity, accountability and conduct. Principles of individualised and woman centred care, role of the midwife in normal birth. Structure and provision of maternity services. Introduction to midwifery theories, reflective practice and evidence based practice. The role of the midwife in the provision of care in

normal pregnancy, birth and puerperium. Introduction to local national and international breastfeeding policies. Principles of effective study skills.

NS4063 - CARE OF THE NEONATE

26L/26Lab; 13weeks; 3rd semester;
ECTS credits 3

Rationale and Purpose of the Module:

To provide the student with the knowledge and skills to assess, plan, implement and evaluate care of the neonate.

Syllabus: Adaptations to extrauterine life. Role of the midwife in assessing, planning, implementing and evaluating care for healthy newborn babies from birth to discharge. Thermoregulation. Prevention of infection. Meeting the safety needs of the neonate. Nutritional requirements of the term neonate; promoting, supporting and protecting breastfeeding; formula feeding. Principles of drug administration for the neonate. Discharge advice. Newborn bloodspot screening technique. Sudden Infant Death Syndrome. Role of the public health nurse. Vaccinations and immunisations. Transition to parenthood; parent infant attachment; Infant cues and responses; Meeting diverse parenting needs. Communicating and recording clinical practice.

NS4071 - ADAPTATIONS TO PREGNANCY

26L/26Lab; 13weeks; 1st semester;
ECTS credits 6

Rationale and Purpose of the Module:

To facilitate students to acquire knowledge and understanding of adaptations to pregnancy from a physiological and psychosocial perspective.

Syllabus: Women's adaptation to pregnancy and childbirth from a physiological and psychosocial context; Anatomy and physiology applied to childbirth, Confirming pregnancy, Embryonic and placental development, Maternal nutrition; Antenatal care and examinations and assessing fetal well-being. Applied pharmacology.

NS4073 - AT RISK PREGNANCY AND CHILDBIRTH

26L/26Lab; 13weeks; 3rd semester;
ECTS credits 6

Rationale and Purpose of the Module:

To facilitate students in assessment and management of care of women experiencing at risk pregnancy and childbirth.

Syllabus: Assessment, investigations and management of maternal and fetal well-being Obstetric conditions e.g. Bleeding in early pregnancy, antepartum haemorrhage, obesity in pregnancy, amniotic fluid and its complications, multiple pregnancy, hypertensive disorders, anaemias,

thromboembolic disorders, obstetric cholestasis, metabolic disorders in pregnancy. Diabetes, thyroid, cardiac and respiratory disorders, pregnancies complicated by other medical conditions i.e. renal, gastrointestinal and neurological problems, the psychosocial aspects of at risk pregnancy and childbirth. Medication management, use and effects in the at risk pregnancy. Development of problem solving, clinical decision making skills and relevant clinical skills in relation to at risk pregnancy and childbirth.

NS4075 - MIDWIFERY SPHERE OF PRACTICE AND MODELS OF CARE

Rationale and Purpose of the Module:

To explore the midwife's sphere of practice and prepare students to fulfil the role of midwife.

Syllabus: Models and theories of midwifery care, scope of midwifery practice and decision making framework, Practice Standards for Midwives (An Bord Altranais, 2010) the Nurses and Midwives Act (2011) and legislation underpinning the provision of maternity services, maternity benefits, structure and provision of maternity care, national and international perspectives, advances in midwifery led care in hospital and community, politics and policies underpinning maternity care, concept of normal birth and partnership, ethical decision making, autonomy, and advocacy. Facilitation of informed choice for women and woman-centred care, Interprofessional collaboration in maternity provision, supporting and

developing midwifery practice, to include managing change in practice. Clinical governance, clinical effectiveness in midwifery and principles of clinical risk management.

NS4201 - BIOLOGICAL SCIENCES 1, ANATOMY AND PHYSIOLOGY

26L/26Lab; 13weeks; 1st semester;
ECTS credits 3

Rationale and Purpose of the Module:

To provide the foundation for understanding the anatomy and physiological functioning of the human system so as to assist in the study of the effects of illness and disease on the individual.

Syllabus: Introduction to the body as a whole, tissues, organs, system, and cavities of the body. Cellular structure, the cell surface, cytoplasm, filtration, and simple diffusion. Tissues: epithelial, connective, muscle and nervous. The Integumentary System: Histological structure and function of the skin and subcutaneous tissue. The Skeletal System: Structure and function of the skeleton, the healing of fractures. Joints: Classification, structure, function. Muscles: Structure and function. The Central Nervous System: Meninges, ventricles and cerebrospinal fluid, blood supply and the brain barrier system, structure and function of the spinal cord, the midbrain, the pons varolii and cerebellum, the cerebrum, medulla oblongata, the limbic system. The Peripheral Nervous System and Reflexes: Classification and anatomy of nerves and nerve fibres, the cranial nerves, the spinal

nerves, nerve plexuses, the nature of reflexes, components of a reflex arc. The Autonomic Nervous System: Anatomy of the sympathetic and parasympathetic division, functions of the autonomic nervous system, the adrenal glands, neurotransmitters and receptors.

NS4203 - BIOLOGICAL SCIENCES 3 ANATOMY, PHYSIOLOGY AND PATHOPHYSIOLOGY

26L/26Lab; 13weeks; 3rd semester;
ECTS credits 6

Rationale and Purpose of the Module:

The aim of this module is to provide the student with a foundation for understanding normal human anatomy and physiological function, considered essential for the later study of illness and disease in the individual.

Syllabus: Structure and function of the urinary system- the kidneys, nephrons, ureters, urinary bladder, urethra, micturition, excretion and body fluid homeostasis. Digestive system- general histology and physiology of the organs of the gastrointestinal tract, associated organs of the digestive system, pancreas, liver, biliary tract. Reproductive systems- female reproductive system, male reproductive system. Endocrine system- anatomy, physiology and homeostatic functions of the pituitary gland and hypothalamus, thyroid gland, parathyroid glands, adrenal glands, pancreatic islets, pineal gland, thymus gland. Hormones and their actions. Stress and adaptations including the general adaptation syndrome (GAS).

Pregnancy, childbirth, lactation. Special senses: Structure and function e.g. eye, ear, nose, tongue, and equilibrium. Pathology: inflammation, granulomas, repair/regeneration of tissues. Degenerative changes in cells/tissues, carcinogenesis, tumours, classification of tumours, biology of tumours, breast cancer, lung cancer, prostate cancer etc.

NS4205 - MATERNITY, PEADIATRIC AND OLDER PERSON NURSING

26L/26Lab; 13weeks; 5th semester;
ECTS credits 6

Rationale and Purpose of the Module:

The aim of this module is to facilitate students understanding of maternity, paediatric, and older person nursing so that they may provide appropriate care to individuals and families.

Syllabus: Introduction to the principles of peri-natal care; effects of pregnancy upon maternal health. Nursing care and management of mother and baby; introduction to the nursing principles to the care and management of children experiencing acute and chronic illness, their experiences of hospitalisation; family centred care; child protection. Dignity, advocacy and protection of the older adult; introduction to the principles of nursing the older person and family/carer across the care continuum. Attitudes towards ageing and the normal process of aging, age related disorders, e.g. confusion, polypharmacy, falls, dignity, advocacy and restraint. Applied pharmacology.

NS4211 - THE ART AND SCIENCE OF NURSING

26L/26Lab; 13weeks; 1st semester;
ECTS credits 6

Rationale and Purpose of the Module:

The module will introduce students to the core concepts underpinning the art and science of nursing and the professional nature of nursing.

Syllabus: Historical development of nursing. Regulation of nursing profession. Professionalism. Patient safety agenda and quality care. Caring, empathy and care delivery systems e.g. team nursing, multidisciplinary teamwork and the nursing process. Therapeutic relationships and holistic models of care. Models of reflective practice. Evidence-based practice. Introduction to competencies. Introduction to library skills, study methods skills and the presentation of academic material.

NS4213 - PRINCIPLES OF NUTRITION NURSING

26L/26Lab; 13weeks; 3rd semester;
ECTS credits 3

Rationale and Purpose of the Module:

The aim of this module is to introduce students to the role of nutrition in health care and disease prevention so that the specialist needs of a person experiencing dietary difficulties can be addressed.

Syllabus: Nutrients, their functions, metabolism, food sources and optimal

nutrition for the promotion and maintenance of health and prevention of disease.

Absorption, digestion, and vital functions of the macronutrients (protein, carbohydrate and fat) and the micronutrients (vitamins and minerals). Changes in nutritional needs throughout the life cycle including special considerations during pregnancy, lactation, and aging. Nutritional standards, the role of nutrition in disease prevention and clinical nutrition topics including PKU, malnutrition, and dietary recommendations for diabetes. Interventions to maintain nutritional status in illness. Nutrition as an interdisciplinary approach to health care and disease prevention and its application to the individual, in community health and education. Introduction to the use of computer-based diet analysis to evaluate personal dietary intakes. The role of the nurse in meeting the specialist nutritional needs of a person experiencing dietary difficulties. Applied pharmacology.

NS4215 - SPECIALISED NURSING CARE

26L/26Lab; 13weeks; 5th semester;
ECTS credits 6

Rationale and Purpose of the Module:

The aim is to facilitate the student understanding of oncology, palliative care, mental health, and intellectual disability so that they may provide appropriate care to these groups of individuals. In order to prepare general nurses to support patients/clients with specific and complex needs the process of identifying needs, planning, prioritising, implementing and evaluating

nursing care will be considered.

Syllabus: Cancer cell biology, nursing care and management in oncology. Treatment modalities. Palliative care. Introduction to intellectual disability and nursing care and management. Institutionalisation, normalisation, individualisation and philosophy of an 'ordinary life'. Introduction to the concept of mental health. Nursing care of individuals with mental health illness in a range of settings. Applied pharmacology.

NS4221 - ADULT NURSING CARE

26L/26Lab; 13weeks; 1st semester;
ECTS credits 6

Rationale and Purpose of the Module:

This module introduces students to the challenges of nursing individuals in the acute hospital and community setting. The process of assessing and identifying needs, planning, prioritising, delivering and evaluating nursing care will be explored. The module aims to discuss evidence based nursing assessment and management strategies supported by current healthcare policies to ensure holistic and safe care for all individuals and their families. The purpose of this module is to facilitate students understanding of the nursing required for the acutely ill adult.

Syllabus: Nursing care and management of the acutely ill adult: Altered levels of consciousness, pressure area maintenance. Pain: Definitions, dimensions, measurement, strategies to support and care for the

individual experiencing pain. Introduction to peri-operative nursing care: Elective and emergency surgery; altered homeostasis, peri-operative complications e.g. anaphylaxis, malignant hyperthermia, hypovolaemic and neurogenic shock. Bio psychosocial aspects of the nursing care of the ill adult e.g. stress, sleep and sensory deprivation, altered body image, role of the family and carer's. Nursing care and management of individuals experiencing altered skin integrity e.g. wounds, burns, dermatological conditions. Applied pharmacology.

NS4223 - RENAL AND GASTROENTEROLOGY NURSING

26L/26Lab; 13weeks; 3rd semester;
ECTS credits 6

Rationale and Purpose of the Module:

The purpose of this module is to facilitate students' understanding of gastro-enterological and renal disorders and the application of appropriate nursing care to an individual with such condition(s).

Syllabus: Gastro-enterological disorders: e.g. cirrhosis, oesophageal varices, peptic ulceration, appendicitis, colitis, pancreatitis, gastroenteritis; intestinal obstruction; nursing care and management. Renal disorders: infection and obstruction, acute and chronic renal failure; nursing care and management. Dialysis, organ transplants. Applied pharmacology. Nurses' role and responsibilities in investigative and diagnostic procedures.

NS4305 - NURSING THE CHILD AND ADULT WITH BEHAVIOURAL DISORDERS

26L/26Lab; 13weeks; 5th semester;
ECTS credit 6

Rationale and Purpose of the Module:

The aim of the module is to critically evaluate current attitudes policies and practices that support persons with an intellectual disability and associated behavioural or mental health difficulties.

Syllabus: Human behaviour, adaptive and maladaptive responses Role of the RNID in supporting and assisting the individual with an intellectual disability and associated behaviour problems for e.g. self injurious behaviour, aggressive and violent behaviours. Behavioural and cognitive therapies and the nursing process. Mental health difficulties across the life span. Concept of dual diagnosis in intellectual disability. Nursing care and management of the child and adult with an intellectual disability experiencing mental health difficulties, e.g. phobias, eating disorders, stereotypical, aggressive and violent behaviours; anxiety disorders; psychosexual disorders; perceptual and mood disorders, schizophrenia, depression. Habit and conduct disorders, attention deficit disorders with or without hyperactivity. Applied pharmacology.

NS4315 - NURSING AND ALLIED THERAPIES

26L/26lab; 13weeks; 5th semester;
ECTS credits 6

Rationale and Purpose of the Module:

The purpose of this module is to apply and analyse creative mediums which support the development of life skills for persons with an intellectual disability.

Syllabus: The role of the nurse in facilitating and processing diversional and recreational activities for persons with an intellectual physical/sensory disability. The role of creative mediums in health promotion, inclusion, choice and empowerment and reflection for people with intellectual disabilities. The use of drama to promote education, skill development and advocacy in the lives of people with an intellectual disability. Occupational and recreational social and self-help skills, for example swimming. Introduction to movement as an educational medium; expressive and creative movement skills for example drama, dance and mime, Creative games in group work. Strategies and techniques for implementing creative sessions for persons with an intellectual disability for example arts and crafts, puppetry.

NS4321 - CONCEPTS AND NATURE OF INTELLECTUAL DISABILITY

26L/26Lab; 13weeks; 1st semester;
ECTS credits 6

Rationale and Purpose of the Module:

This module aims to introduce the student to the concept of intellectual disability, nursing practice and a rights based approach to care and service provision. Within the module the role and contribution of the RNID in caring for people with an intellectual disability is integrated and cognisance is paid to the ever changing paradigm shifts of service ideologies and healthcare provision.

Syllabus: Concepts of impairment and disability: its incidence, causation, manifestations, classification criteria and terminology. Differentiation between intellectual disability and mental illness. Historical development of nursing practice, service provision and approaches to nursing care (e.g. holism, personcentred). The role and function of the nurse as a healthcare professional, member of the multidisciplinary team and wider healthcare service. Organisational philosophy and ethos of service providers, nurse-client relationship and communication. Theory and application of the principles of normalisation, deinstitutionalisation, empowerment and advocacy. Effects of disability on the nuclear, extended family and society.

NS4323 - NURSING ADOLESCENTS AND ADULTS WITH INTELLECTUAL DISABILITY

26L/26Lab; 13weeks; 3rd semester;
ECTS credits 6

Rationale and Purpose of the Module:

The aim of this module is for each student to develop knowledge and skills required to support the person with an intellectual disability through adolescence and adulthood with their family.

Syllabus: Theories and stages of development relating to adolescence and adulthood. Cognitive, social and personality development. Implications of intellectual disability upon the adolescent and adult. Rights of the person with an intellectual disability: Education and training opportunities: occupational, vocational and work skills training. Therapeutic and creative activities including leisure and recreational provision for adolescents and adults. Moral development: values and spirituality. Relationship between spiritual well-being and physiological/psychological health.

NS4405 - MENTAL HLTH NURSING AND SPECIAL CLIENT GROUPS

26L/26Lab; 13weeks; 5th semester;
ECTS credits 6

Rationale and Purpose of the Module:

To aim of this module is to develop students' knowledge, understanding and nursing management of individuals experiencing physical

and/or emotional distress as a result of chemical substance misuse/addiction, disordered eating, self-harming/suicidal behaviour and abuse (physical, emotional, sexual). The module also aims to build upon the skills and knowledge gained in years one and two of the programme enabling the student to address complex care management issues in accordance with best practice guidelines.

Syllabus: Problems/disorders related to behaviour(s) resulting in physical and/or emotional distress e.g. eating disorders, suicidal behaviour, self-mutilation, violent aggressive behaviour, and sexual, physical, emotional abuse. Dual diagnosis (substance misuse and mental illness), chemical substances of misuse. Theories relating to the module focus disorders, epidemiology and predisposing and precipitating factors, nursing care, management and prevention. Specialised interventions e.g. risk assessment, harm reduction, relapse prevention, cognitive behaviour therapy, medication management (detoxification, maintenance), restraint, seclusion, special observation and legal requirements according to the Mental Health Act (2001). National and international policies and guidelines for best nursing practice. Contemporary research findings. Family work and theory as it relates to the module focus. Introduction to forensic mental health nursing.

NS4415 - MENTAL HEALTH AND THE CARE CONTINUUM

26L/13T; 13weeks; 5th semester; ECTS credits 6

Rationale and Purpose of the Module:

The purpose of this module is to develop students' knowledge and understanding of common mental-health problems experienced across the age spectrum. This module will discuss the more common mental health problems associated with children and adolescents, childbirth and older persons.

Syllabus: Common mental health disorders experienced among childhood and adolescences. Bio-psychosocial theories of childhood and adolescent psychopathology. Evidenced based assessment and therapeutic approaches in the management of childhood and adolescent mental health problems and the role of the nurse in the child and adolescent mental health team. Mental health problems related to childbirth e.g. postpartum mood disorders. Evidence based approaches to care and the role of the mental health nurse in the assessment and management of mental health problems associated with childbirth. Mental health disorders in the older person including mood disorders and cognitive disorders e.g. dementia and delirium. Evidence based assessment and interventions in the care and management of older persons with mental health problems including risk management, pharmacological, non- pharmacological interventions, person-centred approach and carer/family needs. Applied pharmacology. Nursing care of persons with an intellectual

disability experiencing mental health problems.

NS4421 - THEORETIC BASIS FOR MENTAL HEALTH NURSING

26L/26Lab; 13weeks; 1st semester;
ECTS credits 6

Rationale and Purpose of the Module:

The aim of the module is to introduce students to the historical development of nursing within mental health care. To provide an overview of current mental health/psychiatric nursing practice within healthcare settings. Introduce the student to mental health specific terminology, mental health disorder classifications and the Mental Health Act 2001.

Syllabus: Origins and developments of mental health nursing within the context of contemporary nursing practice. Introduction to the philosophy, theories and models of mental health nursing e.g. institutionalisation and normalisation, person-centred care, recovery. Role of the mental health nurse in a variety of health care settings. Incidence, prevalence, classification, and models of mental health/illness. Promotion and maintenance of safety in practice settings.

NS4423 - ALTERED HOMEOSTASIS AND MENTAL HEALTH

26L/26Lab; 13weeks; 3rd semester;
ECTS credits 6

Rationale and Purpose of the Module:

The purpose of this module is to develop mental health nursing students' appreciation of the importance of a holistic approach to service user care and to develop their knowledge and understanding of physical illnesses common in mental health care.

Syllabus: The inter-relationship between mental and physical health. The physical health status of persons with mental illness. The role of the nurse in promoting the health of this service user group. The aetiology, signs, symptoms, treatment and nursing care of physical illnesses which commonly present in mental health care e.g. diabetes, thyroid disorders, respiratory and circulatory disorders, urinary tract infections, incontinence and constipation. Somatoform disorders: presenting features and nursing care of persons with somatoform disorders. Applied pharmacology.

LA4205 - NURSING AND MIDWIFERY AND THE LAW

26L/13T; 13weeks; 5th semester; ECTS credit 3

Rationale and Purpose of the Module:

This module provides an understanding of the role and application of the legal process in the practice of nursing and midwifery.

Syllabus: The sources of law: the Constitution, case law, and legislation. The court structure; tribunals and other dispute resolution mechanisms. The regulatory framework: The Nurses and Midwives Act, An Bord Altranais, registration and control on the right to practice and the Misuse of Drugs Acts, confidentiality, record keeping, data protection legislation and freedom of information legislation. Health and safety provisions as applied to the health care environment. Wills. Charter of Patients' Rights. Disciplinary issues: fitness to practice, investigation, and sanction. Issues in criminal and tort law in the practice of nursing and midwifery: Liability for negligence. Issues of informed consent, informed choice, right of refusal. Mental health provisions. Fundamental human rights issues.

NS4057 - CONSOLIDATING MIDWIFERY PRACTICE

23L/13T; 13weeks; 7th semester; ECTS credit 9

Rationale and Purpose of the Module:

To provide students with opportunities to integrate and consolidate evidence based practice in the care of women experiencing normal and complicated birth.

Syllabus: Theoretical Content: Consolidation of evidence based learning in the context of the safe and effective provision of midwifery care. Apply the concepts of physiological and normal birth and its application to midwifery practice in all settings. Measuring quality clinical practice. Psychological adaptation during pregnancy, labour, birth and the puerperium (including antenatal and postnatal depression). Assessment tools used in midwifery practice. Midwifery registration and practice, roles and responsibilities in teaching and assessing in midwifery, preceptorship, continuing professional and career development.



UNIVERSITY of LIMERICK

OLLSCOIL LUIMNIGH

Faculty of Arts, Humanities
and Social Sciences

40^{1972 - 2012} years of Innovation

AUTUMN 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.

MISSION

The mission of the Faculty of Arts, Humanities and Social Sciences is to support excellence in teaching and research within the general context of the University's overall mission statement and national needs.

DEPARTMENT/FACULTY

History (HIS)

Irish World Academy of Music & Dance (IWAMD)

Languages, Literature, Culture & Communication (LLCC)

Law (LAW)

Politics & Public Administration (PPA)

Sociology (SOC)

UNDERGRADUATE DEGREE PROGRAMMES OFFERED

LM044 - Applied Languages

LM032 - Arts - Joint Honours

LM036 - Economics & Sociology

LM035 - English and History

LM040 - European Studies

LM048 - Gaeilge agus sna Meáin Úra

LM046 - History, Politics, Sociology & Social Studies

LM043 - International Insurance & European Studies

LM030 - Irish Music and Dance

LM039 - Journalism and New Media

LM045 - Languages, Literature and Film

LM020 - Law & Accounting

LM029 - Law Plus

LM033 - New Media & English

LM022 - Politics and International Relations

LM041 - Politics & Public Administration

LM038 - Psychology and Sociology

LM031 - Voice and Dance

IRISH WORLD ACADEMY OF MUSIC AND DANCE

The Irish World Academy of Music and Dance is a centre of academic and performance excellence housed at the University of Limerick, Ireland. It offers a suite of taught MA courses and a BA and Grad.Dip in music and dance related subject areas. Its research is at the forefront of these fields of enquiry worldwide. Community outreach, artists in residence and a series of concerts, seminars and a summer school showcase this unique focus to local and international spheres

Modules with prerequisites/auditions

The practicum modules are designed primarily to develop the performance skills of students and to do this they will work with visiting and resident tutors who represent the cream of performance in Ireland and beyond. The main bulk of performance work will be solo but there will also be a significant amount of ensemble work. Students will also be encouraged to develop second performance skills -making them more versatile as performers.

All practicum modules require an audition on arrival

- * a prerequisite level of knowledge is required for students taking these courses-students will need to check with the course leader on arrival to see if they can take these courses

ASSESSMENTS:

Assessment practices vary between modules. In general, practicum modules have a continuous assessment and performance component while lecture-based modules are assessed by written submissions, project-based work, examinations, or any combination of these elements. The assessment criteria for each module are detailed in the course documentation each academic semester, which is subject to change and updating on an ongoing basis.

MU4135 - IRISH TRADITIONAL MUSIC 1 2L/2Lab/1T; ECTS credits 6

This module is an introduction to the growing field of traditional music and dance studies and will give the student an overview of some of the important features of these traditions.

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.

MD4021 - INTRO TO IRISH TRAD MUSIC AND DANCE STUDIES 1

2L/2Lab/1T; ECTS credits 6

This module is an introduction to the growing field of traditional music and dance studies and will give the student an overview of some of the important features of these traditions. 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.

MD4001 - PRACTICUM 1A

6Labs; ECTS credits 6

Development of student's primary performance interest, whether instrumental, vocal or dance. Also the development of musicianship and body awareness skills. This module is divided into two parts. The first is the development of the student's performance practice will occur in the stylistic context most common to the performance practice of the student. However tutors will begin to encourage students to look to other styles and repertoires current within a primarily Irish context. This will take place in the context of one-on-one classes and develops from the progress in Practicum 1a and 2a. The second part of these modules will be related to performance skills and again this element will be divided into two separate streams for musicians and dancers. Musicians will take

Keyboard Skills and Aural Training which will include keyboard harmony (vamping, chordal analysis and application, both aural and written), aural skills (transcribing tunes and songs, awareness of traditional forms and styles, sight reading and sight singing). It is important to emphasise that the orientation of this stream of multi-skill development will be towards the needs and realities of traditional Irish music and musicians but with a wider context in mind. Dancers will take Movement Awareness. This will include practical dance workshops to introduce some of the movement principles that inform other dance practices today. It will also include an introduction to techniques and practices designed to promote the release of tension in the body in order to facilitate greater ease of movement. It will also include an introduction to the use of visual imagery as a way to develop an understanding of the correct alignment in movement. Finally an introduction to supplementary practices used by dancers as part of their training eg. Yoga, Feldenkrais, Alexander technique and Pilates. Improvisation will be undertaken in practical workshops to introduce the concept of improvisation as a means of exploring movement possibilities and also expanding movement vocabulary. Improvisations will include working with movement themes, dramatic themes, props, text and visual stimuli.

MD4011 - PRACTICUM 1B

5 Labs; ECTS credits 6

Development of the student's primary performance interest, whether instrumental, vocal or dance. Students will be encouraged to engage in a dynamic self-critical process conducive to development and related to the principle of reflective practice. Also the development of musicianship and body awareness skills.

This module is divided into two parts. The first is the development of the student's performance practice and will occur in the stylistic context most common to the performance practice of the student. However, tutors will begin to encourage students to look to other styles and repertoires current within a primarily Irish context. This will take place in the context of one-on-one classes and develops from the progress in Practicum 1a. The second part of these modules will be related to performance skills and again this element will be divided into two separate streams for musicians and dancers. Musicians will take Keyboard Skills and Aural Training which will include keyboard harmony (vamping, chordal analysis and application, both aural and written), aural skills (transcribing tunes and songs, awareness of traditional forms and styles, sight reading and sight singing). It is important to emphasise that the orientation of this stream of multi-skill development will be towards the needs and realities of traditional Irish music and musicians but with a wider context in mind. Dancers will take Movement Awareness. This will include practical dance

workshops to introduce some of the movement principles that inform other dance practices today. It will also include an introduction to techniques and practices designed to promote the release of tension in the body in order to facilitate greater ease of movement. It will also include an introduction to the use of visual imagery as a way to develop an understanding of the correct alignment in movement. Finally an introduction to supplementary practices used by dancers as part of their training eg. Yoga, Feldenkrais, Alexander technique and Pilates. Improvisation will be undertaken in practical workshops to introduce the concept of improvisation as a means of exploring movement possibilities and also expanding movement vocabulary. Improvisations will include working with movement themes, dramatic themes, props, text and visual stimuli.

MD4023 - IRISH TRADITIONAL MUSIC AND DANCE STUDIES 1

3L/2Lab/2T; ECTS credits 6

To provide a deeper understanding of the historical development of these Irish traditions. In this module, as in Traditional Music and Dance Studies 2 and 3, students will follow three streams of study concerning instrumental music, song and dance. This module will deal with music, song and dance up to 1900, approaching the historical development of the tradition in pre-twentieth century Ireland and its various roots and equivalent developments abroad. The areas covered will be Song in

Ireland ù Texts and Manuscripts; Harp Music
ù Rise and Fall of an Irish Art Music Tradition;
The History of Irish Traditional Dance.

**MD4031 - CONTEXTUALISING AND
VOCATIONAL STUDIES 1-Popular
Music & Dance Studies/Music & Dance
Technology**

2L/3Lab; ECTS credits 6

Contextualising and Vocational Studies
1 Popular Music and Dance Studies /
Audio/Visual Technology. This module has
two strands with particular purposes - to
contextualise interdisciplinary academic fields
of popular music and dance studies and to
introduce students to audio/visual technology
theory and practice in order to begin to build
upon such technical skills

In this module students will be introduced to
the academic field of popular music and dance
studies, examining popular music and dance
movements, particularly those relevant to Irish
traditions. They will also begin to consider the
role of traditional artists as business people,
competing in an international market.

**MD4037 - CONTEXTUALISING AND
VOCATIONAL STUDIES 6 - WORLD
MUSIC AND DANCE SURVEY /
VOCATIONAL PROJECT**

2L/1Lab; ECTS credits 6;

To expose students to a broader world of
traditional music and dance under the rubric

of world music, and to develop a vocational
project relevant to the potential future
professional experience of the student.
In the first part of this module students will
study the music and dance in the context of
'world music' with a specific focus on England,
Scandinavia, Scotland, Brittany, Galicia, North
America, North Indian Classical traditions,
and Indonesia. This part of the module will
be assessed through course-work and exam.
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). The assessment
of this will be decided by the course director or
relevant members of staff and be appropriate
and individual to the project chosen, subject to
approval by the student.

**MD4051 - SOMATICS AND RITUAL
PERFORMANCE 1**

1L/6Labs; ECTS credits 6

This module will provide each student with the
opportunity to develop skills to research and
develop an informed and intelligent approach
to own specific technical needs so they can
develop healthy and sustainable practices
in preparation for performance. It will also
encourage them to develop skills to explore
new models for ritualising performance, which
will increase their options for engagement in a
range of professional practices.
An introduction to the history of

contemporary somatic practices and
their various application in arts practice
with particular reference to performance,
educational, and therapeutic contexts, with
particular reference to the somatic practice of
Body Mind Centering, in addition students
will study historical, cultural and social aspects
of ritual practice with specific reference to
performance rituals.

**MD4053 - SOMATICS AND RITUAL
PERFORMANCE 3**

1L/6Labs; ECTS credits 6

This module will provide each student with the
opportunity to develop skills to research and
develop an informed and intelligent approach
to own specific technical needs so they can
develop healthy and sustainable practices
in preparation for performance. It will also
provide the opportunity to develop skills to
create innovative new models for ritualising
performance and increase their options for
professional practice.

This module will provide each student with
the opportunity through the study and
practice of Authentic Movement, Feldenkrais
and Alexander techniques to develop
skills to research and develop an informed
and intelligent approach to own specific
technical needs so they can develop healthy
and sustainable practices in preparation
for performance; it will also provide the
opportunity for students to develop skills
necessary to explore and develop innovative
models for ritualising performance and

increase their options for engagement in a
range of professional contexts.

**MD4097 - COMPOSITION AND
ARRANGEMENT IN IRISH
TRADITIONAL MUSIC 1**

ECTS credits 6

To develop the students skills and knowledge
of composition and arrangement in the idiom
of Irish traditional music as it is performed
contemporarily.

Students will examine the various ensemble
practices in Irish traditional music in currency
today. These practices will include 'traditional'
as well as more contemporary and fusion based
styles of composition and arrangement. This
examination will engage ethnomusicological
issues of origin and creation as well as practices
of record, transcription and reproduction.
Students will also develop and synthesize their
own arrangement and composition practices
from those studied. Students will be provided
with written feedback according to BA Irish
Music and Dance policy.

**MD4061 - VOICE AND DANCE SKILLS
FOR PERFORMANCE 1**

6Labs/2T; ECTS credits 6

To provide the opportunity for students
to study a broad range of movement and
voice techniques in order to develop good
understanding and foundation for their
practice. The development of a broad base of

performance skills will empower the students in professional performance based contexts. Students will be required to specialise in voice or dance, and will study and practice a range of different techniques and methods designed to provide them with a strong foundation on which to develop their technical ability in both dance and voice focussing on contemporary dance and voice technique training and including dance techniques and practices from Irish, Asian and African traditions, as well as ear training, sight reading/singing and oral transmission learning to complement the technique of voice production.

MD4063 - VOICE AND DANCE SKILLS FOR PERFORMANCE 3

6Labs/2T; ECTS credits 6

The development of a broad base of performance skills together with an understanding of their historical origins and the ability to analyse movement and sound will provide the students with a depth of understanding and knowledge which will extend their opportunities for engagement in professional performance based contexts. Students will be required to specialise in voice or dance, and through regular technique classes and workshops students will continue to study and practice the technical principles underpinning both western and world dance and voice traditions; they will also study movement and voice analysis to increase their understanding of these practices.

MD4071 - REPertoire, Improvisation and Composition 1

1L/6Labs; ECTS credits 6

To develop the understanding in both practice and theory of the works from the canon of western contemporary and world dance and song traditions in order to fully understand their relevance in current performance contexts. To develop skills necessary to prepare to perform these dances and songs in range of performance contexts.

Students will be required to specialise in voice or dance, and will study and practice dances and songs from the repertoire of western contemporary and Asian, African and Irish dance; and Gregorian chant, Irish traditional song, western solo and choral, and jazz and pop music traditions; in addition they will study the historical and cultural contexts within which these repertoires developed, and study and practice skills necessary to develop in both solo work and as a member of an ensemble.

MD4087 - ADVANCED ENSEMBLE

ECTS credits 6

This is a module for fourth year BA Irish Music and Dance Students who wish to develop their ensemble skills further and who show a propensity to do so in their assessment for module MD4016.

Students in this module will concentrate on developing their knowledge of ensemble

skills taken from a number of musical contexts. These skills will be developed in the context of their own performance practices. Students will attend a number of lectures that engage a systematic examination of the musical processes involved in the creation of ensemble. Such processes will then be utilised in performance laboratory classes, which will result in a public performance, developed in the context of a reflective journal.

MD4107 - VOCAL HYGIENE AND PEDAGOGY

ECTS credits 6

This module will focus on the anatomical, functional, and psycho-social aspects of the singing voice. It is encouraged for all singers on the BA Irish Music and Dance but is open to all students as an elective.

This course will serve as an introductory course to the anatomical, functional, and psycho-social aspects of the singing voice. Intended for singers and non-singers alike, this course will give the student an understanding of the mechanism and function of the components of the singing instrument. With an emphasis on healthy, non-damaging vocal use across all styles of music, the course will cover important aspects of vocal health and hygiene as well as noting the social use of the voice in music and speech. Students will receive verbal feedback on their progress on a weekly basis and also written feedback after the final exam. A reflective practice (i.e. self-observation) journal will also be part of the coursework, and as

part of the assessment will gauge students' understanding of sources, concepts, as well as provide important observations to assist students' own progress.

CU4003 - ROMANTICISM

26L/13T; ECTS credits 6

LLCC

Focusing on the genesis and development of Romanticism in Western Europe, this module will explore some of the key thematic concerns which defined the Romantic movement in British, French, German and Spanish culture. Isolating and evaluating a number of the common themes that run through this literary, artistic, and cultural movement, this interdisciplinary module will treat critically of such issues as the Romantic self; the role of the imagination in Romantic literature; the Romantic exploration of the subconscious; the concept of the Romantic quest; the interplay between the Romantic subject and society; and the influence of gender on Romantic authorship. Also making reference to the social and political revolutions that framed the ideological landscape of the period, this course will examine the expression of Romantic selfhood through a variety of genres and media, including poetry, fiction, drama, letter writing, art, and music

CU4007 - POPULAR GENRES AND POSTMODERNISM

26L/13T; ECTS credits 6

LLCC

The various forms of popular genres and the functions attributed over time to the category of the popular will be explored through an examination of the genesis and development of a range of genres such as the detective novel, science fiction, horror, romance, comics etc.. Theoretical positions with regard to hierarchical taste formations and the shifts in the critical debate on popular culture will be presented and discussed, in particular in the context of postmodernist theory. A central issue will be how popular genres articulate socio-cultural values and to what extent they reinforce ideological stances on, among others, gender, class, ethnicity. The course will focus on an in-depth analysis of a number of literary (and cinematographic) works from different cultural and national backgrounds. These will include reworkings of genres such as the detective novel and science fiction in international postmodernist literature.

CU4027 - VISUAL CULTURAL STUDIES (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits: 6

LLCC

Visual cultural studies from the 19th to 21st centuries will be studied in this module: the theories of representation in painting,

photography, cinema, television and the internet will be centred thematically around such areas as gender, race, globalisation and virtuality.

CU4037 - EUROPEAN CINEMA FROM ITS BEGINNINGS TO THE 1950S

39L; ECTS credits 6

LLCC

Principles of film history; Europe vs. America; the concept of National Cinema; aesthetics of silent vs. sound films; literature vs. moving images; visions of modernity; images of technology and science fiction. Aspects covered will include: Beginnings (LumiPre brothers, Georges Méliès); Nordisk Film Company; Film and World War I; Soviet Cinema (Montage, Eisenstein, Dziga Vertov); Weimar Cinema (Expressionism, Fritz Lang, Murnau, mountain films, proletarian cinema, Marlene Dietrich); French cinema (Gance, Renoir); Nazi Cinema (cinema as propaganda; Riefenstahl); Italian Neo-Realism (Rossellini, de Sica), Spanish Cinema (Berlanga, Bunuel).

CU4121 - INTRODUCTION TO NEW MEDIA AND CULTURAL STUDIES (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits: 6

LLCC

This module introduces students to the fields of cultural studies to develop an understanding

of culture from a European perspective. Areas covered include; the concept of culture, the English language tradition, German theories of culture, French theories of culture, gender and race, psychoanalysis, and culture and communication. Tutorials will take the theoretical aspects and apply them to present day cultural phenomena.

CU4127 - CULTURAL STUDIES 5: COMPARATIVE LITERATURE (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits: 6

LLCC

The aim of this interdisciplinary module is to examine literatures comparatively, both from the point of view of theory, and in practice. The syllabus will deal with the different issues which arise in comparing literatures; cultural similarity and diversity; nationalism; stereotypes and archetypes; post-colonialism; the use of common sources such as the classics and the Bible; cross-national literary and cultural movements such as Romanticism and Feminism; the role of translation in accessing literature; the influence of writers both inside and outside their social, national and linguistic groups; national stereotypes and clichés in literature and varying attitudes to language. A large part of the syllabus will be given over to practical applications of the issues of chosen texts.

CU4128 – NEW MEDIA, LANGUAGE AND GLOBALISATION

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits: 6

LLCC

To deepen students' understanding of the interaction between language and technology, economics and politics in New Media; To explore the linguistic and sociolinguistic characteristics and consequences of New Media practices, To analyse these practices and their consequences at both micro and macro levels; To develop students' critical skills.

EH4001 - CRITICAL PRACTICE 1: ACADEMIC READING AND WRITING (AUTUMN/1)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits: 6

LLCC

This module aims to develop the skills of literary analysis and academic writing, in tandem with an understanding of literary genres and literary theory.

EH4003 - INTRODUCTION TO LITERARY THEORY (AUTUMN/3)

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

LLCC

What is literature? How does the historical and social context of a work alter its meaning? What influences our understanding of a literary work?

This course examines the numerous ways in which critical theory has challenged traditional assumptions about literature. A wide range of critical approaches will be discussed, and applied to two core texts.

EH4007 - LITERARY MODERNISM

ECTS credits 6

LLCC

This module covers British literature from 1900-1945. Writers will include major novelists of the period such as E.M. Forster, D.H. Lawrence, Virginia Woolf and James Joyce; and/or major poets such as T.S. Eliot, William Butler Yeats, W.H. Auden and the poets of the First World War. In defining the themes and interpreting the literature of the period, attention is paid to political, social and cultural constructs (for example, the World Wars, the suffrage movement, the impact of other art forms), to significant concepts and philosophies (for example, Primitivism, psychoanalysis, physics) and to literary movements (for example, Bloomsbury).

EH4013 - SENSIBILITY AND ROMANTICISM (AUTUMN/2)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits: 6

LLCC

The aim of this course is to provide students with a survey of literature 1770 to 1830. This course aims to immerse students in the literary language of the time, and instructs them in ways to respond to this literature in ways which are critically and historically informed.

EH4017 - CONTEMPORARY AFRICAN LITERATURE IN ENGLISH

ECTS credits 6

LLCC

This module will examine the literary representation of violence by authors writing across the African continent today. Specifically, our analyses of selected works and writers will explore the following themes: 1. how attempts toward the national catharsis of post-genocide Rwanda and post-apartheid South Africa have been unsuccessful in ridding the two countries of cruelty and bloodshed; 2. how child soldiers come to terms with their violent and violated childhood while struggling to reinvent themselves in the midst of ruined societies; 3. how anti-colonial liberation warfare is remembered and informs contemporary identity struggles; and 4. how the memory of slavery informs the desire for rootedness and home. We will read novels, autobiographies, and hybrid texts, alongside watching films and

reviewing key essays in the field of African literature.

EH4023 - THE NEW WORLD: AMERICAN LITERATURE TO 1890

ECTS credits 6

LLCC

American literature pre-1620 (for examples, Columbus, de Vaca, Harriot, Smith); American literature from 1620 to the early 18th century (for example, Bradford, Bradstreet, Rowlandson, Byrd); the

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Puritan influence (for example, Williams, Taylor, Mather, Edwards); the Age of Enlightenment and Revolution 1750-1820 (for example, Paine, Jefferson, The Federalist, Murray); 19th century American literature (for example, Emerson, Hawthorne, Thoreau, Whitman, Melville, Dickinson); incipient American modernism.

EH4033 - AFTER THE REVIVAL: STUDIES IN MODERN IRISH POETRY

ECTS credits 6

LLCC

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.

EH4111 - THE IRISH LITERARY REVIVAL (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 26L/26T; ECTS credits: 6

LLCC

The course examines Irish writing in English at a crucial stage in its development. It concentrates on poetry and drama with special attention being given to the work of W.B. Yeats; the fiction-writing tradition is also studied. Background and context form an integral part of the course.

FR4141 - FRENCH LANGUAGE AND SOCIETY 1: INTRODUCTION TO FRENCH STUDIES (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 13L/26T/13LAB; ECTS credits: 6

LLCC

Textual analysis and commentary, translation, summary and essay writing in the context of a variety of issues relevant to contemporary French culture and society; development of oral skills and listening comprehension; revision of all basic grammatical structures

of French through the texts analysed in class; development of autonomous language-learning skills.

FR4143 - FRENCH LANGUAGE AND SOCIETY 3: EDUCATION AND WORK ENVIRONMENT IN FRANCE (AUTUMN/2)

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

Introduction to aspects of the world of work in France: course work will include letter writing preparation of dossiers on specialist topics economic and commercial translation role plays involving telephone conversations interviews presentations etc.

FR4147 - FRENCH LANGUAGE AND SOCIETY 5: FRANCE, EUROPE AND BEYOND (AUTUMN/4)

4 hours per week; 13 weeks/3rd semester; 13L/39T; ECTS credits:6
LLCC

Introduction to key moments in the history of France in European affairs and that of France with the francophone communities language varieties in France and the francophone countries: this will be done through the study of a variety of texts and will provide the basis for language activities including reading and linguistic analysis of authentic texts, development of written skills discussion

and debate oral presentations and translation of authentic texts: in addition students will study a work of literature from a francophone country.

FR4241 - FRENCH LANGUAGE, CULTURE AND SOCIETY 1: INTRODUCTION TO FRENCH STUDIES (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6
LLCC

Textual analysis and commentary, translation, summary and essay writing in the context of a variety of issues relevant to contemporary French culture and society; development of oral skills and listening comprehension; revision of all basic grammatical structures of French through the texts analysed in class; development of autonomous language-learning skills

FR4243 - FRENCH 3A (AL) (AUTUMN/2)

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

Introduction to aspects of the world of work in France; letter-writing, preparation of dossiers on specialist topics, economic and commercial translation, role plays involving telephone conversations, interviews, presentations.
Prerequisite FR4222

FR4247 - FRENCH LANGUAGE, CULTURE & SOCIETY 5 (AUTUMN/4)
4 hours per week; 13 weeks/7th semester; 13L/39T; ECTS credits:6
LLCC

Development of language skills through reading and analysis written and oral of authentic texts: the role of France in European affairs: the francophone communities; current issues in Translation Studies: practice in translation in a variety of areas as technology international affairs commerce:
Prerequisite FR4246

FR4621 - LITERATURE AND CULTURE 1 TWENTIETH-CENTURY LITERATURE IN FRENCH 1: 1900-1945 1-2-1 (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 13L/26T/13LAB; ECTS credits:6
LLCC

Four literary texts will be studied; works by authors such as the following will be included: Mauriac, Gide, Colette, Giraudoux, Apollinaire, Damas.

FR4623 - FRENCH LITERATURE & CULTURE 3: THE ENLIGHTENMENT IN FRANCE (AUTUMN/2)
3 hours per week; 13 weeks/3rd semester; 26L/13T; ECTS credits:6
LLCC

The module will concentrate on the following themes in a variety of texts: the cosmopolitan enlightenment campaign for toleration optimism the philosophies and the encyclopaedia debate on inequality.

FR4627 - FRENCH LITERATURE AND CULTURE 5: INTELLECTUAL MOVEMENT (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6
LLCC

Two/three areas will be chosen each year from among the following and a variety of theoretical and literary texts will be addressed: existentialism ii structuralism/semiology iii post modernism iv feminist theory.

FR4921 - FRENCH FOR BUSINESS* 1A (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 26L/26T; ECTS credits:6
LLCC

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; means of payment, organisational structures of firms, Company types.

FR4923 - FRENCH FOR BUSINESS 3A (AUTUMN/2)

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

LLCC

The use of authentic material (both Written and oral) to increase proficiency in relevant work situations which the students are likely to encounter during their professional activity; focus is on communication networks, insurance and advertising.

Prerequisite FR4922

FR4925 - FRENCH FOR BUSINESS 5A (AUTUMN/3)

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

LLCC

This module entitled 'Le monde du travail' focuses on the organisational structure of a cross section of French firms and the functions of their various departments; it includes the development of trade unions and the relationship of the social partners; students are asked to participate in a case study involving industrial issues. *Prerequisite FR4924*

FR4927 - FRENCH FOR BUSINESS 7A (AUTUMN/4)

4 hours per week; 13 weeks/7th semester;
26L/26T; ECTS credits:6

LLCC

"La region et l'Europe"; the socio-economic identity of the regions of France; study of decentralisation and regionalisation; the techniques necessary to give a detailed presentation of an economic issue through the use of statistics, graphs and key economic phrases.

Prerequisite FR4925

GA4105 - IRISH FOLKLORE 1 (AUTUMN/3)

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

LLCC

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.

GA4115 - IRISH LANGUAGE 1 (AUTUMN/3)

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

LLCC

An introductory course in communicative Irish, the language content of which is based on scientific research on frequencies of lexis, verbal forms and syntactical patterns in conversational Irish; the external history of

the Irish language; introduction to early Irish literature.

GA4163 - BEGINNERS IRISH 3

13L/13Lab/52T; ECTS credits 6

LLCC

To encourage transfer of oral and written communicative skills to a wider range of situations. To consolidate and revise the grammar, pronunciation and communicative skills acquired in the first two semesters. Students will progress to a level suitable to undertake a coop placement in Irish and join students who have successfully completed modules Teanga, Sochaí agus Saíocht 1-3, in Semester 6.

GE4141 - GERMAN LANGUAGE AND SOCIETY 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester;
13L/26T/13LAB; ECTS credits:6

LLCC

Lecture: The German language, its history and relationship with other languages; political geography of the German-speaking countries; historical background to present day Germany, focus on 1871 to 1939 Tutorials: a) reading 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: grammatical categories and terminology,

graded English/German translation exercises, grammar in use/communicative grammar. Language laboratory: exercises in pronunciation, listening comprehension and grammar utilizing CALL facilities.

GE4143 - LIVING AND WORKING IN GERMANY (AUTUMN/2)

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

LLCC

Lecture: education environment: the educational system, universities and university life, the legacy of 1968; work environment: vocational education, industrial relations, company structures, trade unions, working in the east; working in the west; the legacy of state socialism; xenophobic tendencies; Germany as a multicultural nation. Tutorials: a) discussion of authentic text material and a novel to support the lecture, focus on the development of writing skills and cultural awareness; b) grammar in context. Language laboratory: CALL exercises; language related exercises based on German TV programmes dealing with the issues covered in the lecture.

GE4147 - GERMANY, EUROPE AND BEYOND (AUTUMN/4)

13L/39T; ECTS credits 6

LLCC

Lecture: the debate about European

unification; Germany and its neighbours; Germany and the Third World; German economic and cultural activities abroad; the image of Germany abroad and the German self-image; German/Irish relations.

Tutorials: a) discussion of texts connected with the lecture b) contrastive cultural studies including students' presentations in the foreign language; c) graded translation exercises focussing on German/English translations.

GE4211 - GERMAN FOR BEGINNERS (AUTUMN/1)

6 hours per week; 13 weeks/1st semester; 13L/13T/4L; ECTS credits: 6

LLCC

The German language, its history and relationship with other languages; political geography of the German speaking countries; sociocultural and historical background to the German-speaking countries of Europe in the 19th and early 20th century; introduction to the concepts of gender, number and case and to the basic structures of the German language; German poetry and short stories; approaches to language learning, including developments of autonomous learning skills, exploitation of reference material and dictionaries, etc.; use of all laboratory facilities in their private language study.

GE4213 - GERMAN FOR BEGINNERS 3

6 hours per week; 13 weeks/1st semester; 13L/13T/52L ECTS credits: 6

LLCC

The educational system, universities and university life; vocational education, industrial relations, company structures, trade unions; Germany as a multicultural nation; completion of basic structures and vocabulary of the German language, focusing particularly on grammar and lexis in context; consolidation of skills, focusing particularly on the development of speaking and writing skills and cultural awareness; German Erzählung and novel; preparation for living and working/ studying in a German-speaking environment (application letters, cvs, practice of short interview situations, using the telephone, etc.)

GE4241 - GERMAN LANGUAGE, CULTURE AND SOCIETY 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits: 6

LLCC

Lecture: The German language, its history and relationship with other languages; historical geography of the German-speaking countries; historical and cultural background to present day Germany, focus on 1871 to 1939.

Tutorial work: Grammar/translation: introduction to basic grammatical categories and terminology; consolidation of existing grammatical knowledge and expansion into

more complex structures; contrastive work by means of English/German translation exercises; Text analysis & production: principles of textual analysis and text discussion (literary and non-literary); grammar in use/ communicative grammar. Laboratory: 1 hour per week in the CALL/language laboratory will support grammar and oral work.

GE4243 - GERMAN LANGUAGE CULTURE & SOCIETY 3 (AUTUMN/2)

4 hours per week; 13 weeks/3rd semester; 13L/39T; ECTS credits: 6

LLCC

Education environment educational systems, universities and university life, the legacy of 1968 work environment, vocational system, industrial relations, company structures, trade unions, xenophobic tendencies, Germany as a multicultural country: one hour text work, consolidates skills relating to textual analysis production, grammar in use and German-English translation one hour oral discussion presentation will also focus on authentic text material written video, etc, relating to intercultural issues adaptation and identity perceived differences in areas such as value systems social interaction etc: two short literary texts relating to lectures will also be discussed in this class and examined in the oral and written exams; one hour German linguistics continues with past and current developments in the German language:
Prerequisite GE4242

GE4247 - GERMAN LANGUAGE, CULTURE AND SOCIETY 5 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 13L/39T; ECTS credits: 6

LLCC

Lecture: The debate about European unification; Germany and its neighbours; Germany and the Third World; German economic and cultural activities abroad; the image of Germany abroad and the German self-image; German/Irish relations. Tutorial work: Oral presentation & discussion class: drawing on text and audio-visual materials to develop formal oral skills (analysing tone & register; reporting and commentary); Text analysis & production: analysis & writing of commentaries and critiques; Translation theory and practice: scientific, technical and legal 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.

GE4621 - GERMAN LITERATURE AND CULTURE 1 (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 13L/26T/13LAB; ECTS credits: 6

LLCC

Lecture: What is literature? how do we interpret a literary text? a brief history of German literature; German/Irish literary relations.

Tutorials: a) analysing literary examples from different periods; b) detailed analysis of two selected novels; introduction to the interpretation of literary texts in a foreign language.

GE4623 - ROMANTICISM, ITS BACKGROUND AND ITS LEGACY (AUTUMN/2)

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

LLCC

Lecture: critique of the Enlightenment; the Preromantics: Sturm und Drang; Romanticism in Europe; Romanticism in art and literature; political Romanticism, particularism and nationalism; Young Germany, Vormärz, 1848; the legacy of Romanticism in the 20th century. Tutorials: Discussion and analysis of selected writers of the romantic era including Novalis, E. T. A. Hoffmann, Eichendorff, Heine and women writers like Bettina von Arnim, Rahel Varnhagen and Dorothea Schlegel. Study of Romantic paintings (C. D. Friedrich, P. O. Runge).

GE4627 - GERMAN LITERATURE AND CULTURE 5: ASPECTS OF 20TH CENTURY WRITING IN GERMAN (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

LLCC

The works covered in this module may be drawn from the expressionist movement, Weimar and exile literature and post war writing: aspects which may be considered include literature and cultural identity the role of literature in political change the writer as social critic and women's writing:

GE4921 - GERMAN FOR BUSINESS 1 (ADVANCED) (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 26L/26T; ECTS credits:6

LLCC

Lecture: The German language, its history and relationship with other languages; political geography of the German-speaking countries; historical background to present day Germany, focus on 1871 to 1939. Intensive revision of grammatical structures; consolidation of existing language skills and development of a basic competency in the language; equal emphasis on development of accuracy in oral and written expression; examination of socio-economic and political structures and of Germany's cultural background.

GE4923 - GERMAN FOR BUSINESS 3A 1-3-0 (AUTUMN/2)

4 hours per week; 13 weeks/3rd semester; 13L/39T; ECTS credits:6

LLCC

Education environment educational systems, universities and university life, the legacy of

1968 work environment, vocational system, industrial relations, company structures, trade unions, xenophobic tendencies, Germany as a multicultural country Emphasis will be placed on enabling students to make presentations on business issues in German, introducing the concept and the importance of trade fairs (Messe); German companies in Ireland / Irish companies in Germany; issues in intercultural communication (German/Irish).

Prerequisite GE4922

GE4925 - GERMAN FOR BUSINESS 5A (AUTUMN/3)

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

LLCC

Provision of an adequate ability to interact in the specific situations arising within the areas chosen by students in this semester as their specialisation: familiarisation with the language of marketing and economics; introducing the language of finance and accounting; preparation and oral presentation of a case-study or report, based on the students' own area of expertise; revision of practical skills to prepare students for Co-operative Education placements.

Prerequisite GE4924

GE4927 - GERMAN FOR BUSINESS 6A (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

LLCC

Preparation and oral presentation of a case-study or report based on the students' own experience during Cooperative Education; the translation of general and business texts and documents from the foreign language; how to research Business subject matter. Analysis and familiarisation with current socio-economic issues in Germany.

Prerequisite GE4925

GY4013 - SOCIAL & URBAN GEOGRAPHY (AUTUMN/2)

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

SOC

Development and scope of social geography, paradigms, patterns and processes; change and development within rural communities; urban patterns, residential location, territoriality, intra-urban mobility, segregation; urbanisation as a social process, problems of growth and decay.

GY4023 - GEOGRAPHY DEVELOPMENT

26L/13T; ECTS credits 6

SOC

This module aims at familiarising students with the evolution of varying perspectives on development issues in Third World countries. It seeks to explore meanings, theories and strategies of development, and at promoting reflection on institutional and policy frameworks appropriate to tackling problems of development at multiple scales.

GY4031 - INTRODUCTION TO HUMAN GEOGRAPHY (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

SOC

Why human geography is worth doing; what human geography writes for students to read; worldviews through the eyes of the human geographer;

HI4007 - HISTORIOGRAPHY (AUTUMN/2)

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

HIS

The syllabus will be principally designed around discussions on questions of historiography and how past and recent controversies provide insights into

interpretative differences for understanding both history and myth; enlightenment and romanticism; thinkers, philosophers and philosophies of history/historicism; empiricism and 'scientific' history; the influence of propaganda and secrecy; Marxism; the Annales school; revisionism; post-colonialism; gender and ethnicity; the peripheries of historical knowledge; the archive; subaltern studies; memory and remembering to forget; public history and commemoration; the end of history?

HI4043 - EUROPE: ENLIGHTENMENT & REVOLUTION 1688 – 1815 (AUTUMN/2)

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

HIS

Changing mentalities in eighteenth-century Europe; the emergence of Russia and Prussia; the expansion of Britain as a world power; the Enlightened absolutist rulers; Spain in the eighteenth century; the collapse of the Old Regime in the 1780s; European revolution in the 1780s and 1790s; Napoleonic Europe; reaction, conservatism and romanticism, 1815–1830; Austria in the age of Metternich; the revolutions of 1848.

HI4053 - IRELAND: 1750 – 1850 (AUTUMN/2)

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

HIS

Diverse societies, economies and cultures: disunited kingdom and discontented colony; owning, managing and working the land: the rural economies; subsistence, markets, production and surplus; the long-term demographic trend and the demographic transition; family and household; gender, sexuality and patriarchy: proto-industrialisation, urban growth, and the modernisation of industry; breaking and making the union; professional society and the urban proletariat; the transformations of language use: Anglicisation 1750-1914; the failure of economic capacity: coping with poverty; rural prosperity and rural crisis; the triumph of capitalism.

HI4061 - REFORMATION AND THE MODERN STATE: EUROPE IN THE SIXTEENTH CENTURY

ECTS credits 6

HIS

This module aims to give students a thematic and chronological overview of the history of continental Europe during the sixteenth century. It is intended as a gradual introduction for first-years into the early modern period, and covers a shorter and more manageable time-frame than the previous

practice of teaching two centuries in one semester.

The waning of the middle ages and the culture of the renaissance; the political geography of early modern Europe - republics, new monarchies and composite polities; Europe in the broader context of the discovery of America; diet, demography and disease; a society of estates - nobles, clergy, merchants and peasants; family life - birth, marriage and death; Charles V, Francis I and the Habsburg-Valois conflict; Luthers protest and the Evangelical movement in Germany and Scandinavia; Calvin and the second Reformation; capturing the hearts and minds of the ordinary people - preaching and literacy; the response of the Catholic Church - Jesuits, the Council of Trent and the alliance of Church and State; Wars of Religion in France and the Netherlands; Philip II and Spanish world hegemony.

HI4081 - EARLY MODERN IRELAND

ECTS credits 6

HIS

The Anglo-Irish and Gaelic lordships, Tudor Reform and Reformation, the Tudor conquest (1579-1603); British settlement in Ireland; The crisis in the three kingdoms and the 1641 rising; The Catholic Confederates, Cromwellian reconquest and settlement; demographic and social trends in Restoration Ireland; 'The War of the Three Kings 1685-91; Patriotism and the Irish parliament.

HI4102 - IRELAND: REVOLUTION AND INDEPENDENCE, 1898 – 1968

26L/13T; 13 weeks; 2nd Semester;

ECTS credits 6

HIS

This course charts the history of how Ireland emerged from the British Empire in the years following 1898.

The course is divided into lecture themes which address a wide range of important topics. These include the impact of the Boer War on Ireland, resurgence of the Irish Republican Brotherhood, rise of Sinn Féin, Larkin and the Union Movement, Connolly and Irish Socialism, 1916 Rising, War of Independence, Civil War and Partition, Ireland during and after the Second World War, the declaration of the Republic, Civil Rights and the origins of the modern 'Troubles'.

HI4117 -The Irish Conflict, 1948-98

39L; ECTS credits 6

HIS

To provide students with a comprehensive grasp of the origins and nature of the 'Irish Troubles' from the birth of the Irish Republic to the 'Good Friday Agreement'. The course traces the evolution of the political crisis in both Irish jurisdictions, with reference to the British perspective.

JOURNALISM

JM4021 - JOURNALISTIC WRITING 1

2Labs/13T; 1st semester; ECTS credits 6

Journalistic Writing 1 aims to introduce students to the broad range of writing in journalism, from newspapers to magazines of all types, both print and internet. It aims to teach students to write short news stories for a variety of publications, including local and national newspapers and websites. Students will learn the principles of news reporting, including grammar and working to a style book. They will learn by comparing reports in national and local newspapers and magazines. They will have extensive practice in creating news stories. They will learn to report from speakers, radio and TV programmes and documents and will practise writing intros and structuring a news story both for print and the internet. They will learn about newsroom practices and journalistic routines. They will consider the work of leading news and feature writers and their distinct styles. They will write short profiles of people in the news. Assessment will be by the production of a portfolio of work completed during the course, and a final timed examination. This module is a basic introduction to news writing for journalism, including understanding what news is and how the news is created, how to write a news story, how to source news, and how to write cogently, concisely and clearly in English. Some writing for the web instruction is also included. This module is suitable for someone with little or

no journalism experience, or a journalism major whose first language is not English. Assessment is by coursework. Availability: 4-5 spaces.

JM4001 - PROFESSIONAL SKILLS FOR JOURNALISM 1

26L/52Lab; 1st semester; ECTS credits 3

This module will introduce students to the role of both the journalist and print and broadcast media in contemporary Irish society. Professional Skills for Journalism aims to introduce students to the range of skills needed for journalism, from finding and assessing ideas for news and features, editing and headline writing for print, internet and broadcast, and designing and creating for print and internet.

Students will learn to find stories through observation exercises, vox pops, and internet and other research. They will learn the principles of professional editing, headline and standfirst writing, and cutting to length. They will be introduced to the basic principles of illustrating news, including taking photographs and generating graphics. They will learn print and website design and will create their own websites. They will analyze and compare design in national and local newspapers and websites, and will use these analyses to inform their own work. They will have an introduction to broadcast journalism. Assessment will be by the production of a portfolio of work completed during the course, and a final timed examination

This module introduces students to sub-editing and design techniques for newspaper publishing. It strengthens students' own writing abilities by examining key rules of grammar, punctuation and spelling, sharpening student's editing abilities. The design elements introduce students to basic newspaper design techniques using Adobe InDesign and photo editing using Photoshop. This module is suitable for someone with little or no journalism experience, or a journalism major whose first language is not English. Students should have a good command of written English already, however, and will need to have a basic familiarity with Adobe design software. Assessment is by coursework. Availability 4-5 spaces

JM4003 - INTERVIEWING AND REPORTING

26Labs/13T; 3rd semester; ECTS credits 6

Interviewing and reporting aims to develop student's skills at researching and carrying out interviewing face to face and by telephone, and covering a patch as for a local newspaper. Students will study interviewing in depth, learning how to select interview subjects, research topics and prepare for the interview. They will carry out a face-to-face interview with a newsmaker in class, reflect on that interview and the ones by fellow classmates, and write up both their own and classmates interviews as news stories. They will research and carry out a telephone interview. During the second half of the semester students will

be assigned to a local patch, from which they will, with the guidance of the tutor, produce a portfolio including a report on the area, off diary and on diary stories and short features, with suitable pictures. This material must be designed into pages for a dummy local paper. Classes throughout the semester will include revision on news writing as the students develop and polish their stories. Assessment will be by coursework: production of a portfolio of interviews and a folder of work from the student's patch, and a timed exam on news writing and editing.

This module is an intermediate class, aimed at student at least one year of news writing and some newspaper design experience. Students are expected to be already able to write news stories, and will be asked to report on events in the city including court and council meetings, as part of the module. Students also conceive, plan, design, edit and produce a newspaper, the City Voice, as part of the module. Assessment is via written assignments, a simulated "news day" and newspaper production. *Availability 4-5 spaces*

JM4441 - SHORTHAND 1

52Labs; 1st semester; ECTS credits 3

To provide students with an introduction to the role of shorthand in the professional life of the journalist. To introduce students to the listening skills required for taking shorthand. To develop a basic competence in recording notes neatly and accurately, using a recognised form of shorthand. To develop a

basic competence in reading and transcribing notes fluently and accurately To improve language skills especially vocabulary, spelling and punctuation.

Within this module, shorthand will be introduced as the preferred recording method for professional journalists. Through regular practice, students will begin to develop the listening skills and basic elements 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 particular 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 40 words per minute by the end of this module.

This module teaches students a phonetic alphabet used by journalists in courtroom settings, allowing them to take a note of proceedings at up to 100 words per minute. Classes examine the theory of the alphabet as well as regularly practising the lettering and note taking, from beginners to an intermediate level during the semester. The class is only suitable for students with English as their mother tongue, or students with an extremely advanced command of English. Assessment is by coursework and a time summative exam.

JM4013 - RADIO JOURNALISM

ECTS credits 6

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

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

JM4017 - JOURNALISM TEAM PROJECT

26L/13T; 7th semester; ECTS credits 6

The Team Project aims to polish students reporting, writing and designing skills to a professional level. It will enhance their ability to work in a team and to meet deadlines. Students will produce a dummy one-off magazine and/or local newspaper (print or internet-based) on a subject of their choice. They will develop the concept to publication producing a reader profile and a business case. Students will write news and original features and other material, source pictures, design pages and edit accurately. The final submission will include a statement from each student about what s/he wrote, details of his or her role in the production, and contacts for the sources for the written pieces. Assessment will be by the individual student's contributions to the final project.

This module is an advanced newspaper production module, in which students will divide into teams to produce newspapers for print and for online during simulated news days, as well as producing a local newspaper for the city, entitled the City Voice, which will be distributed as part of the Limerick Leader. An element of new media production is included as part of this module. The module is best suited to journalism majors with an interest in print journalism. News writing skills are a pre-requisite. An intermediate understanding of newspaper design is necessary to successfully complete this module. *Availability: 4-5 places*

**JA4211- JAPANESE LANGUAGE,
CULTURE AND SOCIETY 1
(AUTUMN/1)**

*6 hours per week; 13 weeks/1st
semester; 39L/39T; ECTS credits: 6*
LLCC

Listening practice leading to recognition of numbers, times, days, dates, locations; conversation practice based on grammar structures and vocabulary necessary to introduce oneself politely, ask basic questions, explain schedules, and talk about pastimes; reading and writing practice introducing the hiragana and katakana writing systems and 80 kanji, progressing from the understanding of notices and posters to descriptions of people's everyday lives; writing passages involving self-introduction, daily routines, hobbies, and shopping; also discussion in English about Japanese customs, culture and society.

**JA4213 - JAPANESE LANGUAGE,
CULTURE AND SOCIETY 3
(AUTUMN /2)**

*6 hours per week; 13 weeks/3rd
semester; 39L/39T; ECTS credits: 6*
LLCC

Understanding of instructions, needs and wants, descriptions of events in order. Speaking exercises explaining actions in sequence, telling stories, making requests and asking permission. Reading more demanding passages about Japanese life and society. Written exercises concentrating on descriptions

and narratives; also memos, letters and notes. Study of a further 170 kanji to bring the total up to 250 characters. Discussion of modern Japanese culture, literature and films.
Prerequisite JA4212

**JA4247 - JAPANESE LANGUAGE,
CULTURE AND SOCIETY 5
(AUTUMN/4)**

*6 hours per week; 13 weeks/3rd
semester; 39L/39T; ECTS credits: 6*
LLCC

Authentic listening practice, especially broadcast news; test items from JLPT level 2 tests; speaking practice involving further use of polite language; presentations about work experience and current affairs; spoken summaries of reading and broadcast material; reading of authentic passages including news stories and literature; translation of a variety of passages into English; writing of summaries, descriptions, and letters of various levels of formality; study of a further 150 kanji.
Prerequisite JA4216

**JA4911 - JAPANESE FOR BUSINESS 1 A
(AUTUMN/1)**

*6 hours per week; 13 weeks/1st semester;
26L/39T/13LAB; ECTS credits: 6*
LLCC

Elementary daily conversation through role play exercises and pronunciation practice in the language laboratory; simple question

and answer exercises; the Japanese syllabary alphabets (Hiragana and Katakana); elementary descriptive writing, such as introducing oneself; introduction of the first 50 kanji; elementary grammatical structures.

**JA4913 - JAPANESE FOR BUSINESS 3
(AUTUMN/2)**

*6 hours per week; 13 weeks/3rd semester;
26L/39T/13LAB; ECTS credits: 6*
LLCC

Vocabulary expansion and consolidation through the audio-visual materials; introduction of a further 80 kanji; kanji consolidation through selected Japanese texts; basic personal correspondence, i.e. letter of greeting; basic conversation skills through sketch presentation, e.g. visiting, receiving visitors, etc.; further basic grammatical structures.

**JA4915 - JAPANESE FOR BUSINESS 5
(AUTUMN/3)**

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

Business presentation in Japanese, i.e., describing a company and explaining its products; basic business communication, e.g., discussing trade terms and patents and reporting in business talks on what has been discussed; consolidation of basic grammatical structures; introduction to a further 70 Kanji (Total 360).

**JA4917 - JAPANESE FOR BUSINESS 7
(AUTUMN/4)**

*6 hours per week; 13 weeks/7th semester;
26L/39T/13LAB; ECTS credits: 6*
LLCC

Business project in Japanese: advertisements in both written and oral forms; further business communication: discussing price and quantity; introduction and intermediate grammatical structures; introduction of a further 70 kanji (total 430).

**LA4001 – LEGAL SYSTEM AND
METHOD**

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits: 6*
LAW

The concept of law, common law, civil law in Europe. Classification of law: municipal, international, substantive, procedural, public, and private. The administration of justice in Ireland. Sources of law: common law, legislation, the Constitution, European law. Elements of the Constitution of Ireland. Legal reasoning and methodology.

LA4005 – LEGAL ENVIRONMENT OF BUSINESS

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

LAW

The concept of law. Legal systems: common law systems; the civil law systems; the European Union legal system. Sources of Law; precedent; legislation; the 1937 Constitution, the European Treaties.

The administration of justice in Ireland, courts and quasi-judicial tribunals; legal and equitable remedies. The role of law in the business environment, its function and methods, legal philosophy in business law. Core elements of private law. Contractual transactions: formation; formalities; capacity; contractual terms and obligations; standard form contracts; statutory regulation; discharge. Civil liability: negligence; statutory duties and remedies; economic torts: inducement to breach of contract; conspiracy; passing off; deceit and injurious falsehood.

LA 4011 - LEGAL SYSTEM AND METHOD

3 hours per week; 13 weeks/1st Semester; 26L/13T; ECTS credits:6

LAW

The concept of law, common law, civil law in Europe. Classification of law: municipal, international; substantive; procedural; public; and private. The administration of justice in Ireland. Sources of law: common law,

legislation, the Constitution, European law. Elements of the Constitution of Ireland. Legal reasoning and methodology.

LA4013 - MEDIA LAW

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

LAW

This course aims to make students fully aware of the legal framework and constraints within which the media operates, and to enable them to cover courts and other stories with legal implications effectively and with confidence. It also aims to make students fully aware of the major ethical issues that concern journalists. Students will be able to form judgments about ethical dilemmas and articulate a response to them.

LA4033 - LAW OF THE EUROPEAN UNION 1

ECTS credits 6

LAW

The aim of the module is to equip the student with an understanding and knowledge of the basic principles and rules of the European Union, including: the origins and character of European Union law, beginning with the three original Community Treaties, developments from the 1960s up to the Lisbon Treaty. Each of the Institutions will be examined: Parliament, Commission, Council, European Council, Court of Auditors, European Central

Bank and the Court system. Sources of law-Primary (Treaties), Secondary (Regulations, Directives etc), Case law of the Court of Justice of the European Union. Enforcement of EU law-Infringement proceedings (Article 258), proceedings for failure to act (Article 265), proceedings for failure to fulfil an obligation (Article 259); Preliminary references-Article 267; Legislative process-role of the institutions, Relationship between EU Law and national law-Supremacy and Direct Effect; Development of Human rights and the effect of EC/EU membership on Ireland. The module covers, in the first instance, the history of the European Communities and the various Treaty amendments up to the Treaty of Lisbon. The module proceeds to consider the role, function and legislation powers of the Commission, Parliament and Council. The module will also examine the European Council, the Court of Auditors and the European Central Bank. The Court system and the types of actions heard by the Court of Justice, the General Court and the Civil Service Tribunal will also be covered. The new legislative procedures, the ordinary legislative procedure and the special legislative procedure as introduced by Lisbon will be examined. The development of human rights and the principles of direct effect and supremacy will be considered. Finally, the evolution and impact of membership of the EC and EU on Ireland will be examined.

LA4035 - LABOUR LAW (AUTUMN/3)

3 hours per week; 13 weeks/5th semester; 26L/13T; credits 6

LAW

Nature of labour law; protective legislation and conditions of employment; termination of employment; trade unions; courts and tribunals in labour law.

LA4091 - LEGAL SYSTEMS & METHODS

26L/13T; ECTS credits 6

LAW

To introduce the discipline of law through an examination of the functioning of the legal system, sources of law and legal methodology. The concept of law, common law, civil law in Europe. Classification of law: municipal, international, substantive, procedural, public, and private. The administration of justice in Ireland. Sources of law: common law, legislation, the Constitution, European law. Elements of the Constitution of Ireland. Legal reasoning and methodology.

LA4111 - CONTRACT LAW 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

LAW

Formation of contracts: offer and acceptance; intention; doctrine of consideration; formal

and evidentiary requirements: void, voidable and unenforceable contracts; construction/ interpretation of contracts: intention; parole evidence; express and implied terms; public interest restrictions on contractual freedom: capacity; illegality; privity; competition policy; doctrine of restraint of trade; consumer protection.

LA4211 - CRIMINAL LAW 1
(AUTUMN/1)

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6*

LAW

Historical and ethical consideration of criminal law; characteristics of a crime; parties to a crime: principals and accessories; vicarious liability; elements of a crime; actus reus; conduct; omissions; status; mens rea: intention; recklessness; criminal negligence; men in penal statutes; offences of strict liability; general defences: infancy; insanity; automatism; intoxication; mistake; necessity; duress; self defence; inchoate offences: attempt; incitement; conspiracy.

LA4291 - CRIMINAL LAW 1

26L/13T; ECTS credits 6

LAW

To examine the general principles of criminal law through consideration of their ethical, social and legal dimensions.

LA4330 - LAW OF TORTS 1B

26L/13T; ECTS credits 6

LAW

To evaluate critically the role of the law of torts in society, to examine the basic elements of a tort with particular emphasis on negligence and the defences thereto.

LA4430 - CONSTITUTIONAL LAW 1

ECTS credits 6

LAW

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.

Constitutional Law I will examine the Irish Constitution from an institutional perspective. The course will examine how the Constitution regulates the legal framework of the Irish state and its institutions, including the interaction between these various institutions. Thus, during the course, fundamental issues such as sovereignty and the separation of powers will be examined. The historical development of the Constitution will be initially addressed,

and then the powers and competencies of the various organs of government. The related issue of international obligations, including our obligations due to our membership of the European Union will be considered. Issues such as constitutional litigation and constitutional interpretation will also be considered.

LA4810 - EQUITY AND TRUSTS 1
(AUTUMN/3)

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

LAW

The nature of Equity, priorities, registration and notice, mortgages; equitable doctrines, conversion, election, satisfaction and ademption, performance, donations mortis causa; equitable remedies, the injunction, specific performance, rescission, rectification, declaration and tracing.

LA4890 - EQUITY AND TRUSTS 1

26L/13T; ECTS credits 6

LAW

To examine the growth and development of equity, particularly equitable doctrines and equitable remedies available in the modern Court.

LA4901 - PRINCIPLES OF LAW
(AUTUMN/1)

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6*

LAW

The concept of law, common law and equity, historical development, precedent and legal reasoning, the civil law system in Europe, Community Law; sources of Law, the 1937 Constitution, the European Treaties, statutes, case law, custom; the Administration of Justice in Ireland, court structure and jurisdiction, legal and equitable remedies; role of law in the business environment, its function and methods, legal philosophy in business law, substantive issues of law: constitutional law; property law; law of torts; criminal law; business ethics and the law.

LI4113 - LANGUAGE TECHNOLOGY
(AUTUMN/2)

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

LLCC

Overview of computer applications in modern languages, including machine translation and computer aids for the translator; corpus linguistics; terminology management and on-line dictionaries; CALL applications; practical seminars in the CALL lab; develop skills in word-processing in the target language, text structuring and text editing.

LI4211- LINGUISTICS 1 (AUTUMN/1)

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6*

LLCC

Definition, properties, functions of language; history and development of linguistics; basic linguistic concepts; grammatical; categories; levels of linguistic analysis - phonology, morphology syntax, semantics; language history and change, language families, the Indo-European heritage; language varieties dialect register, standard issues in pragmatics, text and information structure; conversation and discourse analysis; speech acts, direct and indirect.

**PA4017 - SUB NATIONAL
GOVERNMENT IN EUROPE:
CHALLENGE AND CHANGE
(AUTUMN/4)**

*3 hours per week; 13 weeks/7th Semester;
26L/13T; ECTS credits:6*

PPA

Using a comparative approach (within a Joint European Module subscribed to by 11 European universities) this course aims to explore the changing relationships between the different levels of government and to examine the origin, nature and implications of the challenges facing sub-national governments in Europe.

**PA4021 - IDEAS AND CONCEPTS
IN PUBLIC ADMINISTRATION
(AUTUMN/1)**

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6*

PPA

Introduction to the development of modern thought on public administration starting from Woodrow Wilson and the Northcote Trevelyan report. Discussion of different schools of thought on public administration: Max Weber's theories on bureaucracy, Power block Theory, Scientific Management, Rationalism, Incrementalism, Public Choice and New Public Management, Post-modern discourse on public administration.

**PL4017 - REGIONAL DEVELOPMENT
(AUTUMN/4)**

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

PPA

The field of locational analysis; market forces; spatial concepts; raw materials; transport; labour; capital; technology; agglomeration; development theories; stages; growth poles; dualism; development from below; empowerment.

**PO4011 - INTRODUCTION TO
GOVERNMENT AND POLITICS
(AUTUMN/1)**

*3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6*

PPA

Introduction to basic institutions of government, including the constitution, the legislature, the executive, the judicial system, the civil service, pressure groups and political parties; examination of patterns of government in contemporary democratic and non-democratic systems and of the political ideologies that sustain them; evaluation of the main approaches to political analysis.

**PO4023 - COMPARATIVE EUROPEAN
POLITICS (AUTUMN/2)**

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

PPA

Introduction to comparative European politics; provides a basic understanding of the organisation of European governmental systems; the role of political parties; party families; voting behaviour; majoritarian and consensual Democracies; the politics of individual European states.

**PO4027 - INTERNATIONAL
ORGANISATIONS & GLOBAL
GOVERNANCE (AUTUMN/4)**

*3 hours per week; 13 weeks/7th Semester;
26L/13T; ECTS credits:6*

PPA

The origins of international organisations and their place in liberal internationalist thought; the successes and failures of the league of nations system; the united nations system and its internal processes; regional organisations; non-governmental organisations and global governance; international organisations and the search for political and military security; functional-technical co-operation at the regional and global level; global governance and the post-cold war global political economy.

PO4033 - POLITICAL THEORY

26L/13T; ECTS credit 6

PPA

This module will cover the basic concepts in contemporary political theory, building on the ideas introduced in PO4022 Modern European Political Thought. The goal is to develop a clear understanding and mastery of the main concepts and ideas in political theory.

PO4043 - INTRODUCTION TO IRISH POLITICS*26L/13T; ECTS credits 6***PA**

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.

PO4087 - NATIONALISM, ETHNICITY AND CONFLICT*ECTS credits 6***PPA**

In this module students will address debates about the causes and nature of nationalist politics and ethnic conflicts. They will explore the ways in which historians and political scientists have sought to explain the capacity for national movements and ethnic identities to mobilise and unite people who may among themselves have sharply contrasting objective interests. A key aim of this module is to enable you to take general theories; in this case those that explain nationalism and ethnicities and to use them critically, testing their validity, and if necessary, introducing your own modifications and qualifications to these theoretical generalizations.

Introductory: What is a nation? Nations, nationalism and modernity. Pre-modern nations. Case study: Irish nationalism Case Study: South Africa: Afrikaner and African nationalism Case Study: Slovak Nationalism Ethnicity and ethnic conflicts: An introduction Ethno-nationalist movements and political violence Ethnic conflicts and peace processes Gender, nationalism and ethnic conflicts Case studies: Sri Lanka, Kashmir Case Studies: Northern Ireland, Former Yugoslavia

PO4093 - INTERNATIONAL RELATIONS*39L; ECTS credits 6***PPA**

Provides an overview of some of the theoretical debates and issues that have underpinned the study of International Relations (IR). Theoretical perspectives such as Realism, Liberalism and Structuralism will be introduced and this will allow students to apply these to the arena of world politics and to processes such as the interactions of states, the workings of International Organisation and the global economy

RM4001 - RESEARCH METHODS IN LANGUAGES, LITERATURE AND CULTURAL STUDIES 1*2 hours per week; 13 weeks/1st semester; 13L/13T; ECTS credits; 6***LLCC**

This module introduces students to research methods in languages, literature and cultural studies, covering the main areas of these disciplines, their methods of inquiry, and their key concepts and problems. The module provides training in essential research skills, equipping participants to pursue self-directed study, to individually select a research topic and develop appropriate research questions, to identify the appropriate tools and methods of research to carry out this project, and write a research proposal. The aims of the module are:

- to introduce students to research methods in languages, literature and cultural studies;
- to equip students with the necessary skills to select a research topic, develop a research question(s) and write a research proposal;
- to introduce students to the research skills required for sourcing, storing and presenting research data;
- to develop an awareness of the information technology skills necessary to develop the above research skills.

SN4201 - SOCIAL SCIENCES 1, INTRODUCTION TO PSYCHOLOGY*3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6***NURSING**

Overview of emotional, cognitive, and social development. Development of intelligence. Psychology of health beliefs, experience, and behaviour. Social psychology: in particular, the concepts of attitude development, interpersonal and group relationships, and communication. Introduction to the main

categories of abnormal behaviour, including their aetiology and treatment.

SO4001 - INTRODUCTION TO SOCIOLOGY (AUTUMN /1)*3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6***SOC**

The Scope of Sociology; locating yourself sociologically: culture and identity - sociological versus personal explanations; four sociological perspectives: conflict, functionalist, interactionist and feminist perspectives introduced; what do sociologists do? an exploration of the key research methods used by sociologists in their analysis of society; doing sociology: an examination of power and control in society; a consideration of social structure in terms of gender, race and class; sociological consideration of social structure in terms of gender race and class; sociological understandings of social change, social exclusion, work and non-work, religion and the media; sociological accounts of the state; crime, health and education.

SO4007 - QUALITATIVE METHODS FOR SOCIOLOGICAL RESEARCH*ECTS credits 6***SOC**

Aims/Objectives: the aim of the module is to provide students with an understanding of the development of the field of qualitative research

and to introduce students to the central methods and approaches that fall under the category of qualitative research. Furthermore students will be provided with guidelines governing research that is grounded in the assumptions of qualitative methodology. What is qualitative research? What are the different paradigms, which fall within the parameters of qualitative research? The history of qualitative research. Approaching research from a qualitative perspective, generating ideas, defining cases, analysis and interpretation. Doing interviews and conducting observation studies.

SO 4033 - SOCIOLOGY OF MEDIA (AUTUMN/2)

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

SOC

Sociology and the analysis of media and communications; The Conflict Perspective: Ideological analyses of the media; The Interactionist Perspective: Analyses of message production; Users and Gratification's and Reception Analysis approaches to the Media Audience; The Politics of the Popular: TV Drama and the coverage of social issues with specific reference to Feminist Perspectives on the media. Media Representation of the Economy: The work of the Glasgow Media Group; Media Representation of Poverty and Inequality; Media Globalisation: More Choice or Just More Channels

SO4037 - QUALITATIVE METHODS FOR SOCIOLOGICAL RESEARCH

ECTS credits: 6

SOC

The aim of the module is to provide students with an understanding of the development of the field of qualitative research and to introduce students to the central methods and approaches that fall under the category of qualitative research. Furthermore students will be provided with guidelines governing research that is grounded in the assumptions of qualitative methodology.

SO4047 - SOCIOLOGY OF THE WELFARE STATE

ECTS credits: 6

SOC

The key focus and aim of the module is to provide students with an understanding of the welfare state. Students will be familiarised with debates, definitions and theoretical frameworks pertaining to the concept of the welfare state, the different models of welfare in existence, and the need for a rigorous analysis of the welfare state.

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. It is hoped that students will consider the issues covered in the module as case studies through which they can develop their understanding of the techniques

of sociological analysis, which may then be applied to other contexts.

SO4057 - SOCIOLOGY OF HEALTH AND ILLNESS

ECTS Credits: 6

SOC

The aim of this course is to introduce students to the important sub-disciplinary field of the sociology of health and illness. The overall objective is to develop the students; analytical ability to examine the concepts of health and illness from a sociological perspective (perspectives), and critique the structures and processes involved in these within late modern Western society.

SO4063 - INTRODUCTION TO SOCIAL RESEARCH METHODS

ECTS credits: 6

SOC

The aim of this module is primarily to provide a general introduction to the range of quantitative and qualitative research methods which are used in sociological research. Secondly, the course introduces students to the underlying epistemological, conceptual and ethical dimensions of the research process. In addition, the course establishes the importance of understanding social research in the context of some key debates in contemporary sociology. The primary objective is to provide students with

basic skills in the use of both quantitative and qualitative techniques of research, and experience in collecting, handling, organising and analysing data of their choice.

SO4067 - SOCIOLOGY OF WORK

ECTS credits: 6

SOC

The course will introduce theories of social change and perspectives on work as well as examining contemporary changes in work practice. The effects of class, gender and ethnicity on access to and experience of work will be examined. The changing organizational context of work will be explored. Other themes include sectoral decline, development and relocation as well as an examination of globalization and the rise of the transnational corporation. The continuance of hierarchical and vertical segregation in the midst of organisational, societal and cultural change will be explored, as well as organisational culture. A number of Irish case studies will be examined e.g those related to the semi-state and educational sectors. The course concludes with a consideration of the future direction of socioeconomic change and its impact on the distribution, structuring and experience of work.

SO4073 - CLASSIC SOCIOLOGICAL THEORY*ECTS credits: 6***SOC**

The module begins by outlining the socio-historical transformations (industrialisation, urbanisation, expansion of capitalism) that gave rise to classic social theory. Key thinkers, who sought to make sense of modernity and 'the problem of social reality', are then discussed; such as: Mark, Durkheim, Weber, Simmel, Mead and Schutz. Discussion will focus on their different analyses of, among other things: the development of capitalism and the money economy; the division of labour; social solidarity; class conflict and ideology; rationalisation; religious life; the structures of the life-world; the dynamics of symbolic interactions and the self. The module considers analyses of historically unfolding macro-social structures, meso-social formations (e.g. bureaucratic organisation) and the vicissitudes of everyday life. The import of classic social theory to the discipline of sociology - including its aims, scope and analyses of modernity - is a theme that runs through the module.

SO4077 - SOCIOLOGY OF YOUTH*ECTS credits 6***SOC**

To understand and to explore key theoretical perspectives on youth and the youth experience within contemporary contexts

To critically engage with key examples of empirical research conducted with young people in a variety of social contexts To encourage and to enable critical and analytical thinking about the diverse ways in which young people are constructed and represented via media, policy and academic discourses To examine the relationship between social theory, methodological approaches, research methods and ethical considerations

SO4093 - INVESTIGATING SOCIAL REALITY*39L; ECTS credits 6***SOC**

General introduction to epistemological, methodological and practical issues relating to sociological research practice.

SO4095 - SOCIOLOGY OF MEDIA*3 hours per week; 13 weeks/5th semester; 39L; ECTS credits; 6***SOC**

This course aims to provide students with a critical understanding of the mass media from a sociological viewpoint. It will introduce students to key aspects of the debate amongst social scientists about the workings and influence of the media. The course is structured upon an examination of these key areas as well as presenting examples of the various methodological approaches used by sociologists in their analysis of the mass media.

SP4007 - MODERN TRENDS IN HISPANIC CULTURE AND THE ARTS (AUTUMN/4)*3 hours per week; 13 weeks/3rd semester; 13L/26T; ECTS credits:6***LLCC**

This module aims to analyse the major cultural developments in Hispanic literature of the twentieth century and to focus in particular on four major trends; Latin American modernismo and its legacy in Spain; surrealism in art and literature; magical realism; and the 1980's boom in women's writing with particular regard to the relationship between feminism and popular culture.

SP4131 - SPANISH FOR BEGINNERS 1 (AUTUMN/1)*3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6***LLCC**

Students acquire basic reading and writing skills by being exposed to authentic and simplified language material both written and oral; emphasis will be given to oral skills both listening and speaking; special attention will be given to those sounds with which the student is not familiar; introduction to Spanish as a romance language Spanish in Spain and beyond Europe Spanish syntax semantics and phonology.

SP4133 - SPANISH FOR BEGINNERS 3 (AUTUMN/2)*6 hours per week; 13 weeks/3rd semester; 39L/39T; ECTS credits:6***LLCC**

Introduction to new grammatical structures and expansion of vocabulary dealing with a wide variety of real life situations: students will learn the grammar and lexicon needed to give an account of a personal experience give personal opinions and express judgement and feelings in Spanish and practice translating these structures: the lecture hour will deal with life in Spain and Latin America the education system the work environment and general traditions:

SP4141 - SPANISH LANGUAGE AND SOCIETY 1: INTRODUCTION TO SPANISH STUDIES (AUTUMN/1)*3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6***LLCC**

An overall revision of Spanish grammatical structures and their usage; text analysis and exposure to a variety of writing styles; oral discussion and presentations of topics relevant to the theme of the general lectures; Spanish language; its history and linguistics; the Spanish-speaking countries; political geography, Spanish variations and dialects.

SP4143 - SPANISH LANGUAGE AND SOCIETY 3: EDUCATION, WORK AND BUSINESS IN SPAIN AND LATIN AMERICA (AUTUMN/2)

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

LLCC

Spain and Latin America's relevant issues in the world of education work and business; a look at legends traditions beliefs and fiestas from an anthropological perspective and as preparation for study/work abroad period.

SP4147 - SPANISH LANGUAGE AND SOCIETY 5: SPAIN EUROPE AND BEYOND (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

LLCC

Vocabulary and grammar problem areas for English speakers; contrastive language analysis by use of translation of various types of text; cultural, linguistic and political relationship between Spain and hispanoamerica; Spain's political role within the EU: EU legislation and developments and their effects on Spanish soil; Spanish-Irish relations; Latin American-Irish relations.

SP4231 - SPANISH LANGUAGE, CULTURE & SOCIETY 1 (BEGINNERS) (AUTUMN/1)

6 hours per week; 13 weeks/1st semester; 13L/56T/13Lab; ECTS credits:6

LLCC

An overall revision of Spanish grammatical structures and their usage. Text analysis and exposure to a variety of writing styles. Oral discussion and presentations of topics relevant to the theme of the general lectures. Spanish language: its history and linguistics; the Spanish-speaking countries: political geography, Spanish variations and dialects.

SP4233 - SPANISH LANGUAGE, CULTURE & SOCIETY 3 (BEGINNERS) (AUTUMN/2)

6 hours per week; 13 weeks/1st semester; 13L/56T/13Lab; ECTS credits:6

LLCC

Spain and Latin America's relevant issues in the world of education, work and business. A look at legends, traditions, beliefs and 'fiestas' from an anthropological perspective and as preparation for study/work abroad period.

SP4241 - SPANISH LANGUAGE, CULTURE AND SOCIETY 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

LLCC

An overall revision of Spanish grammatical structures and their usage. text analysis and exposure to a variety of writing styles. Oral discussion and presentations of topics relevant to the theme of the general lectures. Spanish language: its history and linguistics; the Spanish-speaking countries: political geography, Spanish variations and dialects.

SP4243 - SPANISH LANGUAGE, CULTURE & SOCIETY 3 (ADVANCED) (AUTUMN/2)

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

LLCC

Spain and Latin America's relevant issues in the world of education, work and business; a look at legends, traditions, beliefs and 'fiestas' from an anthropological perspective and as preparation for study/work abroad period.

SP4247 - SPANISH LANGUAGE, CULTURE & SOCIETY 5 (ADVANCED) (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 13L/26T/13Lab; ECTS credits:6

LLCC

Students are introduced to a variety of EU-related topics which are then covered in more detail during the discussion hour, Spain's political role within the EU, EU legislation and developments on Spanish soil, Spanish-Irish relations and Latin-American-Irish

relations are examples of these topics, students also pursue more advanced translation and writing.

SP4627 - TWENTIETH CENTURY TRENDS IN HISPANIC LITERATURE

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

LLCC

To analyse the major cultural developments in Hispanic literature of the twentieth century and to focus in particular on four major trends: Latin American modernismo and its legacy in Spain. Surrealism in art and literature. Magical realism. The 1980s boom in women's writing with particular regard to the relationship between feminism(s) and popular culture. * To further develop students' analytic and interpretative skills. * To develop students' critical skills when analysing cultural production.

TW4115 - TECHNICAL WRITING 1 (AUTUMN/3)

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

LLCC

Cognitive processes; reader analysis, readability factors; language/text structures; usability factors; peer review; user testing; practice on a range of writing techniques and strategies.

**WS4003 - CONTEMPORARY WOMEN'S
WRITING (AUTUMN 4)**

*3 hours per week; 13 weeks/1st semester;
26L/13T; credits:6*

SOC

This course will introduce students to a number of key fictions by British and North American women authors, written between the 1950s and the present day. We will examine the ways in which these fictions respond to the changes in female experience in the second half of the twentieth and beginning of the twenty-first century, as well as exploring how these fictions reflect upon, and re-figure, conventional understandings of gender and female identity. Key issues for discussion will be the ways in which the texts respond to their social and cultural contexts, and how gender identity is shaped by location and place in these fictions. We will also explore the significant motifs that emerge across texts, such as women and madness; mother-daughter relationships; female desire; fantasy and romance; the female body; and the writing of race and gender.



UNIVERSITY of LIMERICK

OLLSCOIL LUIMNIGH

Faculty of Science and Engineering

40^{1972 - 2012} years of Innovation

AUTUMN 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.

DEPARTMENT/FACULTY

Architecture (SAUL)
 Chemical & Environmental Science (CES)
 Civil Engineering & Materials Science (CEMS)
 Computer Science & Information Systems (CSI)
 Design & Manufacturing Technology (D&MT)
 Electronic & Computer Engineering (ECE)
 Life Sciences (LS)
 Mathematics & Statistics (M&S)
 Mechanical, Aeronautical & Biomedical Engineering (MA&BE)
 Physics & Energy (Ph&E)

UNDERGRADUATE DEGREE PROGRAMS OFFERED**SCIENCE**

LM065 - Applied Physics
 LM037 - Economics and Mathematical Sciences
 LM087 - Energy
 LM066 - Environmental Science
 LM093 - Equine Science
 LM180 - Equine Science (Cert/Diploma)
 LM068 - Food Science and Health
 LM064 - Industrial Biochemistry
 LM088 - Mathematics and Physics
 LM060 - Mathematical Sciences
 LM061 - Pharmaceutical and Industrial Chemistry
 LM117 - Science Choice

LM067 - Wood Science and Technology**ENGINEERING**

LM077 - Aeronautical Engineering
 LM099 - Architecture
 LM071 - Biomedical Engineering
 LM115 - Chemical and Biochemical Engineering
 LM085 - Civil Engineering
 LM074 - Computer Aided Engineering and Design
 LM069 - Computer Engineering (Replaced by LM118 from Sept 2011)
 LM110 - Computer Games Development
 LM051 - Computer Systems
 LM082 - Construction Management and Engineering
 LM056 - International Business
 LM119 - Design and Manufacture
 LM113 - Digital Media Design
 LM118 - Electronic and Computer Engineering
 LM080 - Electronics
 LM116 - Engineering Choice
 LM023 - Health Informatics
 LM073 - Mechanical Engineering
 LM083 - Mobile Communications and Security
 LM114 - Music, Media & Performance Technology
 LM076 - Product Design and Technology
 LM112 - Robotic Engineering (Replaced by LM118 from Sept 2011)
 LM063 - Technology Management

ENGINEERING MODULES**AR4001 - DESIGN STUDIO 1A**

15 hours per week; 13 weeks/1st semester;

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.

AR4005 - DESIGN STUDIO 3A

15 hours per week; 13 weeks/ 5th semester;

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 first term is on developing a thoroughly researched design proposal and to produce a set of competent design documents.

AR4007 - DESIGN STUDIO 4A

1L; ECTS credits 18

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.

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 develop a method of research and allocate significant time to the research part of the curriculum. The architectural project is tightly allied to construction and the physicality of building; construction technology is an important part of the years work. A research led project in the autumn semester opens the expanse of architectural intelligence into circumscribed cultural and environmental fields. Students develop a fluency in the means of making of and thinking through things in terms of structure, technology, and environment to the point where they can rise above the practicalities and conceptualise as well.

AR4011 - GRAVITY AND REACTION 1*5 hours per week; 13 weeks/1st semester;*

Give students the understanding of a 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.

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AR4013 - GRAVITY AND REACTION 3*5 hours per week; 13 weeks/3rd semester;*

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.

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AR4015 - GRAVITY AND REACTION 5*5 hours per week; 13 weeks/5th semester;*

In depth study of Load Path, in depth study of structural form, particularly as it relates to specific material properties. Learning through the analysis 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.

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AR4019 - PROFESSIONAL PRACTICE(CONTRACTS)*ECTS credits 3*

The module will consist of lectures, culminating in a written examination. The lectures will cover, in outline, but not exhaustively, aspects of the following areas: Statutory regulation pertaining to the built environment, including, but not limited to- building, fire, health and safety and environmental regulation and statutory planning processes.

Basic outline of the principles of law pertaining to the built environment, including, but not limited to- the principles of tort and contract law. The principles of the principal building contracts, and the duties therein. The work stages and organisational structure of an architectural project, with reference to statutory obligations, administration of contracts, and organisation of information. The role of the architect in relation to the administration of all of the above. The function and role of the RIAI, with reference to the Code of Conduct of the architect.

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AR4021- REPRESENTATION / DRAWING 1*5 hours per week; 13weeks/1st semester;*

To establish drawing as a tool of observation, a tool of thinking and a tool of representation, this course is composed of two different types of drawing exercises: Studio based exercises with weekly changing subjects introducing key

aspects of architectural vocabulary (light and space, site, human scale, skin and comfort, flows and organisation, vision and architecture). Short introducing lectures are followed by a drawing or sketching exercise, and, in the next step by a model making exercise, where the drawings from the exercise have to be interpreted and transformed into the 3rd dimension.

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AR4023 - REPRESENTATION / DRAWING 3*5 hours per week; 13 weeks/1st semester;*

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.

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AR4025 - REPRESENTATION / DRAWING 5*5 hours per week; 13 weeks/1st semester;*

In this module students are introduced to the computer and related modes of representation,

in conjunction with continuing studies in hand drawing. Switching between virtual and analogue modes of representation, e.g. models, drawings, digital photography, photoshop, illustrator, and other graphics programmes will be explored as tools of transformation and spatial, logical, and structural exploration.

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AR4031 - HISTORY AND THEORY OF ARCHITECTURE 1*5 hours per week; 13 weeks/1st semester;*

The first year program in History-Theory aims to expand students' horizons of knowledge about architecture while teaching foundational skills in reading and writing in the discipline. Even though students at the School of Architecture are expected to be highly 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 a selection of the monuments of modern architecture together with contemporary ways of thinking about the field.

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AR4033 - HISTORY AND THEORY OF ARCHITECTURE 3

5 hours per week; 13 weeks/1st semester;

The second year program in Architectural Research provides students with a comprehensive survey of the history of architecture and urbanism. 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 goal is to provide students with a basic knowledge and understanding of architecture and urban design in the period between circa 1851 and 1980. In addition, the course is designed to teach students how to critically analyze and evaluate built projects from a variety of perspectives, and how to communicate these ideas in spoken and written form.

AR4035 - HISTORY AND THEORY OF ARCHITECTURE 5

5 hours per week; 13 weeks/1st semester;

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 the relationship of architecture to technology and materials, both naturally occurring and those produced by man both in Ireland and globally. The goal for the course is to give students a broad introduction to architecture throughout

the ages, from the classical Greek and Roman periods to the present day while introducing them to the role that materials and technology have in architecture.

AR4041 - ASSEMBLY AND TECHNIQUES 1

5 hours per week; 13 weeks/1st semester;

This course will introduce basic constructional principals through the detailed study of elements of simpler constructional technology. This technology is considered from the point of view of design intent, logic of assembly and the quality of the resulting climate/environment. The course will further challenge the students to analyse the built environment they are familiar with under these themes. The suitability of various forms of construction to different design ambitions will be considered with particular emphasis put on developing an understanding of the size and dimensions of various constructional systems. The course is intended as a foundation course in itself as well as anticipating the information required in the design studio. The course is seminar based with an individual student research component.

AR4043 - ASSEMBLY AND TECHNIQUES 3

5 hours per week; 13 weeks/5th semester;

The aims of this class are: **1.** to explain clearly and simply the basic principles

of construction. **2.** to show how much architectural expression depends on its constructional composition. Special attention will be paid to constructional aspects which imbue meaning and in this aspect it differs from the albeit relevant but exclusively technology-focused literature. **3.** to introduce students to the importance of representing clear, legible and organised ideas to others in the construction industry.

AR4045 - ASSEMBLY AND TECHNIQUES 4

5 hours per week; 13 weeks/5th semester;

The aims of this class are: **a.** to introduce students to the initial studies required to later generate a comprehensive set of working drawings of a third year design studio project. **b.** to develop further the student's own intuitive skills in technique alongside knowledge of available construction technology today. **c.** to develop the students capacity to interrogate and develop design decisions through construction principles.

AR4051 – ENVIRONMENTAL SYSTEMS AND FORCES 1

5 hours per week; 13 weeks/1st semester;

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 its 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.

AR4053 - ENVIRONMENTAL SYSTEMS AND FORCES 3

5 hours per week; 13 weeks/3rd semester;

Advanced understanding of physical backgrounds and interconnections for sustainable development, and the integration of environmental principles into architectural works. Emphasis will be placed on the study of material properties. Particular attention will be paid to integration of environmental principles into design studio work. Specific material properties will be studied, and modelled.

AR4073 - DESIGN STUDIO 2A*15 hours per week/3rd semester;*

Phase I Using mapping as a vehicle for speculative architectural analysis, students will map one defined aspect of a particular place as ground, infrastructure, climate and occupation of space. Through mapping, students will confront their first analysis with more specific information: climate, ground, geology, built structures, growing structures, water treatment and flows, infrastructural networks, historic traces, land use and occupation of space. It is about identification of specifics through drawing, registering, measuring, timing, investigating; observe on site at several occasions and document, explain conditions, situations, make drawings, diagrams and sketches to explain conditions Phase II Explore settings for physical activity and for the interconnection that happens between spectator and sport and between land and the body. Cultural and technical characteristics of sport must be integrated into the land in a way, which will change it consciously. Students first make a first landscape urban proposition (MODEL) plus make a set of drawings showing dimensional sizes for activities include heights PLANS, SECTIONS, Make a set of investigations of three different structures and how they work with the land. Development Synthesis Two: Choreography, colour, light, material, crowd versus the individual delineation, studies Development Draw Up and review MODEL 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.

AR4099 - DESIGN STUDIO 5A - PRE THESIS*ECTS credits 21*

The thesis project should span over two semesters. 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 5a and 5b increase to 18 and 21 credits respectively while the number of parallel modules is reduced. Fifth-year Design Studio invites the student to engage with complex large-scale architectural design problems. These problems aim to enable multiple scales and programmes to be managed within a tight set of constraints, both physical and temporal. Students will deepen the strength, breadth and application of their conceptual approach and will integrate increasingly sophisticated structural and environmental solutions at a large scale. Thesis will be a year-long piece of work, initiated by a proposition written at the start of the autumn semester. This proposition is tested against a theme (rather than a place) and will act as a framework within which ideas are developed. Students are invited to engage in sharpening architectural positions and idioms, and refining design methods, in the context of contemporary society and in relation to current architectural and cultural debates. Through explorative projects and research,

students situate their work on an expanding platform for discussion, engaging with current issues facing the city and the region, related to both national and international contexts.

AR4317 - ADVANCED CONSTRUCTION 1
ECTS CREDITS 3

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 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. After revisiting traditional and conventional (vernacular) forms of building taxonomy and production techniques in a range of materials

(stone, concrete, metal, timber, fabric and polymers) staff and students engage more advanced means of fabrication (including milling, folding, laminating, sewing, stacking, interlocking, hanging, injection moulding, compositing, extrusion, weaving and bundling). Spatially and programmatically this will entail various degrees of articulation from the standardised, low tech component to the highly articulated formal element, avoiding self similar repetition in favour of the diversity of the composite.

AR4319 - ADVANCED CONSTRUCTION 3*ECTS credits 3*

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. 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. Staff and student undertake in-depth research into specialist areas of technology. Case studies focus is on an integration of structural and environmental systems in response to specific conditions that require complex skills in analysis and/or design. The students are expected to apply findings from directed and independent research on advanced construction technologies to develop each student's thesis proposal individually.

CH4001 - CHEMISTRY FOR ENGINEERS (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

CES

Simple characterisation of atoms and molecules: basic atomic structure, ions and isotopes, atomic and molecular weights, the mole concept. Early chemical concepts and their present day uses: e.g. Dalton Atomic Theory, Avogadro's Law, Oxidation and reduction. Chemical nomenclature. Modern theories of atomic and molecular structure. Quantum mechanical description of the atom: Schroedinger Wave Equation, atomic orbitals and quantum numbers. Introduction to chemical bonding. Bond representation by Lewis dot, valence bond and molecular orbital structures. Hybridisation. Periodic classification of the elements. The Gas Laws, Stoichiometry. Classification of chemical reactions. The Electrochemical Series. Chemical equilibrium. Liquid

solution chemistry. Acids and bases. Selected applications of chemistry in domestic, medical and industrial environments.

CH4003 - PHYSICAL CHEMISTRY 2

2L/3Lab/1T; 6 ECTS credits

CES

To facilitate the student in understanding of the reaction thermodynamics and the role of thermodynamics in chemical reaction processes. ii. To familiarise the student with the various reaction kinetics, including some complex kinetic schemes, their interpretation and applications in the appraisal of industrial problems. iii. To develop the students ability to design basic kinetic experiments and to extract kinetic information from the measurements of concentration-time based data. iv. To provide the student with the basic knowledge of commonly used spectroscopes

CH4005 - PHYSICAL CHEMISTRY 4

2L/3Lab/1T; ECTS credits 6

CES

To familiarise the student with the concepts of electrochemical systems under current flow situations. To familiarise the student with electrochemical methods of chemical analysis. To introduce the area of large scale electrochemical technology.

CH4007 - ORGANIC PHARMACUTICAL CHEMISTRY 1

2L/1T; ECTS credits 6

CES

To build on the functional group chemistry covered in CH4102, CH4103 and CH4104. To impart to the student a detailed understanding and working knowledge of the applied use of organic compounds as pesticides and as medicinal drugs with an emphasis on mode of action at the molecular level and on the synthesis of selected structures.

CH4013 - ORGANIC CHEMISTRY

ECTS credits 6

CES

To introduce the student to fundamental aspects of organic chemistry eg the different families of compounds- their nomenclature, structure (2D and 3D) and isomerisation (if any). To highlight the functional group of each family and relate structure to reactivity; to examine associated reactions/reaction mechanisms of the different functional groups; to introduce aromatic chemistry and study the chemical behaviour of aromatic compounds; to highlight current trends and applications in the areas of organic chemistry. To carry out practical work to support and reinforce some of the theoretical aspects encountered; to encourage self-directed learning through the use of software and web sources. Aliphatic Hydrocarbons: Alkanes/ Cycloalkanes/Alkyl Groups/Alkenes/

Cycloalkenes/Alkynes: Nomenclature; Structural formulae (2D&3D); Isomerisation; Reactions: Combustion and Free Radical Rxns (Alkane/Cycloalkanes); Electrophilic Addition Rxns., Carbocations; Polymerisation;(Alkenes/ Cycloalkenes/Alkynes). Occurrence/ Uses. Environmental factors/current trends. Haloalkanes: Structural formulae; Nomenclature; Substitution/Elimination Reaction Mechanisms- SN1, SN2; E1, E2. Alcohols/Ethers: Structural formulae; Nomenclature; Classification; Physical properties; Occurrence and Uses. Alcohols only:- Acidity; Preparation; Reactions: Oxidation, Esterification. Aldehydes/ Ketones: Structure & Basicity of the Carbonyl Group; Nomenclature; Properties; Preparation; Typical Carbonyl Group Reactions (Nucleophilic Addition Reactions); Imine formation; Reaction with Grignard Reagents; Synthesis; Occurrence/Applications. Carboxylic Acids and Carboxylic Acid Derivatives: - Esters, Acyl Halides, Acid Anhydrides and Amides. Functional Group; Nomenclature; Physical Properties; Acidity of the Carboxyl group; Preparation; Nucleophilic Acyl Substitution Reactions (Simple Carboxylic Acids and Esters only). Amines: Classification; Aliphatic and Aromatic Amines; Reactions; Occurrence. Aromatic Hydrocarbons: Benzene and Benzenoid Compounds. Aromaticity- Huckel Rule; Structural Formulae; Nomenclature, Electrophilic Aromatic Substitution Rxns Mechanism; Few examples. Occurrence/Uses.

CH4017 - CHEMICAL NANOTECHNOLOGY

ECTS credits 6

CES

To provide a specialist module in chemical nanotechnology.

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 spectroscopic 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.

CH4153 - ORGANIC CHEMISTRY 2B

2L/2Lab/1T; ECTS credits 6

CES

To build on and extend the functional group chemistry initiated in CH4152; develop the associated reactions/reaction mechanisms of the various functional groups; to cover, in depth, aromatic chemistry and the chemical behaviour of aromatic compounds; to introduce the field of stereochemistry; to carry out practical work to support and reinforce some of the theoretical aspects encountered; to encourage self-directed learning through the use of software and web sources.

CH4407 - PROCESS TECHNOLOGY 4

2L/2Lab/1T; ECTS credits 6

CES

Mass Transfer, diffusion in gases and liquids, laws of diffusive flux, mass transfer in solids, unsteady state mass transfer. Mass transfer across phase boundaries, mass transfer coefficients. Separation operations, vapour-liquid systems, plate and packed columns, McCabe - Thiele plots, equilibrium stages, stage efficiencies, HETP and HTU. NTU approaches to packed column design. Distillation continuous and batch. Gas absorption and stripping. Use of triangular

composition diagrams, leaching and liquid - liquid extraction, mixer-settlers. Evaporation, forward and back-feed operation, efficiency.

Prerequisite CH4404, CH4405

CH4415 - PROCESS TECHNOLOGY 3

2L/3Lab/1T; ECTS credits 6

CES

Chemical reaction thermodynamics; review of chemical kinetics; ideal reactor types and design equations; design for single and multiple reactions; multiple reactor systems; temperature effects in reactor design and operation; assessment of and models for non-ideal reactor behaviour; reactor design for heterogeneous reactions.

CH4417 - PHARMACUTICAL FORMULATION

2L/1T; ECTS credits 6

CES

Physical Chemical principles of dosage from design Particle science & powder technology Biopharmaceutics Dosage form design & manufacture.

Prerequisite Modules:

CH4003 CH4004 CH4005 CH4405 CH4415

CH4701 - GENERAL CHEMISTRY 1

2L/2Lab/1T; ECTS credits 6

CES

Simple characterisation of atoms and molecules: basic atomic structure, ions and isotopes, atomic and molecular weights, the mole concept. Early chemical concepts and their present day uses: e.g. Dalton Atomic Theory, Avogadro's Law, Oxidation and reduction. Chemical nomenclature. Modern theories of atomic and molecular structure. Quantum mechanical description of the atom: Schrodinger Wave Equation, atomic orbitals and quantum numbers. Introduction to chemical bonding. Bond representation by Lewis dot, valence bond and molecular orbital structures. Hybridisation. Periodic classification of the elements. The Gas Laws, Stoichiometry. Classification of chemical reactions. The Electrochemical Series. Chemical equilibrium. Liquid solution chemistry. Acids and bases. Selected applications of chemistry in domestic, medical and industrial environments.

CH4721 - GENERAL CHEMISTRY 1C

2L/2Lab/1T; ECTS credits 6

Simple characterisation of atoms and molecules: basic atomic structure, ions and isotopes, atomic and molecular weights, the mole concept. Early chemical concepts and their present day uses: e.g. Dalton Atomic Theory, Avogadro's Law, Oxidation and reduction. Chemical nomenclature. Modern theories of atomic and molecular structure. Quantum mechanical description of the atom: Schrodinger Wave Equation, atomic orbitals and quantum numbers.

Introduction to chemical bonding. Bond representation by Lewis dot, valence bond and molecular orbital structures. Hybridisation. Periodic classification of the elements. The Gas Laws, Stoichiometry. Classification of chemical reactions. The Electrochemical Series. Chemical equilibrium. Liquid solution chemistry. Acids and bases. Selected applications of chemistry in domestic, medical and industrial environments.

CH4751 - INTRODUCTORY CHEMISTRY

2L/2Lab/1T; ECTS credits 6

Simple characterisation of atoms and molecules: basic atomic structure, ions and isotopes, atomic and molecular weights, the mole concept. Early chemical concepts and their present day uses: e.g. Dalton Atomic Theory, Avogadro's Law, Oxidation and reduction. Chemical nomenclature. Modern theories of atomic and molecular structure. Quantum mechanical description of the atom: Schrodinger Wave Equation, atomic orbitals and quantum numbers. Introduction to chemical bonding. Bond representation by Lewis dot, valence bond and molecular orbital structures. Hybridisation. Periodic classification of the elements. The Gas Laws, Stoichiometry. Classification of chemical reactions. The Electrochemical Series. Chemical equilibrium. Liquid solution chemistry. Acids and bases. Selected applications of chemistry in domestic, medical and industrial environments.

CH4901 - SCI. FDN. 1; CHEMISTRY, Biochemistry and Physics for Nursing and Midwifery

2L/2T; ECTS credits 3

(a) Chemistry Coverage of selected aspects of atoms, molecules, bonding, chemical reactions, acids, bases, ph. Chemistry of body fluids. Solutions, suspensions, osmosis and diffusion. (b) Biochemistry The structure and function of proteins, carbohydrates and lipids, nucleic acids, enzymes, metabolism, metabolic pathways, cholesterol, hormone function, will be examined. (c) Physics Coverage and application to Nursing and Midwifery of selected aspects of matter, gravity, motion, pressure, heat, light, electromagnetic spectrum; including UV and X-rays, radioactivity, diagnostic radiology, ECT

ID4811- INDUSTRIAL DESIGN 1 (AUTUMN/1)

7 hours per week; 13 weeks/1st semester; 13L/26T/52 LAB; ECTS credits:6

Design methods; an approach to design working to a brief; design techniques; drawing and modelling skills, practical development of the manual and mental skills of idea development and communication; design history; an overview of industrial design in the context of social and economic conditions.

ME4001 - INTRODUCTION TO ENGINEERING 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

Overview of the engineering disciplines. The profession of engineering, real-life engineering examples, skills required, career opportunities and career progression. Report writing including structure, presentation, information sources, plagiarism. Introduction to engineering units, calculations of units and conversion to standard units.

ME4003 - COMPUTER AIDED DESIGN

ECTS credits 6

To provide engineering students with a strong skill-set in the areas of solid, surface and mechanism modelling with Creo Elements/Pro (formerly known as Pro/Engineer), an industry standard suite of 3D Computer Aided Design software. To introduce students to the techniques necessary to produce high quality solid and surface models of real-life engineering components and products. To introduce students to the techniques for producing high quality two-dimensional engineering drawings directly from a three-dimensional part or assembly model. Analyse motion and component interference in mechanical assemblies using the mechanism dynamics tools in Creo Elements/Pro. To demonstrate animation and enhanced graphical presentation (rendering) techniques for design models. To demonstrate the

ability of Creo software to exchange design models with other engineering software for manufacture of components/products or simulation using Finite Element (FE) and Computational Fluid Dynamics (CFD) methods that are encountered in years 3 and 4 of the students' course of study. A key element of the module is to develop the students' team working ability. The assessment for the module is a group based project (in groups of four or five) to model and present a significant engineering artefact such as, for example, a complete car or aircraft.

The module consists of short online lectures with exercises on the following CAD topics: Introduction to Creo Elements/Pro: Sketching and Editing - Creating Extruded Features, Revolves and Ribs - Creating Sweeps and Blends - Creating Holes, Shells, Rounds and Drafted Features - Assembling Design Models with Constraints and Connections - Creating Engineering Drawings from Component and Assembly Models - Computing Mass, Volume, Surface Area, Centre of Gravity and Mass Moment of Inertia of Components and Assembly Models. Parametric and Freeform Surface Modelling with Creo Elements/Pro: Use of the Boundary Blend, Swept Blend and Variable Section Sweep Tools - Use of Styling Tools to Create Lofted Surfaces - Analysis of Surface Quality - Transforming Surface Models to Solid Objects. Mechanism Design and Simulation with Creo Elements/Pro: Configuring Mechanism Entities in Design Models such as Cams, Gears, Linkages, Belts/ Pulleys, Springs and Dampers - Animation and Visualisation of Mechanism Motion.

ME4037- ADVANCE MECHANICS OF SOLIDS (AUTUMN/3)*13 weeks / ECTS credits:6*

Stress at a point in 3D. Strain at a point in 3D (including finite strain). Theory of 3D strain rosettes and Morie grids. Constitutive relations for finite strain analysis of elastomers. Theory of elasticity: Equilibrium and compatibility, stress functions (various applications). Hertzian contact theory. Photoelasticity. Holography. Curved bars and struts.

ME4047 - FUELS AND ENERGY CONVECTION (AUTUMN/4)*13 weeks / ECTS credits 6*

Review of Thermodynamics. The Flow Through Gas Turbine Blade Rows: Compressible analysis; three dimensional flows; design example Combustion: fuels; methods of combustion; combustors; First Law Analysis of Combustion.; Second Law Analysis of combustion. Gas Turbine Performance.

ME4011 - CONTROL ENGINEERING*26Lx2/26T/26Lab; 13weeks; 1st semester; ECTS credits 6*

To provide a fundamental understanding of:- Principles and techniques of measurement Characteristics of instruments and instrumentation systems Principles and elements of feedback control systems. Block

diagram analysis and dynamic behaviour of 1st order systems Automatic control engineering

1. Sensors, transducers and transmitters
2. Instrument specification
3. Standard instrumentation signal levels
4. Signal transmission
5. Dynamic errors
6. Open and closed loop control systems
7. Control systems components - error detectors, controllers, final control elements
8. Block diagrams and transfer functions
9. Standard process inputs
10. Dynamic response of first order systems.
11. Laplace Transforms
12. Dynamic behaviour closed loop control systems
13. Controller design using frequency response criteria
14. Stability of closed loop control systems. *Prerequisite Modules: ME4714*

ME4111 - ENGINEERING MECHANICS 1 (AUTUMN/1)*4 hours per week; 13 weeks/1st semester; 26L/26LAB; ECTS credits:6*

Application of Newton's Laws to particles and rigid bodies in equilibrium (Statics); equivalent force systems; two-and-three-dimensional force systems in equilibrium; analysis of rigid trusses and frames; centroids, centres of gravity, distributed forces, area and mass moments of inertia; friction.

ME4113 - APPLIED MECHANICS (AUTUMN/2)*4 hours per week; 13 weeks/3rd semester; 26L/26LAB; ECTS credits:6*

Kinematics of simple mechanisms and linkage; analysis of four bar linkages, straight line mechanisms, use of velocity and acceleration diagrams; Coriolis analysis; cams; Kinematics analysis of follower motion, velocity and acceleration of cams, construction of cam profiles, computer aided design of cams; forces analysis of cams; gears; gear kinematics and dynamics, simple and compound trains; epicyclic gears, referred inertia, torque and power transmission; balancing; balancing of rotors, static and dynamic balance, balancing of reciprocating masses; Gyroscope; gyroscope analysis and gyroscopic effects.

ME4117 - VIBRATION ANALYSIS* (AUTUMN/4)*4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6*

Single degree of freedom systems; free response; springs in series and in parallel; logarithmic decrement; forced response to harmonic excitation; excitation by an unbalanced rotor; response to periodic excitation; Fourier series; impulse response; response to arbitrary excitation; free and forced response of two and multi-degree of freedom systems; use of the modal superposition method; use of the finite element method.

*Prerequisite ME4111***ME4121 - ENGINEERING SCIENCE 1 (AUTUMN/1)***4 hours per week; 13 weeks/1st semester; 26L/26T; ECTS credits:6*

Mass, force, weight; forces in equilibrium; frameworks; stress and strain; shear stress; shear force diagrams, bending moment diagrams; friction; velocity, acceleration, relative velocity; motion in a circle; simple harmonic motion; work, energy, power.

ME4213 - MECHANICS OF SOLIDS 1* (AUTUMN/2)*4 hours per week; 13 weeks/3rd semester; 26L/26LAB; ECTS credits:6*

Uniaxial stress and biaxial strain fields; constitutive relations; shear force and bending moment diagrams; bending of beams; transverse shear stress in beams; composite beams; 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.

*Prerequisite ME4112***ME4227 - AIRCRAFT STRUCTURES (AUTUMN/4)***4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6*

Theory of elasticity; Airy stress function. Energy methods for structural analysis. Shear and torsion of open and closed

thin walled sections, single and multicell sections. Bending and twisting of thin plates. Structural instability; inelastic buckling, buckling of thin plates. Laminated composite structures; stress analysis, failure criteria. Stress analysis of aircraft components; fuselages, wings. Application of proprietary structural analysis software packages and the application of Finite Element Analysis to aircraft structures.

ME4427 - MEDICAL DEVICE DESIGN AND PLACEMENT (AUTUMN/4)

Overview of medical engineering materials and their functional properties. Practical aspects of stress analysis and biomechanic in medical appliances and devices. Stability of design elements. Aspects of component life, cost and reliability. Review of the history of medical design device, Fatigue behaviour of medical devices. Wear and strength of medical devices. Mechanical testing of medical devices. Use of fatigue data, load and environment factors in design and selection. Use of standards. Bio-materials and life considerations. Corrosion protection. Safety and the work environment. Testing and certification. Medical device legislation and regulation. Clinical use of devices and design constraints. Case studies in design from Medical Device Industry. Prerequisite Suitable only for 4th year Mech. Eng. (Biomedical Eng.)

ME4517 - ENERGY MANAGEMENT (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26LAB; credit:6

Fossil fuel reserves and rates of consumption; energy situation in Ireland, trends and issues, present and future; energy and the environment; energy tariffs and their significance in industry; economics of energy - payback period, present value, analysis, energy audit; energy management systems; combined heat and power; renewable energy sources; optimising thermal equipment; Lagrange multipliers; modelling thermal equipment; heat exchanger effectiveness and number of transfer units; availability, energy and minimisation of entropy production. *Prerequisite ME4526*

ME4523 - THERMODYNAMICS (AUTUMN/2)

First law of Thermodynamics with applications to non-flow and to steady flow processes. General Thermodynamic relationships and properties. Statements of the Second Law of Thermodynamics including Carnot efficiency. Corollaries of the Second Law of Thermodynamics including the Clausius inequality and concepts of irreversibility. Otto, Diesel and Dual reciprocating engine cycles. Joule cycle with applications to simple gas turbine engines.

ME4611 - COMPUTING (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 26L/26LAB; ECTS credits:6

Introduction to computer organisation, programming languages, top-down design techniques; arithmetic operations including intrinsic functions; control structures; data files and input/output system; single and multidimensional array processing; implementing top-down design with functions and subroutines; character, complex, and double-precision data; internal, sequential and direct access files; numerical applications; and engineering applications. Operating System (DOS) and use of spreadsheets.

ME4727 - STABILITY AND CONTROL (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6

Equations of motion for a rigid body aircraft; physical basis for longitudinal and lateral stability derivatives; solution of the equations for free longitudinal motions, phugoid and short period modes, flight paths, variation of roots with C.O.G. position, flying qualities; free lateral motion; basic control theory, transfer functions, block diagrams, state space to transfer function representations for MIMO systems, the root locus technique; open loop control - response to controls; closed loop control, autopilots with displacement and velocity feedback, stability augmentation systems with velocity feedback and full state feedback.

ME4807 - AIRCRAFT CONCEPTUAL DESIGN

Systems engineering process applied to aircraft design. Preliminary sizing of critical parameters to specified performance requirements and airworthiness regulations. Conceptual aircraft layout and scaling to requirements. General arrangement of aircraft. Wing design, aerofoils, planform parameters selection, high lift devices, control devices. Fuselage design, crew station, passenger compartment, cargo hold. Integration of propulsion systems. Weights estimation, load & balance diagram. Vertical & horizontal tail - layout, sizing for stability, trim and control. Landing gear integration. Fuel system integration. Life cycle costs, cost estimation.

MF4713 - WORK DESIGN AND MEASUREMENT (AUTUMN/2)

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

The aim of this module is to provide expertise in the area of Work Design so that significant improvements in productivity can be achieved in manual and clerical work. To learn how to estimate the times required for jobs and to explain how to collect data on work times and methods.

MF4717 - MODELLING & CONTROL OF DYNAMIC SYSTEMS PT4011* (AUTUMN/4)

4 hours per week; 13 weeks/7th semester;
26L/26LAB; ECTS credits:6

To develop skills in analysing and modelling dynamic systems. To develop the students' ability to build and analyse models at the systems level. To introduce the concept of controlling dynamic systems and to view operations and manufacturing in an integrated fashion. *Prerequisite* MF4766

MF4723 - ORGANISATIONAL PSYCHOLOGY (AUTUMN/2)

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

To introduce students to working in organisations prior to their co-operative placement. To acquaint students with sufficient knowledge to understand structures and cultures of organisations. To enable students to understand managerial practice in order to accept and practice management.

MF4733 - MANUFACTURING INFORMATION SYSTEMS* (AUTUMN/2)

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

To give students an understanding of the role of information within a manufacturing

organisation. To introduce students to tools available for information systems analysis and design and to allow students to acquire data management skills. *Prerequisite*: MF4712

MF4737 - AUTOMATION ENGINEERING 2* (AUTUMN/4)

4 hours per week; 13 weeks/7th semester;
26L/26LAB; ECTS credits:6

To introduce the student to the analytical concepts of movement and stability in equipment design. To introduce the student to the programming languages in Computer Aided Manufacturing. *Prerequisite*: MF4766

MT4003 / MT4013 - POLYMER SCIENCE (AUTUMN/2)

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

CEMS

Molar mass averages; polymer chemistry, addition and condensation, chain growth and step growth mechanisms, kinetics and chain statistics; branching and cross linking; copolymerisation; polymerisation techniques; chain structure and property relationships; crystallinity; polymer solutions.

MT4017 - BIOMATERIALS 1 (AUTUMN/4)

2L/2Lab/1T; ECTS credits 6
CEMS

Introduction to Biomaterials, Definitions, Cell structure and function. Cell regulation, Homeostasis. Biological Macromolecules, Protein Structure, Amino Acids, Primary, Secondary and Tertiary Structure. Immunology, Autografts, Allografts and Xenografts. Blood Clotting Mechanisms. Biocompatibility, Classification of Devices and Materials, Bioactive, Bioinert, Bioresorbable, Hybrid Biomaterials, Tissue Engineering, Haemocompatibility. Assessment of Biocompatibility, Cell Culture Assessment, Implantology. Medical Devices Directive, ISO and EN standards, Testing Protocols and strategies. Risk Assessment. *Prerequisite* CH4701, MT4943

MT4023 - MATERIALS 2

ECTS credits 6
CEMS

Gravity + Reaction = Equilibrium (stable, neutral, un-stable); Newton's Laws; Human Arch: concepts of gravity, reaction, forces, friction, free-body diagram; Structural forms; natural and man-made; Loading : dead, imposed, thermal, wind and dynamic; Free Body Diagrams; Equations of static equilibrium : vertical, horizontal and moment equilibrium; Support conditions pinned, roller and fixed; Internal member behaviour axial tension / compression, bending and shear; Failure modes individual elements buckling of compression members, tensile, bending/shear; overall stability; construct simple models to illustrate modes of failure; 3-pin

arch structures analysed using precedent studies support reactions under different loading conditions; Basic member sizing under axial tension, Basic foundation types and foundation sizing; Introduction to research methods and resources; Initial 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.

MT4027 - AEROSPACE METALLIC MATERIALS ECTS 6; **CEMS**

The chronological development of materials for aircraft structural applications. Quantitative materials selection to determine materials performance indices for selected aircraft components - illustrated by selecting optimised material for fuselage, wing and undercarriage. Properties and processing of metallic monolithic and composite materials. Review and advanced examination of the concepts of stiffness, strength, fracture toughness, stress corrosion, general corrosion, fatigue and damage tolerance. Demonstration of how these properties affect ab initio structural performance and in service degradation. Physical metallurgy and structure property relationships of aluminium alloys,

titanium alloys, magnesium alloys, alloy steels metal matrix composites. Corrosion characteristics. Development of new advanced metallic materials and processes to counter the competition from polymer composites.

MT4101 - INTRODUCTION TO MATERIALS (AUTUMN/1)

5 hours per week; 13 weeks/1st semester; 26L/13T/26LAB; ECTS credits:6

CEMS

Historical background to development of materials; materials science; classes of modern materials; metals; polymers; ceramics and glasses; composites; origin of these materials; properties; applications; related to properties.

MT4105 - QUALITY SYSTEMS (AUTUMN/3)

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

CEMS

To form an understanding of the concepts behind the ISO 9000 standards, product testing and certification. How quality standards operate in Irish manufacturing and service industries. How the standards relate to Total Quality Management (TQM). How to document and maintain a Quality System. How to quantify the cost of quality within companies. To develop an understanding of the basic tools of statistical process control. To understand the role of Total Quality

Management (TQM) in improving business performance.

MT4107 - COMPOSITE MATERIALS (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6

CEMS

Fundamental concepts of composite materials; ceramic, metal and polymer matrix systems; stiffness and strength of composites, with particular reference to continuous fibre materials; macro mechanical and micro mechanical approaches; lamina and laminates; processing techniques; typical applications.

MT4207 - FAILURE AND DAMAGE ANALYSIS (AUTUMN/4)

5 hours per week; 13 weeks/7th semester; 26L/13T/26LAB; ECTS credits:6

Analysis of failure and damage; modes of failure; procedures of failure analysis; implications of failure analysis; experimentally based mini-projects; case studies.

MT4905 - MATERIALS TECHNOLOGY 3 (AUTUMN/3)

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

CEMS

Principles of polymer processing; extrusion; injection; materials, techniques; compression, transfer and rotation, die filling, cycle, process control, effect on properties; blow moulding and vacuum forming moulding; cellular polymers.

MT4943 - MATERIALS PROCESSING (AUTUMN/2)

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

CEMS

Metals; casting; forming; extrusion, forging, rolling, sheet metal work; joining; mechanical, welding, adhesion, brazing; polymers; processing techniques.

PD4003 - ERGONOMICS FOUNDATION

People and aids, system models, anthropometrics, Holding, force, costs and fatigue, sound and noise, physics and light, cognition, comfort and safety, usage phase, product evaluation.

PD4007 - PRODUCT ERGONOMICS

Physical ergonomics, user research in ergonomic evaluations, biomechanics, informational issues, intelligent products, product safety and legislation. Implications for human performance.

PD4013 - AESTHETICS FOUNDATION AND FORM (AUTUMN/2)

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

Appreciate the meaning and impact of aesthetic issues and considerations. Consider cultural, economic and social issues in ergonomic examples and evaluations. Apply aesthetic criteria in form creation and other elements of design. Evaluate the aesthetic quality of products. Be aware of contemporary trends in aesthetics. Attractiveness of forms, colours, textures etc.; emotional and cultural aspects of appearance; historical development of design; economic and social history; awareness of the product form, applications of these in form creation and product design. Contemporary trends in aesthetics.

PD4023 - DESIGN RESEARCH AND SPECIFICATIONS (AUTMN/2)

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

Evaluation of design - function, manufacturability and aesthetics. Evaluate total design processes. Design products to meet specific requirements. Be able to write a design brief. Incorporate systems technologies in design solutions. Be able to write up design standards and specifications. Appreciate responsibility of designing. Background research in designing - environmental, manufacturing cost (and other aspects), constraints, research and analysis. Incorporation of all factors impacting on the product, into a thorough and sustainable product specification, to satisfy appropriate Standards, to include research methods planning and costing etc. Inclusive design considerations and legislation.

Prerequisite: ID4812

PN4001 - TECHNICAL GRAPHICS 1

Fundamentals of communication graphics, drawing as a modelling system, basic visualisation skills and exercises, projection systems, multi-view drawings, pictorial drawings, freehand drawing techniques, dimensioning, tolerancing and notations, sections and auxiliary views, primary geometric solids and plane figures and characteristics, developments of right solids, simple assembly drawings, basic intersections, selection of appropriate graphics for given

tasks, pedagogical considerations associated with teaching fundamental graphics. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area.

PN4013 - TECHNICAL GRAPHICS 3

Advanced orthographic projection. Second auxiliary plans and elevations. True length and shapes, dihedral angles, simply and doubly inclined planes. Pictorial drawing, oblique, planometric, isometric and perspective sketching. Axonometric projection (isometric, diametric and trimetric). Solids in contact. Inclined solids, rotation of solids, basic intersection of solids. Tangent planes and their traces. Introduction to shadow projections. Graphics and Design, modelling solutions, pictograms, logograms. Strategies to develop spatial ability and graphical communication skills. Pedagogical considerations. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area. Assessment modes and techniques. 2D CAD standards, CAD interface, Co-ordinate systems, drawing limits and spaces, drawing templates, customisation techniques, paper space layout, viewports. Basic CAD constructions and transformations. Layers and line types, drawing and editing techniques, text and dimensioning. CAD applications in Technical Graphics and developing teaching resources.

PN4015 - DESIGN & TECHNOLOGY 2 (AUTUMN/3)

5 hours per week; 13 weeks/5th semester; 13L/52LAB; ECTS credit:6

Analysis of technology syllabuses and the structuring and planning of lessons to achieve quality outcomes. Quality of learning and the effective translation of knowledge and understanding of design and technology into practice. Strategies for development of design capabilities in 2nd level pupils to enable them to become confident in applying technological solutions to real problems. Promoting independent learning and facilitating the development of an enquiring mind.

PN4101 - INTRODUCTION TO MATERIALS PROCESSING (ED)

Safety in the Laboratory and in Manufacturing Environments. The language of Manufacturing Technology. Historical perspectives on manufacturing. Production of materials - metals, wood-based and plastic materials. Properties of materials that directly influence their selection and processing methods. Consideration of environmental implications of material processing methods. Basic Manufacturing processes - cutting, forming, rolling, extrusion, casting etc. Hand processing of materials. Introduction to machine tools - parallel and taper turning, drilling, knurling, undercutting and parting off. Machine set up. Pillar drill - set up and use. Coolants, cutting speeds and feed rates. Introduction to metal cutting - cutting tool

geometry. Analysis of skills and pedagogical applications of these. Permanent and non-permanent joining processes - soft soldering, screw threads and folded sheet metal joints. Measuring instruments: Vernier caliper and micrometer. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area. Integration of multimedia and spreadsheet software in pedagogy. Project planning

PN4103 - PROCESS TECHNOLOGY 2 (ED)

Engineering measurement. Standards of measurement. Interchangeability of parts. Limits and fits, BS4500. Introduction to basic inspection methods. The measurement of components using rollers, balls, slip gauges, angle gauges, surface tables and other measuring instruments. Screw thread specification and geometry. Revision on basic bench and machine processes in PN4101: Analysis and generation of projects suitable for use in Junior Cycle Metalwork classes. Routine maintenance of machine tools Further treatment of metal cutting: cutting tool geometry, chip shape and formation. Coolants. Milling of metals and hard plastics. Milling of components using the dividing head - simple indexing. More advanced lathe processes: Screwcutting, eccentric turning, turning between centres, boring and reaming. Introduction to CNC turning Off-hand grinding of high speed steel lathe tools and

twist drills. More advanced benchwork and hand working processes to include precision filing and precision assembly. Economical use of resources and time in the workshop.

PN4105 - PROCESS TECHNOLOGY 3 (ED)

Expendable-mould Casting. Casting terminology. Cores and Core making. Silver Soldering, Brazing, Manual Metal Arc and Inert Gas welding. Resistance welding. Introduction to Oxy-Acetylene welding, Spinning, Heat Engine cycles including Otto, Diesel and dual cycles, reciprocating IC Engines Work planning and machining sequences. Precision milling and Turning. Mechanical assembly.

PN4305 - DESIGN AND COMMUNICATION GRAPHICS 1

Plane and Descriptive Geometries Second and subsequent auxiliary views true shape of surfaces and true length of line, solids in contact. Descriptive geometry of lines and planes, oblique and tangent planes, determination of traces, true shapes and angles, planes cutting objects, intersecting plane laminar surfaces, skew lines and their applications. Intersection and development of surfaces - plane and curved. Conic sections - unique and common properties, centre of curvature, hyperbola from transverse axis. Projection of oblique and platonic solids: cube, tetrahedron. Introduction to measured

pictorial projection. Cognitive modelling strategies. Strategies for managing assignments and stimulating creativity and innovation within the design brief. Designing, planning and managing appropriate teaching and learning activities for this subject area. The design processes. Design visualisation; stages and features of design, 3D feature based model as a design database; features creation; surface, solid and parametric modelling in design; design intent; planning for design flexibility; design sustainability, relations and equations; parametric dimensioning; modelling for manufacture and assembly, design for manufacture; assembly models and drawings; Drawing documentation and bills of materials; library features; files exchanging, CAD standards for data exchange. Rendering and photo realistic images, presentation and communication of concept design. Generic Photo Editing software, Use of auxiliary ICT application to enhance, manage and develop the design portfolio. 3D parametric CAD as a pedagogical tool to derive and communicate complex concepts and principles and aid spatial reasoning and visualisation

PT4011 - INTRODUCTION TO TECHNOLOGY MANAGEMENT *ECTS credits 6*

The purpose of this module is to introduce students to the concept of Technology Management and in doing so to provide them with an understanding of what they will be studying during their 4-year degree and

why it is relevant. This module will provide students with a framework for understanding technology management activities and tools. The module will examine how firms acquire, exploit and protect technology resources. Students will be introduced to a set of tools that can be used in managing technology. Many of the concepts introduced in this module will be explored in greater detail in future modules.

Technology Strategy: Integrating technology and strategy, design and evolution of technology strategy, acquiring and selecting new technologies, technological competencies and capabilities. Technology Forecasting and Road Mapping: Technology S-curves, patterns of innovation, Forecasting techniques: Scenario analysis, EMV, Decision Trees, Technology Trajectories Technology Development: new product development, stage gate processes, market research methods, prototyping Incremental vs. disruptive development, technology transfer, Technology Portfolio Planning: Value Analysis/Value Innovation, Life-cycle models, Patent Analysis, product selection.

PT4111 - MANUFACTURING TECHNOLOGY 1 (AUTUMN/1) *4 hours per week; 13 weeks/3rd semester; 26L/26Lab; ECTS credits:6*

Safety; manufacturing systems; historical perspectives on Manufacturing; production of materials; properties of materials which influence their selection; environmental

implications of material processing; machine tools; basic manufacturing processes; expendable-mould casting; engineering measurement; standards of measurement; measuring instruments; introduction to metal cutting; chip formation; coolants; cutting speeds and feed rates; hand processing of materials.

PT4113 - MEASUREMENT & INSPECTION* (AUTUMN2)

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

Historical background to measurement and interchange ability of parts limits and fits BS4500; measuring instruments; errors in measurement; measurement of components; straightness testing; machine tool alignment; flatness testing; measurement of surface texture; limit gauge design, in process measurement, automated measurement systems. *Prerequisite PT4112*

PT4115 - MANUFACTURING TECHNOLOGY 4* (AUTUMN/3)

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

The stress strain diagram, the plastic region; metallurgical aspects of hot and cold working; work done in the deformation of metals; the mechanics of metal cutting; merchants analysis of metal cutting; lubrication and cutting fluids. *Prerequisite PT4112*

PT4117-MANUFACTURING TECHNOLOGY 5 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6

Mechanics of machine tools; forces on machine elements; machine tool alignment; machining of geometric forms; the machine-control unit for N.C. and CNC system; times for machining processes; cutting times; economic comparison of alternative processes, 'break-even' quantities; ISO standards for tools and tool holders. *Prerequisite PT4115*

PT4121 - COMMUNICATION GRAPHICS (AUTUMN.1)

4 hours per week; 13 weeks/1st semester; 13L/39LAB; ECTS credits:6

To prompt and nurture spatial-visualisation and spatial-reasoning abilities critical to the success of technology professionals. To present the standards and conventions of engineering drawing essential to the correct creation and interpretation of graphical representation used in engineering communication and documentation. To foster manual drawing skills, especially sketching, which are essential to design and communication success.

PT 4315 - PRODUCTIVITY METHODS 3* (AUTUMN/3)

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

The objective of a manufacturing organisation;

functions and types of manufacture; jobbing batch mass and flow production; costs and break-even charts; facilities layout; Gantt charts, network charts, critical path, uncertain times, time-cost tradeoffs; production planning; scheduling by SPT; Johnson's and Jackson's rules; index and graphical methods; use of priority rules.

PT4317 - PRODUCTION METHODS 4* (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

Forecasting by means of moving averages, exponential weighting, regression and smoothing techniques; linear programming; assembly line balancing problems; simple lines; evaluation of alternative methods; mixed-model and multi-model designs; manual flow systems. *Prerequisite PT4315*

PT4323 - PRODUCTIVITY METHODS 1A (AUTUMN/2)

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

Productivity, work design, workplace design, work measurement, time estimating, specialist techniques.

PT4423 - 2D CAD (AUTUMN/2)

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

Contemporary CAD software with particular reference to AutoCAD; hardware, software and operating systems; the AutoCAD drawing environment; absolute and relative coordinates, units and limits, CAD tools and drawing setup; the UCS; basic and advanced drawing and editing commands; introduction to layers; using blocks, attributes and symbol libraries; communicating engineering and design details; dimensioning and dimensioning styles; tolerance dimensioning; sectional views and hatching; text; introduction to Paper Space; basic customisation techniques; isometric drawing, CAD construction techniques, plotting; using Auto LISP routines from the Internet. DWF drawings; introduction to #D functions.

PT4427 - DESIGN FOR MANUFACTURE (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6

New Product Development (NPD) versus traditional product development models. Cost of product development and cost of failure. Rationale for concurrent engineering. Product specification methods including Quality Function Deployment (QFD). Focus Groups, Voice of Customer (VOC) and functional analysis. Concept generation and evaluation using brainstorming, creativity

methods Pugh's concept selector, and ranking methods to evaluate concepts. Design for manufacturing and assembly and the cost of complexity and variation. The function of patents, copyright and legal aspects of product liability and legal requirements including CE mark and environmental protection in product development.

PT4515 - AUTOMATION T1* (AUTUMN/3)

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

Programmable logic controllers; interfacing and programming; sensing devices; Analog - Digital; low cost automation; pneumatic control pneumatic circuit design; hydraulic circuit design; hoppers; feeders; orienting mechanisms; indexing mechanisms; transfer mechanisms; conveyors; the appellation of pneumatic, hydraulic; mechanical systems to manufacturing.

PT4517 - AUTOMATION T 2 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6

Comparisons of hard/ programmable and manual status; costing of systems; systems specifications; design specifications; contracts; user manuals; safety etc.; robotics; production flow analysis; networks communication theory. *Prerequisite PT4515*

PT4617 - RELIABILITY TECHNOLOGY (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

Considerations of implications on costs of purchase, operation and maintenance; reliability estimation; prediction of repair times; acceptance testing for reliability; replacement decision-making.

WT4003 - CONSTRUCTION TECHNOLOGY AND MANAGEMENT 2 *2L/2Lab; ECTS credits 6* **CEMS**

Site works, site layout, electricity on building sites; Plant and equipment; Substructure construction, ground water control, deep trench excavations, cofferdam and caissons, tunnelling and culverts; Underpinning, piled foundations; Demolition and temporary works, Portal frames; Introduction to highrise construction, Introduction to fire protection; Claddings to framed structures; Formwork systems; Pre-stressed concrete; Industrial buildings.

WT4007 - BUILDING MEASUREMENT AND DOCUMENTATION

Introduction to contract documents and their functions, conditions of contract, forms of tender, forms of agreement, bills of quantities, drawings, specifications;

bill preparation process, contents bills of quantities, techniques used in preparing bills; general rules of abstracting and billing; preambles to the bill, using dayworks, specialist bills and addendums; recent developments in the bill preparation process, computer applications and electronic tendering; Application of standard methods of measurement to building works, general rules to using ARM, preliminaries, prime cost items, demolition, excavation and earthworks, piling and diaphragm walling, concrete work, brickwork and blockwork, underpinning, rubble walling, masonry, asphalt, roofing, woodwork, structural steelwork, metalwork, plumbing and mechanical engineering installation, electrical installations, floor wall and ceiling finishes, glazing, painting and decorating, drainage and fencing; Contract administration, letters of agreement, roles within the standard conditions of contract, site meetings, issuing instructions, dealing with variations, discrepancies in the documentation, certification, practical completion, defects liability, practical completion, agreement to final account, documentation and archives.

WT4103- WOOD TECHNOLOGY AND DESIGN 1

Junior Cycle syllabi. The process of design. Fundamental design skills. Teaching design based subjects. Integration of teaching design, craft and processing skills. Problem definition and analysis. Topic and task analysis. Design evolution. Communication of design ideas.

Critical appraisal of design solutions. Materials selection for sustainability. Organisation of work. Production procedures. Classroom/ workshop/laboratory organisation. Safety procedures. Design of jigs and fixtures to aid production and safety. The structure of subject knowledge. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area. Teaching resources. Assessment procedures and criteria.

WT4105 - WOOD SCIENCE 3* *(AUTUMN/3)*

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

CEMS

Mechanical properties of wood; specific gravity, density, concept of cellular solids; tensile strength; compressive strength; hardness and abrasion resistance; wood composites.

WT4107 - PULP, FIBRE AND BOARD MANUFACTURE 1 (AUTUMN/4)

4 hours per hours; 13 weeks/7th semester; 26L/26Lab; ECTS credits:6

CEMS

Concepts in modifying wood; deconstruction, combination, chemical and physical changes; comminution; fibres, pulping, mechanical, chemical, physical, chips, particles, veneer, sections; fibre products; manufacture, types, properties, end uses.

WT4117 - STRUCTURAL DESIGN *2L/2Lab/1T; ECTS credits 6* **CEMS**

Basic structural concepts and material properties, design loads, limit state design principles, beam design, axially loaded column design, column base & splice details, design of tension members and compression members, design of simple connections, trusses and bracing, floor design, introduction to structural detailing; bearing pressures, design of shallow foundations, introduction to lateral stability.

WT4201 - WOOD TECHNOLOGY 1

Health and safety in a production environment. Workshop layout and safety procedures. Concepts of tooling and design rationale of woodworking tools. Care and correct use of hand tools and equipment. Growth and structure of trees. Classification, characteristics and properties of hardwoods and softwoods. World distribution of timbers. Forestry as a resource and the related wood industry. Environmental and ecological considerations relating to the wood industry. Conservation of wood and the forest resource. Conversion and seasoning of timber. Mechanical properties of wood. Degrade and preservation of wood material. Marking out procedures. Wood processing techniques. Mechanical properties of jointing techniques. Factors influencing selection, processing and assembly of wood products. Joint selection,

design and realisation. Strategies for teaching this subject area at second level. Designing, planning and managing appropriate teaching and learning activities for this subject area. Use of information and communication technologies to enhance pedagogical approach to technology teaching at second level. Compilation and presentation of project reports.

**WT4203 - FURNITURE DESIGN*
(AUTUMN/2)**

*3 hours per week; 13 weeks/3rd semester; 39L;
ECTS credits:6*

CEMS

A general appreciation of man's progressive development through the ages by reference to his design achievements; furniture design in a historical context as a precursor to contemporary design; seminars/projects; analysis and response to given design briefs.; problem definition; solution options; design modelling and presentation.

**WT4205 - ARCHITECTURAL
TECHNOLOGY: THE BUILT
ENVIRONMENT**

The construction industry. Professional roles. Sustainable dwelling design. Passive housing. Site safety. Elements of structure. Structural concepts, terminology and calculations. Substructure: common subsoils, bearing capacity, water table, site clearance, principles

of foundation design, foundations for domestic dwellings, damp proofing, rising walls. Ground floors. External envelope & superstructure: common construction types (concrete/ timber frame/ steel frame cavity wall, straw bale, hemp etc.) Roofing. Windows and doors. Internal elements: Floors. Walls. Stairs. Doors. Sustainable construction. Recycling of building materials. Social impact of buildings. Building regulations in relation to the design and construction of domestic dwellings. Strategies for teaching 'The Built Environment' at second level. Designing, planning and managing appropriate teaching & learning activities.

**WT4301 - BUILDING AND
CONSTRUCTION REGULATIONS 1**

3L; ECTS credits 6

CEMS

Introduction: terminology / why manage safety? The Importance of HS&W. Recognising hazards and the Safety culture. Safety, Health and Welfare at Work. Law in Ireland, the 2005 Act, The Safety Statement and Risk Assessment. Overall View of Construction Regulations Impact on Work. Construction Duty Holders. HS&W at work regulations accident/ near miss/ dangerous incident reporting and investigation. Starting on Site Manual Handling. Underground Services Safety in excavation and confined spaces. Working at heights. Work equipment. Noise induced hearing loss. Chemicals and dangerous substances. Emergency

preparedness. Construction Techniques. Housekeeping. Welfare Communication and Coordination Training.

**WT4303 - MACHINING TECHNOLOGY
1 (AUTUMN/2)**

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

CEMS

Health and safety; introduction to standard machines for cutting, shaping and joint formation; factors governing selection and use relative to material and profile; analysis of factors governing machine shop layout, practical applications.

**WT4305 - MACHINING TECHNOLOGY
3* (AUTUMN/3)**

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

CEMS

Advanced machine processes; computer integrated manufacturing; analysis of tool design; material optimisation; analysis of factors governing the economics of manufacturing complex product design including effective modification of design and/ or equipment; case studies.
Prerequisite WT 4304

**WT4401 - CONSTRUCTION
TECHNOLOGY & MANAGEMENT 1**

*5 hours per week; 13 weeks; 26L/13T/26LAB;
ETCS credits: 6*

CEMS

Introduction to site works, temporary works, sub-structure construction, foundations, retaining walls and basements, superstructure construction techniques, stonework, brickwork, blockwork, arches; Timber framed construction; Floors, walls, roofs, internal fixtures and fittings; Thermal and sound insulation; Framed buildings, structural steel, reinforced concrete, pre-cast concrete, cladding systems; Introduction to building services, domestic water supply, sanitary fittings and pipework, drainage.

**WT4405 - WOOD TECHNOLOGY 2*
(AUTUMN/3)**

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

CEMS

Analysis of factors governing the weathering of wood based materials - chemical, colour and physical changes; preservatives - analysis of factors governing their selection and application; surface finishing - analysis of factors governing selection and application of the finishing agent.
Prerequisite WT 4404

WT4503 - STRUCTURAL MECHANICS* **(AUTUMN/2)**

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

CEMS

Statics and dynamics; systems of units, forces, frameworks stress and strain, friction, velocity, motion, work, energy, power.; moments of area; loading, factor of safety/load factor; design of ties struts and beams; indeterminacy, elasticity and plasticity, influence lines, space frames, arches, slabs cables and membranes.

WT4505 - BUILDING ECONOMICS

2L/1T; ECTS credits 6

CEMS

The overall aim of this module is to illustrate the application of economic principles to the building and construction process. Specific objectives include providing the student with;
* An overview of the construction industry and its role in the economy * An understanding of the construction firm and its management from an economic perspective * The economic considerations in evaluating building projects and making decisions.

The construction industry, its economic development, structure and role in the economy. construction as a production process. Management of firms, costs, revenues and markets from the point of view of economists and managers. strategic decision making in property development and project appraisal and feasibility studies.

Linking the economics of the production process of construction to the economics of its output, buildings and structures of the built environment. Cost modelling techniques, cost and price forecasting, cost product and process modelling, dealing with uncertainty. Building design, its interaction with the construction process in determining the cost and quality of buildings. The economics of buildings essential resources, energy efficiency and its cost. Cost limits and values, determining value for money Commercial values and the property market.

Prerequisite WT4804

WT4905 - BUILDING CONSTRUCTION **(AUTUMN/3)**

*1 hour per week; 13 weeks/5th semester; 13L;
ECTS credits:6*

History of Building; design processes - the relationship of constructional forms, spatial and user requirements, comfort and climatic conditions Design Discipline; communication of design; design and construction of small scale/low rise buildings; materials, selection, performance function of components and assemblies.

WT4507 - FORENSIC ENGINEERING **AND ETHICS**

2L/2Lab/1T; ECTS credits 6

CEMS

Reasons for failures in engineering; Modes of failure; Risk; Failure case histories in concrete,

steel, masonry, foundations and timber etc; Common pitfalls, FeldÆs ten basic rules; Nonstructural failures; Learning from failures; Forensic engineering practice; Conducting a forensic engineering investigation; Writing a forensic engineering report; Ethics and Responsibilities, Standard of Care; Rules of evidence, Depositions, Arbitration. These topics will be addressed through PBL exercises involving individual and/or team challenges. The module assessment is by 60% CA work and 40% end of semester examination. Examples of CA work include class debates (e.g. cases involving ethical dilemmas faced by engineers such as Citicorp building N.Y.), individual online quizzes on ethics, individual online quizzes on forensic engineering, team based forensic engineering projects requiring presentations and report writing. Cross faculty collaboration on projects involving law and architecture is also encouraged on this module.

WT4603 - WOOD PROCESSING **SAFETY AND PRACTICE**

Machines and Machining Practice. Safety measures and regulations. Safety promotion strategies. Risk assessment. Safety statements. Safety demonstration procedures and techniques for machines. Tooling and tooling geometry. Cutting tool materials and properties. Cutter block design and balance. Centrifugal and Centripetal forces. Cutting tool holding and setting devices. Machining parameters. Surface finish. Flat surface semblance. Power requirements. Machine and

tool maintenance. Jig and template design. Wood processing. Setting-out procedure and work sequencing. Material optimisation and conservation.

WT4605 - PROCUREMENT AND **CONTRACTING**

2L/1T; ECTS credits 6

CEMS

Contract building blocks, forms and essential elements of contracts, partnering and new developments forms, buyer-seller relationship. Invalidity factors and frustration, agreements, conditions and warranty, liquidated damages, performance bonds and terms of payments. The procurement process, tendering and bidding, tender evaluation and awarding of contracts, uncertainty and risks, negotiations legislative restrictions. eProcurement, centralised purchasing within organisations. Contract administration, claims and disputes, legal procedures, conciliation & arbitration. Managing conflict and negotiating procedures. Contract closure, compliance, maintenance periods, commissioning, payment structures and final accounts.

WT4705 - BUILDING PRODUCTION

Problem definition and clarification - design briefs; New Product Development (NPD) Concurrent Engineering NPD vs Traditional NPD; The deliverables of processes of design; NPD Failure Reasons, Rationale

for Concurrent Engineering. NPD Project Planning- Minimising NPD Lead Time, NPD Resources, Teams. NPD Requirements Definition - Specifications, QFD, Focus Groups, Functional Analysis. Defining Customer Requirements, House of Quality (HOQ), Voice of the Customer (VOC), Product, Process Planning -Parts Deployment & Production Planning. Product Concept Evolution- Idea & Concept Generation, Creativity, Brainstorming - Morphological Analysis, Syntectics, Analogy. Concept Evaluation - Ranking Methods, Concept Assessment Techniques, AHP. -Pughs Concept Selector, Convergence and Divergence. Standardisation & Modularity- Features of Good Design, Parts & Processes Commonality. The cost of complexity and variation. Variety Reduction. Design for Assembly (DFA). Legal Aspects of NPD - Laws on Product Liability and EU PL Directive, CE Mark.- Safety Evaluation, Prevention of Defective Products. Intellectual Property - Patents, Application Process and requirements. -Copyright, trademarks and design registration.

**WT4707 - CONSTRUCTION
TECHNOLOGY AND MANAGEMENT 3**
2L/2Lab/1T; ECTS credits 6
CEMS

Introduction to Construction Project Management and PM Software - purpose, concepts and conventions. Construction Planning Tools and Techniques Schedule Definition and Management; Construction

Project Network Analysis, Critical Path, PERT & Line of Balance. Resource Allocation & Levelling labour, material and equipment. Site Establishment and Management Managing Resources and Costs Communications & Change Control Management Site Meetings and Progress Reports Leadership and Negotiation Skills on Construction Projects Construction Risk Management Identification, Analysis, Response and Control Construction Productivity Improvement - Define, Measure, Analyze, Improve and Control Lean Construction methods TQM, Value Engineering, Waste Elimination, Root Cause Analysis, Supply Chain Management & Partnering.

**INFORMATICS &
ELECTRONICS MODULES
(AUTUMN)**

**CE4205 - MICROCOMPUTER SYSTEMS
(AUTUMN/3)**

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

Overview of the 8086 architecture including, memory and I/O mapping, memory segmentation, interrupt structure, the components of the standard PC base on the 8086 processor; the programmers model for the 8086, instruction set, addressing modes, 8086 assembly language programming tools; operating system introduction; definitions, components command shells, services overview; MS-DOS memory organisation, extended and expanded memory; interrupt handlers, BIOS and DOS functions; device drivers; concept, designing applications; disk storage organisation; disk structures, file and directory structures, performance considerations; introduction to micro-soft windows 3.1; implementation as an extension of DOS, memory organisation, simple co-operative multi-tasking features.

**CE4517 - DIGITAL SYSTEMS 6
(AUTUMN/4)**

*5 hours per week; 13 weeks/7th semester;
26L/13T/26LAB; ECTS credits:6*

Designing with DRAMS in microprocessor-based systems. Graphics and image displays using DRAM, VRAM. DMA hardware; error detection and correction hardware; CRC approach to error detection; Disk storage - media consideration, data coding and system aspects. Xilinx programmable logic.

**CE4607 - COMPUTER NETWORKS
(AUTUMN/4)**

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

The course incorporates: communications within and between computer systems, switching and routing protocols, distributed network architecture's incorporating application oriented protocols and standards.

**CE4701 - COMPUTER SOFTWARE 1
(AUTUMN/1)**

*4 hours per week; 13 weeks/1st semester;
26L/26LAB; ECTS credits:6*

Outline structure of a digital computer; the role and use of the operating system; computer applications software; language hierarchy; Algorithms and problems solving; structuring complex problems, the subprogram concept; Arrays; Input and Output; Disk files.

CE4703 - COMPUTER SOFTWARE 3* (AUTUMN/2)

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

Advanced C language programming; structures; dynamic memory management; separate compilation; modules; header files; linkage; variables, access and scope; data abstraction in C; error handling; recursion; algorithm performance analysis; order notation; sorting arrays of objects; sorted array searching; data structures and abstract data types (ADTs); hashing; data design and selection of data structures.

CE4707 - SOFTWARE ENGINEERING (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

Object oriented analysis/design; object oriented programming; Smalltalk programming language; C++ programming language; C++ development environments; case study and project. Prerequisite: CE4706

CE4717 - LANGUAGE PROCESSORS* (AUTUMN/4)

5 hours per week; 13 weeks/7th semester; 26L/13T/26LAB; ECTS credits:6

An introduction to the theory of compiler design and its application in a simple compiler; the implementation of a compiler

for a simple, Pascal-like language; compiler structure; grammars; parsing; syntactic error detection and recovery; semantic processing; code generation for a simple stack machine; scanning; table-driven parsing techniques; code generation for register architectures; introduction to code optimisation techniques.

Prerequisite CE4703

CE4817 - DIGITAL SIGNAL PROCESSING 1 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

Discrete Time Systems; digital filters; digital filter design: FIR design by the window method; IIR design based on continuous-time systems; 2-D processes: the discrete Fourier transform.

CS4001 - COMPUTER APPLICATIONS FOR SCIENTISTS 1

Scientific literature retrieval - use of Internet/ Intranet databases e.g. Science Direct, ASTI, Medline, Ullmanns and OHSIS. - Presentational skills: (i) Scientific drawing - use of a chemical drawing package (e.g. ChemSketch) to produce 2- and 3-d representations of molecular structures; (ii) Scientific graphing - use of e.g. Advanced Grapher to create professional quality graphs. Computer-aided audio-visual presentations using MS Powerpoint. - Rudiments of spreadsheets: entering names, numbers

and formulas into cells; calculations and simple formulae; display of equations in the spreadsheet; editing, deleting, copying and pasting cell contents; formatting cells in a spreadsheet; relative and fixed (absolute) cell references; ordering data within spreadsheets; creating and embedding charts and graphs; saving and formatting for printing; - Built-in functions for summarizing and evaluating data e.g. count, sum, minimum, maximum, average, mode, median, standard deviation, frequency, permutations and combinations, geometric mean, harmonic mean, probability and distributions, regression analysis; - Descriptive statistics: ranking by percentile, calculating moving averages, exponential smoothing, generating random numbers, sampling data; - Importing and Exporting Data: Import/export data from/to another file, e.g. a text file, a web page. - Pivot tables and pivot charts; - Creating Macros; - Introduction to Visual Basic for spreadsheet applications in chemistry, biochemistry, environmental science and health & safety.

CS4003 - INFORMATION SOCIETY 1: SOCIAL THEORIES OF NEW MEDIA (CSI 2-1-0)

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

The aim of the module is to gain an understanding of the social and cultural implications of new media. The impact new media have had on information sharing, processing and consumption and the changes

on cultural attitudes and practices new media provoked. The course should also introduce students to the body of literature regarding social theory and new media and to the current research studying the impact of new communication technologies into our everyday lives. Brief syllabus: cultural and social implications of new media and emerging technologies; analysis of social theories of media and research on new media in society; focus on the features of new emerging media (e.g. internet agents, distributed systems, intelligent environments) and the probable future social impact of these new communication technologies on culture.

CS4005 - PERCEPTUAL SYSTEMS AND MULTIMEDIA

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.

**CS4007 - INFORMATION SOCIETY 2
(CSI 2-1-0)**

This course offers a socio-economic, political and cultural exploration of the “internet society”. The course will provide a series of perspectives on the network society, examining its conceptual foundations, critiquing its more polemical exponents, and subjecting the claims of the electronic sublime to critical scrutiny. The course will help students understand some of the current debates in the media about the effects of information and communications technology on society. Brief syllabus: the course will examine the claims of those who argue for the emergence of a radically new Information Society, as against those who see the emerging society as being fundamentally a continuation of existing socio-economic forces; the differing perspectives of technological determinism and social determinism will be examined; the notion of “information ecologies” will be examined, as well as the current debate about the “knowledge society”.

CS4011 - COMPUTER APPLICATIONS

Open source and proprietary software as sources of common software applications; Relationship between software and a computer application; Event driven software; Application Programming Interfaces (APIs);

**CS4013 - OBJECT ORIENTED
DEVELOPMENT (CSI 2-2-2)**

On successful completion of this module students will be able to identify, design, formulate and assemble classes using inheritance hierarchies, encapsulation and polymorphism to solve specified programming problems. Brief syllabus: introduction to object orientation terminology; procedural approach versus object oriented approach to problem solving; discovering classes; class-responsibilities-collaborations (CRC) cards; CRC session; CRC cards for analysis; representing classes, objects and attributes; analysis-level diagram; defining classes, objects, methods, access modifiers, invocation; pre-defined object values; constructor method; overloading and overriding methods; exception handling; garbage collection; extending classes; nested classes and interfaces; interfaces and polymorphism; single inheritance of implementation; collections; streams and buffers; declaring packages;

**CS4021 - DIGITAL MEDIA SOFTWARE
AND SYSTEMS 1**

Audio - Controlling the timeline. - Introduction to sequencing. - Implementation of trackers, sequence layering & looping. * Video - Static image processing. - Introduction to image sequencing.

**CS4023 - OPERATING SYSTEMS (CSI
2-1-1)**

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

On successful completion of this module a student should have a clear understanding of the (i) logical structure of, and facilities provided by, a modern OS (ii) concepts of processes, threads and multithreading and how they are implemented in a modern OS (iii) problems that arise when processes collaborate and compete and well as being able to demonstrate practical experience of mechanisms for handling these situations (iv) different ways of implementing virtual memory (v) use of system calls. Brief syllabus: the need for the OS; different types of OSs; interfaces to an OS; processes and threads; process scheduling; multithreading; context switching; concurrency, including interaction between threads; inter process communication (IPC); synchronization and mutual exclusion problems; software algorithms for IPC; 2 processes, n processes; low and high level mechanisms for IPC and synchronization: signals; spinlocks; semaphores, message passing and monitors; deadlock; use of semaphores for synchronization, mutual exclusion, resource allocation; implementation of semaphores; use of eventcounts and sequencers for classical IPC problems; conditional critical regions; monitors and condition variables; physical and virtual memory; segmentation and paging; cache memory; system services for memory management; I/O subsystem; locking; buffering; file systems and file management;

file system based IPC; pipes; the socket mechanism; IPC using sockets; fault tolerance and security;

**CS4025 - DIGITAL AUDIO
FUNDAMENTALS**

Nature of analog and digital sound; principles of digital signal processing for audio including sampling theory and spectral representation, digital sound synthesis techniques; digital audio recording techniques including selection and use of microphones; multitrack recording; manipulation of digital audio files; digital audio and compression; digital audio standards including connectivity; digital signal processing applications; digital audio distribution including storage, internet and digital audio broadcasting.

**CS4027 - INFORMATION RETRIEVAL &
KNOWLEDGE REPRESENTATION (CSI
2-1-1)**

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

To introduce students to the fields of information retrieval and knowledge representation as they pertain to information systems. Brief syllabus: the document collection; character encoding standards; automatic text processing; retrieval systems; retrieval based on sounds and images; measures of performance; modelling, classification and clustering; knowledge representation and

visualisation; ontologies; content management systems; web-based knowledge representation; semantic web technologies; the business case for the semantic web.

CS4031 - INTRODUCTION TO DIGITAL MEDIA (CSI 2-0-0)

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

On successful completion of this module students will: have considered the influence of technology on human cognition and activity; considered a number of case studies focussed on particular technologies and media. Brief syllabus: The influence of technology on cognition and activity, the relationship of technology to practice, form, content and remediation, case studies will consider the influences, consequences and interrelationship of: the written word, printing press, computer & digitisation, world wide web, music instrument form, mnemonics, notation, recording, digitisation, the reproduced image, printing press, camera, film, television, digitisation, narrative, orality, ritual & theatre/ opera, illusion, interactive systems, sensors, virtual spaces, remediation.

CS4037 DIRECTED STUDY FOR MMPT 4

Contemporary Live Electronics & performance including video (Nam June Paik, Bill Viola etc.) and audio (David Tudor, Keith

Rowe, Tim Jenkins, Mimeo). * Popular Culture including the democratisation of technology and the move away from formal organisation. * Video and Audio Sampling.

CS4041 - HEALTH INFORMATION FLOW AND USE

- Introduction to health care delivery systems: components of a health care delivery system: facilities, practitioners and entities; Ferlie and Shortell's nested model: the individual patient, the care team, organisation, and environment; - IOM quality characteristics of a health care delivery system; - Role of information and communications technology; systems engineering tools: systems design tools for meeting needs/desires of stakeholders, systems analysis tools for analysing existing systems for improvement; and systems control tools to ensure processes are operating within their prescribed limits; proximate causes of a health care crisis; - Trace the flow and use of health information in a variety of health care delivery systems; Roles and work patterns of health professions and their use of information and information technology; - Differentiate between terminology, nomenclature and classification; uses and benefits of coding; introduction to classification schemes such as ICD-10, SNOMED-CT, READ, Unified medical language system (UMLS); classification schemes and clinical terminologies used by health care professionals; coding compliance tools; reliability and interoperability of coding schema; ISO/

CEN.HL7; synergies between classifications and clinical terminologies; - Application of information and communication technologies to a health information infrastructure: the importance of information and information exchange; impact of infrastructure on health care processes and outcomes for each of the levels of a health care delivery system; - Current and emerging technologies; technical challenges and opportunities; economic, organisational and cultural barriers; - Health care data standards: Health Level 7 v3; DICOM; NCPDP; medical device data IEEE Standard 1073;

CS4043 - GAMES MODELLING DESIGN

- 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;

CS4045 - MEDICAL IMAGING

the human body: a review of the human skeletal system, of the human anatomy, physiology, the nervous system; - Diagnostic techniques in general: scope of visual markers, including complexion, eye, gait, mobility analysis; role of blood and urine analysis, limitations; percussion techniques, the stethoscope, ECG and EKG; - Image based diagnostics: the electromagnetic spectrum; the optical band; the X-ray band, wave motion, the physics of the image-forming process; the human visual system, lenses, screens, wave reflection, scattering, diffraction, absorption; - X-rays: devices, radiography and radiology; interaction of photons with matter, interaction of an X-ray beam with tissue, detectors, image quality, resolution, contrast, artefacts, clinical use, biological effects and safety; limitations; - X-ray based computed tomography: X-ray detectors in CT, image formation, multislice CT, reconstruction, imaging in 3D; image quality; equipment; clinical use; biologic effects; limitations; - Magnetic Resonance Imaging: the physics of the image formation process, interaction with tissue, slice or volume selection, position

encoding, dephasing phenomena, 3D imaging, acquisition; contrast, resolution noise and artefacts; clinical use; biologic effects, safety considerations; - Ultrasonic imaging; physics of high frequency acoustic waves, wave generation, wave propagation in homogeneous and inhomogeneous media; doppler effect of motion; detection of ultrasonic waves. grey scale imaging; doppler imaging; image quality; equipment; clinical use; biologic effects and safety; - Nuclear Medical Imaging: radionuclides, radioactive decay modes; interaction of photons with matter; photon detection; the imaging process. 2D iterative reconstruction; 3D reconstruction; image quality; PET and SPECT; images; equipment, gamma cameras, SPECT scanners; clinical use; biologic effects and safety; - Image Analysis and visualization: manual and automated analysis; - Standards: the PACS standard, DICOM standard; - Filtering techniques, segmentation, contrast enhancement, feature extraction, image compression; - Image processing skills via the use of software packages and via software development;

CS4047- MULTIMEDIA INDUSTRY PERSPECTIVES

This module introduces the students to a number of external experts from a variety of multimedia industry related areas, within a flexible framework. The precise set of topics that will be available as part of this module will depend on the visiting industry representative, and each topic will be structured as a

“independent unit” which is documented separately. Each unit is assessed by coursework and/or class test; there is usually no formal examination at the end of the semester.

CS4051 - MEDICAL DECISION SUPPORT SYSTEMS

- Decision making: the process of constructing alternatives and seeking resolution; - Modelling decisions; components of decision models; static and dynamic models, decisions, rules and expressions; guidelines and workflow models; - Decision support systems (DSSs): role of a DSS; typical application areas; - Medical decision support systems (MDSSs): key functions of MDSSs: administrative, managing clinical complexity and details, cost control, decision support; - Components of a MDSS; role of MDSSs in reducing preventable medical errors; computerised provider/physician/prescriber order entry (CPOE) systems: functions and features, role as a supporting application to an electronic medical record system; limitations of CPOE systems; - Normative and descriptive approaches; decision-analytic MDSSs; equation-based and mixed systems; - Reasoning about the problem structure in addition to numerical calculations; choice and optimization of decision variable(s); - Linear programming; objective function, constraints, graphical method, simplex solution, sensitivity analysis; integer linear programming; - Network models and waiting line models; - Computer solutions; interpretation of results;

- Decision making under conditions of risk and uncertainty; - User interfaces to MDSSs: support for model construction and analysis; Expert systems in routine medical use: components; medical knowledge they contain for defined tasks; uses: alerts, reminders; diagnostic assistance; therapy critiquing and planning; prescribing decision support; information retrieval; image recognition and interpretation; - Trends concerning MDSSs: standardized interfaces among clinical and practice management systems; higher-performance technologies (e.g., speech recognition and wireless computers) - Security features: levels of data encryption, compliance with Health Insurance Portability and Accountability Act (HIPAA) requirements;

CS4053 - DIGITAL VIDEO FUNDAMENTALS

Introduction to principles of digital video representation and recording. - Principles of Digital Signal Processing for video including sampling theory and hue, saturation and intensity representation. - Selection and use of digital video cameras. - Digital video formats, compression techniques, connectivity and standards. - Principles of digital video colour representation. - Introduction to digital video display and projection. - Digital video image capture. - Introduction to digital video editing. - High-definition digital video. - Introduction to CGI. - Digital video distribution. - Audio technology for video.

CS4055 - DATA MINING AND DATA WAREHOUSING

What is data mining; why data mining; cross-industry standard process (CRISP-DM); CRISP-DM in action; data warehousing and enterprise intelligence; basic elements of data warehousing; what tasks can data mining approach; Data pre-processing: data cleaning, handling missing data, identifying misclassifications, graphical methods for identifying outliers, data transformation, numerical methods for identifying outliers; - Hypothesis testing versus exploratory data analysis: dealing with correlated variables, categorical variables, using exploratory to uncover anomalous fields, numerical variables, multivariate relationships, selecting intersecting subsets of the data for further investigation; - Data warehousing with intelligent agents: integration of database and knowledge-based systems, the role of artificial intelligence in warehousing; - Data warehouse performance: measuring data warehouse performance, performance and warehousing activities; data warehousing and OLAP; relationship between data warehousing and OLAP; - Aspects of building data warehouses: physical design, using functional independence, loading the warehouse, metadata management, operation phase, coherent management of warehouses for security; - Data mining task in discovering knowledge in data: statistical approaches to estimation and prediction, univariate methods: measures of centre and spread, statistical inference, confidence interval

estimation, bivariate methods: simple linear regression, confidence interval for the mean value of y given x , prediction intervals for a randomly chosen value of y given x , multiple regression, verifying model assumptions; - Nearest neighbour algorithm, supervised versus unsupervised methods, classification task, k-nearest neighbour algorithm, distance function, combination function, quantifying attribute relevance, k-nearest neighbour algorithm for estimation and prediction; - Classification and regression trees, C4.5 algorithm, decision rules, comparison of the C5.0 and CART algorithms applied to real data; - Neural networks: neural networks for estimation and prediction, sigmoid activation function, back-propagation, gradient descent method, back-propagation rules, termination criteria, momentum term, sensitivity analysis; - Clustering task: hierarchical clustering methods, k-means clustering; - Self-organising maps, Kohonen networks, cluster validity, using cluster membership as input to downstream data mining models;

CS4057 - MACHINE LEARNING AND AI FOR GAMES

A series of case studies on the application of Artificial Intelligence and Machine Learning methods to all aspects of Games and Games Development will be presented. Example applications could include, Game Playing Programs, Path Finding, Control and Goal Oriented Action Planning, Multi-Agent Systems, Semi-automated Animation, and

Sound Generation. The AI and Machine Learning methods discussed may include Symbolic AI, Expert Systems, Evolutionary Algorithms, Genetic Programming and Grammatical Evolution, Reinforcement Learning, Artificial Neural Networks, Swarm Intelligence, and Behaviour-Based Robotics and Control.

CS4061 - MEDIA PROGRAMMING 1

Program versus algorithm; brief introduction to number systems, character encoding and character sets; data representation and the role of computer memory; why digitize media, media objects and why study programming; programming process; - Introduction to classes and objects; - Primitive data types; declaring and defining variables/data; constant definitions; mixed data types; assignment statements; input and output; - Arithmetic operators; casting; relational operators; logical operators; precedence rules; - Working with turtle objects to create and display picture objects and to create and play sound objects; sending messages to objects; creating methods; method arguments and parameters; - Introduction to how images are digitized/ encoded; different models for colour and colour representations; - Introduction to arrays, using arrays to store images; - Looping constructs; modifying images using loops to undertake lightening and darkening, creating a negative, increasing and decreasing colour values, converting to greyscale; - Using nested looping constructs for processing elements of

arrays to mirror images, to compose images, to blend images, to rotate images and to scale images; - Introduction to selection statements; using conditional constructs to replace one colour or a range of colours, to average nearby pixels and to replace the background of an image;

CS4063 - DIGITAL MEDIA AND SOFTWARE SYSTEMS 2

Audio, sound synthesis, temporal-spectral models, statistical models, physical models, 3D graphics, 3D image modelling, 3D processing, surface rendering, modelling lighting.

CS4065 - WEB INFRASTRUCTURE

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, OOHDM, 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;

CS4067 - WRITING GAMES ANALYSIS

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

CS4073 - DIGITAL ARTS

The development of digital art; the change of relationship between work and production methodology; changes of modes of expression and output; the affect and influence of the development and use of technology over the past century on the creative arts; the shift from the conceptual primacy of expression to the increased role of technology and engineering, production and distribution; a survey of key works from representative domain.

CS4075 - COMPUTER GAMES PROGRAMMING – TOOLS AND TECHNIQUES

Introduction to programming interactive computer games. This module provides an introduction to computer game application elements. Areas covered include: - Components of Game - Resource Management Techniques - AI and Interaction Techniques - Networking for Games - Physics Simulation - Collision Detection - Use of Scripting Engines It introduces required tools and libraries facilitating the job of computer games programmer. After finishing this module student will gain competence in programming basic, but complete, computer game applications.

CS4077 - DIGITAL MEDIA AND SOFTWARE SYSTEMS 5

Software implementation of real-time performance systems; distributed performance system programming; real-time DSP algorithms and environments.

CS4085 - COMPUTER GRAPHICS 2

Basic Modelling Techniques - Basic Animation Techniques - Usage of Content Creation Suites - Graphical File Formats (importing / exporting) - Introduction to Real-Time 3D Engines - Scene Management Techniques - Special FX - Particle Systems - Pixel/Vertex Shaders.

CS4111 - COMPUTER SCIENCE 1 (CSI 2-1-1)

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

Aims: To understand the mathematical basis of many complex computations, to lay basis for derivation of simple programs from formal specifications and to understand the dependence of program on underlying evaluation mechanisms. Objective: On successful completion of this module the student should be able to: 1. Construct syntax trees for expressions (including conditional expressions), involving operations of different arities and signatures, determine the partial ordering of evaluation of subexpressions implied by tree structure, generate a semantically equivalent expression in prefix or postfix notations, evaluate the expressions by hand, and by writing fragments of code in a procedural language and a functional language, and given an expression in lambda notation, to determine the free and bound variables; 2. Construct an inductive definition of some simple functions over the Natural Numbers, derive a functional program, and derive semantically equivalent iterative and recursive programs written in a selected procedural language. Brief syllabus: programming as a form of specification of (not necessarily numerical) computations using specific evaluation mechanisms, and specific notations, analysis of mathematical notations including fixity, arity, precedence of operators, as well as grouping of operands; purely linear notations, and precedence of operators; syntax trees, and

lambda notation, together with scope and partial ordering of operations; conditional expressions, and elementary recursion; inductive definition of functions, and proof by induction; derivation of functional, recursive and iterative programs from inductive definitions;

CS4135 - SOFTWARE ARCHITECTURES (AUTUMN/3) (CSI 2-1-2)

4 hours per week; 13 weeks/7th semester; 26L/13T/13Lab; ECTS credits:6

To provide students with an understanding of complex software systems and to provide them with the skills to create such software. Brief syllabus: Graphical User Interfaces; Survey of the Major Object Oriented Libraries; Software Components; Component Architectures; Overview of Software Architectures; Architectural Styles; Architectural Mismatches. *Prerequisite: CS4113*

CS4167 - HEALTH INFORMATICS RESEARCH

Mammography: mammogram models, models of radiation scatter and extra-focal radiation. - Image analysis techniques: image enhancement, normalisation, sub-pixel representation using Gabor wavelets, subspace methods using Principal Components Analysis (PCA). - Introduction to Research Methods: research design, and qualitative and quantitative approaches. - The agile

manifesto in software engineering with a focus on Extreme Programming (XP). - Managing team dynamics. - Recap of paradigms from intelligent systems and data mining. - Evaluating Hypotheses. - Machine Vision and Learning Under Uncertainty: statistical learning, learning as function approximation, learning as density estimation, unsupervised learning without density estimation, linear classification and regression, non-linear classification and regression. - Neural networks paradigms for identification of abnormalities in mammograms : Multi-Layer Perceptrons (MLP) using backpropagation, Self-organising Maps (SOMs), and Radial Basis Networks. - Evolutionary Algorithms identification of abnormalities in mammograms: Grammatical Evolutions (GE) for the automated synthesis of vision programs. - Mammogram Classification using PCA. - Overview of probabilistic approaches to model building such as the Expectation Maximisation (EM) algorithm for Hidden Markov Models (HMMs).

CS4177 - TELECOMMUNICATION SERVICES

[Public v Private networks]: Ownership and administration, policy issues, licensing & regulation, security considerations, overheads of running a real physical private network, advantages & disadvantages. - [Telephone network services] (voice and data), DSL services, (Broadband), Freephone, Lo-call and premium rate services. Centrex, PBX services. ISDN network services, bearer

services, teleseivices, and value-added services. (psychics alive, weather dial, dating services, on line surveys etc) Intelligent network services. - [Packet network services]:Frame Relay and ATM networks, TCP/IP best effort, Services outsourcing business model, impact on QoS levels, SLAs. - [The Internet]: its structure, tiered layers of ISPs. VPNs over the Internet. Hostile network security services. Secure VPN, IPsec, and SSL. IntServ and Diffserv approaches to QoS for Internet based services. Streaming of audio and video content over the Internet. Multi Protocol Label Switching - [Mobility services] Mobile data services, GPRS, WAP and I-mode services, location based services, GPS.

CS4211 - COMPUTER ORGANISATION 1 (AUTUMN/1) (CSI 2-1-2)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

To provide the student with a sound understanding of the representation of basic data types in a computer and to introduce the student to computer hardware as it pertains to the software developer. Brief syllabus: introduction to computer architecture; the representation of data; principles of error detection and prevention; introduction to Boolean algebra; combinatorial and sequential logic; integrated circuit fabrication; main memory; backing storage; magnetic and floppy disks; input and output peripherals; principles of data communication; microprocessors; hardware.

CS4411 - IMPERATIVE PROGRAMMING (AUTUMN/1) (CSI 2-1-4)

5 hours per week; 13 weeks/1st semester; 39L/26T; ECTS credits:6

Aim: To provide a language-independent introduction to imperative programming using one programming language. Objective: On successful completion of this module the student should be able to design and program solutions, to solve simple practical problems using primitive data types, control structures, functions/procedures, and one-dimensional arrays. Brief syllabus: programming process; syntax and semantics; declaring and defining variables/data; constant definitions; mixed data types; arithmetic expressions and precedence; assignment statements; input and output; program design techniques and approaches; program standards and styles; modules, subroutines, procedures and functions: flow of control; library functions; user-defined functions; relational expressions, logical expressions and precedence; selection statements; data validation; error handling; systematic debugging approaches; looping constructs; one dimensional arrays and their manipulation; sorting and searching techniques; string manipulation; enumerated data types and an introduction to record structures;

CS4457 - PROJECT MANAGEMENT AND PRACTICE (CSI 2-1-1)

The aim of this course is 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. Brief syllabus: Management of IS projects can be the deciding factor in their eventual success or failure. This module covers the range of responsibilities of managing medium to large-scale information systems development projects, from project initiation to systems implementation. This course includes a study of the tools and techniques applicable to planning, monitoring and controlling the project.

CS4513 INTRODUCTION TO SYSTEMS ANALYSIS (AUTUMN/2) (CSI 2-1-2)

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

The aim of this module is to present an integrated approach to system specification and implementation, with an emphasis on relational databases. The objectives are to introduce the system development lifecycle, the concepts of specification and implementation, some simple specification techniques, leading on to relational databases, SQL, database design using the Entity-Relationship approach; the Z notation; specifying and implementing database constraints. Brief syllabus: the system development life cycle; specification and Implementation; modelling facts in terms of predicates, sets, relations; the relational

model of data; relational algebra and relational calculus SQL, simple queries, conditions and expressions; query nesting and union; views in SQL; entity relationship diagrams; the Z notation, schemas, predicates and constraints; database definition and manipulation using SQL; specifying and implementing database constraints.

CS4815 COMPUTER GRAPHICS (AUTUMN/3) (CSI 2-1-0)

9 hours per week; 13 weeks/5th semester; 26L/26T/65LAB; ECTS credits:6

To understand the properties of Interactive Graphics Systems, viz. input & output devices, graphic libraries. To make the student conversant with the issues which arise in the creation, storage and display of graphic images both in 2 and 3 dimensions. To emphasise the role of standards in Computer Graphics. Brief syllabus: general structure of interactive graphics systems; input and output devices, raster scan devices, video memory models; establishing device, language and application independence; digitising analogue information; antialiasing; design and implementation of drawing algorithms for basic shapes; viewing functions, clipping functions, input and output primitives; control, transformation (rotation, scaling, translation, reflection, shears) and segmentation functions; modelling; 3-D transformations; projections; viewing in 3-D; representation of surfaces via polygons; realism; hidden surface removal; surface

generation via bi-cubic curves; rendering.

Prerequisite CS4113

CS4911 - INTRODUCTION TO INFORMATION TECHNOLOGY

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 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.

CS4913 - BUSINESS INFORMATION SYSTEMS* (AUTUMN/2)

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

Growing importance of information systems management in business; components of a business information system; data management; role of the database; personal databases; shared databases; maintenance and security of databases; decision support systems; communication support systems; executive support systems; management of information systems; overview of systems development methodologies; data protection act, 1988.

CS4925 - BUSINESS INFORMATION TECHNOLOGY I (AUTUMN/3)

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

Introduction to fourth generation languages; structure of database management systems; systems development methodologies; systems analysis; feasibility study; gathering systems requirements; entity relationships diagrams; process descriptions; data type and structure; data flow diagrams; structure charts; detailed system design; data base design; user interface design testing; implementation; documentation; students will be expected to analyses, design and develop a database application system. *Prerequisite module CS4913*

EE4001 - ELECTRICAL ENGINEERING (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 26L/26LAB; ECTS credits:6

Electrostatics; conduction; network analysis; magnetism.

EE4003 - THE ENGINEER AS A PROFESSIONAL

1. Communication. Presenting, Writing. 2. Adapting to the Workplace. Effective Meetings, Time Management, Creativity, Stress & Fun, Feedback, Planning, Teamwork, Leadership. 3. The Engineer as a Professional. Professions & The Engineering Profession, Professional Bodies, Life Long Learning & Continuous Professional Development 4. Engineering Ethics, Engineers in Society, Responsibility in Engineering, Common Morality & Codes of Ethics, Analysing the Problem, Utilitarian & Respect for Persons Philosophies, Creative Middle Ways

EE4005 - ELECTRICAL POWER SYSTEMS

Generators/Alternators in power systems: steady state operation, transient conditions, unbalanced loading or faults, operation connected to infinite/non-infinite busbars, stability margin, operational limits, operation at leading power factor, governors and frequency control. Power Factor Correction: Single-phase and three-phase power factor

correction. Utility and consumer power factor correction. Active power factor correction and filters. Voltage Regulation: Voltage control standards: methods of voltage control, generator, reactive injection, series compensation, tap-changing, coordination of voltage regulation, voltage control and reactive power. Three-phase Transformers: Review of power transformers, construction, equivalent circuit, autotransformers, use of tap-changers, three-phase connections and transformer banks, transformer harmonics, parallel operation of three-phase transformers, harmonics, inrush current, unbalanced loading, delta/star transformers. Transmission and distribution: Transmission line inductance, capacitance. Overhead lines, underground cables. Fault analysis: Power systems faults: earth faults, line-line, line-line-earth; fault calculations, symmetrical faults, unbalanced faults. Switching and Protection: Switches, breakers, contactors, purpose of protection, plant protection, personnel, security of supply, stability, protection system components, zones of protection, current transformers, fuses, relays, breakers, inverse time, generator and transformers protection schemes, auto-reclosing circuit breakers. Relay types, over current, differential, impedance and pilot relaying, transformer protection, generator and motor protection, circuit interruption and switching over voltages. Rectification, Inversion and High Voltage DC Systems Advanced Topics: Grid design, transmission and distribution systems, integrating renewable generation onto a grid, grid design for the future, smart grids.

**EE4027 - TELECOMMUNICATION
NETWORK ARCHITECTURES 1**

(No description given)

**EE4101 - ELECTRICAL SCIENCE 1
(AUTUMN/1)***4 hours per week; 13 weeks/1st semester;
26L/26LAB; ECTS credits:6*Electrostatics; conduction: network analysis;
magnetics.**EE4115 - SYSTEMS ANALYSIS
(AUTUMN/3)***3 hours per week; 13 weeks/5th semester;
26L/13T; ECTS credits:6*Bode plots; poles and zeros; Laplace transform,
application to circuit analysis, frequency
response from pole-zero locations; computer
simulations; second-order systems; Fourier
series; filter design; Butterworth, Bessel,
Chebyshev. transmission line introduction;
properties of selected lines.**EE4207 - INDUSTRIAL AUTOMATION**Motion Control: Open Loop and Servos/
Closed Loop Electric motors, drives and
controllers. Steppers, DC Servos, Brushless
Motors. Motion sensors / transducers for servo
operation, tachometers, optical encoders,
resolvers,. Pneumatics Electro Pneumatics,
valves, pneumatic devices, pneumatic controlsystems. Programmable Logic Controllers
PLCs, industrially hardened modular
controller, programming. Mechanical System
Components and Considerations Friction, low
friction designs, inertia matching, gear boxes,
screws, worms, toothed belts, harmonic drives.
Choice of motor system to match speed,
accuracy, stiffness, efficiency requirements
etc. Industrial Robots Classification; robot
programming, forward and inverse kinematics,
sensor systems integration, challenges of
mobile robotics**EE4313 - ACTIVE CIRCUIT DESIGN 1
(AUTUMN/2)***5 hours per week; 13 weeks/3rd semester;
26L/13T/26LAB; ECTS credits:6*Overview; diodes. Mosfets. JFETs: BJTs: IC
components overview: BJTs Mosfets; biasing
methods: small-signal models; amplifier types;
differential; systems overview.**EE4317 - ACTIVE CIRCUITS DESIGN 4*
(AUTUMN/4)***5 hours per week; 13 weeks/7th semester;
26L/13T/26LAB; ECTS credits:6*IC components and technologies; IC design
methods; frequency response; amplifier loading
effects; IC op-amps; switched capacitor filters;
power amplifiers.
*Prerequisite EE4314***EE4407 - ASICS 1 (AUTUMN/4)***5 hours per week; 13 weeks/7th semester;
26L/13T/26LAB; ECTS credits:6*Introduction to Design Methodologies; UNIX;
VLSI structures; design entry and simulation;
hardware description languages; design for
text. *Prerequisite EE4407***EE4511 - DIGITAL SYSTEMS 1**INTRODUCTION: Differences between
analogue-and discrete-signal systems. The
advantages of binary logic systems. BOOLEAN
ALGEBRA: Logical variables and functions of
two logical variables. Truth tables. Theorems
of Boolean algebra. Nand, Nor, And, Or and
the relationship between them. Canonical
forms - minterms and maxterms. Function
synthesis. KARNAUGH MAPPING:
Concept and procedures for up to 4 variables.
Mapping incompletely specified functions.
CIRCUIT SYNTHESIS: Circuit synthesis
from a functional specification. The concept
of gate delay, spurious responses (glitches).
Waveforms in logic circuits. NUMBER
SYSTEMS AND ARITHMETIC: Decimal,
Binary and Hexadecimal numbers. Negative
numbers - One's and Two's complement
representation. Arithmetic with signed
numbers. Simple arithmetic circuits, full
adder. Cascading of adder stages. Look-ahead
carry. ENGINEERING ASPECTS: Gate
characteristics of TTL family of devices: speed,
current flows, noise margin. Open-collector
and Tri-state gates. LATCHES AND FLIP-FLOPS: Simple latch using cross-coupled
Nands. Gated latch, D-latch.**EE4427 - SEMICONDUCTOR
TECHNOLOGY 1 (AUTUMN/4)***6 hours per week; 13 weeks/7th semester;
26L/13T/39LAB; ECTS credits:6*Integrated circuit technology; lithography;
device packaging; clean room; process
integration; reliability; yield.**EE4511 - DIGITAL SYSTEMS 1
(AUTUMN/1)***4 hours per week; 13 weeks/1st semester;
26L/26LAB; ECTS credits:6*Number systems and arithmetic; Boolean
Algebra; Karnaugh Mapping; Gate
characteristics; Latches and flip-flops;
laboratory work.**EE 4513 - DIGITAL SYSTEMS 3*
(AUTUMN/2)***4 hours per week; 13 weeks/3rd semester;
26L/26LAB; ECTS credits:6*Classical von Neumann model. The basic
microprocessor; Addressing modes: data
movement instructions; the assembler and
assembler directives; arithmetic and logic
instructions; program control: processing text;
stacks; cross-linking.
Perquisite EE4512

EE4607 - TELECOMMUNICATION SYSTEMS 1 (AUTUMN/4)

3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6

Introduction to Communication Systems; transmission, T1-digital Carrier, Switching, Signalling, Local Loop, Inter-exchange signalling; mobile Communications, GSM, DECT, DCS-1800 UMTS; satellite communications, DBS, LEO's GPS; future of Telecommunications Systems.

EE4817 - SIGNALS & SYSTEMS 2 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester;
26L/26T; ECTS credits:6

Transforms; systems; signal windowing; non-recursive filters; recursive filters; filter transformation; noise.
Prerequisite EE4816

ET4001 - INTRODUCTION TO TECHNOLOGY (AUTUMN/1)

3 hours per week; 13 weeks/1st semester;
26L/13LAB; ECTS credits:6

The aim of this overview module is to introduce students to the various broad areas that have been identified as important in the support of the Electronics and IT industries.

ET4007 - TEST ENGINEERING 1 (AUTUMN/4)

3 hours per week; 13 weeks/7th semester;
26L/13LAB; ECTS credits:6

The relationship between reliability, maintainability and risk. Basic electronic system fault diagnosis. Fault diagnosis in circuits; analogue, digital. Component functional and parametric testing. VI curve testing for black box circuits. Test techniques for complex digital ICs e.g. boundary scan. Signature analysis, test vectors, pseudo-random test patterns etc. Role of diagnostic programmes for self test. Review of some key test instruments. *Prerequisite ET4514*

ET4015 - TEST ENGINEERING 1: PRODUCT DEVELOPMENT AND ATE SYSTEMS

4 hours per week; 13 weeks/1st semester;
26L/26LAB; ECTS credits:6

Troubleshooting: How circuits, systems and components fail. How are they diagnosed and repaired Reliability : Arrhenius and Eyring Models of failure. Accelerated Life Testing. Impact on the Design and test processes Electronic Production : PCB Design. Through hole and Surface Mount Technology. How can production processes be made more reliable Lean Manufacturing Advanced Interconnection Systems for modern Electronic Production

ET4115 - EMC (AUTUMN/3)

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

This module is intended to provide the student with a basic knowledge required to understand electromagnetic compatibility issues (i.e. electrostatics, magnetics and radiation) and to use this knowledge to evaluate, measure and minimise E.M.I. emissions and susceptibility.

ET4121 - LABORATORY SKILLS 1 (AUTUMN/1)

4 hours per week; 13 weeks/1st semester;
26L/26LAB; ECTS credits:6

Introduction to the electronic engineering laboratory: codes of conduct, operation of test and laboratory test and measurement equipment – power supply, signal generator, oscilloscope, circuit prototyping boards. Taking measurements and measurement equipment limitations. Electronic circuit prototyping, build and test: soldering, wire-wrapping, board design and layout, component choice and correct handling. Determining component values from the package coding. Printed Circuit Board (PCB) build and test, working in a project group environment.

ET4141 - ANALOGUE ELECTRONICS 1 (AUTUMN/1)

4 hours per week; 13 weeks/1st semester;
26L/26LAB; ECTS credits: 6

The electric circuit: charge, current as the movement of charge, charge units, concept of electric field. Concept of energy loss and electrical work. Voltage and Resistance. SI Units. Simple series and parallel resistive circuits. Energy storage: Capacitors. Basic construction and types. Capacitors in series and parallel. R-C networks, qualitative observation and simple calculations for charge and discharge of a capacitor. Electromagnetism: concept of a magnetic field. Electromagnetic induction, Faraday's experiments. Concept of back e.m.f. leading to introduction of inductance. Simple calculations on R-L circuits, time constants, magnitudes of back e.m.f. etc Generation of Alternating Current: graphical interpretation of sinusoidal waveforms. Magnitude, frequency, phase angle, period. Application examples include simple generators, transformers, alternators, dynamos and basic electric motors. Amplitude and time delay effects of R-C and R-L circuits on AC signals. Efficiency. Frequency response of simple R-C and R-L circuits. Simple signal filters. Qualitative assessment of R-L-C circuits. Tuning, amplification, attenuation, bandwidth and Quality Factor.

ET4131 - INTRODUCTION TO COMPUTER PROGRAMMING (AUTUMN/3)

PC Structure; introduce components of a PC such as RAM, ROM, CPU, Disks etc. Algorithms: decomposing larger problems into smaller ones, flow-charts and Pseudo code. Common terms used in the programming world: Syntax, Semantics, compiler etc. Introduction to C: featuring of C. Why use C? Fundamentals of C. Reserved words. Basic data types. C Programming: format styles and good practices. Constants and variables. Operators and expressions. Input and output. Formatted output. Conditional and looping constructs. Functions. Arrays and pointers. File handling.

ET4151 - DIGITAL ELECTRONICS 1

4 hours per week; 13 weeks/1st semester; 26L/26LAB; ECTS credits: 6

The difference between digital and analogue signals. Binary numbers (unsigned) and how they can represent an analogue signal. Number systems and codes, Hexadecimal, ASCII code. Simple ADC and DAC concepts. Logic gates: AND, OR and INVERTER gates and their truth tables. Representing data in parallel and in serial form, RS232. Buses and addressing: the concept of selecting a device by decoding a number on an address bus. Memory devices: basic types (NO internal workings) of semiconductor memory and how they are

used. LED displays: including single LEDs and 7-segment displays and how to drive them. Modem basics. Sequential circuits: D-type flip-flops and registers; counters and their applications; shift register – serial – to parallel conversion (and vice-versa); Simple state diagrams. Mass Storage: disks, magnetic storage, sectors, data rates, optical storage, flash memory.

ET4205 - INTELLIGENT INSTRUMENTATION SYSTEMS (AUTUMN/3)

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

This module introduces students to the key principles associated with the use and specification of intelligent instrumentation and to the use of a computer to control systems and processes. At the end of this module students should be able to identify and troubleshoot the basic building blocks of an Intelligent Instrumentation System and to use a computer to sample, identify and improve the performance of simple dynamic systems. *Prerequisite ET4103*

ET4213 - DIGITAL ELECTRONICS 3 (AUTUMN/3)

4 hours per week ; 13 weeks/3rd semester ;26L/26LAB ; ECTS credits : 6
Intro to microprocessor based electronic systems and design of digital electronics using Hardware Description Languages. Topics:

Microprocessor – concepts, history overview, application areas; Architecture – block diagram model of 8-bit processor, microprocessor as programmable device. CPU, RAM, ROM. Address, data and control buses; Internal operation of microprocessor – overview of internal operation of simple microprocessor at block-diagram level, data path and control logic, fetch-decode-execute cycle ; I/O Devices – input/output devices, examples of serial and parallel I/O ports ; Memory Maps and I/O Maps – memory maps, I/O maps, combined memory and I/O map. Memory and I/O decoding. Basic memory and I/O read and write cycles ; Intro to digital circuit and system design with Hardware Description Languages : Verilog-HDL and VHDL. VHDL – modelling digital circuits in VHDL, synthesis. *Prerequisite ET4512*

ET4215 - ELECTRONIC PRODUCTION 2 (AUTUMN/3)

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

PCB assembly techniques, thru-hole and surface mount technology, thick and thin film hybrid technology; process defects and assembly failure mechanisms; effect of assembly process on electronic components reliability; concept of reliability, the bathtub curve, infant mortalities and concept of stress screening; the Arrhenius equation; MTBF and the principles of accelerated life testing; limitations of the Arrhenius approach in electronics production; Intro in international

screening standards. *Prerequisite ET4214*

ET4223 - EMBEDDED SOFTWARE 1 (AUTUMN/3)

4 hours per week ; 13 weeks/3rd semester ;26L/26LAB

Description of embedded system. Detail of application areas and examples. Intro to simple microprocessor architecture. Registers, buses and memory organization and use in embedded applications. Memory and I/O devices. Memory and I/O accesses. Details instruction machine formats and instruction decoding. Intro to instruction sets, addressing modes, data move instructions, arithmetic instruction, stack operation and usage, Program flow control instructions, sub routines and loops. Detail assembler directives and program translation process. Review the build and load process for embedded application programs..... Simulation tools and debugging techniques. Monitor program and use to test applications using target hardware. Control/communicate with I/O devices through polling and interrupts. Interrupt service routines, interrupt priority, multiple interrupts, nesting. Practical programming examples to illustrate concepts. *Prerequisite Computer Programming 1, Digital Electronics 1*

ET4225 - INDUSTRIAL AUTOMATION (AUTUMN/3)

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

Motors used in motion control, drive electronics, controllers, sensors/transducers, computer based controllers, pneumatics, programmable logic controllers (PLC's) and industrial networks; design of automated work cells and the integration and control of automated processed/work-cells within the production environment.

Prerequisite ET4103

ET4243 - WEB AND DATABASE TECHNOLOGY 2

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

Data models and data base architectures. Database Management System: typical functions/services and major components. The relational database model: intro and additional concepts. Database design methodology: conceptual, logical and physical database design phases. Intro to Structured Query Language: 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 and ActiveX Data Objects; intro to scripting languages. Web database programming case study.

ET4253 - COMPUTER SYSTEMS ARCHITECTURE 2

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

Pentium and later microprocessors and simple RISC and CISC concepts; Protected Mode operation and relationship to Windows operating system; P4 incorporation of RISC techniques. Architecture of modern PC, showing memory and bus hierarchies, use of caches in memory hierarchy. Legacy of ISA bus and Real Mode; Intro to PCI and other internal PC buses. Use of the BIOS in a PC and its relationship to application programs and the operating system. Use of device drivers in a PC. I/O standards, including USB, IEEE 1394, serial and parallel interfaces and standards; video and graphics standards. Role of motherboard; evolution of the PC. Project work.

ET4263 - JAVA PROGRAMMING I

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

Introduce students to Java language and compare it to C. Basic data types, control statements and methods. Import basic understanding of object oriented software development. Introduce Java documentation. Investigate role of Java Virtual Machine. Introduce Java Class Libraries. Introduction to UML. Introduce Java development environment. Complete simple programming assignments to drive home Java syntax and use of its development tools. *Prerequisite ET4702*

ET4335 - PROTOCOLS LABORATORY (AUTUMN/5)

The aim of this module is to offer the students a 'learn-by-doing' approach in communications and computer networks, for a better understanding of how networking technologies, mainly network protocols, operate in practice. Using appropriate laboratory facilities (real network equipment, protocol analysis software), the students will be allowed to observe, measure and experiment various communications protocols. It provides the student with a comprehensive coverage of computer networking, with a strong practical emphasis.

At the completion of the module, students should have an understanding of the important issues in providing communications software for various types of computer networks. This includes LAN medium access protocols, WAN data link protocols and the TCP/IP protocol stack, mainly focusing on application protocols like file transfer, network management and network security. Introduction to Layered Architectures, Basic Concepts: Open Systems, Layering, Peer Protocols, Primitives & Services Reference Models: telecommunications vs. computing approaches, OSI and TCP/IP Layer Functions: Network vs. Application Layer 2 LAN protocols: Ethernet, Token Ring and FDDI: basic characteristics, frame types, fields and troubleshooting tips; capture and decode frames; WAN protocols: HDLC, X.25, Frame Relay, PPP; ATM: basic characteristics, frame types,

fields and troubleshooting tips, capture and decode frames; TCP/IP protocol stack: IP and Ipv6, TCP & UDP: functions & packet structure, protocol analysis, debugging tips; capture and reassemble packets, extract data; Client/Server software used by TCP/IP protocols; design and implementation for Client programs; Network management: SNMP case study Network security: PGP case study

ET4345 - OPERATING SYSTEMS 2 (AUTUMN/5)

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

UNIX Overview: History, standards, shells, interfaces. UNIX architecture: Features, partition of functions and position in the layered structure Kernel organisation: Control flow, execution, daemons, timers, interrupts, clocks, modules. Process Management: Process manager, system calls, task creation, blocking, wait queues, scheduling, IPC, booting. Memory management: Virtual address space, secondary memory, shared memory, addressing, performance issues, system calls. File management: File I/O, file access, different file systems, performance issues, system calls. Device management: Device drivers, streams, interrupt handling, disk drive example. Laboratory: A set of laboratory exercises based on skeleton example programs will guide the

student through the internals of the UNIX operating system. The example programs will be developed in shell scripts and C/C++ programming environments.

ET4355 - JAVA PROGRAMMING 3 (AUTUMN/5)

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

To introduce the student to basic dynamic data structures (e.g. queue, trees) and Java Collections. Introduce numerical methods and the growth of functions. Investigate Java Database connectivity, servlets and Java server pages. At the end of this module students should be completely familiar with all aspects of the Java language, its use in; a standalone programming environment, a client based applet, a server based servlet. In addition students should be familiar with fundamental numerical and data manipulation algorithms. Data structures - Self referential classes, Dynamic Memory allocation, Linked lists, Stacks, Queues and Trees.

Introduction to the Vector, Stack, Hashtable, Properties and BitSet classes.

Java Collections - Arrays, Interface COLLECTION and class COLLECTIONS, Wrappers. Java support for Multimedia. Java Database Connectivity. Servlets. JavaServer Pages.

Case Study of a moderate to large Java applications.

Software engineering practices including design (UML) and testing techniques.

Major development project.

ET4365 - COMMUNICATIONS AND NETWORKING 2 (AUTUMN/5)

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

The aim of this module is provide a firm grounding in the principles and practice of computer and communications networking. The module focuses on topics in LANs and internetworking. At the completion of the module, students should understand:

- networks principles and concepts
- the operation of LANs
- principles of internetworking
- routing in LANs and internets
- network layer protocols
- the IP layer
- the Transport layer
- some TCP/IP applications

Review of Communication networks definitions and concepts, OSI reference model, TCP/IP reference model

LAN architecture and topologies, Medium Access Control, CSMA/CD. Wired LANs;

Bridges; Routing concepts. Overview of Internetworking principles and concepts.

Network and internet routing algorithm principles; Network layer protocols; IP Layer; ICMP, BGP routing protocol, RIP & OSPF protocols. Address Resolution, ARP, RARP.

Transport layer, TCP & UDP; TCP/IP applications, client-server model; DNS; Email, SMTP; Security; WWW, http

ET4417 - COMMUNICATIONS AND NETWORKING 3

5 hours per week; 13 weeks/7th semester; 39L/26T; ECTS credits:6

The aim of this module is provide further study in computer and communications networking. The module focuses on more advanced topics in internetworking. At the completion of the module, students should have an understanding of advanced IP topics, multicasting, multimedia and voice distribution over the internet, network security issues and have an appreciation of other network types.

Review of networking and internetworking concepts and principles IP layer: IPv6, IGMP, Multicast, M-Bone; Data traffic, Congestion control; Quality of Service: Traffic Shaping, Resource Reservation (RSVP), Diffserv, Integrated Services, MPLS Multimedia networking, Voice over IP: RTP, RTCP, SIP, H323; Network Management, SNMP; Network Security: cryptography, authentication; Kerberos, IPSec, PGP, Firewalls, Virtual Private Networks; Metropolitan Area Networks; Wide Area Networks: circuit switched, packet switched; Frame Relay; Topics in ATM: ATM LANs and WANs

ET4437 - DISTRIBUTED COMPUTING AND JAVA (AUTUMN/7)

4 hours per week; 13 weeks/7th semester; 26L/26LAB; ECTS credits:6

To introduce the student to Java and Distributed Computing including Remote Method Invocation and JavaBeans. To examine the role of Java in Distributed Systems and Web based Services including Security issues. In addition XML and advanced GUI features will be investigated.

On completion of this module the student should have an appreciation of the issues pertaining to the use of Java in a large Distributed Enterprise Environment.

JavaBeans Component Model, Creating a JavaBean.

Security - Digital Signatures, Java Keystores, Java Authentication and Authorization Service. Java-based Wireless Applications and J2ME. Remote Method Invocation.

Enterprise JavaBeans and Distributed Transactions.

Messaging with the Java Messaging Service (JMS).

Jini - plug and play interfaces, discovery services.

JavaSpaces - Communicating and sharing information in asynchronous environments Peer-to-Peer Applications.

Case Study.

Extensible Mark-up Language (XML) and Simple Object Access Protocol (SOAP).

Major programming project.

ET4635 - COMMUNICATION NETWORKS 1 (AUTUMN/3)

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

Digital serial communications, asynchronous and synchronous data. Transmission Aspects, Twisted pair, Co-axial cable etc. Physical layer and data link layer protocols. Computer networks, network architecture and protocols. OSI reference model. LAN topologies. Star, Ring, Bus. Data link layer protocols, network layer. Medium access control methods. Details and comparisons of LAN types. Token Ring, Fibre Distributed Data Interface. Token bus, LAN protocols, Internetworking. Network structure, Network Architectures Protocol Hierarchies.

ET4727 - ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS (AUTUMN/4)

Elective module – may change at short notice
4 hours per week; 13 weeks/7th semester;
26L/26LAB; ECTS credits:6

Expert system; expert systems with representative examples; knowledge acquisition and representation; inference mechanisms; programming environments for expert systems; the user interface; implementation strategies; expert system testing and validation; artificial intelligence; examination of representative applications such as in problem solving, symbolic mathematics, heuristic searching, vision, pattern recognition, motion control and robotics.

ET4807 - DSP (AUTUMN/4)

Elective module – may change at short notice
4 hours per week; 13 weeks/7th semester;
26L/26LAB; ECTS credits:6

Introduction to systems and signal processing. Review of frequency domain analysis. Impulse functions, impulse responses and convolution. Line spectra and Fourier Series. Spectral density functions and the Fourier transform. Sampling and reconstruction. Digitalisation of signals. Discrete Fourier Transform, applications, fast Fourier Transform. Introduction to digital networks and the z-transform. Digital filters, correlation, processing techniques for band pass signals. Digital filter realisation and implementation. Digital signal processing applications.

MA4001 - ENGINEERING MATHEMATICS 1 (AUTUMN/1)

5 hours per week; 13 weeks/1st semester;
39L/26T; ECTS credits:6

Series functions; limits, continuity and differentiation from first principles; transcendental functions; vector algebra; complex numbers; differential calculus; properties; maxima and minima, curve sketching, roots of equations; undetermined forms; power series.

MA4003 - ENGINEERING MATHEMATICS 3 (AUTUMN/2)

4 hours per week; 13 weeks/3rd semester;
39L/13T; ECTS credits:6

Vector Spaces; Inner Products, norms, orthogonality; Eigenvalues and eigenvectors. Diagonalisability; Numerical solution of systems of linear equations; iterative methods; nonlinear systems using Newton's method.

MA4005 - ENGINEERING MATHS T1 (AUTUMN/3)

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

The indefinite integral; numerical integration; ordinary differential equations; the Laplace Transform; Fourier series; matrix representation of and solution of systems of linear equations; vector spaces; numerical solution of systems of linear equations; Gauss elimination, LU-decomposition.

MA4007 - EXPERIMENTAL DESIGN (AUTUMN/4)

3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6

Multiple regression: analysis of variance; robust techniques; statistical experimental design; full and fractional factorials, composite design, orthogonal arrays; evolutionary operations.
Prerequisite MA4004

MA4103 - BUSINESS MATHEMATICS 2 (AUTUMN/2)

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

Functions and graphs: review of standard functions, linear, quadratic, polynomial, exponential and log. Differential calculus: continuity and differentiability, sum, product, quotient, chain rules, implicit differentiation, maxima and minima, business applications. Integrals and integration: indefinite, definite integrals, integration techniques including anti-derivative, substitution and integration by parts, integrals involving logs and exponentials, business applications. Functions of two variables: partial derivatives, relative maxima and minima, optimisation. Introduction to first order differential equations with applications to business. Matrices: solving linear systems by row reduction, eigen values for 2x2, and 3x3 matrices, Input-Output analysis.

MA4125 - INTRODUCTION TO COMPUTER AIDED DATA ANALYSIS (AUTUMN/3)

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

Defining the research problem, formulating the research questions, quasi-experimental research designs, sources of data, data protection legislation, SQL, designing the data collection mechanisms, introduction to a suitable computing environment, data input, descriptive statistics and graphical

methods, data analysis and interpretation including inference for a single proportion, a single mean, the difference between two proportions, and the difference between two means; the chi-squared test applied to contingency tables, simple linear regression and correlation, criticisms of data analysis with particular emphasis on the drawing of incorrect inferences due to poor design and/or poor analysis, report writing.

MA4402 - COMPUTER MATHS 2 (AUTUMN/1)

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

Real-value functions, simple numerical methods, matrices, graph theory.

MA4403 - COMPUTER MATHS 3 (AUTUMN/2)

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

Combinatorics; probability; introduction to information theory; normal, Poisson and binomial distributions; hypothesis testing, elementary queuing theory.

MA4505 - APPLIED STATISTICS FOR ADMINISTRATION 1 (AUTUMN/3)

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

Simple design and sampling methods; probability concepts; discrete probability distributions; continuous probability distributions; statistical inference and sampling; hypothesis testing; one-way ANOVA; linear regression; introduction to time series and index numbers.

MA4601 - SCIENCE MATHEMATICS 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

Vectors definition; addition; components, resultant, position vector; scalar product; dot product and angle between vectors; cross product; simple applications in mechanics. Complex Numbers: necessity and definition; algebra including multiplication, conjugate, division, modulus; Argand diagram representation; polar form, argument; exponential form; de Moivre's theorem, powers and roots. Trigonometry: basic definitions and relation to unit circle; basic formulae and identities; frequency, amplitude and phase; more formulae using complex exponential. Linear equations: solution of systems of linear equations by Gaussian elimination; examples with a unique solution, an infinite number or no solutions. Matrices: Addition and multiplication; matrix inversion; simple determinants. Functions: graphs and functions; polynomial and algebraic functions; curve-fitting; least-squares approximation formula only; exponential and logarithm; inverse function; limits and continuity.

Derivative and applications basic concepts: slope as rate of change; differentiation of sum, product, quotient; chain rule; derivative of standard functions; tangent and normal; higher derivatives; maxima and minima; applications to optimisation in science.

MA4603 - SCIENCE MATHEMATICS 3 (AUTUMN/2)

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

Variables; representation of variables; reduction of variables; introduction to the fundamentals of probability; Baye's theorem; introduction to random variables; special distributions; binomial, Poisson, geometric, uniform, exponential, normal; statistical inference; non-parametric tests; correlation and regression. *Prerequisites MA4601, MA4602*

MA4605 - CHEMOMETRICS (AUTUMN/3)

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

Statistical process control; capability studies; correlation and regression; multiple regression; importance of plotting data; design of experiments of variance; factorial designs; Plackett-Burman design. *Prerequisite MA4603*

MA4607 - INTRODUCTION TO APPLIED MATHEMATICAL MODELLING IN CONTINUUM (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

Continuum theory, balance of momenta, constitutive laws, elementary viscous flow, waves, aerofoil theory, vortex motion, Navier Stokes equations, very viscous flow, thin film flow, boundary layer theory, instability and turbulence, introduction to linear elasticity and rheology, illustrative real examples from the sciences.

MA4701 - TECHNOLOGICAL MATHEMATICS 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

Functions; trigonometry; the derivative and its applications; experimental laws; linear equations; vectors; complex numbers

MA4707 - QUALITY MANAGEMENT (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

History of quality; Quality organisation; Quality Planning; Standards and Vendors; Modern Quality development; Continuous improvement strategy, Economics of Quality

MB4001 - ALGEBRA 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6

Number : basic number concepts; number systems; elementary number theory; solution by graphical and numerical methods; matrices; applications.

MB4005 - ANALYSIS (AUTUMN/3)

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

Functions of a real variable; differentiability; set theory; Bolzano-Weirstrass theorem; sequences and series; general topology; integration; Riemann integral, basic integration theorems, improper integrals; functions of a complex variable; differentiability; complex integration; residues; complex power series; applications.
Prerequisite: MA4701

MS4007 - MATHEMATICAL METHODS 1 (AUTUMN/4)

3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6

Functions of a complex variable including the Cauchy-Riemann equations, Cauchy's theorem, singular points, complex integration, residue theorem. Application of residue theorem to the inversion of Laplace transforms. Conformal mapping and its application to solving Laplace's equation in

two dimensions The Fourier transform and its relationship to the Laplace transform. Solution of linear partial differential equations by integral transform methods such as the Fourier and Laplace transform. Solution by separation of variables of some linear partial differential equations such as Laplace's equation, the heat equation and the wave equation.

MS4013 - FOURIER ANALYSIS (AUTUMN/2)

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

Orthogonal sets of functions; inner products of vectors, orthogonality, orthonormal sets of vectors, functions as vectors and orthogonality, generalised fourier series, approximation in the mean, closed and complete systems, orthogonal functions generated by differential equations; fourier series; definition, periodicity, even and odd functions, sine and cosine series, half range series, piecewise continuous functions, fourier theorem, orthonormal trigonometric functions, differentiation and integration of fourier series, uniform convergence, applications e.g. inhomogeneous ODEs, fourier integral, outline of sturmm liouville theory; linear transforms, laplace transform and properties, application to simple odes fourier transform and properties, applications in signal analysis, introduction to green's functions and distributions, fast fourier transform, discrete fourier transform; introduction to wavelets; basic concepts, compact support, localised approximation

MS4021 - CALCULUS 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6

Field of real numbers and complex numbers; sequences, series; the derivative and differentiation techniques; properties of transcendental functions ; functions of the two variables.

MS4025 - APPLIED ANALYSIS (AUTUMN/4)

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

To introduce students to the standard techniques of complex analysis, integral equations and Green's functions and to demonstrate applications of these techniques.
Prerequisite MS4013

MS4101 - MATHEMATICAL LABORATORY (AUTUMN/1)

5 hours per week; 13 weeks/1st semester;
26L/39LAB; ECTS credits:6

Structure of a digital computer; introduction to MS-DOS and its command language; introduction to MS-WINDOWS; using a spreadsheet (MS EXCEL) as a tool for manipulation, analysis and graphical display of data; using a symbolic algebra package (MAPLE) for the analysis and solution of simple mathematical models.

MS4105 - LINEAR ALGEBRA 2 (AUTUMN/3)

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

The aim of this module is to introduce some more advanced concepts in Linear Algebra and Numerical Linear Algebra.
Prerequisites MS4131 and MS4013.

MS4117 - DISCRETE MATHEMATICS 2 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester;
26L/13T/13LAB; ECTS credits:6

Graphs, directed graphs and their computer representation. Graph algorithms. Graph colouring with applications. Network flows and matchings. Planar graphs and Hamiltonian graphs. *Prerequisite MS4132*

MS4131 - LINEAR ALGEBRA 1* (AUTUMN/1)

3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6

Systems of linear equations and their solution by an elimination method. Matrices, matrix algebra, determinants, inverses, methods for "small" matrices, extensions to larger matrices. Vectors in 2 and 3 dimensions, geometric interpretation of vectors, vector arithmetic, norm, scalar product, angle, orthogonality, projections, cross product and its uses, lines

and planes in 3 space. Extension to vectors in n dimensions, vector algebra, scalar product, orthogonality, projections, bases in $\mathbb{R}^2$, $\mathbb{R}^3$ and $\mathbb{R}^n$.

Matrices acting on vectors, eigenvalues and eigenvectors esp. in 2 and 3 dimensions. Applications to (some of, and eg) input-output models, least squares fit, simple Markov chains, geometric transformations, diagonalisation of matrices.

MS4213 - PROBABILITY THEORY (AUTUMN/2)

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

Elementary probability, sample space, events, compound events, the laws of probability, conditional probability, independence; random variables, probability distribution, probability density, moments, expectation, variance; binomial, Poisson, Geometric, uniform, normal, exponential, gamma, chi-squared joint probability distributions, conditional distribution, covariance; functions of a random variable, distribution of sum, difference, product, and quotient of two random variables; introduction to Markov chains.

MS4215 - ADVANCE DATA ANALYSIS 4 (AUTUMN/3)

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

Simple Linear Regression : calibration, reverse prediction, regression through the origin, analysis of residuals, regression diagnostics, leverage and influence.

Matrix formulation of the linear model : Multiple regression, partial correlation, polynomial regression.

Analysis of Variance : One-way ANOVA, multiple comparisons, Two-way ANOVA, interactions, Analysis of covariance. Introduction to Generalized Linear Models including non-linear regression, logistic regression and log-linear models.

MS4217 - STOCHASTIC PROCESSES (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/13T/13LAB ; ECTS credits:6

Conditional probability and conditional expectations; Markov chains, Chapman-Kolmogorov equations, classification of states, limiting distributions, random walks, branching processes, time reversible Markov chains; Renewal Theory, counting processes, the Poisson process, semi-Markov processes; Queuing theory, the M/G/I and G/M/I systems, multiserver queues; continuous-time Markov chains, birth and death processes; Brownian motion with application in option pricing. *Prerequisite MS4213*

MS4315 - OPERATIONS RESEARCH 2 (AUTUMN/3)

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

This module introduces further Operating Research technique for decisionmaking; Monte Carlo methods; simulation; integer programming; deterministic dynamic programming; probabilistic dynamic programming and Network problems.

Prerequisite MS4303

MS4403 - ORDINARY DIFFERENTIAL EQUATIONS (AUTUMN/2)

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

Linearity. Review of first order equations. Second order linear equations. Series solution. Sturm-Liouville theory. Nonlinear ODEs. Regular perturbation techniques.

MS4407 - PERTURBATION TECHNIQUES AND ASYMPTOTICS (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/13T/13LAB; ECTS credits:6

Non-dimensionalisation, scaling, ordering, definition of asymptotic series, algebraic equations, integrals, Laplace's method, method of steepest descent, regular and singular perturbations, multiple scales, strained coordinates, boundary layer techniques. *Prerequisites MS4403, MS4404*

MS4517 - THEORY OF MATHEMATICAL FINANCE (AUTUMN/4)

4 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

4 hours per week; 13 weeks/7th semester; 26L/13T/13LAB; ECTS credits:6

Introduction to Continuous-Time Finance and Stochastic Calculus : The basic building blocks – standard Brownian motion and generalised Ito processes. Basic properties of Markovian processes. Ito's Lemma. The Ito integral and the stochastic differential equation representation of dynamic asset pricing systems. The Kolmogorov forward and backward equations. Probability spaces and filtrations – martingale processes and conditional expectations. Introduction to arbitrage-free pricing and the existence of an implied equivalent probability measure. The Girsanov and Feynman-Kac theorems. Martingales and Diffusive PDE's. Derivation of Black-Scholes using the Martingale approach. Discrete-time modelling of unpredictable errors in continuous-time dynamic systems – discrete random variables and their convergence to Brownian Motion (application of Donsker's Theorem). Complete Markets, No-Arbitrage and Equivalent Martingale Measures: Theoretical foundations for arbitrage-free pricing of financial securities. Fundamental / pure securities and state prices. "No-arbitrage" characterisation of state prices (application of the Separating Hyperplane Theorem). Popular

applications of the risk-neutral valuation paradigm - i) the Cox-Ross-Rubinstein binomial stock-option pricing model, and ii) an introduction to the Heath-Jarrow-Morton model of the evolution of the interest rate term structure. Introduction to Equilibrium-Based Asset Pricing: Partial equilibrium and 'market-clearing' security prices. Definition of 'pareto-optimality' and equilibrium-based characterisations of state prices in capital markets. Theoretical equivalencies with the APT model of capital market equilibrium.
Prerequisite FI 4505, MS4213, MS4404

MS4613 - VECTOR ANALYSIS (AUTUMN/2)

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

Vectorial mechanics: rotation of axes, index notation, review of vector and scalar algebra (scalar vector and triple scalar products); vector functions of a real variable, functions of time; differentiation of vectors, derivative of dot and cross products, tangent to a curve, arclength, smoothness, curvature applications in mechanics. Fields; scalar and vector fields; functions of several variables, maxima/minima, contour maps, directional derivative and gradient vector field; applications in electromagnetism and fluid mechanics; vector identities; cylindrical and spherical coordinates. Line, surface and volume integrals and work; conservation of energy and potential function; applications to planetary dynamics, area, surface and volume integrals;

Gauss's, Green's and Stokes's theorems multiple integrals in radial, cylindrical and spherical coordinates, scalar and vector potentials, Helmholtz's theorem tensor algebra and calculus: review of matrix algebra introducing suffix notation; definition of determinant; evaluation of determinants by row and column expansion.

MS4627 - TOPICS IN FLUID DYNAMICS (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/13T/13LAB; ECTS credits:6

Topics from: slow flow, waves and viscous flow, boundary layer theory, flow instabilities, geophysical fluid dynamics, computational fluid dynamics, classical aerofoil theory.
Prerequisites MA4607, MS4404

TA4001 - INTRODUCTION TO SCIENCE & TECHNOLOGY 1 (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

For Business/Humanities students. Development of our understanding of the universe; the nature of scientific laws; gravitation; energy, conservation and thermodynamics laws; energy conversion and its applications; application of laws of mechanics to transportation; modern concepts of electricity and magnetism; electrical power generation and electronics; analogue and

digital electronics; information technology; signal coding, transmission, networks, the internet.

TA4003 - INTRODUCTION TO SCIENCE & TECHNOLOGY 3* (AUTUMN/2)

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

For Business/Humanities students. Darwinism; genetics and molecular biology, genetic engineering; disease and modern treatment methods, vaccination, drugs and surgery; food production and processing techniques; pollution problems; economics of pollution prevention; science and social structure; critique of modern attitudes to science. *Prerequisite TA4002*

SCIENCE MODULES – AUTUMN

BC4401 - INTRODUCTION TO INDUSTRIAL BIOCHEMISTRY (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

Genetic information and Genetic Engineering; overview of approaches and applications. DNA fingerprinting; applications of fingerprinting to forensic science, pedigree analysis and paternity testing. The Human Genome Project and its impact on society; the cloning of mammals and mammalian body parts. Human cloning.

The Biochemistry of HIV; viral structure and biology. Biotechnical approaches to developing a cure/vaccine. Prion biology; BSE and CJD. Dangerous microbes; concept of mobile DNA. Molecular biology of cancer; oncogenes and cellular transformation. Biotech strategies to cure cancer. The approach to research; case studies; identification of a problem, planning and pursuing a research strategy. Evaluating the results. Pharmaceutical biology and biotechnology; approaches to drug discovery; the discovery of aspirin, antibiotics and taxol. Products of pharmaceutical biotechnology and their medical uses. Gene medicines; gene therapy. Life at the extremes; the unique biology of hyperthermophiles. Biological warfare.

BC4405 - BIOPROCESS TECHNOLOGY 1 (AUTUMN/3)

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

Fluid mechanics; momentum transfer; the Bernoulli equation; flow in pipes and vessels; dimensional analysis; principles of heat and mass transfer; heat transfer coefficients; heat exchangers; structure and use of design equations for biochemical reactor systems; bulk mass transfer effects; quantitative treatment of large scale sterilisation.
Prerequisite CH4404

BC4705 - INDUSTRIAL BIOCHEMISTRY 1 (AUTUMN/3)

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

Plant cell biotechnology; plant cell structure and lignocellulose; extraction of plant cell products; algal biotechnology; bioaffinity purification; industrial uses of enzymes; enzyme stabilisation; yeast technology and brewing science.

Prerequisites BC4915 & BC4904

BC4803 - MICROBIAL TECHNOLOGY 1 (AUTUMN/1)

7 hours per week; 13 weeks/3rd semester;
26L/26T/39LAB; ECTS credits:6

The prokaryotic and eukaryotic micro-organism; systematics in microbiology; industrial micro-organisms; mycology; processes mediated by fungi; industrial mycology; introduction to viruses; microbial ecology; GEMs' control of microbial activity.

Prerequisite BY4001

BC4805 - MICROBIAL TECHNOLOGY 2 (AUTUMN/3)

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

Growth of micro organisms; principles of fermentation technology; animal and plant cell tissue culture; food microbiology; food infections and poisoning; microbial toxins;

pathogenic micro organisms; immunology.

Prerequisites BC4803, & BY4001

BC4903 - BIOCHEMISTRY 1(BIOMOLECULES) (AUTUMN/1)

7 hours per week; 13 weeks/3rd semester;
26L/26T/39LAB; ECTS credits:6

The foundations of biochemistry and the molecular logic of life; biomolecules: proteins, carbohydrates, lipids, nucleic acids, vitamins; bioenergetics and metabolism.

BC4905 - BIOCHEMISTRY 4 (GENETIC ENGINEERING) (AUTUMN/3)

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

Gene structure , function and control; techniques to manipulate DNA; DNA transfer methods; polymerase chain reaction; cDNA; northern ,southern and western blotting; cloning in plants and animals; introduction to bioinformatics; gene therapy. *Prerequisites* BC4903/BC4904

BC4907 - BIOCHEMISTRY 6 (CELL BIOCHEMISTRY) (AUTUMN/4)

7 hours per week; 13 weeks/7th semester;
26L/26T/39LAB; ECTS credits:6

Receptor biochemistry- mode of hormone action]; protein folding, protein targeting via glycosylation; protein engineering;

cell communication neural transmission; biochemistry of vision; the biology of cancer; oncogenes.

Prerequisites BC4903 & BC4904

BC4915 - BIOCHEMISTRY 5 (METABOLISM) (AUTUMN/3)

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

Biological energetics; control of metabolic pathways; carbohydrate metabolism; cellulose; Lignin and Humicellulose; lipid metabolism; membranes and membrane transport; amino acid metabolism; role of amino acids in nucleotide synthesis; natural products; biodeterioration and its global potential; errors in metabolism; use of metabolic pathways as a diagnostic tool; developing new metabolic pathways; enzyme immobilisation.

BC4937 - BIOPHARMACEUTICALS (AUTUMN/4)

7 hours per week; 13 weeks/7th semester;
26L/26T/39LAB; ECTS credits:6

Overview of the pharmaceutical industry; the pharmaceutical facility; sources an production of pharmaceuticals; blood products and related substances; hormones; regulatory factors and enzymes; gene therapy and anti-sense technology.

Prerequisites BC4903/BC4915

BC4957 - BIOINFORMATICS IN GENETIC AND PROTEIN ANALYSIS (AUTUMN/4)

3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6

DNA sequence data; gene structure in eukaryotes archaeobacteria and prokaryote; genome projects; techniques and methodologies; gene functionality; accessing bioinformatics databases; searching databases; analysis of protein sequences; protein modelling; phylogenetic analysis.

Prerequisite Biochemistry 2/4, BC4904, BC4905

BY4001 - BIOLOGY 1 (AUTUMN/1)

4 hours per week; 13 weeks/1st semester;
26L/26LAB; ECTS credits:6

Introduction to biology, characteristics of life, scientific methodology, biomolecules, chemistry of the cell and organism, cell structure and function, membrane structure and function. Cellular energy and metabolism, enzymes and enzyme reactions, cellular respiration; photosynthesis. Introduction to micro-organisms, microbiology, prokaryotic and eukaryotic organisms. Plant structure and function; transport in plants, reproduction, seed structure, germination, growth and development, plant adaptations. Principles and scope of ecology; ecosystems; cycles in nature; energy flows; population and community dynamics; limiting factors; food chains: succession, environmental concerns.

BY4013 - GENERAL MICROBIOLOGY (AUTUMN/2)

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

Microbial structure and function: microbial growth; nutrition; identification and enumeration; introductory systematics; bacterial endospore; applied aspects of microbiology and microbial ecology: microbiology of water; medical microbiology: disease and pathogenesis; food microbiology; preservation and spoilage; microbiology of soil biochemical cycles; biodegradation; some traditional and novel processes in industrial microbiology; microbes and biotechnology.
Prerequisite BY4001

BY4015 - PLANT PHYSIOLOGY

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

Plant mineral nutrition, nutrient deficiencies and fertiliser use. Nitrogen and secondary plant metabolism. Plant hormones, roles and their applications; plants responses, root and shoot growth, tissue differentiation, photoperiodic responses in plants, photomorphogenesis, flowering. Seed dispersal, dormancy and germination. Tropisms and plant movement. Applications in horticulture and agriculture. Plant reproduction and pollination ecology; interactions with animals. Photosynthesis, C3, C4 and crassulacean acid metabolism; photorespiration and plant metabolism.

Plant growth measurement. Biological/ecological relationships between plants and other organisms. Introduction to plant biotechnology, plants and medicines, ethnobotany.

BY4023 - ANIMAL DIVERSITY (AUTUMN/2)

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

Evolution of animal diversity; Animal architecture; Environmental considerations; Invertebrate classification and relationships - the Protozoans, the Poriferans and Placozoans, Introduction to the hydrostatic skeleton, the Cnidarians, the Platyhelminthes, the Nemertines, the Molluscs, the Annelids and Sipunculans, the Arthropods, the Nematodes, the Echinoderms; An overview of invertebrate reproduction and development. Comparative vertebrate morphology; Historical predecessors-evolution; Chordate characteristics; vertebrate classification Agnathans, Gnathostomes, Teleostomi, Tetrapods, Amniotes. Introduction to animal behaviour and the influences of environment on such behaviour.

BY4025 - CROP AND GRASSLAND SCIENCE (AUTUMN/3)

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

Climate in Ireland, climate and plant growth, agricultural policy Fruits crops, protected

crops, horticultural pests, weeds and diseases, integrated crop production. Landscape management. Fertilisers and manures; tillage machinery; cultivation, management and harvesting of arable crops and root crops; farm forestry; energy crops; grassland establishment and management; agriculture and the environment.

BY4035 - CELL BIOLOGY AND BIOCHEMISTRY

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

The course is delivered as a series of lectures covering the following topics: carbohydrates; lipids; amino acids; protein; nucleic acids; enzymes ; membranes; muscles; nerves; hormones; metabolism. This is supported by a series of laboratory based practical investigations covering the following areas; analysis of carbohydrates; exploring lipids; behaviour of amino acids and proteins; enzymes; nutrition. The course is examined through a series of term tests, practical laboratory write ups, and an end of term exam based on multiple choice questions and essay style questions.

Prerequisite BY4001

BY4215 - SOIL SCIENCE (AUTUMN/3)

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

Geology and soil parent materials; weathering; soil composition; soil texture, structure, aeration and water movement; soil temperature; soil biology; soil organic matter and its decomposition; influence of organic matter on soil fertility; soil chemistry, cation exchange capacity, pH, liming of land; soil fertility and plant growth; soil genesis and classification, soil types, soil mapping.

CG4003 - BIOPROCESS ENGINEERING 1

ECTS credits 6

CES

Overview of biochemical processes currently used on an industrial scale. Introduction to biochemical process design strategies for high value/low volume and low value/high volume products. Material and energy balances for bioprocessing operations. Aspects of mass transfer of importance in aerobic fermentations. Biochemical reaction kinetics for cell free enzyme, single cell, cellular agglomerate, and immobilised enzyme systems. Bioreactor design for ideal batch and ideal chemostat operations. Practical aspects of bioreactor operation and monitoring: sterilisation, asepsis, inoculation, rheology, aeration, agitation, instrumentation and sampling; Introduction to commercial-scale bioproduct separation and purification methods. Industrial biosafety.

CG4017 - BIOPROCESS ENGINEERING 2

ECTS credits 6

Bulk mass transfer effects in fermentation systems. Factors affecting oxygen mass transfer in aerobic fermentations. Measurement of kLa using static and dynamic methods. Control of kLa using correlations with agitator power and other operational variables. Heat transfer in biochemical systems. Heat exchanger design in bioprocessing units. Bioreactor sizing and design for the following reactor types: fed batch, stirred fermenter, bubble column, airlift, packed bed, fluidised bed, trickle bed, and perfusion. Bioreactor scale-up. Operation and feeding regimes: chemostat with recycle, fed batch operation, and multistage reactors. Control methods: feedback, indirect metabolite control, programmed control, and emerging AI-based methods. Modelling and simulation of bioreactors. Bioreaction product separation processes including: cell disruption, solvent extraction, adsorption, filtration, and centrifugation. Final product purification methods: gel filtration, process chromatography, protein crystallisation, spray drying, and lyophilisation. Regulatory and licensing systems in the pharmaceutical, biopharmaceutical, and biotechnology industries.

CH4055 - ENVIRONMENTAL CATALYSIS (AUTUMN/3)

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

CES

Introduction to catalysis, defining the environmental problem, catalyst structure and preparation, deNO_x from stationary sources, deNO_x from mobile sources, destruction of VOCs, SO₂ control, control of dioxins, wet air oxidation, catalyst characterisation, surface area analysis, XRD, XPS
Prerequisite CH4202

CH4103 - ORGANIC CHEMISTRY 2 (AUTUMN/2)

5 hours per hour; 13 weeks/3rd semester;
26L/39LAB; ECTS credits:6

CES

Carboxylic acids and derivatives (acid chlorides, anhydrides, esters and amides): nomenclature methods of preparation, pK_a as a measure of acidity; nucleophilic displacement reactions. Aromaticity and resonance stabilisation: Huckels rule, electrophilic aromatic substitution orientation, activating and deactivating effects Stereochemistry: configuration, chirality, optical activity, R/S nomenclature and the sequence rules, Fischer projections enantiomers, diastereomers, meso forms, resolution of a racemic mixture. Kinetics and Mechanism: establishing a reaction mechanism, kinetics, stereochemistry. Rearrangement reactions: Wagner-Meerwein,

Pinacol-Pinacolone, Beckman Concerted Reactions: Basis of Woodward-Hoffman rules, elementary electrocyclic and cycloaddition reactions. *Prerequisite* CH4102

CH4203 - INORGANIC CHEMISTRY 2* (AUTUMN/2)

5 hours per week; 13 weeks/3rd semester;
26L/39Lab; ECTS credits:6

CES

Periodic table and important trends; s-block, p-block, d-block and f-block elements. Chemistry of s and p block elements group by group. Electrode potential diagrams. Comparison of main group and transition metals. Hard and soft acid and base theory. Complexes: structure, isomerism, magnetic and spectroscopic properties. Properties of first row transition metals. Organometallic compounds. Comparison of first row and second and third row transition metals. Chemistry of the lanthanides. Survey of biological importance of the elements
Prerequisite CH4701, CH4202

CH4253 - INORGANIC CHEMISTRY 2B (AUTUMN/2)

6 hours per week; 13 weeks/3rd semester;
26L/13T/39LAB; ECTS credits:6

CES

Periodic Table and important trends; polarising power; chemistry of s and p block elements; electrode potential diagrams; hard and soft acid and base theory; complexes; properties of

; transition metals; organometallic compounds; lanthanides. *Prerequisites* CH4701, CH4252

CH4303 - ANALYTICAL CHEMISTRY 1 (AUTUMN/2)

6 hours per week; 13 weeks/3rd semester;
26L/13T/39LAB; ECTS credits:6

CES

The electromagnetic spectrum; spectrophotometry; atomic spectroscopy; infra-red spectroscopy; NMR spectroscopy; uv-vis spectroscopy.
Prerequisites CH4701, PH4202

CH4305 - ANALYTICAL CHEMISTRY 3* (AUTUMN/3)

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

CES

Errors in chemical analysis and the statistical evaluation of analytical data; analytical separations; introduction to chromatography; gas chromatography; liquid chromatography; surface analysis; mass spectrometry; surface analysis. *Prerequisites* CH4303, CH4304

CH4405 - PROCESS TECHNOLOGY 2 (AUTUMN/3)

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

CES

Fluid mechanics; momentum transfer; the Bernoulli equation; flow in pipes and vessels; dimensional analysis; size reduction of solids; settling; fluidised beds; filtration; heat transfer; heat transfer coefficients; heat exchangers.

Prerequisite CH4404

CH4407 -PROCESS TECHNOLOGY 4* (AUTUMN/4)

5 hours per week; 13 weeks/7th semester;
26L/13T/26LAB; ECTS credits:6

Mass transfer diffusion in gases and liquids, laws of diffusive flux mass transfer in solids, unsteady state mass transfer .Mass transfer across phase boundaries, mass transfer coefficients. Separation operations vapour-liquid systems, plate and packed columns, McCabe Thiele plots, equilibrium stages, stage efficiencies, HETP and HTU,NTU approaches to packed column design. Distillation, continuous and batch. Gas absorption and stripping. Use of triangular composition diagrams, leaching and liquid-liquid extraction ,mixer-settlers .evaporation, forward and back-feed operation, efficiency.

EQ4051 - INTRODUCTION TO HORSEMANSHIP

Subject to space constraints and skill assessment
ECTS credits 6

EQ4037 - PERFORMANCE RIDER DEVELOPMENT

Subject to space constraints and skill assessment
ECTS credits 6

Analysis of performance demands on the rider; sports disciplines, racing (flat and National Hunt), endurance, mental and physical capacities. Characteristics of performance riders; body morphology, attitudes to training, relationships with coach and supporters, technical, tactical, physical, mental and lifestyle capacities. Analysis of rider motor and proprioceptive capacity; video analysis, appropriateness and efficiency of sport movement, common difficulties in movement patterns, developmental plans for riders in various disciplines. Developing the rider; use of technology and equipment to provide feedback and support practise, use of novel development tools, athlete diaries, athlete driven reflection and goal setting, maintaining technique and focus in stress environments - race finishes, jump offs. Models of motor skill development and use of appropriate technology and equipment to support motor skill development.

On successful completion of this module the student will be able to; Research and understand the physiology and psychology of rider development and performance. Investigate the selection and development

of the human equestrian athlete. Define predictors of long term rider performance. Recognise how the human equestrian athlete can perform safely and optimally under differing conditions. Discuss technical, tactical, physical, mental and lifestyle requirements for human equestrian athletes. Evaluate and discuss established, novel and international approaches to rider development. Differentiate between novice and expert performance and suggest developmental strategies. Evaluate current research findings and incorporate them into their own understanding and practise. Transfer learning to diverse areas of equestrian pursuit.

EQ4027 - EQUESTRIAN FACILITIES

Subject to space constraints and skill assessment
ECTS credits 6

Analysis of requirements for equine facilities with regard to; racing, sports horses, breeding, competition, exercise and training, client facilities, horse welfare and soundness, disease control, isolation and quarantine facilities. Ancillary facilities; feed stores, gallops, arenas, fixed and portable fences, dry and water treadmills, solararia, wash boxes, weighing facilities, loading bays, equipment storage, farriery and breeding areas, road and air transport environments. Planning and building requirements; materials, environmental impact, waste disposal, aesthetics. Use of ICT in equestrian establishments; staff training, monitoring horses, entries and administration, horse and client records, veterinary applications.

On successful completion of this module the student should be able to; Understand the physiological responses to stabling, vis a vis behaviour and respiration. Understand advantages and disadvantages of indoor housing of horses. Assess environmental requirements and conditions of stabled horses. Recognise how transportation can impact on Health and Welfare of Horses. Understand ground surface condition vis a vis traction and gait effects. Recognise how course and fence design affects safety and outcome in competition and training. Apply design principles to the design of an equestrian facility

EQ4025 - THE YOUNG HORSE

Subject to space constraints and skill assessment
ECTS credits 6

EQ4013 - FOUNDATIONS OF EQUINE LOCOMOTION

Subject to space constraints and skill assessment
ECTS credits 6

ER4101 - SYSTEMATIC ENVIRONMENTAL SCIENCE (AUTUMN/1)

3 hours per week; 13 weeks/1st semester;
26L/13T; ECTS credits:6

Ecosystem functioning; environmental monitoring; environmental technology.

ER4405 - CONSERVATION ECOLOGY (AUTUMN/3)

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

Legislation; governmental and other agencies; Selection of areas for conservation; theory and practice of management for conservation; habitat rehabilitation and creation.

ER4407 - ENVIRONMENTAL MANAGEMENT 1 (AUTUMN/4)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

The relationship between economic development and the environment: the evolution of the concept of environmental management; and global analysis of the contemporary environment; the interaction between nature, society and enterprise; resources, technology and management.

ER4417 - ENVIRONMENTAL IMPACT ASSESSMENT * (AUTUMN/4)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

Selection of topical project; scoping, alternatives, baseline data criteria, assessment of impact, mitigating measures, contingency measures, public involvement, EIS production.
Prerequisite ER4707

ER4428 - UTILISATION OF NON-RENEWABLE RESOURCES (AUTUMN/4)

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

Production and sources of the major industrial minerals (metallic and non-metallic), fossil fuels and water resources; environmental problems associated with the extraction and utilisation of mineral, energy and water resources, problems of resource depletion, conservation, recycling, substitution; case studies of specific resources relevant to Ireland: base metals, limestone groundwater, peat and natural gas, world trade in non-renewable resources; strategic minerals; global issues related to non-renewable resources.

Prerequisite: CH4554

ER4507 - EFFLUENT CONTROL - WASTE MANAGEMENT 1 (AUTUMN/4)

*3 hours per week; 13 weeks/7th semester;
26L/13T; ECTS credits:6*

Principles of waste water management; effects of waste on receiving water sites and groundwater; pollutant tests; legislation; technology of waste water treatment and disposal; biological treatment of waste water - biological kinetics: activated sludge, trickling filter; sludge disposal; tertiary/advanced process; waste water reclamation.

ER4607 - CLEAN TECHNOLOGY 1* (AUTUMN/4)

*5 hours per week; 13 weeks/7th semester;
26L/13T/26LAB; ECTS credits:6*

Survey of methods of improving or optimising the process chemistry for specific industrial processes; the development of alternative processes with lower energy and material demands or waste production; the role of biotechnology and the use of biological raw materials in developing clean processes.

ER4707 - MONITORING AND RESEARCH METHODS (AUTUMN/4)

*5 hours per week; 13 weeks/7th semester;
26L/13T/26LAB; ECTS credits:6*

Environmental impact assessment its role in the management of projects; scoping; data collection; impact assessment; impact evaluation; the environmental impact statement; interaction with the wider community; strategic environmental assessment; sea with regard to the energy sector, coastal zones; monitoring of emissions, including noise; environmental auditing; collection and encoding of data; multivariate approaches.

EV4003 - EQUINE FEEDING AND BEHAVIOUR

ECTS credits 6

EV4005 - GRASSLAND AND GRAZING MANAGEMENT (AUTUMN/3)

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

Geology and soil parent materials. Weathering of parent materials. Soil composition, soil as a three-phase system. Soil texture, structure, aeration and water movement and the practical significance of these phenomena. Soil temperature and its control. Soil biology; soil organic matter and its decomposition; influence of organic matter on soil fertility. Soils and organic farming. Soil chemistry, cation exchange capacity, pH, liming of land. Soil mineralogy. Soil fertility and plant growth. Grassland management for working surfaces. Grassland production; grassland types, seeds mixtures, reseeding. Grazing management of grassland, extensive and intensive methods; dry matter production, seasonal and annual, animal products. Conservation of grass as hay and silage.

EV4023 - EQUINE HEALTH AND ENVIRONMENTAL MANAGEMENT

ECTS credits 6

EV4005 - GRASSLAND AND GRAZING MANAGEMENT

To educate students in the principles of grazing and grassland management with particular reference to the equine industry in Ireland

1. Introduction 2. Soil formation 3. Physical and chemical properties of soil 4. Soil fertility 5. Lime and pH 6. Major and minor elements in soil 7. Fertilisation in horse pastures 8. Grass growth 9. Reseeding of pastures 10. See mixtures 11. Grazing management 12. Hay production 13. Silage production 14. Poisonous plants 15. Racing track management

EV4025 - EQUINE BREEDING AND GENETICS

ECTS credits 6

Basic genetics including, cells, chromosomes, genes, alleles, gametes, genotype, phenotype; mitosis; meiosis and its role in genetics, genetic recombination; distances between genes; linked genes, Gene mapping; chromosome structure; DNA; replication, transcription, translation and the genetic code; Inborn errors of metabolism; Sex limited inheritance; PCR; Mendelian genetics including recessive, dominant, X linked and polygenic inheritance. Gene interaction, codominance and incomplete dominance; epistasis; Equine coat colour loci including extension, agouti, colour diluting loci, epistatic modifiers, tobiano, overo and spotting loci, mendelian and non mendelian aspects of equine coat colour; Biological basis of sex; X chromosome inactivation; Pedigree analysis and inheritance, determination of inheritance patterns; the normal karyotype; parentage testing of horses, including blood group testing, biochemical polymorphisms, DNA testing; Abnormal

chromosome number and structure; including sex chromosome abnormalities and autosomal trisomies; population genetics, The Hardy-Weinberg law, extensions to the Hardy-Weinberg law including multiple alleles and X linked genes; genotype frequencies; heritability; narrow and broad sense heritability; quantitative trait loci; genotype-environment interaction; estimated breeding values and selection; BLUP; Relationship; Inbreeding and linebreeding.

On successful completion of this module the student should be able to; Understand what genes are, how they are inherited and how they interact. Demonstrate an understanding and an appreciation for Mendelian genetics Differentiate types of gene interaction. Demonstrate an understanding for the genetics of coat colour in horses. Understand the laws of heredity and how they can be applied. Describe genetic variation in populations as well as the factors that affect this variation.

FT4105 - FOOD PROCESS ENGINEERING 1 (AUTUMN/3)

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

To provide food technologists with an understanding of the engineering principles involved in food processing. Introduction to the basic principles of material and energy balances/transfer and the application of these principles to the areas of fluid flow, drying and evaporation as specifically required in the food industry. *Prerequisite CH4404*

FT4107 - FOOD PROCESS ENGINEERING 2 (AUTUMN/4)

3 hours per week; 13 weeks/7th semester; 26L/13T; ECTS credits:6

Application of basic engineering principles to those unit operations which are of particular relevance to the food industry. Such unit operations would include mixing, size reduction, separation, distillation and the use of flow diagrams. *Prerequisite CH4404*

FT4411 - INTRODUCTION TO FOOD SCIENCE AND TECHNOLOGY (AUTUMN/1)

4 hours per week; 13 weeks/1st semester; 26L/26T; ECTS credits:6

Scientific principles in the safe production, preservation and distribution of foods; role of food processing technologies in ensuring food safety; role of food chemistry in monitoring food quality; current food issues of consumer concern including bovine spongiform encephalitis (bse), genetically modified foods, e-coli 0157, h7 etc.; current technology trends to ensure greater safety and quality.

FT4415 - FOOD TECHNOLOGY 2 (AUTUMN/3)

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

Food processing/preservation technologies (chemicals, freezing, drying, canning, irradiation, microbiological, physiological,

chemical and physical effects in foods, safety aspects of processes and post-processing storage, chilled foods, food formulation and product development, applications of hydrocolloids as gelling and thickening agents.

FT4417 - FOOD TECHNOLOGY 3 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

Production of chemicals and biochemicals from conventional and novel crops and from slaughterhouse by-products; whole crop harvesting, agricultural refineries, integration of food, feed, energy and chemical production; biomass as an alternative renewable energy supply, bioethanol production, gasification, combustion, oil crops and the Elsbett engine.

FT4427 - FOOD TECHNOLOGY 4 (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

Physical properties of foods; instrumental methods for measurement of colour, texture, viscosity; organoleptic procedures; relationship between instrumental and sensory methods of analysis; chemical aspects of flavour; microbiological quality standards; ISO 9002, quality systems, effects of food packaging technology on food quality during distribution and storage; human nutrition issues in food quality.

FT4437 - MILK PROTEINS AS FOOD INGREDIENTS (AUTUMN/4)

4 hours per week; 13 weeks/7th semester; 26L/26T; ECTS credits:6

Milk protein chemistry; caseins, whey proteins, minor constituents; functional properties of milk proteins; emulsification; foaming; gelation; significance of milk protein variants to the processing properties of milk; rennet coagulation; cheesemaking; heat stability; enzymatic hydrolysis of milk proteins; commercial proteinases; hydrolysate characterisation, milk protein allergenicity; immunoreactive peptide sequences; reduced/hypoallergenic milk protein hydrolysates. Nutraceuticals/bioactive peptides; angiotensin-I-converting enzyme inhibitors; special assignments will involve review and discussion of relevant research papers.

HC4305 - LAND AND LANDSCAPE MANAGEMENT (AUTUMN/3)

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

Vegetation/habitat types in Ireland; agricultural land as a habitat; vegetation development in Ireland and Northern Europe since the last glaciation; succession models and examples; commercial forestry in Ireland; species used, site-types, silvicultural sequence; introduction to landscaping; interior plant scaping; landscape management.

PH4001 - GENERAL PHYSICS 1 (AUTUMN/1)

5 hours per week; 13 weeks/1st semester; 26L/13T/26LAB; ECTS credits:6

Mechanics; vector algebra; Newton's laws; motion; moment of inertia; conservation of linear and angular momentum; conservation of linear and angular momentum; collisions; conservation of energy elasticity; Hooke's law; fluids; laws of thermodynamics; heat transfer; wave motion; sound light; EM spectrum; sources of light; geometrical optics; components; physical optics; optical systems.

PH4011 - PHYSICS FOR ENGINEERS (AUTUMN/1)

5 hours per week; 13 weeks/1st semester; 26L/13T/26LAB; ECTS credits:6

Mechanics; vector algebra; Newton's laws; motion; moment of inertia; conservation of linear and angular momentum; collisions; conservation of energy; elasticity; Hooke's law; the atom; semiconductors; free electron theory; elementary quantum theory; insulators, semiconductors, conductors, superconductors; electronic devices; diodes; bipolar transistor.

PH4101 - PHYSICS 1 (MECHANICS AND HEAT) (AUTUMN/1)

2 hours per week; 13 weeks/1st semester; 26L; ECTS credits:6

Mechanics: Vector algebra. Newton's laws, motion; moment of inertia, conservation of linear and angular momentum. conservation of linear and angular momentum; collisions, work, conservation of energy. gravity; elasticity, Hooke's law. fluids: Bernoulli's equation, surface tension, viscosity. heat: laws of thermodynamics, heat capacities, the ideal gas, kinetic theory, Carnot cycles, entropy. heat transfer. Stefan-Boltzmann Law.

PH4103 - PHYSICS 6 (MECHANICS)* (AUTUMN/2)

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

Review of the principles of mechanics; linear and angular momentum; rotational dynamics; impulsive motion; gyroscope motion; mechanical vibrations; simple and damped simple harmonic motion; forced oscillations; coupled oscillations; waves; transmission lines.

PH4203 - APPLIED OPTICS 1 (AUTUMN/2)

Geometrical Optics: Combinations of lenses; aperture stops; lens aberrations; image formation; microscopy: Introduction to matrix methods. Wave Theory: Development of the wave equation; solution for SHO. Fourier analysis/synthesis Coherence. Physical Optics: Interferometry; Diffraction; Polarization Double Refraction; Optical Activity; Interferometer applications. Photometry;

Diffuse reflectors and radiators. Luminance and illumination of an image in an optical system. Photometric units; standard sources and absolute photometry.

PH4301 - PHYSICS 2 (ELECTRICITY AND MAGNETISM 1) (AUTUMN/1)

2 hours per week; 13 weeks/1st semester; 26L; ECTS credits:6

Electrostatics; Coulomb's law; Gauss's law; current and circuit; Ohm's law; RC circuits; magnetostatics; magnetic effect on current carrying conductors; electromagnetic induction; Faraday's law; Lenz's law; LR circuits; ac circuits; ac theory.

PH4401 - PHYSICS 3 (MODERN PHYSICS) (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

Special relativity; the atom; quantum mechanics; the nucleus; radiation; radioactivity; introduction to the elementary particles.

PH4403 - PHYSICS 7 (QUANTUM)* (AUTUMN/2)

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

Failures of the classical theory; experimental basis for the quantum theory; wave mechanics;

De Broglie's hypothesis; Heisenberg Uncertainty principle; Schrodinger's equation; solving the Schrodinger equation
Prerequisite PH4401

PH4405 - ATOMIC AND NUCLEAR PHYSICS (AUTUMN/3)

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

Atomic structure; atomic spectra; wave mechanics; spin and exclusion principle; Zeeman effect.

PH4511 - INTRODUCTION TO PHYSICS (AUTUMN/1)

3 hours per week; 13 weeks/1st semester; 26L/13T; ECTS credits:6

The history of physics and the development of physical theory, scientific thought and the scientific method: Aristotle and the Greeks, the middle ages, the scientific revolution, Galileo and Newton, the 18th and 19th centuries, the successes and failings of classical physics; the development of modern physics, relativity and quantum theory. Methods and techniques: quantities, variables and relationships, the nature of a physical law, dimensions and units, dimensional analysis, scientific notation, orders of magnitude and their estimation; problem solving using physics, the application of theories and principles. Applied physics in engineering and technology: the role and

relevance of the applied physicist in industry and other practical contexts.

PH4607 - SOLID STATE PHYSICS 1 (AUTUMN/4)

5 hours per week; 13 weeks/7th semester; 26L/13T/26LAB; ECTS credits:6

Theories of conduction and magnetism]; breakdown of classical theories; magnetic properties of solids; classification of types of magnetism. Crystal dynamics: lattice vibrations; phonons; anharmonic effects; thermal conduction by phonons. Energy band theory; quantum theory of conduction. Superconductivity. Magnetism: diamagnetism; paramagnetism; magnetic order.
Prerequisite PH4403

PH4705 - INSTRUMENTATION 2* (AUTUMN/3)

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

Accuracy of measurement systems; dynamic characteristics of measurement system elements; loading effects; signals; noise; interference reduction; filtering; data acquisition; GPIB; HPIL; RS232; Signal processing; sampling; specialised measurement systems. *Prerequisite PH4704*

PH4805 - INDUSTRIAL PHYSICS B* (AUTUMN/3)

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

Review of electronic materials; electronic components; IC fabrication; electronic production; PCB process; SMT thin/thick film hybrid circuits; statistical methods for process control; reliability theory.

PH4808 - INDUSTRIAL PHYSICS A (AUTUMN/4)

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

Workstations]; introduction to UNIX, Windows, and CAD tools. CAD tools for optics, electromagnetics, and mechanic]. CAD and IC design: the IC design process; organisation and notation. MOS devices and basic circuits; inverters; buffer circuits. Fabrication and design rules; electrical parameters; scaling.