Module Synopses

Master of Science in Construction Management

Abertay University

Total numbers of Modules - 7

Module & Description	Hours	Credits
1.Creation and Management of a Company Provides students with the knowledge and skills needed to create, manage, develop and lead a construction company. Module content includes: legal; tax and social; banking; management; commercial. **Brief description:**This module enables students to develop the necessary knowledge to create and manage a construction company including relevant legal, tax, social and commercial requirements that make an organisation accountable to its stakeholders. **AIM:** The aim of this Module is to provide the student with: the knowledge and skills required to be able to create, manage, develop and lead a construction company Learning Outcomes: By the end of this module the student should be able to: 1. Select and justify an appropriate company structure according to the social protection of their leader and associated tax modes 2. Define a sales strategy and to be able to finance it 3. Analyse projected budgets related to the creation of company 4. Analyse the tax obligations and contribution and to be able to negotiate with the banks 5. Enter the results analytically and to interpret financial plans **Indicative content:** Indicative Content: 1 Legal Various legal forms, the responsibility for the leaders, statutes of the company, insurances, professions regulated, the industrial property, enabling works, approvals and certification. 2 Tax and social Tax modes, social modes, assistances with creation, exemptions from charges, taxes, wages 3 Banking Contributions, the capital and working capital, the treasury, the banking negotiation, loans, solvency. 4 Management Accountancy, the assessment, depreciation, income statements, dividends, taxation 5 Commercial The graphic charter, publicity, canvassing, sales strategy	45	20

Module & Description	Hours	Credits
2. Environmental Management Provides students with a series of practical management tools with which environmental issues can be managed, within both the public and private sector. Students are enabled to examine the policy, legal and ethical framework in which projects operate and to develop the necessary skills to manage diverse teams in a sustainable manner. **Brief description:** Increasingly many organisations have recognised that the environment is a management issue and not just a matter of legislative compliance. This module presents a series of practical management tools with which environmental issues can be managed, within both the public and private sector. This module enables those interested in the role of project management to examine the policy, legal & ethical framework in which projects operate and to develop the necessary skills to manage diverse teams in a sustainable manner. **Aims:** The module aims to provide an understanding of the practical application of environmental management and its role in the strategic development and operation of organisations and activities; to provide an understanding of environmental assessment tools to support the decision-making process and provide the skills and knowledge required to manage the project development process effectively, safely and in a sustainable manner. **Learning Outcomes:** By the end of this module the student should be able to: 1. Understand the policy, legal & ethical issues and critically evaluate the social, economic and technical factors, which influence environmental management to operate and plan sustainable projects. 2. Appraise the environmental performance of an organisation or activity and recommend appropriate measures to minimise pollution, in the short-term and long-term and design appropriate control systems 3. Undertake a project appraisal involving a range of investment and operational options and make judgments on priority; taking into account cost and environmental considerations. 4. Examine the leadership traits required to achieve successful project outcomes and evaluate the effectiveness of health and safety practices in reducing workplace risk.	45	20
3. Innovation in Design This project module focuses on the theory and practice of identifying and implementing innovation of products and systems in organisations. It provides an opportunity for students to critically reflect on analytical, design, planning and evaluation tools that have been included in the programme and to apply these to the design and construction processes of a project that requires innovation and mimics the real-world feasibility design stage of a Civil and Environmental Engineering project. **Brief description:** This project module focuses on the theory and practice of identifying and implementing innovation of products and systems in organisations. It provides an opportunity for students to critically reflect on analytical, design, planning and evaluation tools that have been included in the programme and to apply these to the design and construction processes of a project that requires innovation and mimics the real-world feasibility design stage of a Civil and	45	20

Environmental Engineering project. The outline designs created in this module will be developed in Module EEM502.

Aims: The aim of this Module is to provide the student with the opportunity to work with others as part of a professional team, integrating skills learned in previous modules, along with self study, CPD events and informed research within the teaching team and using problem solving to produce innovative engineering design solutions. Learning Outcomes: By the end of this module the student should be able to:

1. Analyse and critique processes and practices that support innovation in design and construction.
2. Work as part of a professional design team to produce creative and innovative design options to a given brief, undertaking appropriate research activities to access and apply information.
3. Work as part of a professional design team to develop and apply a decision support framework to appraise design options, giving due regard to sustainability and health and safety aspects.

Indicative Content:

1 Innovation Practice Understanding the construction market, PEST and SWOT; role of PEST and SWOT in delivering business strategy; business models that support innovation; learning from innovation failure.

2 Case Study Brief Meeting with practitioners and academic supervisors/researchers to review case study brief and other available information.

3 Development of Options Group synthesis of innovative options, including self study and research as required.

4 Option Appraisal Review and assessment of options using and integrated decision support framework that includes sustainability indicators.

Indicative Content:

1 Sustainable Development Definitions, approaches, assessment and enhancement frameworks. Policy, legal & ethical frameworks. Comparison of EU Environmental Legislation with other Zones, eg Asia, USA, Africa.

2 Management Systems Environmental Management Systems (EMS) Environmental Impact Assessment (EIA) Life Cycle Analysis or Assessment (LCA) Carbon management and carbon sequestration

3 Environmental decision support tools Environmental decision support tools such as economic evaluation, cost-benefit analysis, risk assessment, multi criteria analysis in the context of the development of priorities for sustainable development.

4 Planning and programming tools Planning and programming tools and techniques, cost estimation and cost control systems, Quality and Environmental Management systems.

5 Project Leadership Role of the project leader and making the difference as a project leader, effective decision making, solving complex problems, team development and leading people.

6 Health & Safety Module Synopsis – MSc Construction Management (Abertay University) Duties and liabilities of employer and employees, purpose and role of health and safety risk assessments and method statements, ethical issues in managing health and safety.

7 Project and on-going management Project and on-going management, including business efficiency projects e.g. PPC Permitting, ISO14001

Module & Description	Hours	Credit
4. Logistics, Waste Pollution and Processing of Building Sites Provides students with a precise analysis of pollution and waste arising from building sites, treatment options and opportunities to add value to waste. The impact of logistics on a building site is explored in relation to environment and financial performance and opportunities to optimise performance. **Brief description:** This module makes it possible to have a precise analysis of pollution and waste arising from building sites, treatment options and explore opportunities to add value to waste. This module explores the impact of logistics on a building site in relation to environment and financial performance and opportunities to optimise performance **AIM:**To realize savings on the waste processing upstream of the building site by a better analysis of the existing situation. To develop waste resulting from the building site in order to realize substantial savings. To understand waste production and treatment to identify efficient methods of practice. To realize savings on the cost of logistics building site by a better analysis of the situation. To develop this logistics building site in order to realize substantial savings as well on the estimated one as on the execution **Learning Outcomes:**By the end of this module the student should be able to: 1. To analyze the depollution of the building sites as well as the treatment and the valorization of waste compared to what exists 2. To analyze the waste emitted by the building sites, to define their treatments and their value in order to reduce the costs 3. Capacity to develop a charter clean building site 4. To analyze the logistic need for a building site and to deduce the assessment carbon from it 5. To define an optimization in order to reduce the environmental impact while controlling the financial budgets **Indicative content:** 1 Soil contamination Various types and classification of pollution of ground, their transport, their treatments as well as the analysis of the costs 2 Site clearing Various types and classifications of materials of clearing out, recycling, treatment, valorization, the financial incidence 3 Demolition Various processes of deconstruction, harmful effects, recycling, treatment, valorization, the financial incidence 4 Site waste The management of the losses, recycling, the management of waste, treatment, valorization, the financial incidence. 5 Waste production Knowledge internal processes of each waste production in order to know the environment of treatment sorting of building site 6 Logistics Bases of logistics, various means of transport and production, consumption in fossil energy, the assessment carbon, various possibilities of optimization, the financial incidence, the study of new behavior and new energy source	45	20

Module & Description	Hours	Credits
5. Project Research Methods and Management This module provides the student with the theoretical underpinning required to pursue a detailed investigation of a research topic of choice. It explores the qualitative and quantitative research methodologies and the range of statistical analysis techniques used in conducting research, as well as the development of project management skills. **Brief description**: This module provides the student with the theoretical underpinning required to pursue a detailed investigation of a research topic of choice. It explores the qualitative and quantitative research methodologies and the range of statistical analysis techniques used in conducting research, as well as the development of project management skills. **Aims:** The aim of this Module is to provide the student with a range of theoretical and practical skills required to carry out research in a specified area appropriate to the programme of study. **Indicative Content:** By the end of this module the student should be able to: 1. Critically review current knowledge in a specified area, and establish its status and limitations. 2. Identify, select and define a research question(s) and justify its relevance to practice and its significance as a potential contribution to existing knowledge. 3. Select and justify a research methodology to meet specified research aims and objectives. 4. Develop a Research Proposal & research management plan including documentation to satisfy university regulatory protocols with regards to risk assessment and ethical approval of the proposal 5. Critically analyse and interpret primary/secondary research data (quantitative and qualitative), testing for validity and reliability of the results. **Indicative Content**: 1 Introduction to Research The nature and purpose of research; different types of research (quantitative qualitative, mixed methods, developmental, practice based) and their mapping within different philosophical paradigms (positivism, interpretivism, pragmatism); strengths and weaknesses. 2 Dealing with Practical Issues The research process; identifying a research topic and setting research objectives; developing a research strategy; characteristics of a good research project; ethical issues in conducting research. 3 Searching and Reviewing the Literature The purposes and main steps of a literature review; searching, evaluating, organizing and synthesizing the relevant literature; and, writing a literature review and managing bibliographic records. In addition, developing research questions for qualitative and quantitative research; and identifying characteristics/attributes. 4 Data Collection and Analysis Approaches to data collection and analysis (quantitative, qualitative, mixed-methods, iterative); questionnaire design; populations, samples, and sampling methods; data Mining. Module Synopsis – MSc Construction Management (Abertay University) 5 Writing your Research Proposal Identifying a research problem or issue, the purpose of the research	45	20

and the main research question(s); choosing the research strategy and methods; writing a research proposal. In addition: discussing findings, formulating conclusions, making recommendations, and reporting; planning, executing, writing up, and submitting a dissertation. 6 Descriptive Statistics for Quantitative and Qualitative D Summarizing and visualizing data sets; finding trends in data and formulating a research hypothesis. 7 Introduction to Probability and Statistical Inference Basic concepts of probability and probability distribution; discrete and continuous random variables; basic probability distributions; introduction to the hypothesis testing procedure. 8 The Hypothesis Testing Procedure Parametric and non-parametric tests; Chi-squared Test for Association; Independent Sample t-Test; One and Two Way Analysis of Variance ANOVA; power calculation and sample size estimation 9 Correlation and Regression Relationship between two numeric variables, dependent and independent variable; Pearson's Correlation Coefficient; Simple Linear Regression. 10 Multiple Regression Multiple Regression Analysis and introduction to the General Linear Model.		

Module & Description	Hours	Credit
6. Financial Management of Construction Operations **Brief description:** This module enables students to evaluate the direct and indirect costs of a building site, to prepare and analyse a financial strategy for construction operations and the skills to analyse and take corrective action against unsatisfactory financial performance thereby ensuring commercial competitiveness for an organisation. **Aims:** The knowledge to manage the financial plans and strategy for a building site by integrating the various financial parameters and to deduce the corrective actions from them allowing an optimisation from the profits **Learning Outcomes:** By the end of this module the student should be able to: 1. Control the direct and indirect costs of a building site Module Synopsis – MSc Construction Management (Abertay University) 2. Analyse the differences between the forecasts and reality in execution of a financial plan 3. Define an analytical finance strategy including/understanding the corrective actions allowing an improvement of the profits for a building site **Indicative content:** 1 Cost Control of Construction Projects Estimated analysis of the costs building site, preventive actions, impact of stocks, the fixed assets, the treasury building site, the cash-flow, the analysis of the variations, the SAV, the DGD, the finance strategy, the corrective actions	45	20

Module & Description	Hours	Credit
7. MSc Work Based Project/Dissertation Individual in-depth investigation of a particular aspect of your own specialism. **Brief description**: Individual in-depth investigation of a particular aspect of their own specialism. **Aims:** To provide the student with: An opportunity to undertake individually an in-depth investigation in a relevant area of interest within an applied context in industry, consolidating theory and examining practice and providing a basis for the writing of a substantial dissertation Learning Outcomes: By the end of this module the student should be able to: 1. Critically evaluate and select an appropriate area of investigation 2. Plan, design and undertake a programme of research in the selected subject area, working individually, demonstrating time and goal management 3. Gather, collate, present and analyse information and use the information to make deductions 4. Demonstrate an ability to communicate the findings and implications of the research programme in a written thesis and during a Viva Voce examination **Indicative Content :** • Nature of project (1): Projects may be based on any aspect of technical and operations, management, economics, environmental or social impact • Nature of project (2): Projects may involve: an experimental investigation; a dissertation involving survey, collation and critique of collected information • Nature of project (3): Projects may involve modelling or simulation of data, development of frameworks or systems to improve practice	45	20