

MODULE DESCRIPTION FORM



DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

CL504/EF929 Financial Engineering

Module Registrar: Dr Andrew Ward	Taught To (Course): MSc Students (Sustainable Engineering) and 5 th Year MEng students from across department in the Faculty; PhD students opting for the course as an elective		
Other Lecturers Involved: None	Credit Weighting: 10	Semester: 2	
Assumed Prerequisites: None	optional/ elective class	Academic Level: 5	Suitable for Exchange: Y

Module Format and Delivery (HOURS i.e. 1 credit = 10hrs of study):

Lecture	Tutorial	Laboratory	Groupwork	External	Online	Project	Assignments	Private Study	Total
10	10		50					30	100

Educational Aim

This class explores the role finance plays in business solvency and sustainability. It will give participants an appreciation of the core issues surrounding finance in business and how to analyse financial data to support decision making. The module aims to:

1. Explain the need for and role of finance in business
2. Describes the financial tools that are used for making decisions
3. Explore different strategies for raising finance and investing

The material will be delivered through a series of online lectures and tutorials, supported by background reading available on myPlace.

Learning Outcomes

On completion of the course the student is expected to be able to:

- LO1 Identify and analyse issues arising from the financial accounts and reports of companies
- LO2 Identify sources and methods of raising project finance and implications of these for business and financial risk
- LO3 Analyse the principles underlying operation of financial/capital markets
- LO4 Be able to apply knowledge required to make investment decisions

Syllabus

The syllabus will consist of the following points:

Week 1: Money and the role of finance within an organisation
About the course – course structure – expectations
Overview of financial engineering – finance and reporting – wealth creation – understanding risk and return – corporate governance

Week 2: Structure of a business and corporate governance

Limited liability! – equity – assets – liabilities – accounting conventions and principals – standards and legal obligations

Week 3: Financial reporting tools: the three statements

Statement of financial position (balance sheet) – statement of income (P&L) – statement of cash flow

Week 4: Debt financing and the time value of money

Difference between equity and loans – Funding mechanisms: Bonds, stock and derivatives

Week 5: The stock market: how it works

Principles of the stock market – Stakeholders – Tracking stocks – Stock market games

Week 6: Depreciation and Amortisation

The need for depreciation – straight line method – declining balance – sinking fund – capital recovery

Week 7: Capital structure and asset valuation

The need for a systematic approach to investment – Investment appraisal techniques (e.g. DCF/NPV/IRR/ARR/PP)

Week 8: Investment decisions and portfolio theory

Making Investment Decision and the internal rate of return – Common models in portfolio management

Week 9: Project financing and private finance initiative

Financing large infrastructure project – Special purpose vehicles – the failure of private finance initiatives

Week 10: Corporate restructuring, mergers and acquisitions

The many forms of corporate restructuring – Winners and losers in mergers and acquisitions – evasive strategies in acquisitions

Assessment of Learning Outcomes

For each of the Course Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1 Identify and analyse issues arising from the financial accounts and reports of companies

C1 Use data from corporate accounts to assess financial performance and present reasons for success/failure of organisations

C2 Compare financial information across similar organisations using recognised financial tools and equations in order to assess performance

LO2 Identify sources and methods of raising project finance and implications of these for business and financial risk

C1 Show knowledge of the different sources of finance available to businesses

C2 Demonstrate knowledge of the advantages and disadvantages of different financing routes

LO3 Analyse the principles underlying operation of financial/capital markets

C1 Show knowledge of how financial and capital markets exist

C2 Describe the principles of the stock market

LO4 Be able to apply knowledge required to make investment decisions

C1 Apply asset valuation tools used to make investment decisions

C2 Demonstrate understanding of the relationship between risk and return

The standards set for each criterion per Module Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessment.

Principles of Assessment and Feedback

(within Assessment and Feedback Policy at: <https://www.strath.ac.uk/staff/policies/academic/>)

Assessment will be 50% group coursework, with written feedback provided through assessment feedback sheets. The remaining 50% of assessment will be by multiple choice exam at the end of the module, where a summative mark will be provided.

When completing the group coursework, students will be required to provide feedback on the peers within their group and provide a statement on their contribution to the group coursework. Marks may be adjusted down for students who

did not engage and contribute to group activities sufficiently.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

	Examinations			Courseworks		Projects		
	Number	Month(s)	Duration	<i>Weighting</i>	Number	<i>Weighting</i>	Number	<i>Weighting</i>
L/Outcomes	1	S2 Exam Diet	2 hrs	50%	1	50%		

Indicate which learning outcomes (L01, L02 etc) are to be assessed by exam/coursework/project as required.

Coursework / Submissions deadlines (*academic weeks*):

Coursework submission will be S2, Week 6

Resit Assessment Procedures:

Resit assessment will be 100% by exam in the August exam diet.

PLEASE NOTE:

Students must gain a summative mark of 50% to pass the module. Students who fail the module at the first attempt will be re-examined during the August diet. This re-examination will consist entirely of exam. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

Atrill, P., McLaney, E.J., (2019) Accounting and finance for non-specialists, Eleventh edition. ed. Pearson, Harlow, England; New York.

Duhon, T.L., (2012). How the trading floor really works. Wiley, Hoboken, N.J.

Beder, T.S., Marshall, C.M. (Eds.), (2011). Financial engineering: the evolution of a profession, The Robert W. Kolb series in finance. Wiley, Hoboken, NJ.

John D. Finnerty, (2007). Project financing: asset-based financial engineering, 2nd ed.. ed, Wiley finance series. John Wiley & Sons, Hoboken, N.J.

Solomon, J. (2007), Corporate Governance and Accountability. West Sussex: John Wiley & Sons Ltd.

Additional Student Feedback

(Please specify details of when additional feedback will be provided)

Date	Time	Room No

Session: Verbal coursework feedback will also be provided during the tutorial sessions in week 11.

Approved:

Course Director Signature:

Date of Last Modifications:

MODULE TIMETABLE

Module Code: CL504/EF929

Module Title: Financial Engineering

Brief Description of Assessment:
 Assessment will be partly by coursework and partly by exam. Students will be expected to do one coursework in groups on an assigned topic. The group coursework (2000 word report) will be assessed at 50% and the exam which will be assessed at 50%. For the group coursework will be carried out in allocated groups of four or five. The coursework (submitted through Myplace) is expected to be well-researched, well-structured, well-written, well-referenced and Turnitin-checked for originality.

Assessment Timing:-

Indicate on the table below the start/submission dates for each assignment/project and the timing of each exam/assessment using the dropdowns provided. Dropdowns can be left blank. Add extra notes below the dropdowns.

Please note: Timings can and will change, this should only be used as a guide.

Semester One	W&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
	Choose an item. Choose an item.												

Semester Two	C&D Wk	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10	WK11	Exam Period
	Choose an item. Choose an item.	Course work Set Choose an item.	Choose an item. Choose an item.	Course work Submit Choose an item.	Choose an item. Choose an item.								
		Group Course work LO1-4					Course work LO1-4						

Mapping Module Learning Outcomes to AHEP

Module Learning Outcome	Engineering Council AHEP competencies: Knowledge, Understanding and Ability
<p>LO1 Identify and analyse issues arising from the financial accounts and reports of companies</p>	<p>Science and mathematics</p> <ul style="list-style-type: none"> • Understanding of concepts from a range of areas, including some outside engineering, and the ability to evaluate them critically and to apply them effectively in engineering projects. <p>Engineering analysis</p> <ul style="list-style-type: none"> • Ability to extract and evaluate pertinent data and to apply engineering analysis techniques in the solution of unfamiliar problems. <p>Additional General Skills</p> <ul style="list-style-type: none"> • Apply their skills in problem solving, communication, working with others, information retrieval and the effective use of general IT facilities • Exercise initiative and personal responsibility, which may be as a team member or leader
<p>LO2 Identify sources and methods of raising project finance and implications of these for business and financial risk</p>	<p>Economic, legal, social, ethical and environmental context</p> <ul style="list-style-type: none"> • Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk <p>Additional General Skills</p> <ul style="list-style-type: none"> • Apply their skills in problem solving, communication, working with others, information retrieval and the effective use of general IT facilities • Exercise initiative and personal responsibility, which may be as a team member or leader
<p>LO3 Analyse the principles underlying operation of financial/capital markets</p>	<p>Economic, legal, social, ethical and environmental context</p> <ul style="list-style-type: none"> • Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk • Understanding of the key drivers for business success, including innovation, calculated commercial risks and customer satisfaction.

	<p>Additional General Skills</p> <ul style="list-style-type: none"> • Apply their skills in problem solving, communication, working with others, information retrieval and the effective use of general IT facilities • Exercise initiative and personal responsibility, which may be as a team member or leader
<p>LO4 Be able to apply knowledge required to make investment decisions</p>	<p>Design</p> <ul style="list-style-type: none"> • Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics. <p>Additional General Skills</p> <ul style="list-style-type: none"> • Apply their skills in problem solving, communication, working with others, information retrieval and the effective use of general IT facilities • Exercise initiative and personal responsibility, which may be as a team member or leader

JBM Programme Threads

Thread	Primary	Secondary	Contributory
Design	LO4		
Health, Safety & Risk Assessment			LO2
Sustainability		LO4	
Maths for Engineers	LO1		LO2
Industrial Engagement	LO2, LO3		
Digital Technologies			LO1, LO2, LO3, LO4

