



The University of Sheffield

Department of Mechanical Engineering and Management School

Course Description and Requirements

Title: SELECT – Service Entrepreneurial Learning for Engineers, Enterprise students, Community and Teachers **Module Code:** MEC414

Course Year: 4 **Semester:** 8 **Module Size:** 0.5

Prerequisites: None

Corequisites: None

Brief Description (including aims of course):

Essential to the module is the concept that the students work in multidisciplinary teams (Engineering and Management School students) to find solutions to a real problem provided by a real customer. Typically the customer will be a member or members of the community i.e. children with disabilities, terminally ill people, etc. The challenge is for the student teams to identify a technical solution to the customer problem (*making their lives easier or better*) and then develop a business proposition from this. Students are supported by external contributors from a great range of disciplines including business angels, bankers, marketers, business advisors, manufacturers, etc. At the end of the course, teams pitch their ideas to an invited audience and judges from a mixed background (technical, commercial and legal). Prizes are then awarded to the best presentations on a national level in the UK and student teams will then go on to compete on a European level with students from partner countries in Italy, Spain and Austria as part of the SELECT European programme. A Service Learning approach for the teaching methodology will be applied for this module – integrating this with entrepreneurial skills and developing a new teaching methodology as a result – Service Entrepreneurial Learning. All students will progress to a practical prototyping phase following module teaching, where they will further develop their solutions over 6 months. Following prototyping the best two student teams will be chosen to progress into Business Incubators at the university to receive further support and guidance on turning their solutions into business realities.

Objectives:

The main aim of the module is to give the student an opportunity to try to solve a real problem by combining their engineering and business knowledge with the commercial constraints that would need to be met in making a business success of their technical solution. It is also an opportunity for students to develop their presentational skills - oral and poster. More specifically, students will:

1. develop the analytical and critical skills of final year students,
 2. appreciate the importance of having a structured business plan in the development of a commercial venture,
 3. look at the components (resources, financial, marketing, IPR, etc) of the planning process and will apply the tools and techniques of business planning,
 4. develop commercial awareness by developing a business plan for the exploitation of a technical solution developed by them.
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Outline Syllabus:

The course introduces the techniques behind a business plan based on the exploitation or development of identified technological opportunities. These strands are drawn together in the development of a valid business plan. For their training students get just 15% traditional lecturing. The rest is based on case studies and workshops, presentations from relevant speakers such as bankers, customers, IP consultants and real entrepreneurs (70%). The remaining 10-15% they get the advice from business mentors (from local companies – SMEs where possible) who provides support, guidance and focus to the students.

Contents (lecture by lecture):

7. I have done it!

7. Feedback session

7. Technical mentorship

8. Q&A (WPA)

COURSE SYLLABUS

Lectures for this module are 2hr long. Usually lectures will start with a 5 min introduction, followed by an 40-50 min lecture and wrapped up either by a case study or an individual/group dynamic. These activities could last from 30-40 min.

Only in few cases the tutor will give a one-way lecture, otherwise it is expected to have a group discussion.

Session 1: Introduction and what makes a good business plan (2hrs)

Introduction to the course: How will the module be conducted? Timetable, project description, assessment procedure and deadlines will be revised in this session. A brief introduction to the module's topic, as well as a revision of the guidelines to writing a business plan will be covered.

Handout 1: About the module

Handout 2: Project description

Handout 3: Module's timetable

Handout 4: Guideline to writing your own business plan.

Session 2: Design for living and business canvas model (2hrs)

An expert in design will a one hour lecture, explaining the background of inclusive design, the factors that affect inclusive design and tools and techniques to handle the challenge in hand.

The second part of the session is based around the 'business canvas model'. Students in advance of this workshop type of session are provided with a lecture online. In this lecture, students familiarise themselves with this approach to business planning. At the live session, students are given a case study and asked to canvas into the format. A SWOT analysis is also conducted on the business canvas model and a Q&A is conducted at the end.

Handout 5: Presentation

Handout 6: Business Canvas Model/SWOT

Session 3 Sensory Deprivation Exercise (2hrs)

This session will use a sensory deprivation approach, in which students will experience having a sight, hearing, cognitive impairment as well as a mobility disability. Students will reflect on how this experience can help them inform their market research and how they should formulate the questions to the customer.

Required: earplugs, blindfolds, thick gloves and a 10 minute lecture in a different European language.

Mini test

Session 4 Understanding the customers (2hrs)

In this session, the customers are invited to attend the session. Ethic research approval is required in advance. Students will have two hours to ask relevant questions to the customer. This a primary type of research but requires careful facilitation to ensure that customers are at east but also that students ask all the questions they need in order to progress their plans.

With approval of the customers, this session may be recorded.

Session 5 Market research and business models (2hrs)

In this session students will learn how to understand the market into which their design needs to be launched and well as defining the 4Ps, conducting a SWOT analysis, difference of primary and secondary market research and marketing tools. A marketer will deliver this session.

The second part of the session will explore the different types of business models used in the UK, from sole traders to LLP. It will also explore on the different requirements of a business plan from the point of view of an investor. The session will be delivered by a professional business advisor/solicitor.

Handout 7: Presentation

Session 6 Financing Planning and Methods of Financing your Operations (2hrs)

In this session students will learn the advantages and disadvantages of different sources of investment. They will also be provided with a set of tools to appraise investment as well as learn about the financial statements that are required for a business plan. This session will be delivered by a Business Angel and a Financial Advisor.

Handout 8: Presentation

Session 7 Intellectual Property, its Value and its Protection (2hrs)

This lecture will provide an insight into very important IP issues, its value and how to protect it. It will also explore the timescales, costs related to IP and will use case engineering case studies to illustrate such issues. The session will be delivered by an IP European Patent Attorney.

Handout 9: Presentation

Session 8 Elevator pitches (2hrs)

This session provides students with the background of elevator pitches, the how to do it, what to do and what not and will provide an example of an elevator pitch for critical analysis. Students are expected to deliver a 1 minute elevator pitch and will have the opportunity to practice their pitches at the session.

Handout 10: Presentation

Session 9 I have done it (2hrs)

Graduate entrepreneurs from the University talk about their experiences on setting up their companies. They will talk about the highs and lows, the do's and don't's and will give students advice on how to go about setting up their own companies. The session will have 3 or 4 panelists and at the end there will be a Q&A

Session 10 Q&A surgery (2hrs)

This session is fully dedicated to answering questions relevant to the business plan. Provide feedback, facilitate discussion and ensure that students are ready for the poster presentation.

Session 11**Poster presentation (5hrs)**

<u>Module Format</u>		<u>Hours</u>
Lectures	Basic tools & techniques are introduced in lectures	10
Tutorial classes (no of tutorial sheets)	Project progress	10
Lab/design/project classes		
Other activities	Developing a business plan for exploiting or develop an identified technological opportunity	80
	Total:	100

Main text books (A – core text; B – secondary text; C – peripheral reading)

- A Business Model Generation by Alexander Osterwalder & Yves Pigneur
 - B How to write a business plan, Mike McKeever, Mari Stein (Illustrator), 4th ed
 - C The definitive business plan, Richard Stutely, 2002, Prentice Hall
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Assessment:

Group report 40%

Initial ideas 10%

Poster Presentation 40%

Discretionary points 10%

Individual effort factor

(Staff use only)

			Lecture hrs	Tutorial hrs	Laboratory hrs	Project / design hrs
Staff member responsible	1	E. Rodriguez-Falcon	5	5		40
Other staff	2	John Kawalek	5	5		40
	3					
	4					
	5					
Totals:			10	10	0	80
Total (hrs)						100

Resource needs

Demonstrator requirements:

One Demonstrator for 15 hours

Estimated student numbers: 30
