

Enterprise Education with the Entrepreneurial Skills for Engineers Online Programme

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***Introduction to the Entrepreneurial Skills
for Engineers Online Course***

Entrepreneurial Skills for Engineers Online Programme

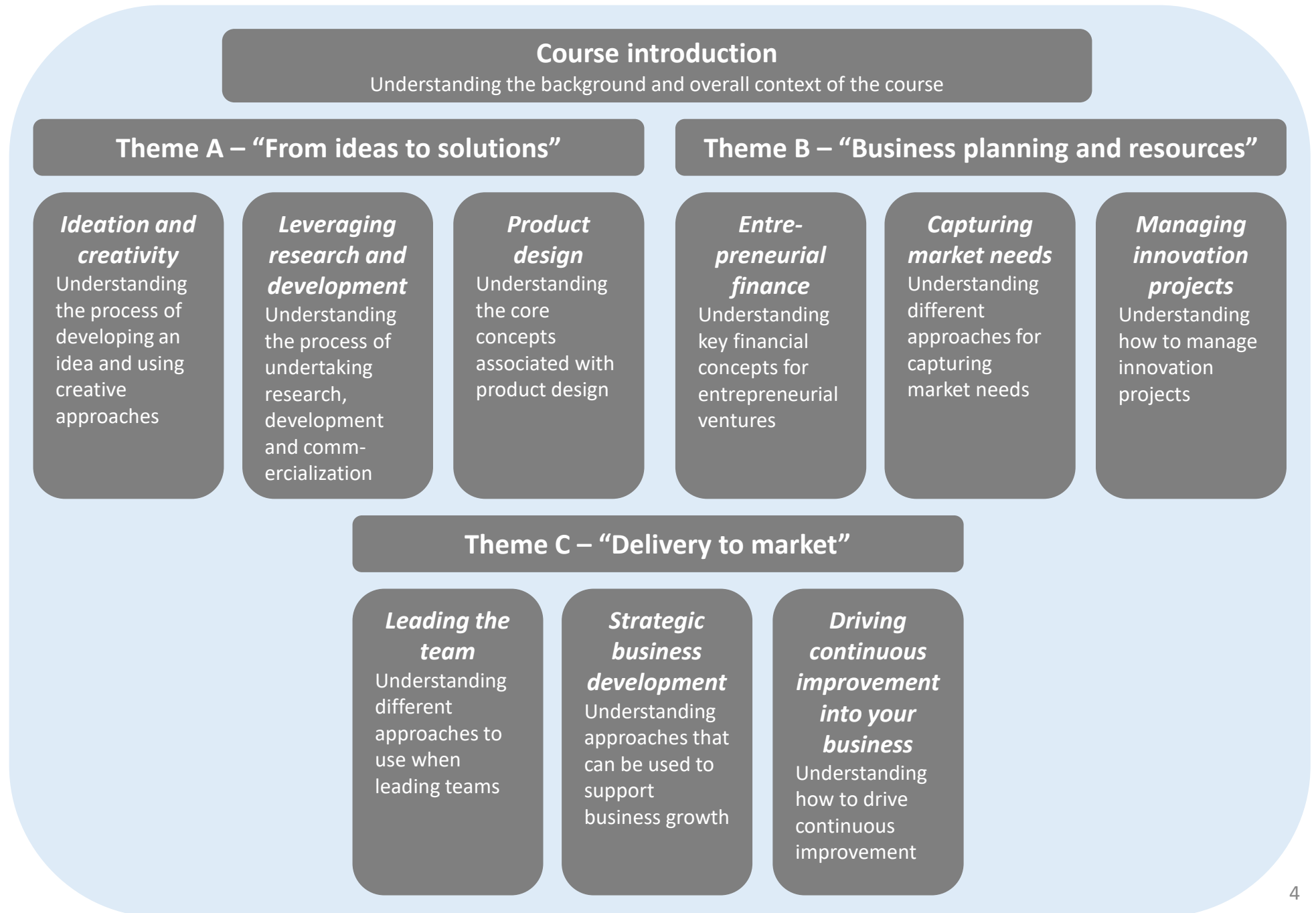
- Online course in partnership with the Institution of Engineering and Technology (IET) – launched in August 2019
- Academic team developed the technical content and the IET were responsible for implementing through the e-learning platform
- Designed to provide a comprehensive view across the various areas associated with becoming more entrepreneurial
- The course provides tools and techniques along with supporting theory – but crucially it is grounded in engineering applications

The screenshot shows the IET Academy website interface. At the top, there is a navigation bar with 'IET sites' and a search bar for the IET Academy. The IET logo and 'The Institution of Engineering and Technology' text are visible on the left, and 'Academy' is on the right. Below the navigation bar, there is a breadcrumb trail: 'Home > Entrepreneurial Skills for Engineers'. The main content area features a course card for 'Entrepreneurial Skills for Engineers' (AC190160) with a price of £297.00. The card includes a 'CPD 11 Hours' badge, a 'Login to buy' button, and a 'Free sample' button. A note states 'IET members please log in to view member pricing'. Below the course card, it identifies 'Content Partner' as 'London South Bank University' and includes a 'Share' button. To the right of the course card, there is a dark red box titled 'Multi-User Access' with the text: 'If you would like to purchase a course or unit for your company, please get in touch.' and an 'Enquire now' button.

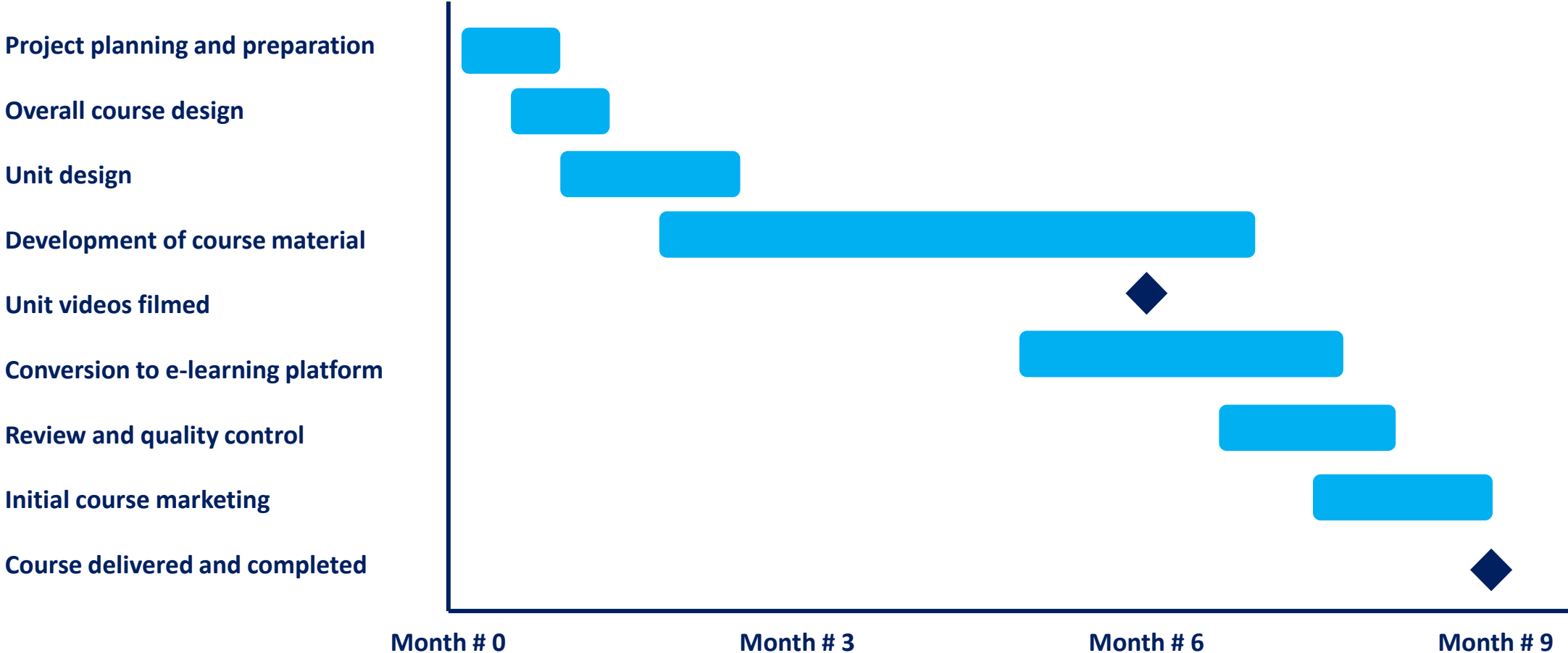
Target audience for the online course

- Engineers with an interest in innovation and entrepreneurship
- Engineers looking to develop new products, or setting up a new business area or start-up
- Engineers working in large companies as well as entrepreneurial engineers who are looking to set-up or have already set up a new company

Overall structure of the course



Course development schedule (Gantt chart)



*Illustrative details from the course, including
course material and formative assessment*

Illustrative details from one of the course units

Unit 7: Managing innovation projects

Learning outcomes

- 1) Describe the project management process and how it applies to innovation projects
- 2) Understand how to manage technologically complex projects through taking a holistic approach
- 3) Understand the key concepts of agile project management, including selected tools and techniques
- 4) Describe how to prepare a risk register to help manage projects risks

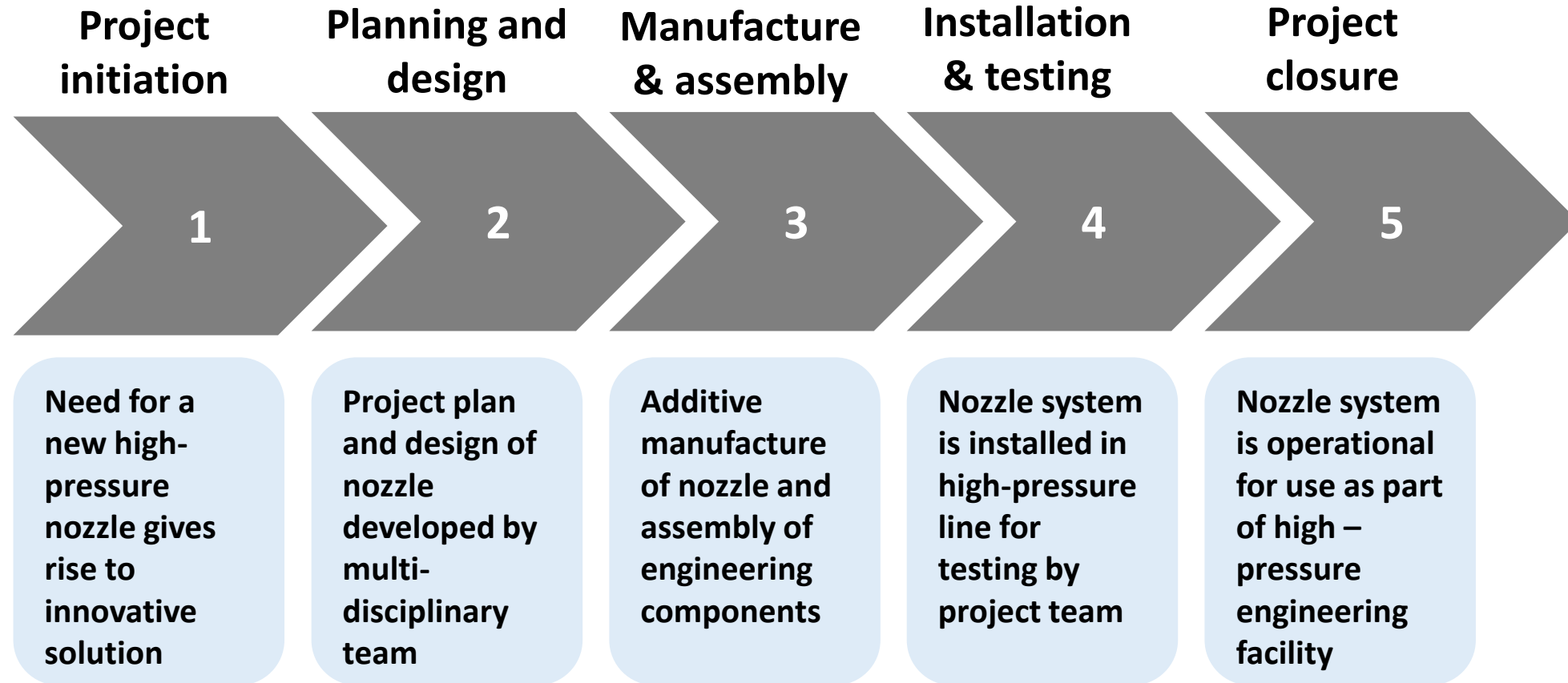
Unit modules

- 1) Setting the context for managing innovation projects
- 2) Adopting a holistic view of managing innovation projects
- 3) Managing project risks
- 4) Introduction to agile project management

Module 1: Setting the context for managing innovation projects

Project to develop a new lightweight nozzle that can easily be fitted to high pressure lines while being manufactured on site

Example is provided in order to help understand the project lifecycle



Project lifecycle for innovative nozzle project

Course screenshot: Video introduction for Unit 1 (Introduction)

The screenshot displays a course interface for "Entrepreneurial Skills for Engineers". The top navigation bar includes a back arrow, the course title, and a progress indicator showing 49. Below the navigation bar are icons for PATH, PEOPLE, SHARE, and ACTIVITY. The main content area is divided into a left sidebar and a right video player.

Course Progress Table:

Item	Points
Welcome	
Section 1: From ideas to solutions	
Unit 1: Introduction	
Video: Introduction to the Unit	2 PTS
Unit Overview	1 PT
Learning Objectives	1 PT
Module 1: Introduction to the course	5 PTS
Module 2: What is entrepreneurship?	10 PTS
Module 3: Business planning	15 PTS
Exercise: What are the five main reasons identified for why a start-up company will succeed?	10 PTS

Video Player Details:

- Title: Video: Introduction to the Unit
- Video Title: Unit 1: Introduction - Entrepreneurial Skills for E...
- Channel: IET academy
- Duration: 0:02 / 2:50
- Rating: 5/5 (1 votes)
- Language: EN
- Vote: Your vote (5 stars)

Course screenshot (1): Using the MoSCoW technique to understand agile project management

Using the MoSCoW technique
Match the four technical project requirements with the MoSCoW categories provided:



Must have	Should have	Could have	Won't have
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

✓ Submit



Course screenshot (2): Using the MoSCoW technique to understand agile project management

Using the MoSCoW technique
Match the four technical project requirements with the MoSCoW categories provided:



Must have	Should have	Could have	Won't have
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="button" value="✓ Submit"/>			

< >

The novel powder metallurgy process offers comparable efficiency levels when compared to other materials processing techniques

Course screenshot (3): Using the MoSCoW technique to understand agile project management

Using the MoSCoW technique

Match the four technical project requirements with the MoSCoW categories provided:



Must have	Should have	Could have	Won't have
<p>The metal matrix composite material provides robustness and reliability for the proposed automotive application</p> <input type="text"/>	<p>The novel powder metallurgy process offers comparable efficiency levels when compared to other materials processing techniques</p> <input type="text"/>	<p>The metal matrix composite material that is developed provides additional functionality when compared to existing standard materials</p> <input type="text"/>	<p>The novel powder metallurgy process can be used for other industrial applications, such as manufacture of packaging materials for industrial products</p> <input type="text"/>

Course screenshot (4): Using the MoSCoW technique to understand agile project management

Using the MoSCoW technique

Match the four technical project requirements with the MoSCoW categories provided:



Must have

The metal matrix composite material provides robustness and reliability for the proposed automotive application

Should have

The novel powder metallurgy process offers comparable efficiency levels when compared to other materials processing techniques

Could have

The metal matrix composite material that is developed provides additional functionality when compared to existing standard materials

Won't have

The novel powder metallurgy process can be used for other industrial applications, such as manufacture of packaging materials for industrial products

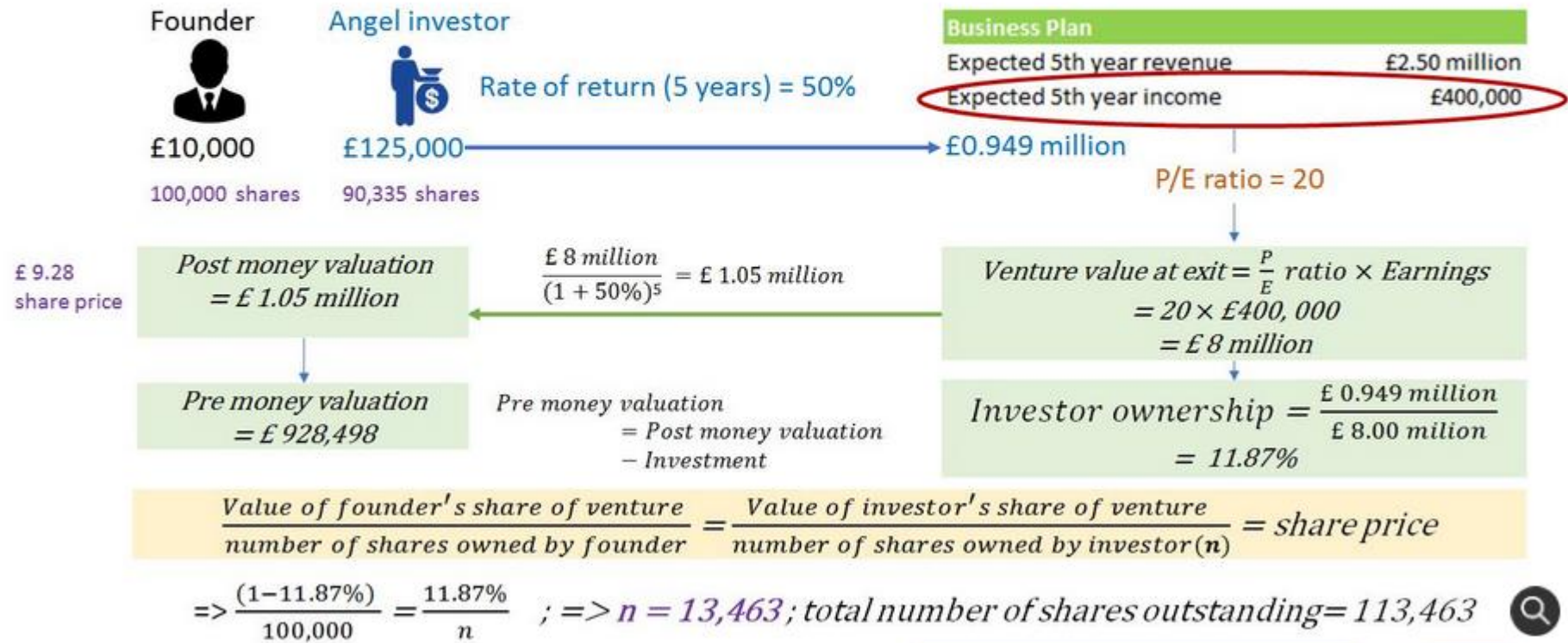


That is correct. Well done!

CONTINUE >

Course screenshot from Unit 4 (Entrepreneurial Finance)

The venture capital valuation method



Course screenshot from Unit 6 (Capturing market needs)

The Product-Market Matrix



Strategic Opportunity Matrix - click each box to find out more:



Course summative assessment

Summative assessment

- Summative assessment for units is through a series of multiple-choice questions. Each module has an end of module assessment
- Each unit also has five questions for the end of unit assessment
- Finally, each unit also contributes four questions towards an end of course assessment based on forty questions, i.e. four questions from each unit

Example question from assessment (a)

Test your knowledge

What is entrepreneurship?



Choose the right answer(s) and click on 'Submit'.

- Entrepreneurship is the management of teams of people in order to deliver a series of process improvements.
- Entrepreneurship is the process of developing, launching and running a business in order to make a profit.
- Entrepreneurship is the process of developing and managing a new technical project.
- Entrepreneurship is the management of business operations and manufacturing activities.



✓ Submit

Example question from assessment (a)

Test your knowledge

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✓ Submit

Example question from assessment (b)

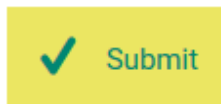
Question 19

Which of the following indicates how much of the capital injected into a business is converted back into profits for the business?



Choose the right answer(s) and click on 'Submit'.

- Earnings per share (EPS)
- Acid test ratio
- Return on Capital Employed (ROCE)
- Price to earnings (P/E) ratio

A yellow rectangular button with a green checkmark icon on the left and the word 'Submit' in a black, sans-serif font on the right.



Example question from assessment (b)

Question 19

Which of the following indicates how much of the capital injected into a business is converted back into profits for the business?



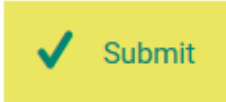
Choose the right answer(s) and click on 'Submit'.

Earnings per share (EPS)

Acid test ratio

Return on Capital Employed (ROCE)

Price to earnings (P/E) ratio

A yellow rectangular button with a green checkmark icon on the left and the word 'Submit' in black text on the right.



Lessons learnt and final comments

Lessons learnt from developing the online course

- 1) Development of a new online course can be a significant undertaking – it is important that adequate time and resources are available, including sharing development of teaching material over several authors
- 2) Partnering with a professional organization that has the supporting e-learning platform allows the academic partner to concentrate on the development of the teaching and assessment material
- 3) Development of a course oriented towards business but designed for technical specialists (i.e. engineers) needs to blend business management theory and frameworks with technological areas and an overall engineering context
- 4) Design of an online course can benefit from using different types of content, e.g. written text, audio commentary, exercises, quizzes, reading tasks as well as video content
- 5) In order to reinforce learning of specific points there should be regular formative assessment in the form of exercises throughout the online course. This can be balanced with summative assessment at the end of units and the entire course

Final comments and concluding remarks

- This seminar has described the development of the 'Entrepreneurial Skills for Engineers' online course, which was developed by LSBU in partnership with the IET
- The development project was an intensive initiative that required detailed planning, lots of team working and a close relationship between the content provider (university) and course provider (professional society)
- Various insights and lessons learnt have been provided in terms of the course design, structure and technical content, learning approach, formative and summative assessment
- Hopefully the seminar will be of use to practitioners looking to develop online programmes designed to provide innovation, entrepreneurship and intrapreneurship related skills and knowledge

Acknowledgements

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Grateful acknowledgement is made to the Institution of Engineering and Technology (IET), which partnered with LSBU on development of the online course as part of the IET Academy. Specifically thanking Rachel Gregory, Alex Strang and Grace Phelps from the IET for their help and support

