COURSE OUTLINE

ENG604 Engineering Innovation and Entrepreneurship

School: School of Science, Technology and Engineering

2027 | Trimester 2

UniSC Moreton Bay	BLENDED LEARNING	Most of your course is on campus but you may be able to do some components of this course online.
Online	ONLINE	You can do this course without coming onto campus, unless your program has specified a mandatory onsite requirement.

Please go to unisc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course explores the creation and commercialisation of new engineering concepts. Students will start practicing the theories of creative and idea generation, as applied to a project. Students will then practice the business skills and tools required to lead and launch an engineering venture. Teams will work as small startups, but the course will also examine the role of innovation in large organisations.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Asynchronous weekly learning material	10hrs	Week 1	12 times
Tutorial/Workshop 1 – On campus	2hrs	Week 1	10 times
Seminar – On campus	1hr	Week 1	3 times
ONLINE			
Learning materials – Asynchronous weekly learning material	10hrs	Week 1	12 times
Tutorial/Workshop 1 – Online	2hrs	Week 1	10 times
Seminar – Online	1hr	Week 1	3 times

1.3. Course Topics

Topics may include:

- Creative problem solving tools and idea generation methodologies.
- Product and technology strategy.
- Innovation management.
- Customer and segment identification.
- Marketing Plan development.
- Financial planning.
- Business plan formulation.

2. What level is this course?

600 Level (Specialised)

Demonstrating a specialised body of knowledge and set of skills for professional practice or further learning. Advanced application of knowledge and skills in unfamiliar contexts.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...	GRADUATE QUALITIES MAPPING Completing these tasks successfully will contribute to you becoming...	PROFESSIONAL STANDARD MAPPING * Engineers Australia Stage 1 Professional Engineer Competency Standards
1 Generate concepts in response to an articulated engineering problem using a range of appropriate innovation tools.	Creative and critical thinker Organisation	2.1.e, 2.1.f, 2.3.a, 2.3.c, 3.3.a, 3.3.b, 3.3.c
2 Formulate customer requirements leading into a marketing plan to identify targets for technical product commercialisation.	Empowered Applying technologies	1.5.d, 1.6.d, 2.4.b, 2.4.c
3 Analyse engineering financial considerations in support of a financial plan.	Empowered Applying technologies	2.4.b, 2.4.c
4 Integrate all required parts into a full concept Business Plan, such as concept description and management team.	Empowered Organisation	2.4.b, 2.4.c, 2.4.d, 2.4.e
5 Apply professional written and presentation communications.	Creative and critical thinker Communication	3.2.a, 3.2.b, 3.2
6 Apply concepts of ethics and sustainability where appropriate.	Ethical	1.6.a, 1.6.c, 1.6.e, 2.4.f

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1.5.d	Knowledge and Skill Base - Knowledge of engineering design practice and contextual factors impacting the engineering discipline: Is aware of the founding principles of human factors relevant to the engineering discipline.
1.6.d	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Understands the fundamental principles of engineering project management as a basis for planning, organising and managing resources.
1.6.a	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Appreciates the basis and relevance of standards and codes of practice, as well as legislative and statutory requirements applicable to the engineering discipline.
1.6.c	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Appreciates the social, environmental and economic principles of sustainable engineering practice.
1.6.e	Knowledge and Skill Base - Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline: Appreciates the formal structures and methodologies of systems engineering as a holistic basis for managing complexity and sustainability in engineering practice.

CODE	COMPETENCY
2.1.e	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Partitions problems, processes or systems into manageable elements for the purposes of analysis, modelling or design and then re-combines to form a whole, with the integrity and performance of the overall system as the paramount consideration.
2.1.f	Engineering Application Ability - Application of established engineering methods to complex engineering problem solving: Conceptualises alternative engineering approaches and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.
2.3.a	Engineering Application Ability - Application of systematic engineering synthesis and design processes: Proficiently applies technical knowledge and open ended problem solving skills as well as appropriate tools and resources to design components, elements, systems, plant, facilities and/or processes to satisfy user requirements.
2.3.c	Engineering Application Ability - Application of systematic engineering synthesis and design processes: Executes and leads a whole systems design cycle approach.
2.4.b	Engineering Application Ability - Application of systematic approaches to the conduct and management of engineering projects: Seeks out the requirements and associated resources and realistically assesses the scope, dimensions, scale of effort and indicative costs of a complex engineering project.
2.4.c	Engineering Application Ability - Application of systematic approaches to the conduct and management of engineering projects: Accommodates relevant contextual issues into all phases of engineering project work, including the fundamentals of business planning and financial management
2.4.d	Engineering Application Ability - Application of systematic approaches to the conduct and management of engineering projects: Proficiently applies basic systems engineering and/or project management tools and processes to the planning and execution of project work, targeting the delivery of a significant outcome to a professional standard.
2.4.e	Engineering Application Ability - Application of systematic approaches to the conduct and management of engineering projects: Is aware of the need to plan and quantify performance over the full life-cycle of a project, managing engineering performance within the overall implementation context.
2.4.f	Engineering Application Ability - Application of systematic approaches to the conduct and management of engineering projects: Demonstrates commitment to sustainable engineering practices and the achievement of sustainable outcomes in all facets of engineering project work.
3.3.a	Professional and Personal Attributes - Creative, innovative and pro-active demeanour: Applies creative approaches to identify and develop alternative concepts, solutions and procedures, appropriately challenges engineering practices from technical and non-technical viewpoints; identifies new technological opportunities.
3.3.b	Professional and Personal Attributes - Creative, innovative and pro-active demeanour: Seeks out new developments in the engineering discipline and specialisations and applies fundamental knowledge and systematic processes to evaluate and report potential.
3.3.c	Professional and Personal Attributes - Creative, innovative and pro-active demeanour: Is aware of broader fields of science, engineering, technology and commerce from which new ideas and interfaces may be drawn and readily engages with professionals from these fields to exchange ideas.
3.2.a	Professional and Personal Attributes - Effective oral and written communication in professional and lay domains: Is proficient in listening, speaking, reading and writing English.
3.2.b	Professional and Personal Attributes - Effective oral and written communication in professional and lay domains: Prepares high quality engineering documents such as progress and project reports, reports of investigations and feasibility studies, proposals, specifications, design records, drawings, technical descriptions and presentations pertinent to the engineering discipline.
3.2	Professional and Personal Attributes: Effective oral and written communication in professional and lay domains.

5. Am I eligible to enrol in this course?

Refer to the UniSC Glossary of terms for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

Enrolled in Program MC010

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

5.5. Microcredential Information

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

The first assessment is in Week 3, providing feedback and instructor expectations by Week 4-5.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Report	Individual or Group	20%	1000 words.	Week 3	Online Assignment Submission with plagiarism check
All	2	Report	Individual or Group	20%	1500 words.	Week 6	Online Assignment Submission with plagiarism check
All	3	Report	Individual or Group	20%	1500 words.	Week 9	Online Assignment Submission with plagiarism check
All	4	Report	Individual or Group	40%	3000 words and a 15 minute presentation.	Week 12	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Concept Development

GOAL:	Apply a variety of creative problem solving and concept generation tools to generate concepts, then use discrimination tools to select a single concept to carry forward through the course.
PRODUCT:	Report
FORMAT:	Written report.
CRITERIA:	

No.		Learning Outcome assessed
1	Detail the challenge being solved and the objectives of the concept.	1
2	Generate a range of concepts using the methods learned in class.	1
3	Discriminate a single concept to develop further, applying objective tools and reasoning.	1 5

GENERIC SKILLS:	Communication, Problem solving, Applying technologies

All - Assessment Task 2: Marketing Plan

GOAL:	Develop a Marketing Plan for the concept selected in Assessment 1, that will frame the commercialisation plans to follow.
PRODUCT:	Report
FORMAT:	Written report.
CRITERIA:	

No.		Learning Outcome assessed
1	Describe the business model for commercialisation of the concept from Assessment 1.	2 5
2	Describe the customer, market, and segments for the concept and their respective requirements.	2 5
3	Develop the Marketing Plan for the concept, using the tools described in class.	2 5

GENERIC SKILLS:	Communication, Problem solving, Applying technologies

All - Assessment Task 3: Financial Plan

GOAL:	Develop the Financial Plan of the ongoing concept that is being commercialised. This will build on the marketing plan and lead into the final Business Plan for the concept.
PRODUCT:	Report
FORMAT:	Written report.
CRITERIA:	

No.		Learning Outcome assessed
1	Analyse the complete costs to develop the concept.	3 5
2	Determine the EOU, profits, and breakeven for the concept.	3 5
3	Communicate the Financial Plan for the concept, using the tools learned in the course.	3 5

GENERIC SKILLS:	Communication, Problem solving, Applying technologies

All - Assessment Task 4: Business Plan

GOAL:	Develop the final Business Plan and Pitch Presentation for the concept developed throughout the course, building on the Marketing Plan, Finance Plan, and other requirements learned in the course.
PRODUCT:	Report
FORMAT:	Written report and presentation.
CRITERIA:	

No.		Learning Outcome assessed
1	Develop the Marketing Plan and Financial Plan into a final coherent proposal.	4 5 6
2	Develop all standard and required sections of a Business Plan, fully planning the commercialisation of the concept developed throughout the course.	4 5 6
3	Deliver a final Pitch Presentation for the concept developed throughout the course.	4 5 6

GENERIC SKILLS:	Communication, Problem solving, Applying technologies

6.4. Assessment to competency mapping

PROGRAMME DELIVERY MODE	ASSESSMENT TYPE	TITLE	COMPETENCY	TEACHING METHODS
ENGINEERS AUSTRALIA 2020 STAGE 1 COMPETENCY STANDARDS FOR PROFESSIONAL ENGINEERS				
All delivery modes	Report	Concept Development	2.1.c	Taught, Practiced, Assessed
			2.1.d	Taught, Practiced, Assessed
		Marketing Plan	1.5.e	Taught, Practiced, Assessed
		Financial Plan	1.5.e	Taught, Practiced, Assessed
		Business Plan	1.5.a	Taught, Practiced, Assessed
			1.5.b	Taught, Practiced, Assessed
			1.5.d	Taught, Practiced, Assessed
			1.5.e	Taught, Practiced, Assessed
			1.5.f	Taught, Practiced, Assessed
			1.6.c	Taught, Practiced, Assessed
			1.6.d	Taught, Practiced, Assessed

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

There are no required/recommended resources for this course.

8.2. Specific requirements

Not applicable

9. How are risks managed in this course?

Health and safety risks for this course have been assessed as low. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the online induction training for students, and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.5. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The Student Charter sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central