Course Title: Introduction to Engineering Design

Part B: Course Detail

The following link provides important information on the topics below:

- Academic integrity
- Academic progress
- Appeals
- Assessment adjustments (extensions, special consideration, equitable assessment arrangements)
- Award levels
- Grades
- Student feedback

Teaching Period: OFFSe22023

Class Number: All

Class Section: All

For flexible terms and optional semesters, a Part B course guide may have been published for the entire teaching period, or for the specific class number in which you are enrolled. If there is no Part B course guide published for your specific class number, please refer to the guide for the teaching period in which you are enrolled. Enrolment Online is the definitive source for details regarding your class enrolment.

Course Code: OENG1277

Course Title: Introduction to Engineering Design

School: 172H School of Engineering

Career: Undergraduate

Campus: Birla Inst of Tech&Sci, Pilani

Learning Mode: Face-to-Face

Primary Learning Mode:

This course will be delivered in a blended learning mode, including pre-recorded online lectures, timetabled online lectorials and face-to-face computer laboratory, and project-based assessment task designed to encourage further learning.

Credit Points: 12.00

Teacher Guided Hours: 48 per semester

Learner Directed Hours: 72 per semester

Offering Coordinator: Associate Professor Abhijit Date

Offering Coordinator Phone: +61 3 9925 0612

Offering Coordinator Email: abhijit.date@rmit.edu.au

Offering Coordinator Location: B251.02.029

Offering Coordinator Availability: By prior appointment, between 9am to 5pm Australian Eastern Standard time

Additional Staff Contact Details

Pre-requisite Courses and Assumed Knowledge and Capabilities

None

Course Description

This course provides students with a foundation in engineering design practice and prepares them for discipline-specific advanced courses in engineering design. Students will gain experience in the use of digital design techniques and management of larger open-ended, team-based engineering design tasks in a project-based learning environment. Students will learn to create detailed design of real world products and systems by applying design thinking and scientific principles. Students will learn a range of design techniques to contextualize, evaluate, and communicate designs, from generating ideas via sketching to development of digital models and detailed technical drawings that meet the Australian and international standards. Students will develop foundation skills in computer-aided design (CAD) techniques to generate 3D models of products and assemblies and learn to integrate them in augmented and virtual reality tools.

Objectives/Learning Outcomes/Capability Development:

This course contributes to Program Learning Outcomes (PLOs) for:

PLO 2: Utilise mathematics and engineering fundamentals, software, tools and techniques to design engineering systems for complex engineering challenges.

PLO 4: Apply systematic problem solving, design methods and information and project management to propose and implement creative and sustainable solutions with intellectual independence and cultural sensitivity.

PLO 5: Communicate respectfully and effectively with diverse audiences, employing a range of communication methods, practising professional and ethical conduct.

For more information on the program learning outcomes for your program, please see the program guide.

Upon successful completion of this course, you will be able to:

1. Apply key elements of the design process and scientific principles to create detailed design of a product that meets engineering requirements and standards;
2. Generate and interpret engineering technical drawings of parts and assemblies according to engineering design standards; and

3. Use CAD software to generate a computer model of a well-defined part or assembly.

Overview of Learning Activities

You will be actively engaged in a range of learning activities such as lectorials, tutorials, practicals, laboratories, seminars, project work, class discussion, individual and group activities. Delivery may be face to face, online or a mix of both.

You are encouraged to be proactive and self-directed in your learning, asking questions of your lecturer and/or peers and seeking out information as required, especially from the numerous sources available through the RMIT library, and through links and material specific to this course that is available through myRMIT Studies Course.

Details of Learning Activities

Pre-recorded lecture videos will introduce you to concepts and theory.

Lectorials will be used to review theory and clear any doubts that you may have about the theory.

Practical/Tutorial/Computer lab activities will be used to practice engineering design and drawing concepts and practice CAD software skills.

Teaching Schedule

Week	Topic	Assessments
Week 1	Course overview and Academic integrity	
Week 2	Engineering Design process	
Week 3	Introduction to Engineering Drawing	Assessment Task (AT) 1 – Online Quiz (3%) Due: Weekly during the computer lab
Week 4	Introduction to Orthogonal Projection – Part 1	AT 1 - Online Quiz (3%) Due: Weekly during the computer lab
Week 5	Introduction to Orthogonal Projection – Part 2	AT 1 - Online Quiz (3%)

		Due: Weekly during the computer lab
Week 6	Projections of lines, points, planes, and objects (solids)	AT 1 - Online Quiz (3%) Due: Weekly during the computer lab
Week 7	Dimensioning and Tolerancing	AT 1 - Online Quiz (3%) Due: Weekly during the computer lab
Week 8	No Lecture (Class test)	Assessment Task 2 - 20% - This will be in class test.
Week 9	RMIT Non-teaching week	
Week 10	Isometric Projections and 3D CAD	AT 1 - Online Quiz (2.5%) Due: Weekly during the computer lab
Week 11	Introduction to assembly and sectional views	AT 1 - Online Quiz (2.5%) Due: Weekly during the computer lab
Week 12	Manufacturing processes and materials	
Week 13	Project (No lectorial)	Students are meant to work on their project during the lectorial and computer lab time
Week 14	Project (No lectorial)	Students are meant to work on their project during the lectorial and computer lab time
Week 15	Project (No lectorial)	Students are meant to work on their project during the lectorial and computer lab time
Week 16	Project Presentation and final submission	Assessment Task 3 – Project (30%) Due: Week 16
		Assessment Task 4 - End of semester exam (30%)

			Due date will be announced during the semester.

Learning Resources

References

Engineering drawing Parthasarathy, N. S., author.; Murali, Vela, author. 2015,	9780199455393
A first course in engineering drawing Rathnam, K.	9789811053580
Engineering Drawing and Design, 6th Edition David A Madsen	9780357699706

Overview of Assessment

This course has no hurdle requirements.

Assessment Tasks

Offshore Assessment Schedule:

Assessment Task 1: Lab Quiz
Weighting: 20%
This assessment task supports CLOs: 1 & 2

Assessment Task 2: Class Test
Weighting: 20%
This assessment task supports CLOs 1, 2 & 3

Assessment Task 3: Project/Assignment
Weighting: 30%
This assessment task supports CLOs: 1, 2, & 3

Assessment Task 4: End-of-Semester Examination
Weighting: 30%
This assessment task supports CLOs: 1, 2 & 3

If you have a long-term medical condition and/or disability it may be possible to negotiate to vary aspects of the learning or assessment methods. You can contact the program coordinator or Equitable Learning Services if you would like to find out more.

Assessment Tasks

Offshore Assessment Schedule:

Assessment Task 1: Quizzes/assessment during the practical session

Weighting: 20%

This assessment task supports CLOs: 1 & 2

Description: You will have to solve quizzes/assessment during the practical sessions based on the topic covered in the lecture and practical.

Assessment Task 2: Mid-Sem Exam

Weighting: 20%

This assessment task supports CLOs 1, 2 & 3

Description: Generate and interpret engineering technical drawings of parts.

Nature of Component: Closed Book

Assessment Task 3: Project/Assignment

Weighting: 30%

This assessment task supports CLOs: 1, 2, & 3

Description: Design a part and assembly using engineering design process that meets engineering requirements and standards. Generate and interpret engineering technical drawings of parts and assemblies and use CAD software to generate a computer model of a well-defined part and assembly.

Assessment Task 4: Comprehensive Exam

Weighting: 30%

This assessment task supports CLOs: 1, 2 & 3

Description: This will be the comprehensive exam that will test your knowledge and understanding of all topics. computer model of a well-defined part and assembly.

Nature of Component: Closed Book

Other Relevant Information

Assignments received late and without prior extension approval or special consideration will be penalised by a deduction of 10% of the total score possible per calendar day late for that assessment.