Mechanical and Manufacturing Engineering

Course Outlines

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2. Operational environment, including orbits, orbital manoeuvres, interplanetary transfers as well as the thermal, structural, and electromagnetic environment.
3. The hardware implementation of the space segment, incorporating the payload types and satellite support subsystems.
4. The design, integration and testing procedures used in developing the space segment.

Examples of current and past space missions are used to illustrate the design process and design implementation associated with the space segment of the mission. Where appropriate, theory associated with the preliminary analysis of the operation and performance of the space segment is also presented. This course delivers to the student a broad overview of the engineering principles involved with the design, development, testing and implementation of the space segment of a space mission.

The Space Segment course is a Core

4. Teaching strategies

The course material will be taught through a combination of in-class lectures, text book content, and research articles. The lectures will focus on presentation of the core content of the course, while supplementary reading material will be used to highlight the current trends in spacecraft systems design. A team project, which involves designing of spacecraft system(s), will help students learn the basics of spacecraft design methodology.

Students are expected to prepare for the lecture in advance, as the sections of the textbook to be read will be available prior to each lecture. The lecture slides will build upon the framework provided by the text, but they will also contain additional material. Both the textbook and lecture slides together constitute examinable material. Additionally, students will be encouraged to read research articles (and discuss them) in order to learn about the present state of spacecraft systems design. This material will ***not*** be included in the exams and is purely intended to help students learn about the present and the future of spacecraft systems design.

5. [illegible]

Week	Topic	Suggested Readings
1	Course introduction, a historical overview of space flight; Anatomy of spacecrafts and their missions.	Notes provided Space Vehicle Design, Ch. 1, 2 O

Week	Topic	Suggested Readings
7	Spacecraft thermal systems and atmospheric reentry; Telemetry, tracking and command systems	Space Vehicle Design, Ch. 6 & 9 Spacecraft Systems Engineering, ch. 13
8	Spacecraft power systems; Command and da8.371 058.0843 EMC /P AMCl	

6. Assessment

Assessment overview

Assessment	Group Project?	If Group, # Students per group	Length	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Deadline for absolute fail	Marks returned
Mid-Semester Exam	No	N/A	2 Hours	30%	1, 2, and 3	Course content from Weeks 1 through 5	Week 6, in class	N/A	Week 8
Team Project	Yes	5	15 20 pages report + 5 minute presentation from each group	15% (Report: 10% Presentation: 5%)	1, 2, 3, and 4	All course content	Week 10, in class	N/A	Upon release of final results
Assignments	No	N/A	Less than 10 pages of content	15%					

the respective research journal.

This course has a website on Moodle which includes lecture notes, lecture recordings and a discussion forum.

UNSW Library website: https://www.library.unsw.edu.au/
Moodle: https://moodle.telt.unsw.edu.au/login/index.php

8. Course evaluation and development

Feedback on the course is gathered periodically using various means, including the UNSW myExperience
Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

In this course, recent improvements resulting from student feedback include changes to lecture topics, and inclusion of more guest lecturers to speak about their field of expertise.

9. Academic honesty and plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit: student.unsw.edu.au/plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, dra

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis) even suspension from the university. The Student Misconduct Procedures are available here:
www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Further information on School policy and procedures in the event of plagiarism is available on the intranet.

Appendix A: Engineers Australia (EA) Competencies

Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals