AERO9610

The Space Segment

Contents

Staff contact details

Contact details and consultation times for course convenor

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Consultation will primarily take place during or after lectures. Please contact me by Moodle or email if you require further consultation.

Contact details and consultation times for additional lecturers/demonstrators/lab staff

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Please see the course Moodle.

2.

Engineering Science . Space Systems Engineering program (ELECTS8338).

The course is also available as a 4th year disciplinary elective within a Bachelor of Engineering.

There are no prerequisite courses leading into this course; however, it is expected that enrolling students will have the third stage of a Bachelor of Engineering from a related discipline (Electrical, Mechanical, Aerospace, Surveying, Computer Science) or equivalent and have prior undergraduate learning in Mechanics, Mathematics and Physics.

Student learning outcomes

This course is designed to address the learning outcomes below and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A.

After successfully completing this course, you should be able to:

Learning Outcome		EA Stage 1 Competencies
1.	Discuss and apply space systems engineering methodology and design methods to the space segment	1.1, 1.5, 1.6, 2.3, 2.4, 3.2
2.	Assess the impact of the space environment on spacecraft and space mission design	1.1, 2.3, 3.3
3.	Select and design space power systems, telecommunication links and systems, structures, propulsion systems, attitude determination and control systems and thermal control systems for a space mission	1.2, 1.5, 2.1, 3.3
4.	Have a thorough understanding of the different subsystems that make up a spacecraft, and how they function and interact with customer requirements in each stage of development	

5.

Week	Topic	Location	Suggested Readings
1	Introduction, design process, systems engineering	Michael Hintze Thea	

Assignments

The main assessment in this course is an assignment. You will be given a current space mission to analyse, based on the material taught in class about each subsystem. To support student learning, the assignment will have three deliverables: a proposal, a draft, and the final report.

In the **assignment proposal**, you will lay out your plan for the assignment analysis and present your preliminary research findings about your mission. You should also list the sources of information you will be using. This will go on to form the main part of your final report introduction.

The **assignment draft** will allow you to present your research findings for the subsystems covered so far in the course and receive feedback and suggestions from the demonstrators on your progress and on how to best complete your assignment.

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For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the [̃ɴ[¦{ æzɨ}Á}ÁÑ ÙY ɋÁ[Special Consideration page](#).

7. ███████ esources for students

Textbooks

1. [Elements of Spacecraft Design](#), C. D. Brown.

2. Spacecraft Systems Engineering (4th ed) . Fortescue, Stark and Swinherd

3. Space Vehicle Design (2nd Edition), Griffin, Michael D and French James R, American Institute of Aeronautics and Astronautics

All three books are available at the UNSW library and UNSW book shop (in limited quantity) æ̦åæ̂^æ̦◆[Áæç̦æ̦æ̦æ̦|^Á[¦Å[¸}|[æå̦Á̃ÁÚÖØÁ[¦{ æeÅ¦[{ Áĉ@ÁÑ ÙY Á̃Šæ̦æ̂ˆɋ̦Á̦^à̦æ̂^È UNSW Library website: https://www.library.unsw.edu.au/

Another great resource is [Space Mission Analysis and Design](#), J.R. Wertz and W.J. Larson (affectionately known as SMAD), available in the library and online.

Handouts will be provided for any subjects covered in the classes which are not taken from the course texts. You are recommended to take your own notes or annotate your own copy of the course text and your handouts.

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

Moodle: https://moodle.telt.unsw.edu.au/login/index.php

8. ███████████████████████████████

Feedback on the course is gathered periodically using various means, including the UNSW myExperience]¦[&^••Ẽ̃ɨ[¦{ æ̦Å̃ã̃&ˇ••ɨ}Å̃ɉĉ@Á̃ɉæ̦̦æ•Á[¦ĉ@Á̦[ˇ¦•^Ẽæ̦ åĉ@ÁÙ&@[[ɋÁ 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 provision of more feedback to students throughout the course.

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*