AERO4110

Aerospace Design 2

Term Two // 2021

School of Mechanical and Manufacturing Engineering // UNSW Engineering

(+61 2) 9385 4097 – School Office**

Course Details

Credit Points 6

Summary of the Course

This course is a capstone aerospace design project. In design teams, students develop a preliminary design of an aircraft to meet a given request for proposal. The course aims to give a holistic approach to the aerospace design process. Students are required to consider the requirements of several disciplines including conceptual design, configuration, weights, sizing, payload, aerodynamics, propulsion, structures, systems, stability and control, performance, and cost. The course will give students the opportunity to integrate these elements into a single congruous design of an aircraft. Teamwork, report writing, and presentation skills are a focus to develop important professional skills for industry.

Course Aims

This course is a capstone aerospace design project. In design teams, students develop a preliminary design of an aircraft to meet a given request for proposal. The course aims to give a holistic approach to the aerospace design process. Students are required to consider the requirements of several disciplines including conceptual design, configuration, weights, sizing, payload, aerodynamics, propulsion, structures, systems, stability and control, performance, and cost. The course will give students the opportunity to integrate these elements into a single congruous design of an aircraft. Teamwork, report writing, and presentation skills are a focus to develop important professional skills for industry.

Course Learning Outcomes

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

Learning Outcome	EA Stage 1 Competencies
1. Produce a preliminary aircraft design to meet request for proposal and regulatory requirements.	PE1.5, PE2.1, PE2.3, PE3.3
2. Apply aerospace cross-disciplinary principles appropriately for a congruous design.	PE1.3, PE1.4, PE2.3, PE3.4
3. Cooperatively manage and contribute to an engineering team.	PE1.6, PE2.4, PE3.5, PE3.6
4. Professionally communicate design concepts and information.	PE3.2, PE3.3

Teaching Strategies

This course is a capstone aerospace design project to meet a given request for proposal. Students will address the design challenge in teams. Lectures will introduce the design project and briefly outline some of the required areas for design. Detailed technical information relevant to each team's design should be sought outside of class from appropriate engineering sources to make and justify design decisions. Studio classes will include weekly design meetings for each team, plus general time for teams to work together on their projects with teaching staff support. Teamwork is central to this course to assist in developing the communication and interpersonal skills critical for industry. The final designs will be

presented to the class and peers to improve professional communication.

Additional Course Information

Prerequisites

AERO3110 Aerospace Design 1

Assumed Knowledge

Students are expected to have a sound understanding of aerospace regulations, aerodynamics, flight performance, propulsion, structural design and analysis, materials, flight dynamics, and aerospace systems prior to attempting this course.

Platforms and Communication

Assessment

Weekly design meetings must be documented with minutes. Minutes should be uploaded in a timely manner to a folder located in the Files tab of the Meetings channel in your designated Microsoft Teams team.

Assessment Tasks

Assessment task	Weight	Due Date	Student Learning Outcomes Assessed
Progress Design Reports (2) (Team)	30%	See below	1, 2, 3, 4
Final Design Report (Team)	50%	19/08/2021 04:00 PM	1, 2, 3, 4
Presentation (Team)	20%	04/08/2021 10:00 AM	3, 4

Assessment Details

Assessment 1: Progress Design Reports (2) (Team)

Length: 30 pages maximum (per Progress Report)

Details:

Two Progress Reports regarding the aerospace design project - Teamwork.

Progress Report 1 (15%) - Due *//83.nk Kmlb_w Ucci 2*

Progress Report 2 (15%) - Due *//83.nk Kmlb_w Ucci 6*

Submission via Moodle.
Deadline for absolute fail: Three (3) days after relevant due date.
Marks returned two weeks after submission.

Additional details:

Maximum page numbers exclude front matter, references, and appendices.

Marking:

by the required deadline for any assessment will result in an individual penalty of 10% of the maximum mark possible for the assessment.

Assessment 2: Final Design Report (Team)

Details:

Final Report regarding the aerospace design project - Teamwork.

Submission via Moodle.
Deadline for absolute fail: Five (5) days after relevant due date.
Marks returned with release of final results.

Additional details:

Maximum page numbers exclude front matter, references, and appendices.

Marking:

The team assessment mark will be moderated by academic review and peer evaluation to give an individual mark for the assessment.

For each assessment, an individual statement of claim of contributions must be submitted electronically by the assessment due date. Failure to submit an individual statement of claim for any assessment will result in an individual penalty of 10% of the maximum mark possible for the assessment.

For each assessment, a peer evaluation must be completed electronically. Peer evaluations for the Final Design Report must be completed by 4:00pm Tuesday August 24th. Failure to complete the peer evaluation by the required deadline for any assessment will result in an individual penalty of 10% of the maximum mark possible for the assessment.

Assessment 3: Presentation (Team)

Details:

Team presentation, brochure and model.

Deadline for absolute fail: N/A
Marks returned with release of final results.

Additional details:

Presentations will commence at 10am on Wednesday of Week 10. Presentation slides, and a soft copy of your brochure, must be submitted electronically via Moodle.

Each team is required to produce a scale model of their final aircraft. For 2021 Term 2, your team can decide if you manufacture and submit your model physically yourselves (by 10am on Tuesday of Week 10); or have the UNSW MakerSpace team support model manufacture (manufactured by 3D printing)

required must be submitted to the MakerSpace by 10am on Wednesday of Week 9.

Marking:

The team mark will be moderated by academic review and peer evaluation to give an individual mark for each assessment.

For each assessment, an individual statement of claim of contributions must be submitted electronically by the assessment due date. Failure to submit an individual statement of claim for any assessment will result in an individual penalty of 10% of the maximum mark possible for the assessment.

For each assessment, a peer evaluation must be completed electronically. Peer evaluations must be completed within one week following the assessment due date. Failure to complete the peer evaluation by the required deadline for any assessment will result in an individual penalty of 10% of the maximum mark possible for the assessment.

Attendance Requirements

Attendance is required at all online studio classes via Microsoft Teams. If your absence equates to more than 20% of studio classes, you may fail the course, or be denied special consideration.
You must be available for all assessments. Your Design Presentations will be held online on Wednesday, August 4th from 10-11am, you must be present for the entire event.

Course Schedule

View class timetable

Timetable

Date	Type	Content
Week 1: 31 May - 4 June	Lecture	A: Introduction and RFPs B: Design Pro

A: Introduction and RFPs

A: Introduction and RFPs

Resources

Prescribed Resources

Submission of Assessment Tasks

Assessment submission and marking criteria

Should the course have any non-electronic assessment submission, these should have a standard School cover sheet.

All submissions are expected to be neat and clearly set out. Your results are the pinnacle of all your hard work and should be treated with due respect. Presenting results clearly gives the marker the best chance of understanding your method; even if the numerical results are incorrect.

assessment performance, you are eligible to apply for Special Consideration prior to submitting an assessment or sitting an exam.

UNSW now has a Fit to Sit / Submit rule, which means that if you attempt an exam or submit a piece of assessment, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

Please note that students will not be required to provide any documentary evidence to support absences from any classes missed because of COVID-19 public health measures such as isolation. UNSW will not be insisting on medical certificates from anyone deemed to be a positive case, or when they have recovered. Such certificates are difficult to obtain and put an unnecessary strain on students and medical staff.

Applications for special consideration will be required for assessment and participation absences – but no documentary evidence for COVID 19 illness or isolation will be required.

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. *Nj_eg_pgqk _r SLQU gq bcdglcb _q sqgle rfc umpbq mp gbc_q md mrfcpq _lb n_qqgle rfck mdd _q wmsp mul,*

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, drafting and the proper referencing of sources in preparing all assessment tasks.

If plagiarism is found in your work when you are in first year, your lecturer will offer you assistance to improve your academic skills. They may ask you to look at some online resources, attend the Learning Centre, or sometimes resubmit your work with the problem fixed. However more serious instances in first year, such as stealing another student's work or paying someone to do your work, may be investigated under the Student Misconduct Procedures.

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

Academic Information

Credit points

Course credit is calculated in Units-Of-Credit (UOC). The normal workload expectation for one UOC is approximately 25 hours per term. This includes class contact hours, private study, other learning activities, preparation and time spent on all assessable work.

Most coursework courses at UNSW are 6 UOC and involve an estimated 150 hours to complete, for both regular and intensive terms. Each course includes a prescribed number of hours per week (h/w) of scheduled face-to-face and/or online contact. Any additional time beyond the prescribed contact hours should be spent in making sure that you understand the lecture material, completing the set assignments, further reading, and revising for any examinations.

On-campus class attendance

Public distancing conditions must be followed for all face-to-face classes. To ensure this, only students enrolled in those classes will be allowed in the room. No over-enrolment is allowed in face-to-face classes. Students enrolled in online classes can swap their enrolment from online to a limited number of on-campus classes by Sunday, Week 1. Please refer to your course's Microsoft Teams and Moodle sites for more information about class attendance for in-person and online class sections/activities.

Appendix: Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes	