Contents

Contact hours

	Day	Time	Location
Lectures	Monday	1500 1700	Ainsworth 102
Studio	Tuesday	1000 1200	Ainsworth 102
Catia	Tuesday	1200 1300	Ainsworth 204

Summary of the course

The course will provide the student with an understanding of the aerospace design process.

Aims of the course

The course builds on the principles taught in the science based classes and provides insight into the application of aeronautical engineering knowledge in a practical industrial environment. Students are shown methods used by practicing engineers in the design process and assisted in developing engineering judgement that will be useful to them throughout their careers. They are also introduced to the tools and data sources used by a modern practicing aerospace designer.

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.	Carry out a simple aerospace detail design	PE 1.5 PE 2.3 PE 3.2 PE 3.3
2.	Understand how aerospace structures, flight dynamics, propulsion and systems interact with the design process	PE 1.3 PE 3.2 PE3.3
3.	Have a very basic ability to use CATIA, the design computer program that dominates the industry	PE 1.5 PE 2.2
4.	An ability to seek out sources if design data and evaluate their reliability and relationship to the safety regulators	PE 1.6 PE 3.1

3. Teaching strategies

A number of teaching strategies are adopted in the teaching of this course. Each week there are three hours of lectures shared by academics with expertise in flight dynamics\propulsion, aerostructures, regulations and aerosystems. The aim of these lectures is to assist in the understanding of how the theoretical work undertaken on the course relates to the design of aerospace vehicles.

Two hours a week are spent in a studio environment. The aim of this time is to cultivate creative skills by undertaking a number of simple structural design tasks under supervision. This approach is adapted from the teaching methods developed for architectural students. A further hour is allocated in the computer lab for learning CATIA. This is taught by direct hands on practice where exercises are provided which when complete allow the required standard to be achieved. The undertaking of these tasks is entirely voluntary but there is a strong correlation that those who ignore this opportunity do poorly at the CATIA assignment. During this period the students will also be able to attend a demonstration of modern simulation in small groups if they wish.

4. Course schedule

Topic	Date	Location	Lecture Content	Demonstration/Lab Content	Suggested Readings
Flt.Dyn. and Prop.	Wk. 1-12	Mech.Eng. 102	Design implications	N/A	As required
Systems	Wk 1-7	Mech.En 0 1			

5 [redacted]

Assignments

Assessment	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Marks returned
Aircraft assessment	10%	2, 4	Research and assessment of material in public domain	Mon Wk 5, 1500	By Wk.7
Flight systems	20%	1, 2, 4	A detailed design project	Mon Wk 9	By Wk 12
CATIA	20%	3, 4	Electronically submitted exercise showing understanding of capabilities	Tues Wk 13, 1700	On Request

Class test

Assessment	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Marks returned
Flight mechanics/propulsio re					

6 resources for students

You will be expected to access and reference a number of texts throughout the course of this subject.

Appendix A: Engineers Australia (EA) Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
PE2: Engineering	