



UNSW
AUSTRALIA

Course Outline

Semester 1 2016

Never Stand Still

Engineering Mechanical and Manufacturing Engineering

AERO3660

FLIGHT PERFORMANCE & PROPULSION

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1. Staff Contact Details

Contact details and consultation times for course convenor

Dr John Olsen
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Consultation with me concerning this course will be available at a time to be decided.
Consultation by email should only be used as a last resort as it is clumsy and inefficient.

Others who may be involved in the course

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2. Course details

Credit points:

This is a 6 unit-of-credit (UoC) course, and involves three hours per week (h/w) of face-to-face contact.

The UNSW website states “The normal workload expectations of a student are approximately 25 hours per semester for each UoC, including class contact hours, other learning activities, preparation and time spent on all assessable work. Thus, for a full-time enrolled student, the normal workload, averaged across the 16 weeks of teaching, study and examination periods, is about 37.5 hours per week.”

This means that you should aim to spend about 9 h/w on this course. The additional time should be spent in making sure that you understand the lecture material, completing the set

assignments, further reading, and revising for any examinations. There is no parallel teaching in this course.

Contact hours

Day	Time	Location
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- ✚ To emphasize the fact that the world is not undergoing an energy crisis as energy is always conserved. Instead, the students need to realise that it is the work potential (exergy or availability) of our energy sources that is being degraded.
- ✚ To introduce the analysis of steady-state climb and descent, turning flight and gliding flight and to link this Newtonian approach to energy methods.
- ✚ To introduce take-off and landing analysis.
- ✚ To introduce students to the differences between commercial and military gas turbines. Also to discuss the need to control the engine depending on operating conditions.
- ✚ To introduce students to rocket engine analysis.

Student learning outcomes

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

Learning

4. Course schedule

Week	Concepts
1	The atmosphere, airspeeds, an introduction to lift and drag, straight and level flight.
2	Introduction to gas turbines, net thrust, propulsive & component efficiencies. Internal compressible flows, convergent nozzles, convergent-divergent nozzles, normal and oblique shocks.
3	Breguet range and endurance equations, steady climb and descent. Reciprocating piston engines, air-

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5. Assessment

Assessment overview

Assessment	Length	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Marks returned
Assignment	-	15%	1, 2, 3, 4, 5, 6, 7.	All lecture material up to the date of the assignment.	Tuesday, dam	

Examinations

You must be available for all tests and examinations. Final examinations for each course are held during the University examination periods, which are June for Semester 1 and November for Semester 2.

Provisional Examination timetables are generally published on myUNSW in May for Semester 1 and September for Semester 2

For further information on exams, please see the [Exams](#) section on the intranet.

Recommended internet sites

Be very careful when looking at websites that discuss the thermodynamic aspects of propulsion. The sign conventions used in thermodynamics are not uniform around the world and some of these websites can therefore **strongly mislead students** .

Other resources

If you wish to explore any of the lecture topics in more depth, then other resources are available and assistance may be obtained from the UNSW Library.

One starting point for assistance is: www.library.unsw.edu.au/servicesfor/students.html.

Please be aware of: <http://info.library.unsw.edu.au/web/services/services.html>

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

Further information on School policy and procedures in the event of plagiarism is available on the [intranet](#).

9. Administrative matters

All students are expected to read and be familiar with School guidelines and policies, available on the intranet. In particular, students should be familiar with the following:

- x [Attendance, Participation and Class Etiquette](#)
- x [UNSW Email Address](#)
- x [Computing Facilities](#)
- x [Assessment Matters](#)

