

Mechanical and Manufacturing Engineering

# Course Outline

Semester 2 2017

NAVL3710

SHIP PROPULSION AND MACHINERY

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# 1. Staff contact details

Contact details and consultation times for course convenor



## 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.	Decide on the most-appropriate form of mechanical propulsion for a new vessel and specify the transmission system and auxiliary machinery.	PE1.3, PE1.5, PE2.1, PE2.2, PE2.3
2.	Understanding SOLAS systems and automation.	PE2.1-2.3
3.	Be conversant with a range of ship resistance prediction methods.	PE1.1, PE1.2, PE2.2
4.	Analyse the propulsion power required by way of the resistance or bollard-pull characteristics.	PE1.1, PE1.2, PE2.2
5.	Be competent in the fundamentals of propulsion design: propellers and water jet installations.	PE2.1-2.4
6.	Deciding propeller particulars	PE2.1-2.3
7.	Propeller analysis	PE2.1-2.3

## 3. Teaching strategies

Lectures in the course are designed to cover the terminology and core concepts and theories in the design of propulsion trains, auxiliary machinery, shipbuilding contracts and equipment. They do not simply reiterate the texts, but build on the lecture topics using examples taken directly from industry to show how the theory is applied in practice and the details of when, where and how it should be applied.

## 4. Course schedule

6/10/17			x	Part A - Filters and purifiers
9/10/17	11		x	

## 5. Assessment

Assessment overview: Parts A and B are equally weighted

Part A: Machinery						
No.	Assignment	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Marks return - ed:
1	Terminology	15%	1	Correct identification and usage	Week 5: 24/8/17	2 weeks after submission
2	Gas turbine fuel and air	15%	1	Lecture material from weeks 1 and 4.	Week 7: 7/9/17	2 weeks after submission
3	Main machinery recommendation	15%	1	All course content from weeks 1-8.	Week 9: 21/9/17	2 weeks after submission
4	SOLAS requirements	15%	2	Correct reference to SOLAS requirement.	Week 11: 12/10/17	2 weeks after submission
Exam		40%	1,2	All Part A content.	Examination period: 4-19/11/17	
Part B: Resistance, Powering & Propulsion						
No.	Assignment	Weight	Learning outcomes assessed	Assessment criteria	Due date and submission requirements	Marks return - ed:
1	USNA & Lahtiharju resistance	15%	3	Application of methods	Week 5: 26/8/17	2 weeks after submission
2	Robinson's resistance prediction	15%	3	Application of method	Week 7: 9/9/17	2 weeks after



						submis sion
3	Design charts and polynomials	15%	4,5,6	Correct design procedure requirement	Week 11: 14/10/17	2 weeks after submission
4	Propeller design	15%	5,6,7	Correct design procedure		
Exam		40%	3-7	All Part B content.	Examination period: 4-19/11/17	

## Assignments

### 4

All submissions should have a standard School cover sheet which is available from this course's Moodle page.

Presenting them clearly gives the marker the best chance of understanding your method; even if the numerical results are incorrect.

### 5

Part A: By hard copy in-class.

Part B: By email to [\\_\\_\\_\\_\\_](mailto:_____)

Late submissions will be penalised 5% of the available marks per calendar day (including weekends). An extension may only be granted in exceptional circumstances. Where an assessment task is worth less than 20% of the total course mark and you have a compelling reason for being unable to submit your work on time, you must seek approval for an extension from the course convenor before the due date. Special consideration for assessment tasks of 20% or greater must be processed through [student.unsw.edu.au/special-consideration](http://student.unsw.edu.au/special-consideration).

It is always worth submitting late assessment tasks when possible. Completion of the work, even late, may be taken into account in cases of special consideration.

## Examinations

You must be available for all tests and examinations. The final School examination for this Course will be held during the University examination period 4-19 November 2017.

Provisional examination timetables are generally published on myUNSW in September for Semester 2.

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

## **6**

You will need to provide your own calculator, of a make and model approved by UNSW, for the examinations. The list of approved calculators is shown at [student.unsw.edu.au/exam-approved-calculators-and-computers](http://student.unsw.edu.au/exam-approved-calculators-and-computers)

It is your responsibility to ensure that your calculator is of an approved make and model, and to obtain an “Approved” sticker for it from the School Office or the Engineering Student Centre prior to the examination. Calculators not bearing an “Approved” sticker will not be allowed into the examination room.

Special consideration and supplementary assessment

For details of applying for special consideration and conditions for the award of supplementary assessment, see the School [intranet](#), and the information on UNSW’s [Special Consideration page](#).

## **6. Expected resources for student 3.746.72 180 405.72 180 405.72 18**

## General Textbooks

Ghose, J.P. and Gokarn, R.P. (2004), ~~57~~Allied Publishers, New Delhi.

Paulling, J.R. (2010), ~~ENR~~, Society of Naval Architects and Marine Engineers, Jersey City.

Carlton, J.S. (2008), ~~ENR~~ 2nd Ed., Butterworth-Heinemann, London.

O'Brien, T.P. (1962), ~~ENR~~, Hutchison, London.

Paulling, J.R. (Ed.) (2010), ~~ENR~~ Society of Naval Architects and Marine Engineers, Jersey City.

Saunders, H.E. (1957), Hydrodynamics in Ship Design, v.1 and v.2, Society of Naval Architects and Marine Engineers, Jersey City.

Additional materials provided in Moodle

This course has a website on UNSW Moodle which includes:

- x copies of assignments (as they are issued), otherwise issue in-class;
- x previous examination papers in this course from 2010 onwards;
- x answers to the numerical questions in examinations from 2010 onwards; and
- x a discussion forum.

The discussion forum is intended for you to use with other enrolled students. The course convenor will occasionally look at the forum and take note of any frequently-asked questions, but will not respond to questions on the forum. If you want help from the convenor then direct contact is preferred.

Recommended internet sites

There are many websites giving lectures, papers and data on ship terminology and design..

Principal particulars of many different types of vessels are available on the Internet. You might like to try the following for a start:

Austal Ships	<a href="http://www.austal.com">www.austal.com</a>
Incat Crowther	<a href="http://www.incatcrowther.com.au">www.incatcrowther.com.au</a>
Incat Australia	<a href="http://www.incat.com.au">www.incat.com.au</a>
One2Three Naval Architects	<a href="http://www.one2three.com.au">www.one2three.com.au</a>

There are also many websites giving lectures, papers and data on propellers and propeller design. Try searching for propellers, or propeller design.

You can check some of the propeller manufacturers:

[www.veem.com.au](http://www.veem.com.au)

[www.australpropeller.com.au](http://www.australpropeller.com.au)

[www.stonemanganese.co.uk](http://www.stonemanganese.co.uk)

[www.arneson-industries.com/page.php?type=products&id=drives](http://www.arneson-industries.com/page.php?type=products&id=drives)

(for surface-piercing propellers)  
[www.sistemar.com](http://www.sistemar.com) (for CLT propellers)  
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.

UNSW Library website: <https://www.library.unsw.edu.au/>

## 7. Course evaluation and development

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:

# Appendix A: Engineers Australia (EA) Competencies

~~9/15~~