

Course Outline

Semester I 2015

UNSW
Sydney Australia

NAVL4120 and NAVL4130

Ship Design Project A and B

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These attributes will be assessed within the prescribed assessment tasks, as shown in the assessment table on Page 6.

You will be supported in developing the above attributes through:

- (i) the design of academic programs;
- (ii) course planning and documentation;
- (iii) learning and teaching strategies; and
- (iv) assessment strategies.

3. RATIONALE FOR INCLUSION OF CONTENT AND TEACHING APPROACH

This course is included to give you an understanding of how ships are designed by exposing you to the complete design cycle, from the first estimate of dimensions, through the preliminary layout and calculations, and then iterating through to the final layout and analysis, confirming that the proposed vessel meets the requirements of the design brief.

The content, in addition to being directed at the design requirements, reflects the experience of the lecturer in drawing offices, in shipyards, and at sea on various vessels.

Effective learning is supported when you are actively engaged in the learning process and by a climate of enquiry, and these are both an integral part of the lectures and tutorials, and this is encouraged during the literature searches.

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Lectures in the course are designed to cover the next phase of the design assignment schedule, what to look for and how to go about it, and to alert you to pitfalls and traps which you may encounter. This introduces you to how the design process unfolds, and you then know what to expect in industry.

Much of the design project involves self-directed work, both in researching designs of previous similar vessels in the literature, and in working on your own design, as you will be expected to do as a naval architect.

Tutorials are arranged on both a one-to-one basis with the lecturer, and group sessions with the lecturer, to assist in the analysis at each stage of the design process. Designs are discussed as they evolve, and students who have selected the same type of vessel can benefit from the experiences of and information found by others.

5. ASSESSMENT

General

In both NAVL4120 and NAVL4130, you are assessed by way of assignments involving data collection, calculations and descriptive material to test your grasp of the principles involved in the ship design process. The intention is that these assignments involving collecting data, calculations, decisions and reports should reflect the actions which you will be expected to undertake as a graduate naval architect preparing the design documentation for a prospective client.

There is no examination in either of the courses, and assessment is entirely on the basis of assignments. An aggregate mark of 50 is required to pass each course.

Assignments

The set assignments during the semester are shown on the following page. Assignments will be handed out in hard copy in class, and will be available on the Moodle website in case you miss the hand-out in class.

Presentation

A standard specification is available from the School office to aid presentation of your assignments (in all courses). All submissions should have a standard School cover sheet. All submissions are expected to be neat and clearly set out. All calculations should be shown as, in the event of incorrect answers, marks are awarded for method and understanding.

The preferred set-out of any numerical calculation is similar to the following:

| | |
|------------------------|-----------------------|
| $\Delta = \rho \nabla$ | (Equation in symbols) |
| $= 1.025 \times 200$ | (Numbers substituted) |
| $= 205 \text{ t}$ | (Answer with units) |

NAVL4120 Semester 1

| No. | Assignment | Mark | Learning outcomes assessed | Graduate attributes assessed | Due Mon |
|------------|---|-------------|-----------------------------------|-------------------------------------|----------------|
| 1 | Report on data published on vessels relevant to the chosen design brief and | | | | |

Submission

Assignments are due on the scheduled day of the class in the week nominated on the previous page. Assignments should be submitted direct to me in class or at my office by 1700 on the date due, rather than via the assignment boxes.

Late submission of assignments attracts a penalty of ten percent of the total marks awarded for each calendar day the assignment is late. For example, if you received a mark of 40 out of 50 for an assignment that you handed in 2 days late you would receive a penalty of 8 marks and your mark would be reduced to 32. If the same assignment were handed in 4 days late the mark would be reduced to 24. 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 <https://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

Criteria

In general, the assignments comprise collected data, calculations, and/or a drawing, together with a report. The following criteria will be used to grade assignments:

For data collection:

- Comprehensiveness of information.
- Clarity of presentation.
- Neatness.

For drawings:

- Comprehensiveness of information.
- Compliance with drawing standards.
- Clarity of presentation.
- Labelling.
- Neatness.

For numerical calculations:

- Accuracy of numerical answers.
- All working shown (see *Presentation* above).
- Use of diagrams, where appropriate, to support or illustrate the calculations.
- Use of graphs, where appropriate, to support or illustrate the calculations.
- Use of tables, where appropriate, to support or shorten the calculations.
- Neatness.

For reports:

- Identification of key facts and the integration of those facts in a logical development.

- Clarity of communication—this includes development of a clear and orderly structure and the highlighting of core arguments.
- Sentences in clear and plain English—this includes correct grammar, spelling and punctuation.

7. COURSE SCHEDULE

All lectures in this course are given by Mr Phil Helmore.

NAVL4120

Monday 1300–1600

OMB144A

| Week | Topic |
|-------------|---|
| 1 | Introduction, design briefs and data collection |
| 2 | Data collection |
| 3 | Design lanes and basic dimensions |
| 4 | The lines plan and tutorial on Maxsurf in CAD Lab |
| 5 | Tutorial on importing hullforms into AutoCAD in CAD Lab |
| 6 | Student's own time in CAD Lab |
| 7 | The general arrangement drawing |
| 8 | General arrangement details |
| 9 | Student's own time in CAD Lab |
| 10 | Mass estimates and stability criteria |
| 11 | Stability assessment using Hydromax |

Suggested additional readings

Lamb, T. (Ed.) (2003 and 2004), *Ship Design and Construction*, v.1 and 2, Society of Naval Architects and Marine Engineers, Jersey City.

Larsson, L. and Eliasson, R.E. (2007), *Principles of Yacht Design*, 3rd Ed., Adlard Coles Nautical, London.

Claughton, R.E., Wellicome, J.F. and Sheno, A. (Eds), *Sailing Yacht Design: Theory (v.1) and Practice (v.2)*, Longman, London.

Skene, N.L. and Kinney, F.S. (1981), *Skene's Elements of Yacht Design*, 8th Ed., Dodd Mead & Co., New York.

These are all available in the UNSW Library and are useful as additional reading material.

Lamb (2003 and 2004) are text books for other naval architecture courses at UNSW and are also available for purchase from the Society of Naval Architects and Marine Engineers, Jersey City, USA. However, the price to non-members (of any one book) exceeds the member price plus the cost of student membership, so it is advisable to join the Society and order the books at the same time. Please see the course convenor for an application form if you wish to do this.

Additional materials provided in Moodle

This course has a website on Moodle which includes:

- copies of notes (as they are issued, in case you missed the hand-out in class);
- copies of assignments (as they are issued); and
- a discussion forum.

The discussion forum is intended for you to use with other students enrolled in this course. The course convenor will occasionally look at the forum, monitor the language used 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

Internet sites relevant to particular topics will be advised in class.

The NSW Roads and Maritime Services' website

www.maritime.nsw.gov.au/cv/vessel_compliance.html

has a number of spreadsheet applications which are useful for calculating the requirements for

- shafting diameters
- shafting systems (bearing spacing, couplings, etc.)
- rudder and steering gear
- bilge systems

10. ADMINISTRATIVE MATTERS

You are expected to have read and be familiar with *Administrative Matters for All Courses*, available on the School website:

https://www.engineering.unsw.edu.au/mechanical-engineering/sites/mech/files/u41/S1-2015_Admin-Matters.pdf

This document contains important information on student responsibilities and support, including special consideration, assessment, health and safety, and student equity and diversity.

P.J. Helmore
20 February 2015