



UNIVERSITY OF LINCOLN

NAVL4140

Design of Y

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Course Outline

This means that you should aim to spend not less than about 10 h/w on this course, i.e. an additional 4 h/w of your own time. This should be spent in making sure that you understand the lecture material, completing the set assignments, further reading about the course material, and revising and learning for the examination.

There is no parallel teaching in this course.

Summary of the course

Australia is currently doing well at designing yachts and high-speed craft. This course focusses on how these vessels are designed, the materials used, the analyses which are required, and the rules and regulations which are applicable.

Aims of the course

This course enables you to explore the design of high-speed craft from the viewpoint of the practising consultant looking at the rules embodied in the High Speed Craft Code 2000 and how they apply in practice. You are given practical insight into the analysis of the structure, and to the application of hydrodynamic principles to the prediction of resistance and performance.

The course also provides you with the terminology and tools unique to the design of yachts, most of which are now constructed in composites. You are also given the tools to analyse the sail and rig of the yacht, the fin and ballast requirements, the resistance and, hence, the performance of the yacht using a velocity-prediction program.

This course uses the ship terminology which you learned in NAVL3610, and builds on the hydrodynamic principles which you learned in NAVL3620. For those choosing a yacht or high-speed ferry for their design project in NAVL4120 and NAVL4130, this provides a good stepping stone for the final design iteration. The assignments also build on the report-

Graduate attributes

<https://my.unsw.edu.au/student/atoz/GraduateAttributes.html>

UNSW aspires to develop graduates who are rigorous scholars, capable of leadership and professional practice in a global community. The university has, thus, articulated the following Graduate Attributes as desired learning outcomes for ALL UNSW students.

UNSW graduates will be

1. Scholars who are:
 - (a)

(iv) assessment strategies.

3. RATIONALE FOR INCLUSION OF CONTENT AND TEACHING APPROACH

This course is included to give you the skills to generate designs of yachts and high-authorities, and to be able to analyse the principal factors which contribute.

The content reflects the experience of the lecturers in drawing offices, in shipyards, and at sea on various vessels, and practical examples drawn from that experience are used throughout the lectures and tutorials.

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.

You become more engaged in the learning process if you can see the relevance of your studies to professional, disciplinary and/or personal contexts, and the relevance is shown in the lectures and assignments by way of examples drawn from industry.

Dialogue is encouraged between you, others in the class and the lecturers. Diversity of experiences is acknowledged, as some students in each class have prior marine experience. Your experiences are drawn on to illustrate various aspects, and this helps to increase motivation and engagement.

It is expected that assignments will be marked and handed back in the week following submission. You will have feedback and discussion while fresh in your mind to improve the learning experience.

4. TEACHING STRATEGIES

Lectures in the course are designed to cover the terminology and core concepts and theories in the design of yachts and high-speed craft. 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.

The work in the yacht design assignments involves both self-directed work, in being creative in the design of your component, and teamwork, in integrating your component into the overall design.

Tutorials in Parts A and B are designed to provide you with feedback and discussion on the assignments as the design progresses, and to investigate problem areas in greater depth to ensure that you understand the application and can avoid making the same mistake again.

Tutorials in Part C 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 of components are discussed as they evolve, with a view to successful integration of the parts into the whole.

5. ASSESSMENT

General

You will be assessed by way of short assignments and examinations, both of which involve calculations and descriptive material.

The various parts of the course contribute towards the overall grade as follows:

	Part A	Part B	Part C
	HSC Design	HSC Hydrodynamics	Yachts
	C.J. Boulton	R.M. Payne	D.Lyons
h/w	1.5	1.5	3
Assignments	40%	40%	50%
Examination	60%	60%	50%
Total	100%	100%	100%
Scaled	50%	50%	
Part		100%	100%
Scaled		50%	50%
Overall		100%	

In order to pass the course, you must achieve an overall mark of at least 50%.

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.

Part A High Speed Craft Design

Part C

Assignments in Part C will be given out in Week 6, and each is a part of a team project to design a 12 m yacht. You will be expected to undertake one part of the project (i.e. one assignment).

It is expected that each assignment will take about 16 h to complete, including background reading, calculations, drawing (sketch or CAD), and a written overview of about 200 words. These assignments give a practical application of the design methodology, and further practice in written communication skills.

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:

$$\begin{aligned} A_{\text{bow}} &= 0.0035 A m f V && \text{(Equation in symbols)} \\ &= 0.0035 \ 480 \ 0.95 \ 1.0 \end{aligned}$$

Criteria

The following criteria will be used to grade assignments:

For reports:

Identification of key factors

6. ACADEMIC HONESTY AND PLAGIARISM

Plagiarism is using the words or ideas of others and presenting them as your own. 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 booklet which provides essential information for avoiding plagiarism: <https://my.unsw.edu.au/student/academiclife/Plagiarism.pdf>

There is a range of resources to support students to avoid plagiarism. The Learning Centre assists students with understanding academic integrity and how not to

