NAVAL ARCHITECTURE, OCEAN AND MARINE ENGINEERING

Naval Architects, Ocean and Marine Engineers deal with the world’s largest moving structures and most powerful vehicles – from huge ships to sailing yachts, from fast ferries to offshore wind turbines and oil platforms.

The Department of Naval Architecture, Ocean and Marine Engineering (NAOME) offers the following degree courses:

- BEng (Honours)/MEng Naval Architecture & Marine Engineering
- BEng (Honours)/MEng Naval Architecture with Ocean Engineering
- BEng (Honours)/MEng Naval Architecture with High Performance Marine Vehicles

Overview of Courses
The degree programmes are stimulating and challenging and provide a broadly-based engineering education. The balance of emphasis of the course material evolves as you progress through your degree, from fundamental engineering science and core Naval Architecture, Ocean and Marine Engineering subjects, to increasing concentration on topics specific to your chosen course.

The flexible programme structure allows transfer between Naval Architecture degree programmes. Transfer is possible between the Naval Architecture with High Performance Marine Vehicles and Naval Architecture with Ocean Engineering degrees up until the end of Year 2. Transfer to and from the Naval Architecture and Marine Engineering course can take place up until the end of Year 1 (and sometimes later). Suitably qualified students may transfer between the BEng and MEng courses.

A range of realistic design projects is made possible though our strong links with the ship and offshore industries. Transferable skills developed through project work and presentations will give you a wide choice of exciting and rewarding careers.

The Courses
Naval Architecture & Marine Engineering
Marine Engineering is the engineering speciality which addresses the design, construction, installation and operation of machinery and propulsion systems for ships and marine structures.

In addition to core Naval Architecture subjects, you will study a range of specialised Marine Engineering subjects such as control theory and practice, electrical systems, design of marine engines (diesel, diesel-electric and gas turbine), propeller and shafting systems, system design and simulation, green technology and fuel cell technology.

The degrees are accredited by the Royal Institution of Naval Architects (RINA) and the Institute of Marine Engineering, Science & Technology (IMarEST) on behalf of the Engineering Council.
Naval Architecture with Ocean Engineering
Ocean Engineering deals with the technical aspects of fixed and floating marine structures and systems related to harnessing ocean resources. These include offshore oil and gas and the rapidly-expanding area of ocean renewable energy, as well as other ocean resource activities such as subsea mining and aquaculture. The programme is designed to develop engineers who can address the engineering challenges on marine vehicles from giant cruise liners and fast ferries to tidal current turbines and oil platforms.

Naval Architecture with High Performance Marine Vehicles
Marine vessels have developed dramatically in recent years. Lighter, faster, stronger, greener and safer vehicles are being designed and built using advanced materials and technology combined with creative design engineering. This course creates designers with all the core skills of ship design, construction, operation, and maintenance, along with a particular specialisation in the creative design and engineering of high performance leisure and commercial vessels, including sailing and power yachts, fast ferries, hydrofoils, hovercraft, fishing boats and the concept designs of the future.

Course Structure
The degree courses offered by the Department have a flexible credit-based structure. Some of these credits will be elective which you can choose from a wide range of subjects, not only within the Department but also from other Departments and Faculties across the University.

Year 1
You will build the foundations for your specialised skills by studying fundamental engineering science, mathematics, and computing along with introductory classes in naval architecture, marine engineering and marine transportation.

You take part in a group project (typically four to five students) to design, build and test a simple container carrying ship model.

Year 2
Focus changes to the study of specialised Naval Architecture, Ocean and Marine Engineering subjects, such as flotation, stability and safety of ships and marine vehicles, strength of marine structures, properties of materials used in marine structures, manufacturing techniques, and basics of marine machinery and systems.

There is a group project in which you apply your engineering knowledge to design, build and test a radio-controlled sailing yacht.

Year 3
You continue to study core Naval Architecture, Ocean and Marine Engineering subjects, including the resistance (drag) and propulsion of ships, properties of ocean waves, design of marine vehicles, and control of machinery, along with marine business and management. You will also study the first of the specialised modules specific to your chosen degree course.

You also carry out an individual project to produce a preliminary design of a ship, using a traditional approach based on the application of established design rules.
A focused series of laboratory experiments illustrate important phenomena which will help you understand laboratory techniques used in the marine industries.

**Year 4**

One or two modules cover core Naval Architecture subjects, with the main emphasis of the other classes being on your chosen specialism:

- **Marine Engineering** includes marine engineering design, marine transmission & propulsion systems, marine electrical systems, and protection of the marine environment.

- **Ocean Engineering** brings in subjects such as analysis of dynamics of structures subject to wind and wave loading, computer prediction of fluid flow around structures (often known as CFD) and technology and performance of renewable energy systems.

- **High Performance Marine Vehicles** includes subjects such as the prediction of the performance of sailing yachts and powerboats, design of lightweight structures, and the behaviour of high-speed craft.

You can also take part in a team to develop a preliminary design of a sailing yacht or luxury power yacht to a brief supplied by a group of clients.

The remaining 40 credits are devoted to an individual project on a related subject of your choice.

“My course has provided a great foundation on which to build my future career. Making presentations and working in group are great skills to take into the workplace. I took part in the China Summer School and travelled to China to see first-hand how the ship building process works. I also worked as an intern, visiting schools to encourage pupils to choose engineering as a career.”

Emily Lennox
Naval Architecture & Marine Engineering
Year 5 (MEng only)
MEng students can choose from an extensive list of technical and business modules. There is also a substantial and challenging group design project on a subject chosen by agreement between students and staff. Subjects chosen recently include designs of high-speed cargo ships, tidal current energy devices and Americas Cup yachts.

Teaching and Assessment
We believe that a good relationship between staff and students is the most important factor in ensuring that you maximise your potential during your undergraduate studies.

Our top priority is to produce graduates with competence, confidence and communication skills while instilling a professional ethos and an enthusiasm for lifelong learning. We aim to achieve this through a balance of scholarship, innovative teaching and applied research. The performance of our graduates working in the industry has amply justified this policy.

The degree is taught using a carefully chosen blend of approaches. Traditional lecture classes run throughout the programme and are normally assessed through a balance of exam and coursework (sometimes known as continual assessment or assignments). A 20-credit taught class will typically have two lectures and one tutorial per week for two semesters.

Your final mark for a class is a combination of the coursework and exam mark, typically 70 per cent exam and 30 per cent coursework. Past exam papers are usually available as a guide to what to expect. Some specialised classes are assessed purely on the basis of submitted coursework.

Classroom work is put into practice in a carefully structured series of design projects from Year 1 onwards, and by experiment demonstrations in the department’s excellent facilities. A programme of industrial visits illustrates how aspects of your studies can be implemented in the outside world.

The Department
The Department has its own recently refurbished building, with lecture rooms, a computer lab exclusively for NAOME students, project rooms, a hydrodynamics laboratory, a marine engineering laboratory and staff offices. There are full multimedia presentation facilities in all teaching rooms and a wireless network for laptop and palmtop users. Through our Centre for Marine Hydrodynamics, we operate the largest ship-model experiment tank in any UK university.

Our students have exclusive use of the Department’s 33 foot racing yacht, Catalina, based on the Firth of Clyde less than an hour’s travel from the city-centre campus. In order to prepare them for sailing the yacht, we can offer students RYA approved shore-based yachting courses, covering practical subjects such as navigation, weather and safety at sea.
Visits
Applicants are invited to attend a half-day introduction to the Department, which includes an interview. A number of these events are held during the year. Please contact us regarding visits at other times.

Contact
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Find out more ...
visit the University website at www.strath.ac.uk

Careers
Our graduates are always in demand in a wide variety of marine-related organisations worldwide. In addition to engineering and technical activities, many of our graduates are involved in management and commerce. There is a substantial range of opportunities ranging from ship design and technical consultancy, ship safety, shipping, ship operation and management, as well as specialised areas of marine structural design and analysis in the offshore and renewable energy sectors.

BP, Lloyd’s Register Foundation, Babcock Marine, BAE Systems, Technip UK, Maersk Group, SeaTec, Shell, GL Noble Denton and Teekay Shipping are just a few examples of organisations who have recruited our graduates.

the place of useful learning
www.strath.ac.uk
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Information current at August 2015. Please consult the University website for the most up-to-date information. The University of Strathclyde is a charitable body, registered in Scotland, with registration number SC015263.