

THE ROYAL INSTITUTION OF NAVAL ARCHITECTS AUSTRALIAN DIVISION

NAVAL ARCHITECTURE, BOAT, YACHT AND SHIP DESIGN COURSES, SCHOLARSHIPS, PRIZES AND AWARDS FOR STUDENTS

1. NAVAL ARCHITECTURE, DESIGN AND CONSTRUCTION COURSES

1.1 Naval Architecture and Yacht and Boat Design Courses in which Australians may enrol

This paper has been prepared for the Council of the Australian Division of The Royal Institution of Naval Architects (RINA). Its purpose is to provide information on course availability, entry requirements, and the relationship of courses in naval architecture, yacht and boat design and construction.

The paper also brings together information on Scholarships, Awards and Prizes available to Australians studying naval architecture or who have embarked on a career in the boat, yacht, ship design and construction industry.

This information will be used in the preparation of a brochure or booklet adapted from Careers in Naval Architecture published by The Royal Institution of Naval Architects for use by Australians intending or considering a career in naval architecture or related occupations.

Courses in which Australians may enrol are offered both in Australia and offshore. Some offshore courses are available by external means and some Scholarships, Awards and Prizes are also available from overseas educational and professional institutions.

1.2 Education Framework and Relationship of Courses in Australia.

It is important to note that technical and technological courses available in Australia are structured over a number of levels as set out in the Australian Qualifications Framework (AQF). This structure enables students to ladder their education and training to meet their evolving career aspirations.

The Framework has eleven qualification levels in the Vocational Education and Training and Higher Education Sectors.

- 1 Certificate I
- 2 Certificate II
- 3 Certificate III
- 4 Certificate IV
- 5 Diploma
- 6 Advanced Diploma
- 7 Bachelor Degree
- 8 Graduate Certificate - six months duration after a Bachelor Degree
- 9 Graduate Diploma - twelve months duration after a Bachelor Degree
- 10 Masters Degree - two years duration after a Bachelor Degree - usually one year duration after a four year Bachelor Degree or Honour Degree in naval architecture
- 11 Doctoral Degree - minimum of two years duration after a Master Degree - usually three years duration after a four year Bachelor Degree or Honour Degree in naval architecture

Usually only the first six are issued in Vocational Education and Training - TAFE, also qualifications usually articulate from one level to the next higher level.

1.3 Vocational Education and Training

TAFE Courses having substantial relationship with naval architecture are available at the Certificate III level in which Institutes of Technical and Further Education in Australia provide training for apprentices, etc in ship and boat building, and related engineering.

Certificate III articulates through to the Advanced Diploma of Engineering which is available at some Institutes of TAFE in major centres across Australia. This relationship is important as both Certificate III, etc and the Advanced Diploma of Engineering are readily transportable with Students enrolling in modules at Institutes of TAFE across Australia. Also Students and Graduates of the Advanced Diploma may build on their engineering studies by moving into naval architecture. Some Institutes of TAFE offer the Advanced Diploma of Engineering (Naval Architecture) which articulates with Advanced Diploma and Certificate III, etc courses in related engineering disciplines and also provides advance standing for Students entering Bachelor Degree programs at Universities with advanced standing contingent upon the correlation of content.

Courses are available at:

Brisbane Institute of TAFE, Gateway Campus - www.brisbane.tafe.net Certificate III in Boatbuilding offered part-time provides training to develop a broad range of practical skills applicable to the boatbuilding industry, with specialisation in construction techniques using timber, fibre-reinforced plastic, and metal. The course covers vessel design, construction materials vessel maintenance, workshop practices and equipment for apprenticeship boatbuilders and shipwrights. Nominal course duration is three years but the course is offered on a flexible basis and completion time is contingent upon competencies achieved.

Northern Sydney Institute of Technology, Meadowbank Campus - www.tafensw.edu.au/nsi/course.htm Certificate III - Boat and Shipbuilding (Trade) offered part-time for apprenticeship boatbuilders and shipwrights or for people who have entered into a relevant contract of training to gain skills and knowledge in the construction and repair for a range of vessels using traditional and state-of-the-art materials. The course is offered over three years.

Certificate IV Small Craft Surveying through part-time study to provide Students with the skills and knowledge to inspect, evaluate and report on the condition of private and commercial vessels. The 36 week course provides the necessary knowledge and skills to carry out the functions of a small craft surveyor.

Sydney Institute of Technology - www.sit.nsw.edu.au Diploma of Naval Architecture (AQF5) which is a one year full-time or two year part-time course for Students who have been working in a relevant engineering trade and want to work as engineering technicians in naval architecture. Students learn about working in design offices concerned with the design of ships and boats and also gain communication and management skills relevant to naval architecture.

Advanced Diploma of Naval Architecture (AQF6) which is a two year full-time or four year part-time course for Students who have been working in a relevant engineering trade and want to work in para-professional jobs in naval architecture. Students learn about working in design offices concerned with the design of ships and boats and also gain communication and management skills relevant to naval architecture.

Advanced Diploma of Naval Architecture Technology (AQF6) which is a two year full-time or a four year part-time course for Students who want to work in para-professional jobs in naval architecture. Students learn about working in design offices concerned with the design of ships and boats and also gain communication and management skills relevant to naval architecture.

Challenger TAFE, Fremantle - www.challengertafe.wa.edu.au Ship Construction and Naval Architecture Modules within the Diploma/Advanced Diploma of Mechanical Engineering.

Hunter Institute of Technology (Newcastle) - www.hunter.tafensw.edu.au Introduction to Naval Architecture Modules included in its Diploma and Advanced Diploma in Marine Engineering.

Yeronga Institute of TAFE (Brisbane) - www.yeronga.tafe.net Registered to offer Naval Architecture as an extension of its Advanced Diploma of Engineering (both Mechanical and Electrical strands).

Great Southern TAFE (Western Australia) - www.gstafe.wa.gov.au Full year non-apprentice Austudy approved wooden boatbuilding courses 1.4 Higher Education Study Students have a range of undergraduate and postgraduate options to study naval architecture including:

University Engineering Studies Students having completed prescribed engineering studies at universities throughout Australia may approach either The University of New South Wales or the Australian Maritime College for advanced standing and complete an engineering degree in naval architecture.

The University of New South Wales (Sydney) - www.unsw.edu.au Bachelor of Engineering (Naval Architecture) which is a full-time four year degree. In the first two years Students study basic science and engineering and in the second year they further develop essential areas such as Engineering Materials, Design, Engineering Mechanics as well as the Mechanics of Fluids and Solids, Electronics, Statistics, and Thermodynamics. The third and fourth years are devoted to in-depth study of the principles of naval architecture, with special attention given to the application of computing and optimisation to such areas as Ship Hydrostatics and Stability, Hydrodynamics, and the Analysis and Design of the Ship Structure. The final year includes a Ship Design Project. Industrial visits to various companies and to witness ship launchings and tests are organised regularly.

Australian Maritime College (Launceston) - www.amc.edu.au Bachelor of Engineering (Naval Architecture) which is a full-time four year degree. In addition Students must complete twelve weeks of appropriate work experience which is usually undertaken in Australian Maritime College vacation time. Graduates can expect to find employment as design naval architects with consulting firms in the field, with ship builders and ship repair companies, with port and harbour authorities

and government bodies, with ship classification societies or in academia. International recognition of the Bachelor of Engineering (Naval Architecture) allows Graduates to undertake postgraduate studies or to work as professionals overseas.

Bachelor of Engineering (Ocean Engineering) includes naval architectural content.

Curtin University of Technology (Perth) - www.curtin.edu.au Subjects in Introduction to Naval Architecture, Ship Dynamics and Ship Performance are part of its Mechanical Engineering undergraduate program.

Short modules are offered at undergraduate (Bachelor) degree level in Applied Hydrodynamics, Marine Structures and Materials, and Design for Small Craft.

Naval architecture units are available in the three year Bachelor of Science (Applied Physics).

Postgraduate Students may further their studies in naval architecture at:

The University of New South Wales - www.unsw.edu.au Master of Engineering Science mainly undertaken by course work and completion of a naval architectural project.

Master of Engineering undertaken by research, but includes a minimum of three relevant subjects.

Doctor of Philosophy undertaken by research, but includes a minimum of three relevant subjects.

Australian Maritime College - www.amc.edu.au The Master of Philosophy by research available in naval architecture takes from one to three years full time study and may be undertaken full-time or part-time and, in special circumstances, is available to off-campus Students.

Doctor of Philosophy by research is available in naval architecture and takes from three to five years.

Scholarships are available for Students conducting research for higher degrees. Curtin University of Technology (Perth) - www.curtin.edu.au Master of Science undertaken by research, full-time or part-time.

Doctor of Philosophy undertaken by research, full-time or part-time. Scholarships are available for postgraduate research Students.

University of Western Australia - www.uwa.edu.au Centre for Oil and Gas Engineering - Doctor of Philosophy undertaken by research, in the offshore engineering field.

1.5 Overseas Courses Some external studies courses are available in Yacht and Boat Design, for example:

Westlawn Institute of Marine Technology (United States) - www.westlawn.org/splash.htm MacNaughton Group Yacht Design School (United States) - www.macnaughtongroup.com

The availability of boat, yacht and ship design and construction schools may be researched on:

www.newavesys.com/MarineSchools.htm

2. PROFESSIONAL ASSOCIATIONS Brochures are also available from professional associations to assist Students in their decision making processes for their career and underpinning formal study need, and also to provide information on the benefits of membership of professional associations.

The Royal Institution of Naval Architects - www.rina.org.uk The Society of Naval Architects and Marine Engineers - www.sname.org The Institution of Engineers, Australia - www.ieaust.org.au

3. SCHOLARSHIPS, AWARDS AND PRIZES

3.1 Availability

Student Awards, Prizes and Scholarships are available to Australians studying or following a career in naval architecture both in Australia and offshore.

3.2 Available in Australia

The University of New South Wales - www.unsw.edu.au Cooperative Scholarships with industry may be available to Students from time to time for the duration of their studies.

The Baird Publications Prize 1 for the best performance in specified subjects.

The Baird Publications Prize 2 for the best performance in specified subjects.

The Royal Institution of Naval Architects (Australian Division) Prize for the Best Ship Design Project by a Student in the Final Year.

The David Carment Memorial Prize and Medal for the best overall performance by a Student in the Final Year.

RINA/Austal Ships Award for the best presentation on a thesis project by a student member.

Australian Maritime College - www.amc.edu.au Undergraduate Scholarships may be available on application to the College.

Australian Maritime College Search Faculty of Maritime Transport and Engineering Award for excellence in any discipline area of the Faculty of Maritime Transport and Engineering.

RINA/Austal Ships Award for the best thesis project by a student member.

ASP Ship Management Prize to the Student with highest marks in transportation management-related subjects in any degree program in the Faculty of Maritime Transport and Engineering.

BHP Project and Technology Management Prize to the Student with highest marks in technology and project management-related subjects in any program in the Faculty of Maritime Transport and Engineering.

Captain Thomas Swanson Prize awarded to the best Student over the duration of any engineering course.

The Institution of Engineers Australia Norman Selfe Prize for best achievement and attainment of professional skills by a final year Student of a Bachelor of Engineering course.

The Royal Institution of Naval Architects (Australian Division) Prize for the best research project by a final year Student in the Bachelor of Engineering (Naval Architecture).

Work Boat World Prize to the Student with the best mark in Ocean Vehicle Design in the Bachelor of Engineering (Naval Architecture).

Australian Maritime College Council Tom Fink Scholarship awarded to an outstanding undergraduate to undertake research in Australia through the Australian Maritime College.

The DIAB Scholarship is available for the best final year undergraduate working on composite materials in the naval architecture degree.

University of Tasmania - www.utas.edu.au

INCAT Australia Postgraduate Research Scholarship - successful applicant must have completed a good honours degree in mechanical engineering, naval architecture, or a closely related engineering or physical science discipline.

Curtin University of Technology - www.curtin.edu.au

Postgraduate research scholarships may be available particularly with joint industry projects.

RINA (Australian Division) Walter Atkinson Award

Walter Atkinson was a foundation member of the Australian Division of The Royal Institution of Naval Architects and a Council member of long standing, and was Senior Naval Architect at Garden Island Dockyard when he died in the early seventies.

To perpetuate his memory, Council of the Australian Division resolved in 1971 to present an annual Walter Atkinson Award at its discretion to a selected paper or meeting of the Institution in Australia that year. The award was originally valued at

approximately \$25.00 and the inaugural presentation made in 1972 was an impressive painting of the clipper ships Ariel and Taeping racing under full sail. Its object is to stimulate increased interest in the preparation, and to raise the standard, of technical papers for presentation in the Institution.

The Walter Atkinson Award has been awarded in most years. Each Section of the Australian Division reviews nominations from its members and then forwards one nomination to Council for consideration. The Award, now usually valued at around \$250.00 is currently assessed, on behalf of the Australian Division, by a Sub-Committee of Council.

Current guidelines for the Walter Atkinson Award are:

All members of the RINA Australian Division are eligible, with the exception of members of the Division Council.

The paper must be presented at a RINA meeting or maritime conference or published in a journal within Australia during the current year.

The paper must be a technical paper, not simply a lecture, and it must be more than just a promotional presentation.

In assessing each paper the Sub-Committee will consider:

Is there a stated or implied purpose?

How important is its purpose in the context of the Australian industry?

Does it impart any new ideas?

How easy it is to understand?

How rigorous is the paper?

Nominations will be invited annually in the Australian Naval Architect.

3.2 Prizes Previously Available in Australia

In earlier times prizes from the Shipwrights Union of Employees and the Chamber of Manufacturers were made available for Students graduating from the Certificate in Naval Architecture from the Sydney Technical College.

3.3 Overseas Scholarships Awards and Prizes Available to Australians

Australians may also be considered for Awards, Prizes and Scholarships made available by some overseas educational and professional institutions. The following awards, prizes and scholarships are available in the United Kingdom to Australian undergraduate and postgraduate Students.

The Samuel Baxter Prize of \$100 awarded annually for the best paper of distinction published by the Institution on the subject of safety by a RINA Member under the age of 30.

The Wakeham Prize of \$100 awarded annually for the best general paper of distinction published by the Institution, by a RINA Member under the age of 30.

The Calder Prize of \$100 awarded annually for the best paper of distinction published by the Institution on the subject of small or high speed craft by a RINA Member under the age of 30.

Undergraduate Scholarship of \$1000 to the RINA Student Member achieving the best results at the end of the first year at the following universities and colleges - Strathclyde, Glasgow, Newcastle, UCL, Southampton University, Southampton Institute, and Plymouth.

1500 to a RINA Graduate Member who has, Froude Postgraduate Scholarship of been offered a place to carry out research in naval architecture at a United Kingdom university or college.

William White Postgraduate Scholarship of \$700 to a RINA Graduate Member who has been offered a place to carry out research in naval architecture, or undertake a one year Master of Science course at a United Kingdom university or college.

Note: The conditions of the Trusts providing the funding for RINA scholarships precludes them being offered to non-United Kingdom universities, although they may be awarded to non-United Kingdom Students, Graduates and members.

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