



# SUBMARINE DESIGN & ENGINEERING

## 5 DAY TRAINING COURSE

We incorporate the latest thinking and innovations in submarine design and operations. The course will equip attendees with a complete understanding of conventional submarine technology and how capability requirements and new technologies can impact overall submarine design and management.

This course caters to students with technical and non-technical background, providing an understanding of the military capability in conventional submarines and the considerations in the defence acquisition process.

For those students with an engineering background, the course will also investigate how to apply practical approaches to solving technical challenges.

Students will become part of an elite group of alumni, providing excellent networking opportunities and ongoing support from the submarine community.

*This course is certified by  
The Royal Institution of Naval Architects.*

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**\$4,950**

\* not including GST



**DIGITAL COURSE**

# Course content

*Equipping you with the knowledge to understand all stages of submarine ownership.*

## **Military Capability**

Why submarines are a critical component in providing military capability.

## **Submarine Operations**

Full range of roles performed by a submarine and the implications for submariners.

## **Submarine Program**

Planning and implementation process for a new submarine build, focusing on the roles of Government, Navy and Industry.

## **The Modern Conventional Submarine**

Evolution of the modern conventional submarine.

## **Form Factors & Hull Configurations**

External forms used in the design of submarines.

## **Resistance & Propulsion**

Technical introduction to the components of resistance and the effects of submarine form and appendages. Including propulsors available to a submarine designer.



Conventional submarine technologies and management delivered through 26 modules of study.



## **Maneuvering**

Generation of forces and moments using control surfaces.

## **Hydrostatics**

Submarine hydrostatic principles involved in stability and control.

## **Ballast Systems**

Ballast tanks, associated systems and their operation on a modern submarine.

## **Safety Management**

Safety programs as applied to major Defence projects.

## **Submarine Escape & Rescue Systems**

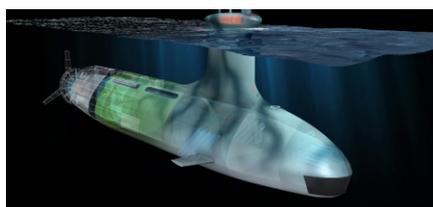
Rescue systems carried onboard a submarine.

## **Materials Selection**

Material selection in submarine design for the operational environment.

## **Structures**

Internal structures and manufacturing techniques.



## **Space & Weight**

Major components and materials driving submarine design.

## **Distributed Systems**

Hydraulics, fire suppression and HP/LP air on a modern submarine.

## **Habitability Systems**

HVAC, lighting, potable water, refrigeration and waste disposal.

## **Electric Systems**

Electric system necessary to support all power requirements.

## **Energy Generation Plant**

Energy generation plant options from the diesel engine through to developing air independent technologies.

## **AIP Systems**

AIP systems, their current implementation and potential for use in Australia's Future Submarine.

## **Battery Systems**

Lead-acid systems including a comparison with developing technologies.



## **Signature Management**

Signature management on a modern submarine.

## **Sonars**

Sonar technology, such as arrays and sensors, through to operational aspects of functional processing.

## **Weapons & Sensors**

Full range of weapons and sensors available to a modern conventional submarine.

## **Combat Systems**

Combat systems, including detection, classification, navigation and communications.

## **Submarine Concept Evaluation**

Evaluation of submarine design at the conceptual design phase, from integrated performance analysis and data quality through to visualization of platform performance.

## **Design Task**

Develop a series of optimised submarine designs to meet the requirements of the mission scenarios provided.