Welcome to the 53rd year of Professional Summer at MIT. The program is an excellent opportunity for members of the ship design community to study the latest methodologies affecting the complex discipline of naval ship design. We invite students from naval activities, commercial activities and academia to join with the almost 8,000 attendees who have already participated.

**Topic:** Shipbuilding Operations and Technology  
**Lead:** Dr. Phil Koenig, NAVSEA  
**US Citizenship Required**

**Topic:** Cybersecurity Bootcamp*  
**Lead:** Mr. Alfonso Guzmán Vazquez, NUWC

**Topic:** Surface Ship Combat Systems Design and Integration*  
**Lead:** LCDR Bryan Crosby

**Topic:** Submarine Combat Systems*  
**Lead:** Mr. Matthew O'Connell, NUWCDIVNPT

**Topic:** Ship and Submarine Signatures*  
**Lead:** Dr. Brian Glover, NSWCCD

**Topic:** Submarine Concept Design*  
**Lead:** RDML Jon Rucker, PEOSUB  
**CAPT (Ret.) Chris Warren**

**Topic:** Weapons Effects & Ship/Submarine Survivability*  
**Lead:** Mr. Brian Beechener, NSWCCD

*SECRET Clearance Required

For more information please visit the website:  
https://naval-pro-summer.mit.edu/

Or contact the Professional Summer Coordinator:  
617-324-2237  
profsum@mit.edu

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Naval Construction & Engineering Program  
77 Massachusetts Ave  
Room 5-317  
Cambridge, MA 02139  
Phone: (617) 324-2237  
Fax: (617) 253-4791

https://2n.mit.edu/
Our Program
Since 1901 the graduate program in Naval Construction and Engineering has been preparing U.S. Navy, U.S. Coast Guard and foreign naval officers for careers in ship design, acquisition, construction and repair. The course of study consists of either a two-year program, which leads to a Master of Science degree in Naval Architecture and Marine Engineering, or a three-year program which leads to the degree of Naval Engineer. All students write a thesis and are encouraged to conduct research supporting the needs of their sponsors. Active-duty officers have been on faculty since 1933. Over 1,700 students have completed the program.

Curriculum Elements
- Mathematics and Numerical Methods
- Dynamics
- Hydrodynamics
- Materials and Fabrication
- Power and Propulsion
- Structural Mechanics
- Acoustics
- Naval Architecture and Naval Engineering
- Systems Engineering
- Ship Production
- Business Electives (Sloan School of Management)
- Thesis

Faculty
- Captain Andrew Gillespy, USN
  Curriculum Officer
gillespy@mit.edu
- Commander Chris MacLean, USN
  Academic Officer
maclean2@mit.edu
- Captain (Ret.) Raymond “Chip” McCord, USN
  Senior Lecturer
rsmccord@mit.edu

Student Projects
The 2N ship design curriculum includes two major student projects. In the January term of the second year students complete a conversion of an existing ship to fulfill a new mission. The culmination of the ship design curriculum is a year-long ship project to develop an original concept design of a naval ship.

We require students to find a sponsor for each project to help develop the requirements for each ship. Sponsors have come from the U.S Navy, foreign navies and academia. If you are interested in serving as a sponsor and mentor our students please contact one of the faculty members.

Recent Ship Design Projects
- A Double Hull, Sailless Submarine
- The Gray Zone Combatant
- Autonomous Swarm of Planing Surface Combatants

Recent Ship Conversion Projects
- DDG51 Improved Roll Response
- Reduced Speed LCS-1
- Autonomous Kits for Civilian Craft Conversion
- Halifax Frigate Conversion to Laser Weapon

Student Research
All students complete a thesis in an area related to naval engineering. This year we have students working various labs and research groups, including:

- FRC Corrosion Prevention
- Investigating the Use of Inductive Transfer Learning and RNN to Quantify Extreme Event Statistics of Ship Motions
- Real-time Autonomy and Maneuvering Simulation of an Unmanned Underwater Vehicle near a Moving Submarine using Actively Sampled Gaussian Process Surrogate Models

Academic Excellence
Our students receive national recognition for their work. They have regularly been featured in the

2024 Design Symposium
May 3, 2024
Speaker RDML Jason M. Lloyd, SEA-05
Presentation of this year’s design and conversion projects, along with selected thesis research by MIT students. Learn about the current focus areas in OE and naval architecture academic research, and an opportunity to reconnect with current and past colleagues and alumni.

Visit our web page for tickets and information
https://2n.mit.edu/2n-ship-design-and-technology-symposium

SNAME student awards program, present their work in technical conferences and publish work.

SNAME Student Awards
- 2023 Graduate Paper Award
  Sarao and Gkiokas, LSD-41 to Diving and Salvage Conversion

Recent Publication
- Scott, Alex and Cumming, Julia; Relieving the SSGN Fleet: Capitalizing on the COLUMBIA SSBN to design SSGN(X). Naval Engineers Journal, June 2022.