SUBMARINE COMBAT SYSTEMS

JUNE 23 – JUNE 27, 2025

LECTURER-IN-CHARGE: Mr. Matthew O'Connell, USW Combat Systems Director of Programs, Naval Undersea Warfare Center Division Newport (NUWCDIVNPT)

TUITION: $2887

DAILY CLASS ROUTINE:

Monday: Classroom facility opens at 0730 and will be secured at 1700.
Class begins at 0800 and ends at 1700. Optional ice breaker after class –
Sulmona, 608 Main Street, Cambridge – pizza, salad and cash bar.

Tuesday: Classroom facility opens at 0730 and will be secured at 1700.
Class begins at 0800 and ends at 1700.

Wednesday: Classroom facility opens at 0730 and will be secured at 1700.
Class begins at 0800 and ends at 1700.

Thursday: Field trip to Naval Undersea Warfare Center Division, Newport RI.
Bus departs from front of Draper Laboratory (555 Technology Square) at 0700
and returns around 1800. Lunch will be provided during the tour.

Friday: Classroom facility opens at 0730 and will be secured at 1600.
Class begins at 0800 and ends at 1600.

LOCATION: Classes will be held in the Hill Building, Building NE-80, Room 1409 at 1 Hampshire Street, Cambridge, MA. The classroom is adjacent to MIT's main campus at The Charles Stark Draper Laboratory.

COURSE DESCRIPTION AND OBJECTIVE:

The objective of this course is to provide the student with an overall knowledge of submarine combat systems and the factors that drive their design. This course will also examine the impact on platform design considering submarine missions and operating environments. The course covers current and future trends in submarine combat systems encompassing sonar, combat control, communications, imaging, electronic warfare, vehicles, weapons, payloads and launcher systems and discusses the role of each in executing mission kill chains. Maintaining undersea superiority and sustaining the undersea advantage are among the themes for this course.

Capabilities of all submarine classes are highlighted focusing on Virginia class/SSN(X) and SSBN (OHIO and COLUMBIA). The Submarine Force's portfolio of missions is presented including Subsea and Seabed Warfare (SSW). Advanced submarine/Undersea Warfare (USW) payloads and relevant Navy experimentation are also presented. An in-class exercise may also be included.

The following topics will be covered:

- Setting the Stage – Strategic Competition
- Submarine Missions, Technology and Future Roadmap
- Non-Propulsion Electronics (NPES) and Platform Engineering
- Sonar Hull and Towed Arrays
- Payload Storage and Launcher Systems
- Special Operations
- Submarine Warfare Federated Tactical System (SWFTS)
- SWFTS Re-architecture
- AN/BYG-1 Combat Control System
- Acoustic Rapid COTS Insertion
- Sonar Processing
- Submarine Communications
- Non-Traditional Acoustic Comms
- Electronic Warfare
- Imaging
- 3PT and Cueing
- Submarine Launched Unmanned Aerial System
- Project Overmatch and USW Implications
- Subsea and Seabed Warfare
- Unmanned Undersea Vehicles
- Defensive Systems
- Undersea Weapons
- Advanced Undersea Weapons
- Countermeasures
- USW Strike - A Current Perspective
- Fleet Perspective
- Conventional Prompt Strike
- Cybersecurity and USW
- Perspective on Nuclear Forces and the Trident II D5 SWS
- Ohio Class - Maintaining Strategic Readiness
- Columbia Development

LECTURERS (Subject to Availability)~~:~~

Mr. Matthew O'Connell	USW Combat Systems Director of Programs, NUWCDIVNPT
Ms. Marie Bussiere	Technical Director, NUWCDIVNPT
Ms. Rebecca Chhim	Head, USW Platforms and Payloads Department
Mr. Michael Cockey	CAPT (ret.) ASW Mission Capability Manager (MCM), NUWC
Mr. Edward Rishmany	Senior Systems Engineer, SEACORP
Mr. Andrew Hulton	SSN-X Technical Project Manager, NUWCDIVNPT
Mr. Edward Giarnese	NPES, Technical Project Manager, NUWCDIVNPT
Mr. Daniel Schwab	Engineer, Sensors and SONAR Systems, NUWCDIVNPT
Mr. James Broadmeadow	Head, Ocean Engineering Division, NUWCDIVNPT
Mr. Jeffrey Cadman	Senior Warfare Analyst, NUWCDIVNPT
Mr. Jamie Rothwell	SWFTS Technical Project Manager, NUWCDIVNPT

Mr. Brian Alexander	AN/BYG-1 Technical Project Manager, NUWCDIVNPT
Mr. Samuel Gilbert	Lead Systems Engineer Active Sonar Subsystems, NUWCDIVNPT
Mr. Jeff Merritt	Lead Systems Analyst for the ARCI Program, NUWCDIVNPT
CDR Dan Miller	Executive Officer, NUWCDIVNPT
Mr. Adam Carvalho	Technical Direction Agent, Submarine Comms/Antenna Systems, NUWCDIVNPT
Mr. Curtis Richard	Head, EM Warfare Special Projects Branch, NUWCDIVNPT
Mr. Gene Hackney	Director for Undersea Warfare, NUWC
Mr. William Roman	ASuW MCM, NUWCDIVNPT
Mr. Tim Nolan	UxS Chief Engineer, USW Combat Systems, NUWCDIVNPT
Ms. Tara Barnum	Customer Advocate, Strategic Systems Programs, NUWCDIVNPT
Mr. Michael Woods	Head, Undersea Vehicles Analysis Branch, NUWCDIVNPT
Ms. Rachel Amore	Senior Analyst, Undersea Vehicles Analysis, NUWCDIVNPT
Mr. David Gimple	USW Strike MCM, NUWCDIVNPT
Mr. AJ Kirkwood	OHIO Chief Engineer, NUWCDIVNPT
Mr. Ben Fernandes	COLUMBIA Chief Engineer, NUWCDIVNPT
Mr. Steven Benner	NTAC Lead Engineer, NUWCDIVNPT
Mr. Rob Mushen	Director of Technology Transition, Weapons and Defensive Systems, NUWCDIVNPT
Mr. Joshua Stone	Defensive Systems Technical Project Manager, NUWCDIVNPT
Mr. Richard Bashour	Director, USW Unmanned Systems and Autonomous Behavior, NUWCDIVNPT
Mr. Ryan Lord	Head, Submarine Defensive Systems Branch, NUWCDIVNPT
Mr. Michael Beatty	Cybersecurity Chief Engineer – USW Combat Systems, NUWCDIVNPT

GUEST LECTURERS (Subject to Availability):

VADM Johnny R. Wolfe, Jr.	Director, Strategic Systems Programs
RADM Jon Rucker	Program Executive Officer, Tactical Submarines
RDML Douglas Adams	Program Executive Officer, Undersea Warfare Systems
Mr. Michael McClatchey	Executive Director, Undersea Warfare Systems
Dr. Steven E. Van Dyk	Chief Engineer, Strategic Systems Programs
Ms. Meganne Atkins	Executive Director, AUKUS Acquisition and Integration
Mr. Ted Shipper	Program Manager, VIRGINIA Class Design, Electric Boat

SPECIAL NOTE: This course contains material governed by Distribution Statement D. Distribution authorized to the Department of Defense and U.S. DoD contractors only. Other requests shall be referred to Naval Undersea Warfare Center, 1176 Howell St., Newport, RI 02841-1708 via the Lecturer-in-Charge, Mr. Matthew O'Connell.

LOCATION: Classes will be held in the Hill Building, Building NE-80, Room 1409 at 1 Hampshire Street, Cambridge, MA. The classroom is adjacent to MIT's main campus at The Charles Stark Draper Laboratory.

COURSE ELIGIBILITY AND CLASSIFICATION: Applicants are expected to have mature technical backgrounds which, either through experience, or education is at least equivalent to graduate education. This course is classified SECRET/NORFORN. It is open to active-duty U.S. military, U.S. government

employees, and U.S. civilian contractor personnel with U.S. government sponsorship. It is NOT open to foreign nationals. A SECRET security clearance is required. A current U.S. Government ID or current Passport will be required each day to obtain a badge for classroom access. Students with appropriate clearances that are outside of DoD must apply by 30 April 2025 to allow time for 'need to know' to be established and approval received through appropriate channels.

APPLICATION AND TUITION PAYMENT: Course enrollment is limited. Seats are reserved in order of receipt of complete applications with 'confirmation of enrollment' upon receipt of payment or obligation of funding through your training coordinator (SF-182).

Note: If course demand is high, we reserve the right to release any unconfirmed enrollments in order to provide a wait-listed student an opportunity to attend. Nominally will do so three weeks before course start date. However, we will make every effort to notify you beforehand and request your intentions.

Flexible payment options, including:

1) Wire transfer
2) Credit card (VISA, MasterCard, Discover Card, American Express)
3) Check

Please see detailed directions on our website for application and payment. Link on upper right of the 2N course webpage http://2n.mit.edu/ or direct to link of http://naval-pro-summer.mit.edu/

It is critical that you provide the name of your training coordinator and/or the person who will be making the tuition payment on your application as we must receive payment in order to hold your place in the course – without payment (or obligated funds via approved SF-182) we may need to release your seat to someone else on the wait list.

In advance of payment, a training officer approval (block 3b of SF182) obligating funds is accepted to confirm enrollment. Full payment is due to MIT at least one week before course.

CANCELLATION: Cancellations within ONE (1) week of the first day of the course will be subject to a $100.00 charge. Substitution by another applicant will be allowed provided an application is received and their security clearance is processed by Draper Laboratory.

ACCOMMODATIONS: Course tuition DOES NOT include accommodations. Each student must arrange his or her own transportation and hotel accommodations. Hotel space in Cambridge is very limited during the summer, so early advance reservations are strongly recommended. We have reserved a small block of rooms at the government rate at a local hotel which is located a short walking distance from the classroom and provides convenient access to the MBTA Red Line at the Kendall/MIT station. We will send you information about our hotel block when we confirm enrollment and payment (or obligated funds via approved SF-182) in the course. The hotel will release the hold on any unclaimed rooms FOUR (4) weeks prior to the first day of the course. Car rental is neither necessary nor recommended.

STUDENT ATTIRE: Business casual. Students are advised to bring a sweatshirt, sweater or jacket in the event that the classroom is cold.

REFRESHMENTS: Continental breakfast will be provided in the morning and a light snack each afternoon. Lunch will be provided on those days when working lunches/guest speakers are scheduled.

POINT OF CONTACT: If you have any questions, please contact the Naval Professional Summer Coordinator at 617-324-2237 or by e-mail to profsum@mit.edu.

EMERGENCY CONTACT INFORMATION: During class, students may be contacted by leaving a message at 617-258-2285 or by e-mail at dsegall@draper.com.

PORTABLE ELECTRONIC DEVICES: This course is CLASSIFIED. The classroom will be a managed as a CLOSED AREA at all times during the period of instruction. Among other restrictions, this means that no recording devices or other electronic devices will be allowed into the room unless prior arrangements have been made. Such arrangements must be made at least three weeks prior to the first day of class. Personal electronic equipment must be left outside the classroom. The area will be guarded, but will NOT be locked. Please keep this in mind when deciding what to bring with you and what to leave in your hotel room. Examples of personal electronic equipment that are NOT allowed in the classroom: laptops, PDAs, iPods, calculators, wireless fitness trackers (such as Fitbit, Basis Peak, or Jawbone Up), cell phones, Iwatches, cameras, and flash drive memory sticks. NOTE that this is not an all-inclusive list. If you have a Portable Electronic Device not listed here, do not hesitate to ask Draper Security prior to bringing the device inside the classroom.

If you require a medical assist electronic device, arrangements can be made to allow these in the classroom. Please contact Draper at (617) 258-2285 or dsegall@draper.com at least three weeks prior to the first day of class.

VISIT REQUESTS: Visit requests can be sent via two methods and should be sent no later than three weeks prior to your class in order to ensure adequate processing time.

1. Preferred Method: Visit requests can be sent via DISS SMO Code 519934. Please ensure that the following is included in DISS visit requests:
    a. Visit Name: 2025 MIT ProSummer
    b. POC: Nate Candeias, ncandeias@draper.com/MIT ProSummer
    c. Valid dates (length of the course/visit only)
    d. phone number: 617-258-1459
    e. In the Visit Notes section, specify whether you are an instructor or student and enter name of the course you are teaching or attending
2. If you cannot use DISS, visit requests can be faxed to (617) 258-2000. Faxed visit requests must contain the following information.
    a. Employer's Name
    b. Employer's address, Phone Number and CAGE Code.
    c. Visitor(s) Full Name
    d. Social Security Number
    e. Citizenship
    f. Date and Place of Birth
    g. POC: Nate Candeias/MIT ProSummer
    h. Valid dates (length of the course/visit only)
    i. Purpose: (Specify whether you are an instructor or student and enter the name of the course you are teaching or attending.)
    j. Clearance Information

If you need to confirm that your visit request has been received and is in order, please contact Draper's Personal Security Office at persec@draper.com or (617)-258-3105.

In addition, this course includes a day trip to Naval Undersea Warfare Center located in Newport RI.

NUWC VISIT REQUESTS:

A visit request is mandatory also needed to NUWC Division Newport, government and civilian. Access to NUWC Division Newport will not be granted under any circumstances without a valid visit authorization request on file along with two forms of official government pictured ID upon arrival.

- DISS is the preferred method for submitting visit requests
- The Security Management Office (SMO) for visits is 666045
- Technical POC: Matthew O'Connell
- Include "Submarine Combat Systems Course" in POC Phone Number
- Date of visit (only list single date): 26 June 2025
- Questions may be addressed to NUWCDIVNPT Security Division at 401-832-2551. Additional POC is Deanna Monell at 401-832-7408.

For those that are unable to use JPAS, a visit request must be FAXED to the NUWC Division Newport Security Division at 401-832-4396 on company letterhead containing the following information:

- Visitor's full name (Last, First, Middle Initial)
- Company or Organization Name – complete address, phone number, fax number & CAGE code
- Visitor's Social Security Number – This information is protected by the Privacy Act of 1974
- Visitor's Date of Birth and Place of Birth (city/state)
- Citizenship
- Individual's Level of Clearance Access – This information is verified using JPAS
- Specific Date(s) of Visit (include the year): 26 June 2025
- Technical Point of Contact (POC) at NUWC Division Newport (include name & phone number)
- Specific Purpose of Visit (include classification of visit): Submarine Combat Systems Course
- Name, Title and Signature of authorizing company official (may NOT be one of the listed visitors)

Note: In addition, a CAC, DBIDS, or Military ID will be required to gain entrance into the NUWC Facility.