SURFACE SHIP COMBAT SYSTEM DESIGN INTEGRATION
JUNE 10–JUNE 14, 2013

LECTURER-IN-CHARGE: CAPT Barry Tibbitts, USN (Ret.), Senior Lecturer, Department of Mechanical Engineering, MIT

TUITION: $1800

DAILY CLASS ROUTINE:

**Monday:** Classroom facility opens at 0730 and will be secured at 1700. Class begins at 0800 and ends at 1700 with a 1 hour break for lunch.

**Tuesday:** Classroom facility opens at 0730 and will be secured at 1700. Class begins at 0800 and ends at 1700 with a 1 hour break for lunch.

**Wednesday:** Classroom facility opens at 0730 and will be secured at 1700. Class begins at 0800 and ends at 1700 with a 1 hour break for lunch.

**Thursday:** Classroom facility opens at 0730 and will be secured at 1700. Class begins at 0800 and ends at 1700 with a 1 hour break for lunch.

**Friday:** Classroom facility opens at 0730 and will be secured at 1200. Class begins at 0800 and ends at 1200.

COURSE DESCRIPTION AND OBJECTIVE: The objective of this course is to provide the student with overall knowledge of surface ship combat systems and the major factors that impact their integration among themselves and aboard ship. The course will cover the impact of missions and threats as they relate to platform design considerations, and vice versa. The fundamental physics, design characteristics and performance of individual combat subsystems such as radar, electro-optical imaging, combat control, communications, Electronic Surveillance Measures (ESM), guns and missiles and launcher systems are addressed. The basic template of Detect, Control, Engage and Assess will be followed in each major warfare area. The following topics will be covered:

- Introduction and Overview of Combat System Architecture
- Missions and Requirements
- Architecture for Ships and Combat Systems
- Following warfare areas will be discussed: Surface and Land Attack, AAW (Aegis and non-Aegis) and Ballistic Missile Defense
- C2 Systems
- Ship Architectures and Impact
- Integrated Topside Design
- Advanced Technologies
- Integration Challenges

Each student, working in a small team, has an opportunity to apply the principles and knowledge gained by completing a short design project during the course.
LECTURERS
CAPT Barry Tibbitts, USN (Ret.) Senior Lecturer, Dept. of Mechanical Engineering, MIT
Neal Baron Distinguished Scientist, NSWC Dahlgren Division
CDR Jeffrey Lock, USN PEO Integrated Warfare Systems
Ansis Kalnajs Technical Warrant Holder for Topside Design, NAVSEA
Carey Filling Head, Surface Combatants Division, NAVSEA 05D
CAPT Jon Hill, USN Program Manager, Integrated Combat Systems, PEO IWS,

Special Note: This course contains material governed by Distribution Statement D. Distribution is authorized to Department of Defense and U. S. DoD contractors only. Other requests shall be referred to PEO Integrated Warfare Systems.

GENERAL INFORMATION

LOCATION: Classes will be held in the Hill Building, Building NE-80, Room 1409 at One Hampshire, Cambridge, MA. The classroom is adjacent to MIT's main campus at The Charles Stark Draper Laboratory. An interactive MIT campus map is available on-line at http://whereis.mit.edu/.

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.

APPLICATION AND TUITION PAYMENT: Course enrollment is limited. Applications AND tuition payment are due THREE (3) weeks prior to the first day of the course. Applications may be submitted electronically (e-mail to profsum@mit.edu), by fax ((617) 753-4962), or by mail to the following address:

Massachusetts Institute of Technology
Department of Mechanical Engineering
77 Massachusetts Avenue, Room 5-317
Cambridge, MA 02139-4307
Attn: Mary Mullowney

Course tuition is $1800.00 and payment must be made in full with the application. You will not be enrolled in the course until payment is received. Payment can be made by check, payable to MIT Account #1541101, and mailed to the address above or on-line by credit card at http://web.mit.edu/2n/profsum/Pro_Summer_Payment.html.

For questions regarding payment for the course, contact Mary Mullowney at (617) 324-2237 or by e-mail at profsum@mit.edu.

Students will receive confirmation of course enrollment upon receipt of their application and tuition payment. Those applicants who are not approved for admission for whatever reason will receive a refund of their tuition payment.

CANCELLATION: Cancellations after June 3, 2013, 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 their own transportation and hotel accommodations. Hotel space in Cambridge is very limited during the summer, so early advance reservations are strongly recommended. Car rental is neither necessary nor recommended.

STUDENT ATTIRE: Casual (Business attire is neither required nor desired). Students are advised to bring a sweatshirt or sweater 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 Mary Mullowney at (617) 324-2237 or by e-mail to mamullow@mit.edu.

EMERGENCY CONTACT INFORMATION: During class, students can be contacted by leaving a message with Lisa Kelleher at (617) 258-4928 or by e-mail to lkelleher@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 prior to May 20, 2013. All personnel attending these sessions must have a SECRET clearance or above, and should be recently briefed on basic information security protocols. The protocols in place at the Draper facility may be slightly different than those at your usual place of employment, so if you would like a detailed Security briefing prior to your arrival, please contact the Draper at (617) 258-4928 or lkelleher@draper.com to make arrangements. 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 is NOT allowed in the classroom: laptops, PDAs, iPods, calculators, cell phones, cameras, and flash drive memory sticks. NOTE that this is not an all-inclusive list.

If you require a medical assist electronic device, arrangements can be made to allow these in the classroom. Please contact Draper (617) 258-4928 or lkelleher@draper.com prior to May 20, 2013.

VISIT REQUESTS: Visit requests should be sent to the attention of Merriane Terranova by May 20, 2013. Visit requests MUST include the following or the request will not be processed: valid dates (length of the course only NOT the entire year); name of the course; and indicate you are attending as a student. JPAS is the preferred method for visit requests. Draper’s JPAS number is 51993-4. Visit requests may also be faxed or mailed to the following:

The Charles Stark Draper Laboratory, Inc.
555 Technology Square
Cambridge, MA 02139-3563
Attn: Merriane Terranova, Room 2194D

Fax number: (617) 258-2000

The security protocols in place at the Draper facility may be slightly different than those at your place of employment, so if you would like a detailed Security briefing prior to your arrival, please contact Merriane Terranova at (617) 258-2413 for arrangements.
Professional Summer Internet Web Site: http://web.mit.edu/2n/profsum