

UMBC UGC New Course Request: NAVY 300 Naval Ship Systems I (Engineering)

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COURSE INFORMATION:

Course Number(s)	NAVY 300
Formal Title	Naval Ship Systems I (Engineering)
Transcript Title (≤30c)	Nav Ship Systems I - Eng
Recommended Course Preparation	
Prerequisite NOTE: Unless otherwise indicated, a prerequisite is assumed to be passed with a "D" or better.	MATH 151 & MATH 152 with a C or better and PHYS 121 with a C or better or concurrent enrollment.
Credits	3
Repeatable?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Max. Total Credits	3 <small>This should be equal to the number of credits for courses that cannot be repeated for credit. For courses that may be repeated for credit, enter the maximum total number of credits a student can receive from this course. E.g., enter 6 credits for a 3 credit course that may be taken a second time for credit, but not for a third time. Please note that this does NOT refer to how many times a class may be retaken for a higher grade.</small>
Grading Method(s)	<input checked="" type="checkbox"/> Reg (A-F) <input type="checkbox"/> Audit <input type="checkbox"/> Pass-Fail

PROPOSED CATALOG DESCRIPTION (no longer than 75 words):

This course introduces the student to a comprehensive fundamental understanding of United States naval engineering principles and systems. Topics include thermodynamics, incompressible fluid flow, electrical theory, hydraulics and pneumatics, power train components, fluid/lube oil systems, desalination, fundamentals of nuclear power, propulsion systems (internal combustion, gas turbines, and steam), electrical distribution, ship stability and damage control. Students will examine case studies to apply and analyze course topics within naval ships systems contexts. Departmental permission required.

RATIONALE FOR NEW COURSE:

a) **Why is there a need for this course at this time?** For students to be successful U.S. Navy and Marine Corps officers, understanding of engineering systems fundamentals and core concepts is critical to professional performance and technical proficiency. The Navy and Marine Corps are charged with maintaining superiority in the maritime domain, and comprehension of fundamental theories and basic operations of naval engineering systems. Classes on thermodynamics, incompressible fluid flow, electrical theory, hydraulics and pneumatics, power train components, fluid/lube oil systems, desalination, fundamentals of nuclear power, propulsion systems (internal combustion, gas turbines, and steam), electrical distribution, ship stability and control and damage control will inform the future Navy and Marine Corps officer.

b) **How often is the course likely to be taught?** The course will be piloted in the Fall 2016 semester and the course will be taught every fall semester (once per Academic Year). Once approved, the course will be adopted into the NROTC program at UMBC as part of its Naval Science curriculum offerings.

c) **How does this course fit into your department's curriculum?** This course is designed to fulfill the U.S. Navy-mandated ship engineering systems requirement. The class is a foundational skills course for midshipmen/students focused on joining the NROTC program and commissioning as an officer in the U.S. Navy. Students will practice the maritime proficiency professional competency required to become a naval officer, and develop a basic understanding of naval engineering systems concepts that are core to the Navy such as theory and employment of engineering systems, including thermodynamics, incompressible fluid flow, electrical theory, hydraulics and pneumatics, power train components, fluid/lube oil systems, desalination, fundamentals of nuclear power, propulsion systems (internal combustion, gas turbines, and steam), electrical distribution, ship stability and control and damage control. Physical aspects of marine propulsion, naval architecture, electrical systems, and auxiliary engineering systems integration will be discussed.

d) **What primary student population will the course serve:** This course is intended for NROTC scholarship students and those students who wish to join the NROTC program and commission as an officer in the U.S. Navy or Marine Corps. It is open to all enrolled UMBC students with approval by the Professor of Naval Science. This course is designed for midshipmen/students in their third year of academic study within the NROTC program, although other students may be accepted for attendance on a case-by-case basis. A thorough knowledge of calculus and calculus based physics is essential for completion of this course.

e) **Why is the course offered at the level (ie.100, 200, 300, or 400 level) chosen?** This course is intended for NROTC scholarship students and those UMBC students seeking to join the NROTC unit who desire a commission in the U.S. Navy. It is offered at the 300 level with the intention, but not required, for participating students to have completed MATH 151 & 152 as well as PHYS 121 for background prior to this course. The four-year curriculum track for NROTC scholarship students is designed for enrollment of midshipmen/students to this course who are in their junior year of collegiate study. Course completion for students participating in NROTC on two- or three-year curriculum tracks will be accepted pending referral from NROTC Academic Advisors.

f) **Explain the appropriateness of the recommended course preparation(s) and prerequisites(s).** Based upon the complexity of thermodynamics, incompressible fluid flow, electrical theory, hydraulics and pneumatics, power train components, fluid/lube oil systems, desalination, fundamentals of nuclear power, propulsion systems (internal combustion, gas turbines, and steam), electrical distribution, ship stability and control and damage control, this course requires background in calculus and calculus based physics. This class is one of the required naval science courses required for completion of the commissioning requirements for the NROTC scholarship, however, it is open to all UMBC students with permission from the Professor of Naval Science.

g) **Explain the reasoning behind the P/F or regular grading method.** Students are able to take a pass/fail course only after they have completed 30 or more credits. Because this class is a core course within the student's Naval Science curriculum continuum, it should only be available as a course with a regular grading method.

h) **Provide a justification for the repeatability of the course.** The Ship Systems I (Engineering) course will be offered once per academic year, dependent on the availability of classrooms and associated resources. It is a core course in the NROTC curriculum continuum, and must be completed with a grade of C or higher. Students may repeat the course only one time, consequent to academic review by the Professor of Naval Science.

ATTACH COURSE OUTLINE (mandatory):