

Naval Science

The Department of Naval Science is embedded within the College of Liberal Arts and Sciences as an interdisciplinary program but does not offer an academic degree. The courses offered by the Department are developed by the Department of the Navy. The Naval Science Department and Naval ROTC (NROTC) Program develop individuals mentally, morally, and physically, and imbue in them the highest ideals of duty and loyalty, in order to commission them upon graduation as Navy and Marine Corps officers. Program graduates possess a basic professional background, are motivated towards careers in the Naval Service, and have a potential for future development in mind and character so as to assume the highest responsibilities of command, citizenship, and government. Emphasis is placed on the core values of courage, honor and commitment.

Naval Science courses are open to any ISU student who has met the course prerequisites. To participate in the Naval ROTC Program, students must apply through one of two programs: the NROTC Scholarship Program (full scholarship; which includes a book stipend, tuition, laboratory fees, uniforms, and a monthly stipend), or the College Program (nonscholarship, with limited financial assistance). Applicants for the Scholarship Program are selected through a comprehensive nationwide competition. Applicants for the College Program are selected by the Professor of Naval Science from among students already in attendance at, or selected for admission by, the university. The College Program involves limited financial assistance for each of the last two academic years. Upon application, students choose between the Navy Option and Marine Corps Option, for the purposes of training focus. NROTC students pursue their studies like other university students except that they must meet certain additional requirements that will prepare them to serve as naval officers upon graduation.

A Marine Corps Option student incurs a minimum 4 -year active duty military obligation as a commissioned officer after graduation; a Navy Option student incurs a minimum 5-year active duty obligation.

Further information is available from the Professor of Naval Science, Iowa State University.

While in the NROTC Program, Scholarship Program students will participate (with pay) in at-sea training cruises during the summer. College Program students will participate in at-sea training during the summer between their Junior and Senior year only. Students are also exposed to regular and extracurricular activities that teach leadership principles and help them decide which field of the Navy or Marine Corps they wish to enter. These activities also include weekly leadership laboratory periods and opportunities for involvement in several student societies.

Undergraduate Study

Naval science courses are primarily for those students in the NROTC program, however, other university students may also enroll. Students enrolled in the NROTC program must fulfill the following requirements:

N S 111	Introduction to Naval Science	3
N S 212	Seapower and Maritime Affairs	3
N S 220	Leadership and Management	3
N S 230	Navigation	3
N S 320	Naval Ship Systems I (Engineering)	3
N S 330	Naval Ship Systems II (Weapons)	3
N S 410	Naval Operations and Seamanship	3
N S 412	Leadership and Ethics	3
N S 440	Senior Naval Science Seminar	1

Marine option students will complete:

N S 111	Introduction to Naval Science	3
N S 212	Seapower and Maritime Affairs	3
N S 220	Leadership and Management	3
N S 321	Evolution of Warfare	3
N S 412	Leadership and Ethics	3
N S 421	Evolution of Amphibious Warfare	3
N S 440	Senior Naval Science Seminar	1

- All NROTC students must complete one course in American military history or national security policy. A course in non-western culture or religion is also required of all Navy-option students.
- All Navy option scholarship students must successfully complete MATH 165 Calculus I and MATH 166 Calculus II by the end of the sophomore year and PHYS 221 and PHYS 222 by the end of the junior year.

- In addition to the normal Naval Science courses, all NROTC students are required to participate in laboratory periods that supplement the various academic courses. The Leadership Lab emphasizes human relations principles, teaches basic military formations, movements, commands, courtesies, and honors, and provides practice in unit leadership. Non NROTC program students enrolled in Naval Science courses are not required to participate in laboratory periods.
- Navy option scholarship students are encouraged to major in engineering and physical sciences to meet the technological requirements of the modern Navy, however Navy-option students and Marine Corps-option students may pursue any major leading to a Bachelor's Degree.
- The College of Liberal Arts and Sciences offers a minor in military studies. Requirements for the minor include taking a minimum of 15 credits of ROTC instruction, which may be taken from any of the three ROTC programs offered on campus. At least 6 credits must be in courses numbered 300 or above.

For basic undergraduate curriculum requirements, see Liberal Arts and Sciences, Curriculum; or Engineering, Curricula.

Courses primarily for undergraduates:

N S 111. Introduction to Naval Science.

(3-0) Cr. 3. F.

Introduction to the organization, regulations, and capabilities of the US Navy, with emphasis on mission and principal warfare components.

N S 212. Seapower and Maritime Affairs.

(3-0) Cr. 3. S.

An historical survey of sea power in terms of national domestic environments, foreign policy, and the evolution of maritime forces with trends in technology, doctrine, and tactics. The student will develop an understanding of the role the US Navy has played in the nation's history, both in peace and war. Naval events, forces and policies will be studied as elements in the shaping of the national consciousness and sense of purpose. Course content will include the development of the concept of sea power, the role of various warfare components of the Navy, the implementation of sea power as an instrument of national policy, the evolution of naval tactics, and the influence of maritime affairs around the world.

N S 220. Leadership and Management.

(3-0) Cr. 3. Alt. F., offered 2012.

Experiential approach to learning principles of leadership and management by examining various management theories and their applications. Skills are developed in the areas of communication, counseling, control, direction, management, and leadership through active guided participation.

N S 230. Navigation.

(3-0) Cr. 3. S. *Prereq: Sophomore classification*

Study of the fundamentals of marine navigation used by ships at sea; includes practical exercises in piloting using visual and electronic means. In-depth discussion of laws that govern conduct of vessels in national and international waters. Course is supplemented with review and analysis of case studies involving actual navigation incidents.

N S 320. Naval Ship Systems I (Engineering).

(3-0) Cr. 3. F. *Prereq: PHYS 221, sophomore classification*

An introduction to naval engineering with emphasis on the equipment and machinery involved in the conversion of energy for propulsion and other purposes aboard the major ship types of the U.S. fleet. Basic concepts of the theory and design of steam, gas turbine, diesel, and nuclear propulsion. Introduction to ship design, stability, hydrodynamic forces, compartmentation, electrical and auxiliary systems.

N S 321. Evolution of Warfare.

(3-0) Cr. 3. Alt. F., offered 2011. *Prereq: Sophomore classification*

Evolution of warfare from 3500 B.C. to contemporary times; analysis of the impact of historical precedents on modern military thought and action; emphasis on the historical development of military tactics, strategy, and technology.

N S 330. Naval Ship Systems II (Weapons).

(3-0) Cr. 3. S. *Prereq: PHYS 221, sophomore classification*

Introduction to the theory and principles of operation of naval weapon systems. Included coverage of types of weapons and fire control systems, capabilities and limitations; theory of target acquisition, identification and tracking; basics of naval ordnance.

N S 410. Naval Operations and Seamanship.

(3-0) Cr. 3. F. *Prereq: Senior classification*

Study of tactical naval operations; employs practical use of maneuvering boards together with shiphandling principles to arrive at tactical shipboard maneuvering solutions. Study also of naval command and control, communications, and the Naval Warfare Doctrine.

N S 412. Leadership and Ethics.

(3-0) Cr. 3. S. *Prereq: Requirements for NROTC students - N S 111, N S 212 or HIST 389, N S 220, N S 230, N S 320, N S 330 and N S 410*

Basic background concerning the duties and responsibilities of the junior naval officer and division officer in the areas of integrity and ethics, human resources management, personnel management, material management, and the administration of discipline. Preparation for responsibilities encountered immediately upon commissioning.

N S 421. Evolution of Amphibious Warfare.

(3-0) Cr. 3. Alt. F., offered 2012. *Prereq: Sophomore classification*

Defines the concept of amphibious operations, origins, development from 600 B.C.

N S 440. Senior Naval Science Seminar.

(1-0) Cr. 1. F.S. *Prereq: Senior classification*

Current leadership issues in the US Navy which will challenge the newly commissioned officer. Opportunities to analyze, provide solutions, and discuss actions related to a variety of real world situations.

N S 490. Independent Study.

Cr. 1-3. Repeatable, maximum of 9 credits. *Prereq: Senior classification and prior approval of Naval Science Department Chair, 6 credits in Naval Science*

No more than 9 credits of N S 490 may be counted toward graduation.