

Naval Science (NAV SCI)

Courses

NAV SCI 1 Introduction to Naval Science 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This curriculum provides guidelines for introducing students to the organization of the Department of Defense and the naval service, the long-held customs and traditions of the service, basic leadership, ethics and character development, the duties of a junior officer, and basic information concerning shipboard procedures and safety. It is the intent of this course to stimulate the students' interest for study and investigation in future courses.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

NAV SCI 2 Sea Power and Maritime Affairs 2 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Traces the U.S. historical evolution of sea power, its concepts, theories and applications. Emphasizes the impact of world situation, U.S. national interest, changing technology, and naval leadership on the evolving concept of sea power. Relates historical developments to current trends. Examines briefly the U.S. Merchant Marine's and the former Soviet Navy's impact on sea power policy formulation.

Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Summer: 10 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

NAV SCI 3 Leadership and Management I 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

This course will cover basic management, decision making, and moral leadership. The student will learn to establish meaningful goals, prioritize among competing demands, and plan and forecast in a task-centered organization. The course includes exposure to measures of organizational effectiveness, methods to overcome resistance to change, effective communications, and techniques to aid in counseling, team building, and resolution of disciplinary and personnel matters.

Hours & Format

Fall and/or spring: 10 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

NAV SCI 10 Naval Ship Systems I: Engineering Systems 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Principles of design and operation of ships. Emphasis on description and analysis of major types of propulsion plants, both conventional and nuclear. Principles of thermodynamic cycles, electrical theory, power generation and distribution, auxiliary machinery systems. Ship construction, strength and stability in intact and damaged conditions. Factors and design criteria for seaworthiness, structural integrity, and operational employment.

Rules & Requirements

Prerequisites: Mathematics 1A or 16A

Repeat rules: Course may be repeated for credit with instructor consent.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

NAV SCI 12A Navigation and Naval Operations I 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Theory, principles, and procedures of terrestrial and celestial navigation and piloting techniques. A study of coordinating systems, including the celestial coordinate system, nautical charts and publications, position fixing, dead reckoning, nautical astronomy, the theory and methods of celestial navigation, and the theory and prediction of tides and current.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

NAV SCI 12B Navigation and Naval Operations II 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

Introduction to the various aspects of ship operations at sea. Principles of terrestrial navigation including the rules of the road for prevention of collisions at sea, vector analysis of relative motion, ship behavior and characteristics in maneuvering, precise ship positioning, use of aids to navigation, meteorology, and electronic navigation.

Rules & Requirements

Prerequisites: 12A or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

NAV SCI 20 Evolution of Warfare 3 Units

Terms offered: Spring 2025, Spring 2023, Spring 2021

Progressive analysis of the evolution of warfare from the ancient world to the present. Emphasis placed on causes of continuity and/or change of methods, as well as the influence of economic, moral, political, and technological factors on strategic thought.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Military Affairs 20

NAV SCI 154 Fundamentals of Maneuver Warfare 3 Units

Terms offered: Spring 2024, Spring 2022, Spring 2020

This course prepares future military officers and other leaders for service by studying modern tactical principles, current military developments, and other aspects of warfare and their interactions with and influences on maneuver warfare doctrine.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: Military Affairs 154

NAV SCI 400C Naval Laboratory 0.0 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

Emphasis is placed on professional training not of an academic nature. The laboratory is intended for topics such as drill and ceremonies, physical fitness and swimming testing, cruise preparation, cruise evaluation, sail training, safety awareness, preparation for commissioning, personal finances, insurance, and applied exercises in naval ship systems, navigation, naval operations, naval administration, and military justice. Other topics and special briefings will be conducted as determined by the Chief of Naval Education and Training or the Professor of Naval Science.

Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of laboratory per week

Additional Details

Subject/Course Level: Naval Science/Other professional

Grading: Offered for pass/not pass grade only.

Instructor: Broihier

NAV SCI 400D Naval Laboratory 0.0 Units

Terms offered: Spring 2011, Spring 2010, Spring 2009

Emphasis is placed on professional training not of an academic nature. The laboratory is intended for topics such as drill and ceremonies, physical fitness and swimming testing, cruise preparation, cruise evaluation, sail training, safety awareness, preparation for commissioning, personal finances, insurance, and applied exercises in naval ship systems, navigation, naval operations, naval administration, and military justice. Other topics and special briefings will be conducted as determined by the Chief of Naval Education and Training or the Professor of Naval Science.

Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of laboratory per week

Additional Details

Subject/Course Level: Naval Science/Other professional

Grading: Offered for pass/not pass grade only.

NAV SCI 400E Naval Laboratory 0.0 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

Emphasis is placed on professional training not of an academic nature. The laboratory is intended for topics such as drill and ceremonies, physical fitness and swimming testing, cruise preparation, cruise evaluation, sail training, safety awareness, preparation for commissioning, personal finances, insurance, and applied exercises in naval ship systems, navigation, naval operations, naval administration, and military justice. Other topics and special briefings will be conducted as determined by the Chief of Naval Education and Training or the Professor of Naval Science.

Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of laboratory per week

Additional Details

Subject/Course Level: Naval Science/Other professional

Grading: Offered for pass/not pass grade only.

NAV SCI 401 Naval Ship Systems II: Weapons Systems 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023

An introduction to the principles and employment of naval weapons systems. This course will build on a foundation of mathematics and physics by exploring the physical theory of acoustic and electromagnetic wave generation and propagation, and how these concepts are applied to the design and functionality of RADAR, SONAR, and electronic warfare systems. Additionally, the course will cover electromechanical and pneumatic systems in the context of weapons design, to include guidance systems, fuzing, and weapons of mass destruction. To inform the real world effects of these systems, this course will examine topics such as weapons employment, blast damage, platform capabilities, case studies, and ethical issues.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Other professional

Grading: Letter grade.

NAV SCI 412 Leadership and Ethics 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023

This course is the capstone leadership course. It is intended to provide the ethical foundation and tools required for success as a leader of a diverse work force, often under circumstances of substantial stress. The course is divided between the art of leadership and the technical aspects of integrating personnel development with the management of resources, although the emphasis is on leadership. It is designed to be given as a seminar or lecture/discussion in which principles, concepts, and concrete subjects are presented, discussed, and debated.

Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Naval Science/Other professional

Grading: Letter grade.