



# University of Minnesota Bulletin

1981-83



UNIVERSITY OF MINNESOTA

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ARMY-NAVY-AIR FORCE

**ROTC**

UNIVERSITY OF MINNESOTA

## How to Use This Bulletin

This bulletin presents basic information about Reserve Officers' Training Corps (ROTC) program opportunities and course offerings for University of Minnesota students. It is arranged in two sections:

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For degree requirements and college regulations, students should refer to the University *General Information Bulletin* and the bulletin of the college or unit of the University in which they are enrolled or enrolling. These bulletins are available at the information booth in Williamson Hall or may be obtained by writing to the Office of Admissions and Records, 110 Williamson Hall, 231 Pillsbury Drive S.E., University of Minnesota, Minneapolis, Minnesota 55455.

Additional information about ROTC programs may be obtained by contacting the following offices in the Armory Building on the Twin Cities campus/Minneapolis: Military Science, room 106, telephone 373-2212; Naval Science, room 203, telephone 373-2230; Aerospace Studies, room 3, telephone 373-2205. The mailing address for all three departments is: Armory Building, 15 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455. Include the appropriate program name and the room number listed above.

**Note**—The following symbols are used throughout the course descriptions in lieu of page footnotes:

- § Credit will not be granted if the equivalent course listed after the section mark has been taken for credit.
- ¶ Concurrent registration is allowed (or required) in the course listed after the paragraph mark.
- # Consent of the instructor is required prior to registration.
- △ Consent of the department offering the course is required prior to registration.
- f,w,s,su Following the course number indicate fall, winter, spring, or summer quarter.

### Equal Opportunity

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap. In adhering to this policy, the University abides by the requirements of Title IX of the Education Amendments of 1972, by Sections 503 and 504 of the Rehabilitation Act of 1973, and by other applicable statutes and regulations relating to equality of opportunity.

Inquiries regarding compliance may be directed to Lillian H. Williams, Director, Office of Equal Opportunity and Affirmative Action, 419 Morrill Hall, 100 Church Street S.E., University of Minnesota, Minneapolis, Minnesota 55455, (612) 373-7969, or to the Director of the Office of Civil Rights, Department of Education, Washington, D.C. 20202, or to the Director of the Office of Federal Contract Compliance Programs, Department of Labor, Washington, D.C. 20210.

# Army-Navy-Air Force ROTC

## I. GENERAL INFORMATION

### History and Philosophy

The Reserve Officers' Training Corps (ROTC) has an important role in the national defense framework of our nation. The American tradition of military instruction on civilian college campuses began in 1819 when a former superintendent at West Point established the American Literary, Scientific, and Military Academy, which later became Norwich University. Military instruction soon spread to other institutions—Virginia Military Institute in 1839, the University of Tennessee in 1840, and The Citadel in 1842.

In 1862 the Congress of the United States, foreseeing the dual necessities of creating additional institutions of higher learning as well as providing a means of schooling in the military arts, passed the Morrill Land Grant Act. This act provided money from the sale of government lands to establish colleges and universities and specified that courses in the military arts should be offered at these institutions.

The University of Minnesota opened its doors in 1869 through the benefits made available by the Morrill Act. One of the original nine faculty members was the University's first professor of military science, Major General Richard W. Johnson. For 70 years ROTC training at the University prepared students for entrance into the Army. Then in 1939 a Naval ROTC unit was established, and in 1949 an Air Force ROTC program was begun.

For more than 150 years, ROTC programs on civilian college campuses have provided intelligent, well-educated leaders for the nation's defense. In keeping with the typically American concepts of the citizen-soldier and civilian control of military forces, these programs have produced civilian-oriented military officers from all geographic and social strata whose leadership has been characterized by initiative, ingenuity, and flexibility. And because ROTC officers may return to civilian status when they have fulfilled their military obligation, ROTC programs provide leadership resources not only for national defense but also for civilian enterprise.

### Programs

At the University of Minnesota, ROTC programs are offered by the U.S. Army, Navy, and Air Force. ROTC course work is completed concurrently with degree work so that participants qualify for officer commissions in one of the four military services—Army, Marines, Navy, or Air Force—as they complete requirements for a University degree. For students, ROTC course work offers the opportunity to widen their perspective, sharpen their sense of responsibility, and develop their ability to organize, motivate, and lead others, as well as to acquire a maturity of judgment that can be a source of strength and self-confidence throughout their careers.

Four-year and two-year programs are available, each offering a different approach toward earning an officer's commission for students who meet selection requirements. Four-year programs consist of a basic course and an advanced course. The basic course is taken during the freshman and sophomore years, and the advanced course normally comprises the junior and senior years. The two-year programs consist of only the advanced course. Enrollment in an advanced course normally obligates students to a service commitment.

## General Information

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### Curricula

ROTC courses are designed to prepare students for military service as junior officers. Students learn to exercise self-discipline, to organize time and effort efficiently, to perform effectively under stress, to analyze and react quickly and with good judgment, and to consistently exhibit exemplary military bearing and appearance. Seniors are placed in positions of command, able to apply the leadership skills they have developed during their preceding years of ROTC training. Following this final year of practical experience, these men and women are well prepared to assume leadership responsibilities as commissioned officers.

The ROTC curricula are administered under the supervision of the University of Minnesota through the Departments of Military Science (Army ROTC), Naval Science (Navy/Marine ROTC), and Aerospace Studies (Air Force ROTC).

### Benefits

ROTC scholarship programs provide up to four years of subsidized education. While in school, the scholarship pays all tuition costs, other instructional fees, and textbook expenses. Additionally, scholarship students receive \$100 per month for a maximum of 40 months. Nonscholarship students in their junior and senior years receive \$100 per month for a maximum of 20 months. While attending summer training, all ROTC students receive approximately \$500 per month plus housing, travel, and subsistence allowances. Students attending summer training to qualify for a two-year program receive the same pay and allowances as ROTC students.

### Obligations

Students who complete all requirements are commissioned as second lieutenants or ensigns. Scholarship students serve an obligatory four-year period of active duty (students in the Naval Nuclear Propulsion Scholarship program have a five-year active duty obligation). Nonscholarship students serve an obligatory period of active duty of three years. Air Force pilot and navigator program students incur a commitment of six and five years, respectively, after completion of their training. Army Reserve students incur a three-month active duty training commitment and then assume reserve obligations.

### Admission Requirements

The three ROTC programs are open to all students. Young men and women are selected on the basis of their own merits. Certain qualifications and eligibility criteria for enrollment and for commissioning must be met, however, and these are set forth in the laws and regulations that govern the programs. Students who do not meet these criteria may enroll in a course for its educational value but do not receive financial benefits or an officer's commission. Basically, to be eligible for admission to a University of Minnesota ROTC program, applicants must:

1. be full-time college students;
2. have reached their seventeenth birthday by June 30 of the year they plan to enroll;
3. be of sound physical condition;
4. show evidence of moral integrity, satisfactory scholarship and extracurricular activity, and potential officer capabilities; and
5. have no moral or personal convictions that will prevent them from conscientiously bearing arms in support and defense of the Constitution of the United States.

## **Transfer Students**

Students who have participated in ROTC training at another college or university may request transfer if they were honorably released by the first institution and are accepted by a University of Minnesota ROTC unit.

## **Advanced Standing**

Students who have participated in ROTC training at another institution may be granted advanced standing for military courses successfully completed.

## **Veterans**

Veterans may take advantage of their military service and experience by seeking advanced placement in an ROTC program. G.I. Bill educational benefits and ROTC benefits may be received concurrently. Army students may receive advanced standing for membership in the National Guard or Army Reserve through the Simultaneous Membership Program. After commissioning, the veterans can count their prior service for longevity pay and retirement.

## **Scholarships**

Scholarships open to high school seniors and college freshmen are available through national or regional selection systems. Completed applications for four-year ROTC scholarships must be submitted by December 1 for the Navy/Marine program and by December 15 for the Army and Air Force programs for enrollment the following fall.

Students accepted into one of the ROTC nonscholarship programs are normally eligible to compete for the scholarship program after one or two quarters of enrollment. Aptitude for military service and academic performance are major considerations for acceptance.

## **Student Activities**

Each ROTC department offers a wide range of activities for its students. A variety of local and nationally affiliated organizations offer interested and qualified students the opportunity to participate in activities, both on and off campus, that will develop their leadership and managerial skills. Social events and athletic competitions, scheduled throughout the school year, round out the activities available.

## **Access to Student Educational Records**

In accordance with the regents' policy on access to student records, information about a student generally may not be released to a third party without the student's permission. The policy also permits students to review their educational records and to challenge the contents of those records.

Some student information—name, address, telephone number, dates of attendance, college and class, major, adviser, and degrees earned—is considered public or directory information. To prevent release of such information outside the University while in attendance at the University, a student must notify the records office on his or her campus.

Students are notified annually of their right to review their educational records. The regents' policy, including a directory of student records, is available for review at the

## *General Information*

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information booth in Williamson Hall, Twin Cities campus/Minneapolis, and at the records offices on other campuses of the University. Questions may be directed to the Office of the Coordinator of Student Support Services, 260E Williamson Hall, (612) 373-2106.



## **II. PROGRAM AND COURSE DESCRIPTIONS**

### **MILITARY SCIENCE**

(Army ROTC)

The Department of Military Science conducts the Army ROTC program to prepare men and women as officer candidates for both the Regular Army and the Army Reserve. In addition to instruction in military fundamentals common to all branches of the Army, this program attempts to develop in students the leadership attributes essential to their future roles as officers. Military science courses are offered in two- and four-year sequences that students complete concurrently with course work required for earning a University degree. Students register and earn academic credits for Army ROTC classes in the same manner as for other elective courses in the curriculum.

### **Programs**

Students usually begin the four-year program in their freshman year, although students with at least two academic years remaining may enroll. Students may enter the advanced program by attending a six-week Basic Camp at Fort Knox, Kentucky; by completing the first two years of military science course work during two summer sessions; or by completing 90 contact hours through participation in various ROTC classes or activities. Numerous University courses may be accepted in place of military science courses, allowing students to become eligible for advanced placement in the military science program. Interested individuals must apply in person to the Department of Military Science for advanced placement or participation in the Basic Camp.

Students attending other colleges or universities in the area may also enroll in the Army ROTC program at the University of Minnesota. They are eligible for the same programs and scholarships offered to University students.

Veterans and members of the Army Reserve or National Guard may use their prior military service to gain advanced placement in the Army ROTC program. Students who have completed ROTC programs at military schools and high schools are accepted for advanced placement on an individual basis. Students who have had ROTC experience at other colleges or universities receive credit for ROTC instruction successfully completed.

In addition to completing ROTC classes, all program participants attend either a six-week Advanced Camp or a nine-week ROTC Ranger Camp during the summer after their junior year. Attendance at one of the camps is mandatory; full course credit and recommendation for a commission are not granted without camp attendance.

Students have an opportunity to receive airborne or air assault training, normally after their junior year of Army ROTC.

### **General Benefits and Obligations**

The department supplies all ROTC texts and uniforms. Students in their junior and senior years of Army ROTC also receive a \$100 monthly allowance during those academic years.

Students attending Basic, Advanced, or ROTC Ranger Camps are paid travel expenses and a salary, and all food, housing, and clothing are furnished.

Students (other than scholarship recipients—see below) enrolled in the first two years of the program incur no military service obligation. Once enrolled in the junior year of Army ROTC, however, students must enlist in the Army Reserve, agree to complete the

## ***Program and Course Descriptions***

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remaining two years of the program, and accept commissions, if offered, upon completing the program and graduating from the University.

Students who have received their bachelor's degrees and have been commissioned through the Army ROTC program may request a delay in reporting for duty in order to continue their education. Normally an additional two years are allowed for graduate study.

### **Scholarships**

There are 22 Army scholarship programs available. Students can receive four-year, three-year, or one-year scholarships. Four-year scholarships are offered annually to outstanding high school students selected in national competition. Applications should be submitted between July 1 and December 15 of the applicant's senior year in high school.

Students enrolled in Army ROTC are eligible to compete for three-year, two-year, or one-year scholarships after completing their first, second, or third years of the program. In addition to the national competition, the professor of military science may award three-year and two-year scholarships.

For those awarded scholarships, the Army pays tuition, laboratory fees, textbook expenses, supplies, and other authorized educational expenses. In addition, students receive \$100 per month for the duration of the scholarship. All scholarship students incur a four-year active duty obligation after graduation.

Scholarships are also available from the National Guard, Army Reserve, American Legion, Association of United States Army, Reserve Officers Association, Anoka County Veterans Council, Society of American Military Engineers, and other organizations.

### **Commissions**

Completing the Army ROTC program and earning their academic degrees qualifies graduates for appointments as second lieutenants in the Army Reserve or Army National Guard. These appointments include an obligation to serve on active duty for a period of three months to three years, depending on Army officer requirements at the time of graduation, or to serve in the Army National Guard for six years. The branch of service in which students are commissioned will depend upon such factors as their interests, their academic majors, and the needs of the Army.

Through a Distinguished Military Graduate program, Regular Army commissions are offered to outstanding students motivated to make Army service their career. Nonscholarship students who accept Regular Army commissions incur a three-year duty obligation. A nursing program is also offered through ROTC.

### **Course Descriptions**

**Leadership Laboratory**—LL is a series of minicourses, covering military topics, taught to all cadets each quarter. These classes are designed to help students develop functional leadership skills in problem solving, decision making, personnel management, and other areas. Progressive and extensive practice in voice and command, bearing, and physical fitness is emphasized.

### **Lower Division Courses**

#### **Military Science I**

**1011. WORLD MILITARY HISTORY.** (2 cr; prereq  $\Delta$ , Leadership Laboratory)

Basic concepts of military history, including principles of war, military definitions, and relationship of geography, economics, and technology to military history; warfare through the Napoleonic age.

- 1012. WORLD MILITARY HISTORY.** (2 cr; prereq  $\Delta$ . Leadership Laboratory)  
Warfare through the ages; American military tradition from 1738 through 1918.
- 1013. WORLD MILITARY HISTORY.** (2 cr; prereq  $\Delta$ . Leadership Laboratory)  
Warfare through the ages; World War II, Korean War and Vietnam, modern military implications, Arab-Israeli war, and NATO vs. Warsaw Pact.

## **Military Science II**

- 1021. U.S. INTERNATIONAL PERSPECTIVES: AN ANALYSIS OF THE U.S. MILITARY ROLE.** (2 cr; prereq  $\Delta$ , Leadership Laboratory)  
Basic factors involved in a nation's capacity for developing power; geographical position, nature of population, social organization; the ideology, economy, and technological resources of a nation.
- 1022. U.S. INTERNATIONAL PERSPECTIVES: AN ANALYSIS OF THE U.S. MILITARY ROLE.** (2 cr; prereq  $\Delta$ , Leadership Laboratory)  
The international political system and its influence on national power; force as related to other types of influence; force as related to other instruments of policy.
- 1023. U.S. INTERNATIONAL PERSPECTIVES: AN ANALYSIS OF THE U.S. MILITARY ROLE.** (2 cr; prereq  $\Delta$ , Leadership Laboratory)  
Varying levels of military force available to implement policy and formulate strategy; role of the U.S. Army and Army officers.

## **Directed Studies**

- 3970. DIRECTED STUDIES.** (Cr ar; prereq #)  
Provides flexibility so a student can fit an ROTC course into his/her schedule if it might otherwise prohibit participation in ROTC. The instructor and the student determine a mutually convenient time to meet. Course content remains the same as for regularly listed military science course.

## **Summer Session Courses**

When sufficient demand exists, the Military Science I and II classes are offered in the summer for five credits each as Mil 1014 and 1024.

## **Upper Division Courses**

### **Military Science III**

- 3131. LEADERSHIP ASSESSMENT AND TRAINING.** (3 cr. 4 cr with Assessment Laboratory; prereq  $\Delta$ , Leadership Laboratory)  
Leadership traits and principles; role-playing situations, methods and techniques of preparing and conducting briefings and instruction; emphasis on group effort and interpersonal relations. Assessment Laboratory involves student participation in tasks to identify leadership strengths, with comprehensive feedback.
- 3132. MAP READING.** (3 cr; prereq  $\Delta$ , Leadership Laboratory)  
Skills in reading and interpreting military maps and aerial photographs; basic land navigation techniques.
- 3133. SMALL-UNIT TACTICS.** (3 cr; prereq  $\Delta$ , Leadership Laboratory)  
Small-unit operations in conventional and unconventional battlefield environments; employment in tactical situations.

### **Military Science IV**

- 3141. MILITARY MANAGEMENT, ETHICS, AND PROFESSIONALISM.** (3 cr; prereq  $\Delta$ , Leadership Laboratory)  
Staff procedures in military organizations; staff writing, code of military ethics and professionalism; role-playing situations and written practical exercises.
- 3142. LEADERSHIP COMMUNICATIONS.** (3 cr, §Spch 3111; prereq  $\Delta$ , Leadership Laboratory)  
Precepts and practices of military leadership: management psychology, interpersonal relationships, group dynamics, individual differences.

## *Program and Course Descriptions*

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**3143. MILITARY LAW.** (3 cr; prereq  $\Delta$ , Leadership Laboratory)

History and basic concepts of military justice; emphasis on origin, nature, and purpose of Uniform Code of Military Justice and Manual for Courts-Martial; relationship between military justice and military discipline; scope and nature of appellate review.



# NAVAL SCIENCE

(Navy/Marine ROTC)

The Naval Reserve Officers' Training Corps (NROTC) offers the opportunity for qualified young men and women to earn commissions as Navy or Marine Corps officers as they complete requirements for a University degree. The NROTC program is the largest producer of officers for the Regular Navy.

During the four years of college, NROTC students (midshipmen) complete 480 hours (35 credits) of instruction in naval orientation, naval ship systems, seapower and maritime affairs, nautical navigation, organization, management, and leadership, plus 120 hours of professional training in military drills, ceremonies, courtesies, and honors.

Upon receiving their commissions, graduates move into various career areas. A newly commissioned ensign in the Navy is normally assigned to duty aboard a surface ship, on a nuclear-powered submarine, or with an aviation squadron after a period of specialized training in the approved warfare specialty. Women officers are usually assigned to duty at shore activities, but an increasing number are being assigned to noncombatant ships and aviation squadrons. Newly commissioned Marine Corps second lieutenants can select from several occupational fields, such as the infantry, aviation, artillery, and engineering.

## Student Categories

Students who study and train with the NROTC unit at the University of Minnesota can be classified into three categories:

**Naval Science Students**—Naval science students are associated with the unit for instruction only, i.e., for classes in navigation or in organization and management. They register and pay fees in the same manner as for other academic courses at the University. Such students are not eligible to participate in the summer training programs, to be issued uniforms, to have access to classified information, or to receive any financial benefits. Those who are eligible may qualify for enrollment as NROTC college program students.

**College Program Students**—College program students are enrolled by the professor of naval science. Such students normally are attending the University or have transferred to the University from other institutions. College program students are issued uniforms and provided naval science textbooks, but they must pay their own tuition and fees. During the junior and senior years (advanced course) they enlist in the Naval Reserve and receive \$100 per month for up to 20 months. Upon graduation and commissioning in the Naval or Marine Corps Reserve, they serve a three-year active duty obligation. College program students may apply for scholarship status through appointments that are based on the recommendation of the professor of naval science.

**Scholarship Students**—Scholarship students are appointed through an annual national selection process or through competition with their contemporaries and/or recommendation of the professor of naval science. Once appointed, students are designated as midshipmen in the Naval Reserve and receive tuition, fees, books, and a subsistence allowance of \$100 per month for up to 40 months. Upon graduation and commissioning in the Regular Navy or Marine Corps, they serve a minimum active duty obligation of four years.

### **Programs**

Four NROTC programs are available that lead to rewarding careers as officers in the Navy or Marine Corps:

- a four-year college program
- a four-year scholarship program
- a two-year college program
- a two-year scholarship program

### **Four-Year College Program**

The Navy-Marine Corps (nonsubsidized) four-year college program is for students who wish to serve their country for a specified period as Reserve officers in the Navy or Marine Corps. Participants are selected from freshmen enrolling at the University.

There are almost no restrictions on undergraduate academic courses students may choose, provided they can be applied to a bachelor's degree. The only requirement is that students successfully complete the required naval science and certain specified University courses prior to graduation. In addition, students attend one short summer training session as well as drills during the school year.

After graduation from college and completion of their naval science requirements, students will be commissioned as ensigns in the Naval Reserve or as second lieutenants in the Marine Corps Reserve, ready to serve on active duty for three years.

### **Four-Year Scholarship Program**

The Navy-Marine Corps four-year scholarship program is maintained for one purpose—to educate and train qualified young men and women for service as commissioned officers in the Regular Navy or Marine Corps.

Scholarship recipients are chosen by a national selection committee and must be accepted by the University. The application deadline is December 1 for enrollment the following fall quarter.

Scholarship students are required to complete three summer training periods, for which they receive training pay. After completing naval science requirements and earning the bachelor's degree, students will transfer from Reserve status to active duty with commission as officers in the Regular Navy or Marine Corps, ready to continue and specialize in their chosen military careers.

Students already enrolled in the college (nonsubsidized) program may enter the scholarship program by being selected as one of a quota allowed to NROTC professors of naval science.

### **Two-Year College Program**

Students attending or transferring to the University should apply for the two-year college program before April 1 of their sophomore year. Students selected must attend a six-week Naval Science Institute (NSI) in Newport, Rhode Island. At the beginning of their junior year, students begin to receive the \$100 monthly allowance.

Students finishing near the top of the NSI class may be offered NROTC scholarship program status for their remaining two years of college. This includes full tuition plus the other scholarship program benefits, but also incurs a four-year active duty obligation.

## Two-Year Scholarship Program

The Navy-Marine Corps two-year scholarship program was established to provide NROTC opportunities to college juniors and seniors. Interested students should apply before March 15 of their sophomore year. Selected students must complete the six-week Naval Science Institute course held at Newport, Rhode Island. Following NSI, students enroll in the advanced course of the NROTC program. Commissioning as an ensign or a second lieutenant follows successful completion of the program and carries an obligation to serve four years of active duty.

## Naval Science Institute (NSI)

Students selected for either of the two-year programs must attend the Naval Science Institute in Newport, Rhode Island, in June after completion of their sophomore year of college. These students participate in a six-week course of instruction in naval science and professional training. While at NSI, they receive pay as seaman recruits. Uniforms, room, and board are furnished by the Navy. Successful completion of NSI qualifies students for enrollment in the advanced course of the NROTC program.

## Curriculum

The naval science curriculum encompasses nautical science subjects from basic seamanship to fleet operations and provides intensive schooling in the art of being a naval officer. All midshipmen receive indoctrination in the background and meaning of our national and naval traditions and the importance of professional performance. This awareness, together with the knowledge of and opportunity to practice basic leadership principles, affords them the inner confidence necessary to effectively lead and command others.

Midshipmen study the first- and second-year courses described below. During the third and fourth years, they study the courses of the Navy or Marine Corps sequence. Two-year students complete only the Navy or Marine Corps upper division sequence. In addition to the courses specified, students are required to meet with their NROTC unit for about two hours each week for professional training. During the junior and senior years, these sessions concentrate primarily on development of command and leadership skills. NROTC students are also required to take certain University courses specified by the Navy.

Students register for NROTC courses in the same manner as for other courses in their academic programs. These courses carry academic credit and may be used to fulfill requirements toward a University degree. Students who are not in the NROTC program may enroll in a naval science course as an elective with the consent of the instructor.

## Course Descriptions

### Professional Training

#### ALL NROTC Students—Each Year/Each Quarter

- 0204. PROFESSIONAL TRAINING IN NAVAL SCIENCE.** (No cr; S-N only; prereq #)  
Instruction and training in basic military formations, movements, commands, courtesies and honors, personnel inspections, and other vocational subjects in the field of naval science.

## Program and Course Descriptions

### Lower Division Courses (Basic Course)

#### All NROTC Students—First Year

0101. **INTRODUCTION TO NAVAL SCIENCE.** (No cr; S-N only; prereq #)  
Instruction in the fundamentals of naval science.
1101. **NAVAL SHIPS SYSTEMS I.** (2 cr; prereq #)  
Types, purposes, and structures of naval ships. Ship compartmentation, steam and fossil fuel propulsion systems, ship design, and ship stability characteristics.
1102. **NAVAL SHIPS SYSTEMS II.** (2 cr; prereq #)  
Nonsteam and nuclear ship propulsion systems, auxiliary ship support systems, ship control, and sensors.

#### All NROTC Students—Second Year

1103. **PRINCIPLES OF NAVAL WEAPONS SYSTEMS.** (2 cr)  
Theory and principles of energy fundamentals, radar, electro-optics, underwater acoustics, electronic scanning, beam propagation and feedback systems, and digital and analog computation used in modern weapons systems and military technology.
1104. **SCIENCE AND TECHNOLOGY IN THE DESIGN, CONSTRUCTION, AND USE OF MODERN WEAPONS SYSTEMS.** (2 cr; prereq 1103)  
Techniques and methods in fusing scientific principles and current technology to design and construct military weapons and integrated weapons systems. Weapon propulsion, guidance, launching, command, control, communications, and characteristics of several advanced weapons platforms.
5021. **OCEANIC HISTORY.** (4 cr; prereq #)
5022. **OCEANIC HISTORY.** (4 cr; prereq #)

### Upper Division Courses (Advanced Course)

#### Navy Sequence—Third Year

3301. **ADVANCED NAVAL OPERATIONS.** (3 cr; prereq #)  
International rules of the nautical road. Relative motion and ship maneuvering. Application of the maneuvering board in solving motion problems.
3303. **INLAND AND COASTAL NAVIGATION.** (3 cr; prereq #)  
Piloting: dead reckoning, fixes, running fixes, tides, currents, and anchoring. Inland rules of the nautical road.
3304. **CELESTIAL AND ELECTRONIC NAVIGATION.** (4 cr; prereq trigonometry, #)  
Theory and practical application of navigation using celestial bodies. Theory and application of modern electronic navigation systems.

#### Navy Sequence—Fourth Year

3404. **PRINCIPLES OF NAVAL MANAGEMENT I.** (2 cr; prereq #)  
Introduction to naval management: management theory and its application to formal military organizations from the national level to the shipboard level.
3405. **PRINCIPLES OF NAVAL MANAGEMENT II.** (4 cr, §Spch 3111; prereq #)  
Precepts and practices of naval leadership: management psychology, interpersonal relationships, group dynamics, individual differences.
3406. **PRINCIPLES OF NAVAL MANAGEMENT III.** (2 cr; prereq #)  
Management at the shipboard level: divisional organization, Uniform Code of Military Justice, formal organization at shipboard level.

#### Marine Corps Sequence—Third Year

3352. **EVOLUTION OF ART OF WAR I.** (2 cr; prereq #)  
Principles of war. Evolution of warfare from 3500 B.C. through the French Revolution.
3353. **EVOLUTION OF ART OF WAR II.** (2 cr; prereq #)  
Evolution of military technology and theory from the industrial revolution through the armistice preceding World War II.

- 3354. EVOLUTION OF ART OF WAR III.** (2 cr; prereq #)  
Evolution of warfare from World War II through the Vietnam experience.

**Marine Corps Sequence—Fourth Year**

- 3452. AMPHIBIOUS WARFARE I.** (2 cr; prereq #)  
Evolution of amphibious warfare techniques from Gallipoli through World War II operations in the Mediterranean.
- 3453. AMPHIBIOUS WARFARE II.** (2 cr; prereq #)  
Amphibious warfare techniques from the Pacific campaigns of World War II through the postwar amphibious trials.
- 3454. AMPHIBIOUS WARFARE III.** (2 cr; prereq #)  
Post-World War II amphibious operations, introduction to present-day concepts of planning amphibious operations.





# AEROSPACE STUDIES

## (Air Force ROTC)

The Air Force ROTC program enables qualified men and women to work toward Reserve commissions as officers in the Air Force while they are completing requirements for a University degree. Students are commissioned as second lieutenants upon graduation. Women cadets are eligible to participate in all phases of the program including those that lead to the pilot, navigator, and missile launch officer occupations.

The Air Force ROTC curriculum emphasizes development of leadership and communication skills. Students learn the ways in which the Air Force functions in support of national policy. Management theory and its practical application in directing personnel and programs are stressed.

Courses in the Air Force ROTC program are offered by the Department of Aerospace Studies. Students register for these courses in the same manner as for other University courses.

## Programs

Air Force ROTC offers both four-year and two-year commissioning programs. Under the four-year program students register for Air Force ROTC courses beginning in their freshman year and complete a four-year academic curriculum that includes a four-week summer camp between their sophomore and junior years. Students electing the two-year program complete the last two years of the Air Force ROTC program after attending a six-week camp during the summer immediately preceding their last two years at the University. The two-year program is available to both graduate and undergraduate students.

The vast scope of the Air Force is difficult to portray in the classroom. Air Force cadets may have the opportunity to visit Air Force bases for firsthand observation of the operating Air Force. These trips are frequently made on weekends or scheduled to coincide with school vacation periods. Cadets may be flown by military aircraft to an Air Force base to tour facilities, receive mission briefings, and inspect aircraft and other technical equipment.

## Admission Requirements

Entry into the last two years of the Air Force ROTC program is on a competitive basis. Candidates must:

1. take the Air Force Officer Qualifying Test (AFOQT);
2. pass an Air Force medical examination;
3. be approved by an interview board; and
4. complete summer camp, i.e., field training (four-year program cadets complete a four-week course, and two-year program applicants complete a six-week course).

Applicants selected for flight training must be able to complete graduation requirements and be commissioned before reaching 26½ years of age. Other applicants must be able to complete graduation requirements before age 30, although deserving students who have completed prior service may obtain a waiver to complete the requirements up to age 35.

Admission to Air Force ROTC academic courses is open to all interested students with the approval of the Department of Aerospace Studies.

*Note:* Applicants interested in the two-year program should apply during the fall quarter of their sophomore year.

### **Financial Benefits**

All cadets receive uniforms and AFROTC textbooks throughout the program. During the last two years of AFROTC all cadets also receive \$100 per month. During summer camp students receive their food, uniforms, housing, medical care, and either \$391 or \$573 (for the four-week or six-week camp, respectively; these amounts were in effect in June 1981 and are subject to annual increase). Transportation to and from camp is also provided.

In addition, scholarships are available on a competitive basis. These scholarships cover full University tuition and fees and all required textbooks.

Physically qualified cadets who are pilot candidates are provided 25 hours of flight training conducted by a civilian flight school near the campus at no expense to themselves.

### **Active Duty Requirements**

Students not programmed for flight training incur a four-year active duty commitment. Students who enter the pilot and navigator programs incur a commitment of six and five years active duty, respectively, after completing their training.

### **Curriculum**

The aerospace studies course consists of one hour per week attending lower division classes (General Military Course or GMC) for the first six quarters, and three hours per week attending upper division classes (Professional Officer Course or POC) for the last six quarters. Aerospace studies credits may be applied toward completion of elective credit requirements for any college of the University. Some students may find, however, that *all* of their aerospace studies credits may not be applied toward degree requirements because of special recommended electives in their majors.

In addition to the classroom study, all Air Force ROTC cadets are required to take 10 hours of Leadership Laboratory each quarter. This training is conducted as a regularly scheduled activity for one hour per week. Leadership Laboratory is planned and directed largely by the Cadet Corps. It provides leadership experience designed to improve the ability of cadets to serve as officers in the Air Force. Students who are taking aerospace studies courses for credit only and are not enrolled in the Air Force ROTC program are exempt from the Leadership Laboratory requirement.

### **Course Descriptions**

With the exception of the flight instruction program, all Air Force ROTC cadets complete the same sequence of upper division courses. Four-year cadets also complete the lower division courses. Any University student can enroll in any of the academic courses with instructor approval.

#### **Lower Division Courses**

**1104f. EARLY HISTORY OF AIR POWER.** (2 cr; prereq  $\Delta$ )

The beginnings of human flight. Early military attitudes toward aviation and the development of employment concepts, tactics, and strategies. *Early development of air doctrines.*

**1105w. ALLIED AIRPOWER IN WORLD WAR II AND THE BERLIN AIRLIFT.** (2 cr; prereq  $\Delta$ )

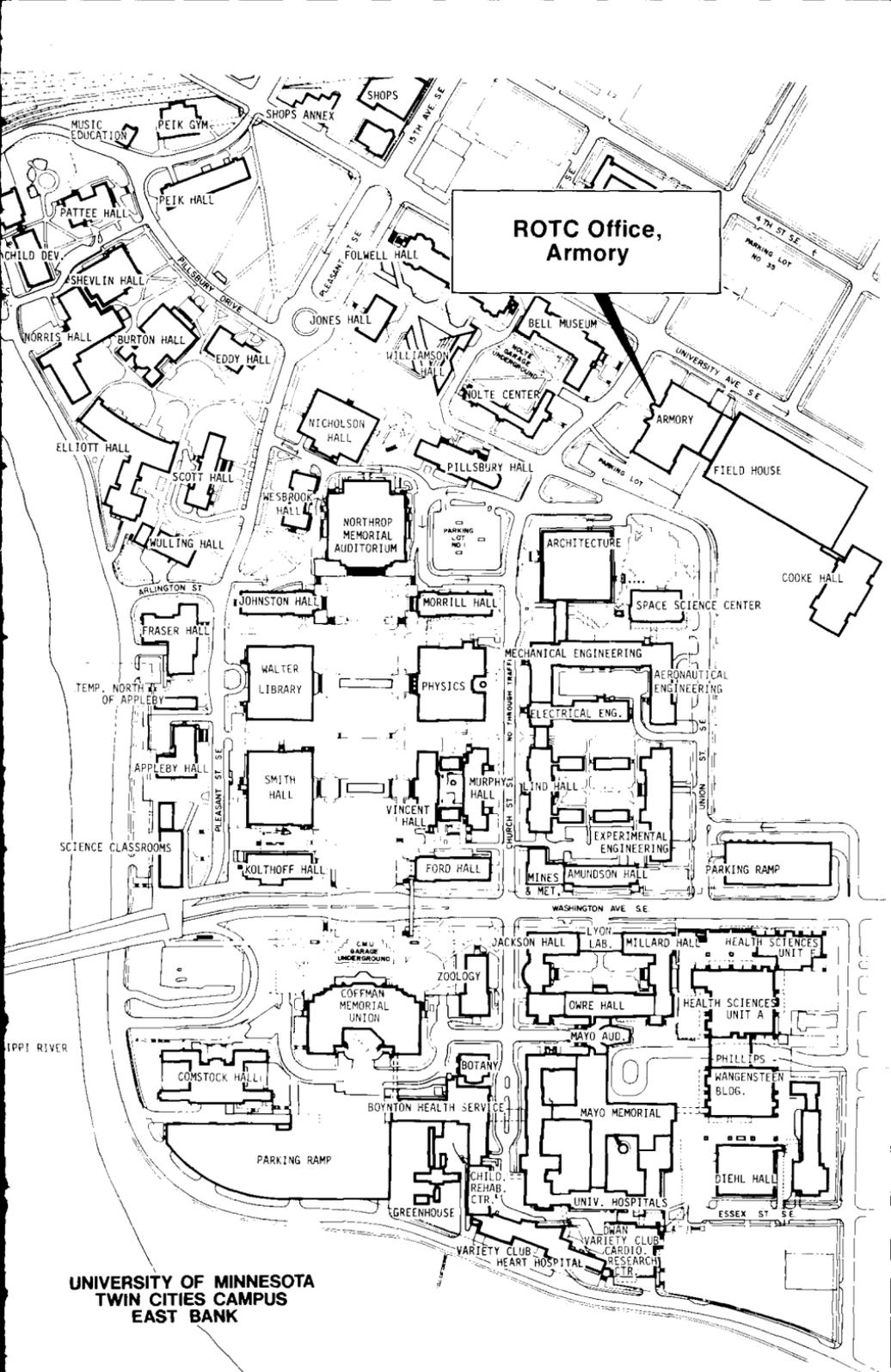
Uses of airpower in World War II. Development of an independent Air Force. Cold war strategy. The Berlin airlift.

- 1106s. MODERN EMPLOYMENT OF AIRPOWER.** (2 cr; prereq  $\Delta$ )  
Effects of air power on tactics and strategy in the modern world. The role of air power in Korea, Cuba, Southeast Asia. Air power advances over the past quarter century.
- 1204f. U.S. AIR FORCE.** (1 cr; prereq  $\Delta$ )  
The doctrine, mission, and organization of the U.S. Air Force.
- 1205w. AIR FORCE COMBAT COMMANDS.** (1 cr; prereq  $\Delta$ )  
The mission, organization, and operation of the Strategic Air Command, Aerospace Defense Command, and Tactical Air Command and their contributions to the U.S. strategic offensive, defensive, and general purpose forces.
- 1206s. U.S. SUPPORT FORCES.** (1 cr; prereq  $\Delta$ )  
The structure and functions of Air Force support forces. Organizations that support the combat commands. Air Force interaction with the Army and Navy.

## Upper Division Courses

- 3301f. MILITARY MANAGEMENT.** (3 cr; prereq  $\Delta$ )  
Fundamentals of management processes with emphasis on the unique nature of management in the Air Force. Emphasis on problem solving, decision making, performance appraisal, and communication skills. Lectures, discussions, student presentations, seminars, and various experiential methods.
- 3302w. AIR FORCE LEADERSHIP COMMUNICATION.** (3 cr; prereq  $\Delta$ )  
Multidimensional study of leadership, relating theory and practice. Overview of theoretical approaches to leadership. Application of interpersonal communication skills to leadership practice. Small-group processes and analysis of individual behavior, motivation, and perceptual processes. Lectures, discussions, student presentations, seminars, and various experiential methods.
- 3303s. CONTEMPORARY PROBLEMS IN AIR FORCE MANAGEMENT.** (3 cr; prereq  $\Delta$ )  
Integration and application of management and leadership concepts to contemporary Air Force situations. Emphasis on social problems and issues related to the all volunteer, professional force. Command and staff functions, ethics, responsibilities. Lectures, discussions, student presentations, seminars, and various experiential methods.
- 3401w. MILITARY IN SOCIETY.** (3 cr; prereq  $\Delta$ )  
Role and function of the professional officer in a democratic society. Civil-military relationships. Development of communication skills.
- 3402f. SEMINAR: FORMULATION AND IMPLEMENTATION OF U.S. DEFENSE POLICY.** (1 cr; prereq  $\Delta$ , \*Pol 5323)  
Principal requirements for maintaining adequate national security forces. Constraints affecting the formulation of U.S. defense policy. Impact of both technological and international developments upon strategic preparedness and the overall defense policymaking process.
- 3413s. MILITARY LAW AND SERVICE ORIENTATION.** (3 cr; prereq  $\Delta$ )  
History and basic concepts of military justice; emphasis on origin, nature, and purpose of Uniform Code of Military Justice and Manual for Courts-Martial; relationship between military justice and military discipline; scope and nature of appellate review; service orientation for newly commissioned officers.
- 3404f,w,s. FLIGHT INSTRUCTION PROGRAM.** (5 cr; prereq AFROTC pilot cadet,  $\Delta$ )  
Twenty-five hours of flight instruction and practice. Ground school covers federal aviation regulations, flight theory, aircraft instruments, meteorology, radio aids, navigation, and aircraft operation to the FAA private pilot level.





**ROTC Office,  
Armory**

**UNIVERSITY OF MINNESOTA  
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