ROTC subjects do not carry academic credit at MIT, but they can be counted toward the PE requirement. (Up to two points per year with a maximum of four points.)

### AEROSPACE STUDIES

**AS.101 The Foundations of the United States Air Force**
- Prereq: None. Coreq: AS.111
- U (Fall) 1-0-1

**AS.102 The Foundations of the United States Air Force**
- Prereq: AS.101 or permission of instructor; Coreq: AS.112
- U (Spring) 1-0-1

Survey designed to introduce students to the United States Air Force and Air Force Reserve Officer Training Corps. Topics include mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force officer opportunities, group leadership problems, and an introduction to communication skills. AS.102 is a continuation of AS.101.

R. Rivera

**AS.111 Leadership Laboratory**
- Prereq: None. Coreq: AS.101
- U (Fall) 0-2-2 [P/D/F]

**AS.112 Leadership Laboratory**
- Prereq: AS.111 or permission of instructor; Coreq: AS.201
- U (Fall) 0-2-2 [P/D/F]

Includes a study of Air Force customs and courtesies, drill and ceremonies, and military commands. Also includes studying the environment of an Air Force officer and learning about areas of opportunity available to commissioned officers, as well as interviews, guidance, and information to increase the understanding, motivation, and performance of other cadets. AS.112 is a continuation of AS.111.

M. Parry

**AS.201 The Evolution of USAF Air and Space Power**
- Prereq: AS.102 or permission of instructor; Coreq: AS.211
- U (Fall) 1-0-1

**AS.202 The Evolution of USAF Air and Space Power**
- Prereq: AS.201 or permission of instructor; Coreq: AS.212
- U (Spring) 1-0-1

Survey designed to facilitate the transition from Air Force ROTC cadet to Air Force ROTC officer candidate. Topics include Air Force heritage and leaders, Quality Air Force, an introduction to ethics and values, introduction to leadership, group leadership problems, and continuing application of communication skills. AS.202 is a continuation of AS.201.

M. Parry

**AS.211 Leadership Laboratory**
- Prereq: AS.101 or permission of instructor; Coreq: AS.201
- U (Fall) 0-2-2 [P/D/F]

**AS.212 Leadership Laboratory**
- Prereq: AS.211 or permission of instructor; Coreq: AS.202
- U (Spring) 0-2-2 [P/D/F]

Consists of activities classified as advanced leadership experiences that involve the planning and controlling of military activities of the cadet corps and the preparation and presentation of briefings and other oral and written communications. Also includes interviews, guidance, and information to increase the understanding, motivation, and performance of other cadets. AS.312 is a continuation of AS.311.

M. Parry

**AS.301 Air Force Leadership Studies**
- Prereq: AS.201 or permission of instructor; Coreq: AS.311
- U (Fall) 3-0-3

Study of leadership, quality management fundamentals, professional knowledge, Air Force doctrine, leadership ethics, and communication skills required of an Air Force junior officer. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts being studied. AS.302 is a continuation of AS.301.

K. Dillard

**AS.302 Air Force Leadership Studies**
- Prereq: AS.301 or permission of instructor; Coreq: AS.412
- U (Spring) 3-0-3

Consists of activities classified as advanced leadership experiences that involve the planning and controlling of military activities of the cadet corps and the preparation and presentation of briefings and other oral and written communications. Also includes interviews, guidance, and information to increase the understanding, motivation, and performance of other cadets. AS.312 is a continuation of AS.311.

M. Parry

**AS.311 Leadership Laboratory**
- Prereq: AS.311 or permission of instructor; Coreq: AS.301
- U (Fall) 0-2-4 [P/D/F]

**AS.312 Leadership Laboratory**
- Prereq: AS.311 or permission of instructor; Coreq: AS.302
- U (Spring) 0-2-4 [P/D/F]

Consists of activities classified as advanced leadership experiences that involve the planning and controlling of military activities of the cadet corps and the preparation and presentation of briefings and other oral and written communications. Also includes interviews, guidance, and information to increase the understanding, motivation, and performance of other cadets. AS.312 is a continuation of AS.311.

M. Parry

**AS.401 National Security Affairs/Preparation for Active Duty**
- Prereq: AS.302 or permission of instructor; Coreq: AS.411
- U (Fall) 3-0-9

**AS.402 National Security Affairs/Preparation for Active Duty**
- Prereq: AS.401 or permission of instructor; Coreq: AS.412
- U (Spring) 3-0-3

Examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Special topics of interest focus on the military as a profession, officerhip, military justice, civilian control of the military, preparation for active duty, and current issues affecting military professionalism. Within this structure, continued emphasis on refining communication skills. AS.402 is a continuation of AS.401.

K. Dillard
AS.411 Leadership Laboratory
Prereq: AS.312 or permission of instructor; Coreq: MS.401
U (Fall)
0-2-4 [P/D/F]
AS.412 Leadership Laboratory
Prereq: AS.411 or permission of instructor; Coreq: MS.402
U (Spring)
0-2-4 [P/D/F]
Consists of activities classified as advanced leadership experiences that involve the planning and controlling of military activities of the cadet corps, and the preparation and presentation of briefings and other oral and written communications. Also includes interviews, guidance, and information to increase the understanding, motivation, and performance of other cadets. AS.412 is a continuation of AS.411.
M. Parry

AS.511 Leadership Laboratory
Prereq: AS.412 or permission of instructor
U (Fall)
0-2-4 [P/D/F]
AS.512 Leadership Laboratory
Prereq: AS.511 or permission of instructor
U (Spring)
0-2-4 [P/D/F]
Consists of activities classified as advanced leadership experiences to continue developing critical leadership, managerial and communication skills along with maintaining an active, physical lifestyle needed in today's Air Force. AS.512 is a continuation of AS.511.
M. Parry

MILITARY SCIENCE

MS.001 American Military History
Prereq: None
U (Fall, Spring)
3-0-3
Thematic exploration of American military history in the context of the broader history of the United States, US military strategy and involvement around the world, and the social effects of the American society on the military. Begins with a survey of world military history, up to the American colonial period, offering perspective on how and why Americans viewed armed conflict the way they did. Then covers the growth and development of the US military, from the colonial period to the modern day. Examines in depth why America fought each conflict the way it did and how it arrived at those ways of fighting. Investigates the usually subtle, yet profound, social effects the US military and American society have on each other. Includes readings, oral and written presentations, and oral and written quizzes and exams.
A. Edwards

MS.101 Leadership and Personal Development
Prereq: None
U (Fall)
2-2-2
Foundational course provides instruction on the basic aspects of the officer corps of the United States Army. Introduces students to the personal challenges and competencies critical for effective leadership. Covers personal development of life skills, such as critical thinking, goal setting, time management, physical fitness, and stress management in relation to leadership, Officership, and the Army profession. Also covers the organization of the United States Army, the role of the military in today's society, and customs and traditions. Students apply classroom instruction during labs.
Staff

MS.102 Introduction to Tactical Leadership
Prereq: MS.101 or permission of instructor
U (Spring)
2-2-2
Provides an overview of leadership fundamentals, such as setting direction, problem-solving, listening, presenting briefs, providing feedback, and effective writing skills. Explores dimensions of leadership values, attributes, skills, and actions in the context of practical, interactive exercises. Introduces land navigation and basic tactics. Students apply classroom instruction during Leadership Laboratories designed to reinforce classroom concepts.
A. Edwards, J. Myers

MS.201 Fundamentals of Military Science
Prereq: MS.102 or permission of instructor
U (Fall)
2-2-2
Explores the dimensions of creative tactical leadership using historical case studies and interactive exercises. Students practice aspects of personal motivation, team-building and peer leadership fundamentals in various situations and environments. Introduces creative problem-solving techniques and procedures. Covers the organization, techniques, resources, and capabilities involved in conducting small-unit tactical operations. Students serve as junior leaders in Leadership Labs designed to reinforce classroom concepts.
J. Myers

MS.202 Fundamentals of Army Operations
Prereq: MS.201 or permission of instructor
U (Spring)
2-2-2
Examines the challenges of leading teams in the Contemporary Operating Environment. Presents the critical thinking and problem-solving skills necessary for adaptive leaders in administrative, training, and tactical environments. Explores Army leadership, mission-planning techniques, and small-unit operations in order to develop and hone decision-making skills. Throughout the term, cadets demonstrate their knowledge through a series of situational exercises. Covers fundamentals of military topography, including the use of military maps to determine topographic features, to conduct land navigation, and to perform terrain analysis. Cadets who successfully complete the subject possess fundamental tactical planning and decision-making skills that prepare them for more challenging training in the field and in future military science subjects. Students apply classroom instruction during labs in which they train and lead small units. They also develop greater self-awareness as they assess their own leadership styles and practice communication and team-building skills.
A. Edwards

MS.301 Planning Small Unit Operations
Prereq: MS.202 or permission of instructor
U (Fall)
3-2-4
Focuses on small unit tactics and the military planning process. Emphasizes application of Troop Leading Procedures (TLPs) as a guide for planning, executing, and making decisions for complex operations. Students study military order formats and advanced communication skills to effectively present their plans. Synthesizes the various components of training, leadership, and team-building. Upon completion, cadets will possess the fundamental confidence and competence of leadership in a small unit setting. Labs present opportunities to plan and conduct individual and collective training, providing leadership and tactical experience. Students delegate, supervise, and plan for/adapt to unexpected changes in organizations under stress. Students receive ongoing assessment designed to highlight their strengths and weaknesses and improve their leadership skills.
Staff
MS.302 Foundations of Tactical Leadership
Prereq: MS.301
U (Spring)
3-2-4
Explores leadership from the military perspective. Surveys basic principles for successfully managing and leading people, particularly in public service and the military. Develops skills in oral and written communication techniques, planning, team-building, motivation, ethics, decision-making, and managing change. Features interactive, experiential classes with case studies, student presentations, role plays, and discussion. During labs, students face challenging scenarios to help develop self-awareness and critical thinking skills. Cadets receive systematic and specific feedback on their leadership activities. Cadets begin to analyze and evaluate their own leadership values, attributes, skills, and actions.

A. Edwards

MS.311 Leadership Laboratory I
Prereq: MS.302 or permission of instructor;
Coreq: MS.301
U (Fall)
0-2-1
Collective training in fundamentals of small unit tactics, drill and ceremony, and the practice of individual military skills under field conditions off campus. Includes one weekend of field adventure training focused on teambuilding through completion of leaders reaction course, obstacle course, marksmanship, and rappelling.

M. Lutkevich, A. Dombroski

MS.312 Leadership Laboratory II
Prereq: MS.311, Coreq: MS.302
U (Spring)
0-2-1
Continues the development of skills taught in MS.311. Prepares students for the Leadership Development and Assessment Course (LDP) the following summer. Provides multiple venues for student evaluation under the Leadership Development Program (LDP). Culminates in a weekend Field Training Exercise (FTX), practicing platoon tactics, land navigation, command and control, and patrolling. Voluntary opportunities exist for airborne school, air assault school, mountain warfare school, and advanced marksmanship training.

M. Lutkevich, A. Dombroski

MS.401 Leadership, Management, and Ethics
Prereq: MS.302
U (Fall)
2-3-4
Develops proficiency in planning and executing complex operations, functioning as a member of a staff, assessing risk, making ethical decisions, and leading fellow students. First half of term covers how higher-level military organizations are organized and managed. Includes an overview of mission analysis, training management, risk management, logistics, maintenance, and medical systems. Second half examines military law and ethics, covering separation of powers, law of land warfare, equal opportunity, privacy, individual rights, searches and inspections, administrative discipline processes, and military law. Case studies, scenarios, and other exercises prepare students to face the complex ethical and practical demands of leading as commissioned officers in the US Army. Labs are designed to assess Officership potential. Through assignment to leadership positions in the ROTC Battalion, students plan and lead the execution of labs, direct and control the corps of cadets, enhance their oral and written communications, and improve their application of troop-leading procedures and mission analysis.

A. Edwards

MS.402 Officership
Prereq: MS.401
U (Spring)
2-3-4
Examines the importance of understanding the culture in which the Army operates, as well as how to establish a positive climate within the organization by accounting for the diverse cultural influences present. First half of term focuses on how to operate successfully within the contemporary operating environment. Emphasizes the role of cultural awareness in successful military operations. Also covers counter-insurgency, terrorism, interacting with non-governmental organizations, civilians on the battlefield, and host nation support. Second half focuses inward on the management and care of subordinates. Explores the Army culture, setting a positive climate in organizations, counseling, and providing leadership-performance feedback to subordinates. Case studies, scenarios, and other exercises prepare students to face the complex ethical and practical demands of leading as commissioned officers in the US Army. Labs are designed to develop technical, tactical, and leadership skills while assessing Officership potential. Through assignment to leadership positions in command and staff capacities, students actively participate in planning and executing training within the program, direct and control the corps of cadets, enhance oral and written communications, and improve their application of troop-leading procedures and mission analysis. Students examine leaders of the past through a battle analysis exercise and a staff ride to the battlefields of Lexington and Concord.

A. Edwards

MS.411 Advanced Leadership Laboratory I
Prereq: MS.312, Coreq: MS.401/15.305
U (Fall)
0-2-4
Designed to develop technical, tactical, and leadership skills while assessing Officership potential. Through assignment to leadership positions in both command and staff capacities, students actively participate in the planning and execution of training within the program, directing and controlling the corps of cadets, enhancing oral and written communications, and the application of troop-leading procedures and mission analysis.

A. Edwards

MS.412 Advanced Leadership Laboratory II
Prereq: MS.411
U (Spring)
0-2-4
Continuation of MS.411. Prepares students for the Basic Officer Leadership Course II and III (BOLC II and III) the following summer/fall/spring. Continued student development and evaluation under the Leadership Development Program (LDP). Culminates in a second weekend Field Training Exercise (FTX) practicing platoon tactics, land navigation, command and control, and patrolling. Includes preparation for the transition from student to Second Lieutenant in the US Army/Army Reserves or Army National Guard.

A. Edwards

NAVAL SCIENCE

NS.100 Naval Science Leadership Seminar
(Subject meets with NS.200, NS.300, NS.400)
Prereq: None
U (Fall, Spring)
0-2-2 [P/D/F]
Leadership seminar addresses professional issues of military leadership, ethics, foreign policy, internal affairs and naval warfare doctrine. Subject matter centers on preparation for commissioned service in the US Naval Forces by examining the role of the junior officer in the employment of naval power. Mostly student originated, the periods include panel discus-
sions, practical applications, guest lecturers from academia, and speakers currently serving in deployed naval forces.

\textit{C. Giorgis}

**NS.101 Introduction to Naval Science**  
Prereq: None  
U (Fall)  
2-0-1  

Introduction to naval science. General introduction to the US Navy and Marine Corps. Emphasizes organizational structure, warfare components, and assigned roles/missions of US Navy/USMC. Covers all aspects of naval service from its relative position within DOD, to specific warfare communities/career paths. Also includes basic elements of leadership/Navy core values. Designed to give student initial exposure to many elements of naval culture. Provides students with conceptual framework and working vocabulary. Completion of MIT NROTC Orientation Program strongly recommended.

\textit{S. Smith}

**NS.102 Naval Ships Systems**  
Prereq: NS.202  
U (Fall)  
3-0-3  

Lecture series on technological fundamentals of applied and planned naval ships Systems from an engineering viewpoint. Topics include stability, propulsion, ship control and systems.

\textit{M. Minck}

**NS.200 Naval Science Leadership Seminar**  
(Subject meets with NS.100, NS.300, NS.400)  
Prereq: None  
U (Fall, Spring)  
0-2-2 [P/D/F]  

Leadership seminar addresses professional issues of military leadership, ethics, foreign policy, internal affairs and naval warfare doctrine. Subject matter centers on preparation for commissioned service in the US Naval Forces by examining the role of the junior officer in the employment of naval power. Mostly student originated, the periods include panel discussions, practical applications, guest lecturers from academia, and speakers currently serving in deployed naval forces.

\textit{C. Giorgis}

**NS.201 Naval Weapons Systems**  
Prereq: NS.102  
U (Spring)  
3-0-3  

Overview of the properties and behavior of electromagnetic radiation pertaining to maritime applications. Topics include communications, radar detection, electro-optics, tracking and guidance systems. Sonar and underwater sound propagation also discussed. Examples taken from systems found on naval ships and aircraft. Selected readings on naval weapons and fire control systems. Physics I (GIR) and Calculus II (GIR) recommended.

\textit{M. Minck}

**NS.202 Seapower and Maritime Affairs**  
Prereq: NS.101  
U (Spring)  
2-0-2  

A study of the US Navy and the influence of sea power upon history. Incorporates both a historical and political science process to explore the major events, attitudes, personalities, and circumstances which have imbued the US Navy with its proud history and rich tradition. Deals with issues of national imperatives in peacetime as well as war, varying maritime philosophies which were interpreted into naval strategies/doctrines, budgetary concerns which shaped force realities, and the pursuit of American diplomatic objectives, concluding with the current search for direction in the post-Cold War era and beyond.

\textit{S. Smith}

**NS.300 Naval Science Leadership Seminar**  
(Subject meets with NS.100, NS.200, NS.400)  
Prereq: None  
U (Fall, Spring)  
0-2-2 [P/D/F]  

Leadership seminar addresses professional issues of military leadership, ethics, foreign policy, internal affairs and naval warfare doctrine. Subject matter centers on preparation for commissioned service in the US Naval Forces by examining the role of the junior officer in the employment of naval power. Mostly student originated, the periods include panel discussions, practical applications, guest lecturers from academia, and speakers currently serving in deployed naval forces.

\textit{C. Giorgis}

**NS.301 Navigation**  
Prereq: NS.202  
U (Spring)  
2-2-4  

Comprehensive study of the theory, principles, and procedures of piloting and maritime navigation, including mathematics of navigation, practical work involving navigational instruments, sight reduction by pro forma and computerized methods, charts, publications, and voyage planning. CORTRAMID cruise recommended.

\textit{D. Lueck}

**NS.302 Navigation and Naval Operations**  
Prereq: Recommended first class cruise and NS.301  
U (Fall)  
3-0-3  

Comprehensive study of tactical and strategic considerations to the employment of naval forces, including communications, tactical formations and dispositions, relative motion, maneuvering board, and nautical rules of the road.

\textit{D. Lueck}

**NS.310 Evolution of Warfare**  
Prereq: None  
U (Spring)  
2-0-4  

Traces development of warfare from dawn of recorded history to present, focusing on the impact of major military theorists, strategists, tacticians, and technological developments. Seeks to understand the relationships between military training, weaponry, strategies and tactics, and the societies and cultures that produce and then are defended by those military structures. By examining the association between a society and its military, students acquire basic sense of strategy, develop an understanding of military alternatives, and see the impact of historical precedents on military thoughts and actions.

\textit{C. Giorgis}

**NS.400 Naval Science Leadership Seminar**  
(Subject meets with NS.100, NS.200, NS.300)  
Prereq: None  
U (Fall, Spring)  
0-2-2 [P/D/F]  

Leadership seminar addresses professional issues of military leadership, ethics, foreign policy, internal affairs and naval warfare doctrine. Subject matter centers on preparation for commissioned service in the US Naval Forces by examining the role of the junior officer in the employment of naval power. Mostly student originated, the periods include panel discussions, practical applications, guest lecturers from academia, and speakers currently serving in deployed naval forces.

\textit{C. Giorgis}
**NS.401 Leadership and Management I**
Prereq: NS.202
U (Fall)
3-0-3

Explores leadership from the military perspective taught by professors of military science from the Army, Navy and Air Force. Survey of basic principles for successfully managing and leading people, particularly in public service and the military. Develops skills in topics such as oral and written communication techniques, planning, team building, motivation, ethics, decision-making, and managing change. Relies heavily on interactive experiential classes with case studies, student presentations, role plays, and discussion. Also appropriate for non-management science majors.

*J. Scislowicz*

**NS.402 Leadership and Ethics**
Prereq: NS.302
U (Spring)
3-0-3

Analyzes ethical decision-making and leadership principles. Students read and discuss texts written by such philosophers as Aristotle, Kant, and Mill to gain familiarity with the realm of ethical theory. Students then move on to case studies in which they apply these theories to resolve moral dilemmas. Provides a basic background in the duties and responsibilities of a junior division and watch officer; strong emphasis on the junior officer’s responsibilities in training, counseling, and career development. Student familiarization with equal opportunity and drug/alcohol rehabilitation programs. Principles of leadership reinforced through leadership case studies.

*S. Benke*

**NS.410 Amphibious Warfare**
Prereq: None
U (Spring)
2-0-4

This seminar course is an introduction to the fundamental concepts and history of amphibious warfare, from the classical period to the present day. Emphasis is placed on analytical study and critical thought rather than memorization of historical facts. Students will trace the evolution of amphibious warfare through analysis of case studies using amphibious and maneuver doctrine as a framework. By the end of this course, students will comprehend modern employment concepts and challenges relating to the use of amphibious forces.

*C. Giorgis*