401 Real Analysis (4)
Prerequisites: MAT 262 and 299 both with a with a grade of “C” or higher. Covers theories of limits, continuity, differentiation and integration. (*once every two years)

410 Complex Analysis (4)
Prerequisite: MAT 262 and 299 both with a with a grade of “C” or higher. Coverage includes complex numbers, analytic functions, elementary functions, integrals, series, residues and poles. (*once every two years)

420 Modern Abstract Algebra (4)
Prerequisite: MAT 299 with a grade of “C” or higher. An introduction to the theory of groups, rings and fields. (*once every two years)

490 Senior Seminar (1)
Prerequisite: senior standing in mathematics or mathematical programming. An in-depth study of a topic in mathematics or mathematical programming. Requires consultation with a faculty member, personal research, library research and an oral presentation. (*fall and spring semesters)

499 Selected Topics (1-4)
Subject may be chosen from point-set topology, partial differential equations, combinatorics, graph theory or other topics. (*fall and spring semesters)

Military Science and Leadership (MSL)

Note: Leadership Laboratory courses are offered only to Army ROTC cadets who qualify to become commissioned officers in the U.S. Army. Enrollment is subject to the approval of the professor of military science. Grades earned in leadership laboratories and all MSL courses provide the basis for selection for leadership positions in the Cadet Corps (Spartan Battalion), selection for Cadet Professional Development Training slots (Airborne School, Air Assault School, internships, etc.) during summer months, and for the national order of merit list ranking for the U.S. Army commissioning process during senior year.

101 Leadership and Personal Development (2)
Introduces students to the personal challenges and competencies that are critical for effective leadership. Students learn how the personal development of life skills such as critical thinking, goal setting, time management, physical fitness and stress management relate to leadership, officer-ship, and the Army profession. The focus is on developing basic knowledge and comprehension of Army leadership dimensions while gaining a big-picture understanding of the ROTC program, its purpose in the Army and its advantages for the student. All cadets must take a Leadership Laboratory course to fulfill Army commissioning requirements. Participation in MSL 101 does not include military obligation. (*fall semester)

102 Introduction to Tactical Leadership (2)
Discusses leadership fundamentals such as setting direction, problem-solving, listening, presenting briefs, providing feedback and using effective writing skills. Students explore dimensions of leadership, values, attributes, skills and actions in the context of practical, hands-on and interactive exercises. All cadets must take a Leadership Laboratory course to fulfill Army commissioning requirements. Participation in MSL 102 does not include military obligation. (*spring semester)

110 Basic Leadership Laboratory (0)
Required of MSL I cadets (freshmen). Involves practical exercises in the principles of military courtesy, discipline, self-confidence, drill and ceremonies, as well as introduction to basic soldier skills. (*fall semester)
111 Basic Leadership Laboratory (0)
Required of MSL I cadets (freshmen). Involves practical exercises in the development of leadership fundamentals and soldier skills including basic land navigation, troop-leading procedures and squad tactical operations. (*spring semester)

201 Innovative Team Leadership (2)
Explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of the Army leadership framework. Students practice aspects of personal motivation and team-building in the context of planning, executing and assessing team exercises and participating in leadership labs. Focus is on continued development of the knowledge of leadership values and attributes through an understanding of Army rank, structure and duties, and basic aspects of land navigation and squad tactics. Case studies provide tangible context for learning the Soldier’s Creed and Warrior Ethos as they apply in the contemporary operating environment. All cadets must take a Leadership Laboratory course to fulfill Army commissioning requirements. Participation in MSL 201 does not include military obligation. (*fall semester)

202 Foundations of Tactical Leadership (2)
Examines the challenges of leading tactical teams in the contemporary operating environment. The course highlights dimensions of terrain analysis, patrolling, and operation orders. Further study of the theoretical basis of the Army leadership framework explores the dynamics of adaptive leadership in the context of military operations. MSL 202 provides a smooth transition into MSL 301. Students develop greater self-awareness as they assess their own leadership styles and practice communication and team-building skills. COE case studies give insight into the importance and practice of teamwork and tactics in real-world scenarios. All cadets must take a Leadership Laboratory course to fulfill Army commissioning requirements. Participation in MSL 202 does not include military obligation. (*spring semester)

203 American Military History (4)
A study of the development of American military institutions, policies, experience and traditions in peace and war from colonial times to the present. Also listed as HIS 210. All cadets must complete MSL 203 to fulfill Army commissioning requirements. Participation in MSL 203 does not include military obligation. (*spring semester)

210 Basic Leadership Laboratory (0)
Required of MSL II cadets (sophomores). Involves practical exercises in the mission, organization and composition of military units, and continued development of soldier skills including basic land navigation, troop-leading procedures and squad tactical operations. (*fall semester)

211 Basic Leadership Laboratory (0)
Required of MSL II cadets (sophomores). Involves practical exercises at the military team level, emphasizing the functions, duties and responsibilities of junior leaders. Students are evaluated for acceptance into the Army ROTC advanced course (MSL 300- and 400-level courses). (*spring semester)

301 Adaptive Tactical Leadership (3)
Challenges cadets to study, practice and evaluate adaptive leadership skills as they are presented with challenging scenarios related to squad tactical operations. Cadets receive systematic and specific feedback on their tactical leadership. Based on such feedback, as well as self-evaluations, cadets continue to develop their leadership and critical thinking abilities. The focus is on developing cadets’ tactical leadership abilities to enable them to succeed at Army ROTC summer Leader Development and Assessment course. Cadets also participate in a physical training program. They must either meet the prerequisites (MSL 100- and 200-level courses) or substitute past military experience with the approval of the professor of military
Science. All cadets must take the Advanced Leadership Laboratory course to fulfill Army commissioning requirements. (*fall semester)

302 Leadership in Changing Environments (3)
Uses increasingly intense situational leadership challenges to build cadet awareness and skills in leading small units. Skills in decision-making, persuading and motivating team members when “under fire” are explored, evaluated and developed. Aspects of military operations are reviewed as a means of preparing for the Army ROTC Leader Development and Assessment Course. Cadets are expected to apply basic principles of the Law of Land Warfare, Army training and motivation to troop-leading procedures. Emphasis also is placed on conducting military briefings and developing proficiency in garrison operation orders. MSL 302 cadets are evaluated on what they know and do as leaders. Cadets also participate in a physical training program. They must either meet the prerequisites (MSL 100- and 200-level courses) or substitute past military experience with the approval of the professor of military science. All cadets must take the Advanced Leadership Laboratory course to fulfill Army commissioning requirements. (*spring semester)

303 Leader Development and Assessment (3)
A four-week, continuous Army ROTC leadership course conducted at Fort Lewis, WA. The course environment is highly structured and demanding, stressing leadership at small-unit levels under varying challenging conditions. Topics include weapons applications, land navigation, small-unit tactics and various other military skills, as well as team-building and management techniques. The focus is on developing and assessing leadership, and individuals are continuously and formally assessed on their potential leadership ability under less than perfect conditions and through a rotating system of leadership positions. Attendance requires the permission of the professor of military science. Cadets receive pay, and the U.S. Army defrays travel, lodging and meal costs. Failure to attain course requirements at any time will result in immediate dismissal and return to campus, and potential expulsion from Army ROTC. Each graduate receives a written Cadet Evaluation Report. (*summer session and fall semester)

310 Advanced Leadership Laboratory (0)
Required of MSL III cadets (juniors). Involves practical exercises emphasizing the leader’s role in directing and coordinating the efforts of individuals and small units in the execution of offensive and defensive tactical missions. Prepares students for the four-week ROTC Leader Development and Assessment course. (*fall semester)

311 Advanced Leadership Laboratory (0)
Required of MSL III cadets (juniors). Involves practical exercises that emphasize the duties and responsibilities of junior leaders in a garrison or field environment. Prepares students to be junior leaders in a garrison or field environment in the various branches of the Army. Prepares students for the four-week ROTC Leader Development and Assessment course. (*spring semester)

401 Developing Adaptive Leaders (3)
Develops cadet proficiency in planning, executing and assessing complex operations, functioning as a member of a staff, and providing performance feedback to subordinates. Cadets assess risk, make ethical decisions, and lead fellow Army ROTC cadets. Lessons on military justice and personnel processes prepare cadets to make the transition to Army officers. MSL IV cadets analyze, evaluate and instruct lower-level cadets. Both their classroom and battalion leadership experiences are designed to prepare MSL 401 cadets for their first unit of assignment. They identify responsibilities of key staff, coordinate staff roles, and use situational opportunities to teach, train and develop subordinates. Cadets also participate in a physical training program. Cadets must either meet the prerequisites (MSL 100-, 200- and 300-level courses) or substitute past military experience with the approval of the professor of military science. All cadets must take the Advanced Leadership Laboratory course to fulfill Army commissioning requirements. (*fall semester)
402 Leadership in a Complex World (3)
Explores the dynamics of leading in the complex situations of current military operations in the COE. Cadets examine differences in customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism. They also explore aspects of interacting with nongovernmental organizations, civilians on the battlefield, and host nation support. The course places significant emphasis on preparing cadets for their first unit of assignment. It uses case studies, scenarios, and “What Now, Lieutenant?” exercises to prepare cadets to face the complex ethical and practical demands of leading as commissioned officers in the United States Army. Cadets also participate in a physical training program. They must either meet the prerequisites (MSL 100-, 200- and 300-level courses) or substitute past military experience with the approval of the professor of military science. All cadets must take the Advanced Leadership Laboratory course to fulfill Army commissioning requirements. (*spring/fall semester)

410 Advanced Leadership Laboratory (0)
Required of MSL IV cadets (seniors). Involves practical exercises in staff planning and coordination at the large-unit level with emphasis on leadership and management of the Spartan Battalion. (*fall semester)

411 Advanced Leadership Laboratory (0)
Required of MSL IV cadets (seniors). A continuation of MSL 410 that involves practical exercises to prepare cadets for service as commissioned officers. (*spring semester)

450 Independent Study in MSL (1-4)
An independent study in Military Science and Leadership (Army ROTC) that provides cadets with an opportunity to pursue a topic, project or tailored curriculum under the guidance of an MSL faculty member. Variable credit. By permission of professor of military science. (*fall and spring semesters)

Music (MUS)

100 Music Fundamentals (3) (A)
Covers basic music reading, theory and terminology, including beginning keyboard, vocal and aural skills. (*fall and spring semesters)

102 Music for Life (3) (W) (A)
A survey of Western musical thought and the history and evolution of musical forms and styles. Requires attendance at selected recitals on campus. (*fall and spring semesters)

105 Basic Guitar Class (1) (A)
Elementary lessons in guitar, including music reading and basic instrument techniques. (*fall and spring semesters)

108 Introduction to Recording and Electronic Music (3) (A)
A practical survey of issues and practices in music technology. Emphasis is on the use of today’s electronic music tools including digital recording, microphones, mixers, synthesizers and computer sequencers. Includes music and recording studio lab projects, coverage of historical background, aesthetics and literature. (*fall and spring semesters)

109 Recording and Synthesis Techniques (3) (A)
Prerequisite: MUS 108 or consent of instructor. A hands-on approach to learning multi-track recording including the digital audio workstation, mics, consoles and signal processors, as well as instruction in synthesizer programming. (*spring semester)

110 Piano Class I (1) (A)
Elementary group lessons in piano for the beginner, given in the electronic piano lab. (*fall and spring semesters)