

Four semester hours chosen from the following:	4 sh
POL 325 The Presidency	
POL 326 The Congress	
HUS 213 Groups and Communities	
HUS 411 Administration of Human Services Agencies	
ENG 304 Understanding Rhetoric	
SOC 331 The Self and Society	
SOC 343 Social and Cultural Change	
HST 338 Germany: War, Democracy and Hitler, 1914-1945	
HST 357 America's Civil War	
HST 365 Social Movements in Post-Civil War America	
JCM 300 Reporting for the Public Good	
JCM 302 Broadcasting in the Public Interest	
JCM 304 Public Relations and Civic Responsibility	
Other courses approved by the program coordinator	
<b>TOTAL</b>	<b>20 sh</b>

**LED 210. GROUP DYNAMICS AND LEADERSHIP 4 sh**

This course will focus on leadership in the context of citizenship and the public good. Students will learn theories and concepts related to leadership and group dynamics and will develop the ability to apply this knowledge in working with others to achieve group goals. Through participation in civic engagement opportunities, reading, research, class exercises and self-assessments, students will develop an understanding of themselves as leaders and as group participants, increasing their ability to participate in and/or lead groups effectively. Offered fall and spring.

**LED 450. LEADERSHIP IN ACTION 4 sh**

The course is the capstone experience for the leadership minor, which includes both a classroom component and a leadership experience. It is a seminar-style class in which the faculty members guide the students through exercises that provide a deeper understanding of their experiences. The students will bring a great variety of experiences to the class, and they will learn from each other as well as from their own personal experience and knowledge. Prerequisites: LED 210, PHL 215, BUS 424 or PSY 368, and a Leadership Portfolio (see coordinator for details). Offered spring.

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### **Leisure and Sport Management**

*Chair, Department of Leisure and Sport Management: Associate Professor Drummond*

*Associate Professor: Walker*

*Assistant Professors: Marx, Weaver*

The Leisure and Sport Management major prepares students to plan, manage and sustain effective leisure and sport experiences in private, public and commercial settings. Students develop a “service” sensitivity and skills applicable to leisure and sport settings.

**A major in Leisure and Sport Management** requires the following courses:

LSM 212	Introduction to Leisure and Sport Management	4 sh
LSM 226	Facility Planning and Maintenance Management	4 sh
LSM 227	Programming and Event Management	4 sh
LSM 332	Research Methods in Leisure and Sport Management	4 sh

LSM	351	Leisure and Sport Marketing	4 sh
LSM	405	Legal Aspects of Leisure and Sport Management	4 sh
LSM	412	Financial Operations of Leisure and Sport	4 sh
LSM	426	Governance and Policy Development	4 sh
LSM	461	Senior Seminar	4 sh
LSM	481	Internship in Leisure and Sport Management	6 sh
ACC	201	Principles of Financial Accounting	4 sh
BUS	202	Business Communications	4 sh
BUS	303	Introduction to Managing	4 sh
<b>Total</b>			<b>54 sh</b>

**A minor in Leisure and Sport Management** requires the following courses:

LSM	212	Introduction to Leisure and Sport Management	4 sh
LSM	226	Facility Planning and Maintenance Management	4 sh
LSM	227	Programming and Event Management	4 sh
Eight semester hours chosen from the following:			8 sh
LSM	351	Leisure and Sport Marketing	
LSM	405	Legal Aspects of Leisure and Sport Management	
LSM	412	Financial Operations of Leisure and Sport	
LSM	426	Governance and Policy Development	
<b>Total</b>			<b>20 sh</b>

**LSM 212. INTRODUCTION TO LEISURE AND SPORT MANAGEMENT 4 sh**

This course is an introduction to leisure and sport management fundamentals emphasizing the role and relevance of each to society. Students study terminology, philosophies and evolution of leisure and sport, internal and external recreation motivation factors, leisure concepts and relevant contemporary issues.

**LSM 226. FACILITY PLANNING AND MAINTENANCE MANAGEMENT 4 sh**

This study focuses on area and facility planning and maintenance principles in leisure settings, including developing a master plan and analyzing the relationship of maintenance and planning to risk management, visitor control, vandalism and law enforcement.

**LSM 227. PROGRAMMING AND EVENT MANAGEMENT 4 sh**

Students study the principles of organization, planning and group dynamics as they apply to leisure events. They also learn to identify, develop and apply component skills such as needs assessment, inventory and evaluation. Students will plan and administer an actual event.

**LSM 332. RESEARCH METHODS IN LEISURE AND SPORT MANAGEMENT 4 sh**

An examination of research methods in leisure and sport settings, including research techniques, defining research problems, hypotheses development, reviewing and interpreting literature, organizing, analyzing and presenting data. Prerequisite: LSM 212.

**LSM 351. LEISURE AND SPORT MARKETING 4 sh**

This course examines the theory and pragmatic aspects of service marketing, promotions and public relations and their application to the leisure and sport industry. Prerequisite: LSM 212.

**LSM 405. LEGAL ASPECTS OF LEISURE AND SPORT MANAGEMENT 4 sh**

The United States is the most litigious nation in the world. Consequently, as a major sector of the economy, leisure and sport industry managers must be aware of component legal

issues in order to operate safely and efficiently. This course will allow students to examine pertinent legal issues such as contracts, personal and product liability, risk management, gender discrimination, human resources and drug testing. Prerequisite: LSM 212.

- LSM 412. FINANCIAL OPERATIONS OF LEISURE AND SPORT 4 sh**  
 This course presents an overview of financial and economic issues within the leisure and sport industry. Topics include economic impact analysis, public and private sector resources, facility funding, sponsorship, fundraising for profit and nonprofit agencies, commercial and public recreation, collegiate and professional sport organizations. Prerequisite: LSM 212.
- LSM 426. GOVERNANCE AND POLICY DEVELOPMENT 4 sh**  
 An analysis of policy development within public and private recreation settings, professional sport, interscholastic sport, and national and international leisure and sport organizations. This course will include analyses of the implications of cultural and social issues in these varied settings. Prerequisites: senior standing or permission of instructor; LSM 212.
- LSM 461. SENIOR SEMINAR 4 sh**  
 Students eclectically review academic work to date and demonstrate ability to analyze contemporary issues/problems in leisure and sport management. Prerequisites: LSM 212 and senior standing.
- LSM 481. INTERNSHIP IN LEISURE AND SPORT MANAGEMENT 6 sh**  
 This course provides students with 400 supervised hours (agency and university) of experiential exposure in the area of their vocational interest. Students demonstrate knowledge, skills, abilities and competencies in the areas of organization and administration, leadership techniques, program planning and implementation, fiscal administration, personnel development and supervision, public and political relations and area/facility planning, development and maintenance. Students will submit the following to the academic supervisor: learning objectives, weekly reports and an agency survey showing comprehensive knowledge of the agency. Arrangements with a professor must be made prior to the semester in which the internship is taken. Prerequisite: for LSM majors, must have junior standing and 2.0 GPA in major. Offered fall, spring and summer.
- LSM 491. INDEPENDENT STUDY 1-4 sh**
- LSM 499. RESEARCH IN LEISURE AND SPORT MANAGEMENT 1-4 sh**

**Mathematics**

*Chair, Department of Mathematics: Professor J. Clark*  
*Professors: Francis, Haworth*  
*Associate Professors: Allis, Arangala, J. Beuerle, T. Lee, Plumlee, Russell*  
*Assistant Professors: Delpish, Mir*  
*Senior Lecturer: L. Beuerle*  
*Lecturers: Mancuso, Mays*  
*Adjuncts: Metts, Travis, Walton, Whiffen*

The Department of Mathematics offers programs leading to the A.B. or B.S. degree with a major in Mathematics. The A.B. degree offers concentrations in Applied Mathematics, Pure Mathematics and Teacher Licensure. The Applied Mathematics concentration is specifically intended to be a second major for students majoring in an area that uses Mathematics. A minor in mathematics is available for students majoring in another discipline.

Mathematics is an excellent major for the student whose immediate objective is to acquire a good liberal arts education. Students who complete a bachelor's degree in mathematics may choose several postgraduate alternatives, including work in a variety of industries, an advanced degree in either mathematics or another closely related field (computer science, biometry, information science, statistics or operations research) or law school.

Students who combine mathematics with another discipline that uses mathematics can also pursue graduate work in the second discipline. These areas include biology, chemistry, economics, medicine, physics and many of the social science disciplines. In addition, mathematics majors may teach at the secondary level or work in business, industry or government positions which emphasize analytical reasoning.

**The Bachelor of Arts in Mathematics** requires the following courses:

MTH	121	Calculus and Analytic Geometry I	4 sh
MTH	221	Calculus and Analytic Geometry II	4 sh
MTH	321	Calculus and Analytic Geometry III	4 sh
<b>TOTAL</b>			<b>12 sh</b>

Students must also complete one of the following concentrations.

***Applied Mathematics Concentration***

Core courses			12 sh
MTH	206	Discrete Structures	4 sh
MTH	306	Applied Matrix Theory	4 sh
Select one course from the following:			
MTH	341	Probability and Statistics	4 sh
MTH	212	Statistics in Application	
MTH	421	Differential Equations	4 sh
A 300/400 level MTH course or course from an allied field, approved by the Mathematics Department			4 sh
CSC	130	Computer Science I	4 sh
A related experiential/capstone experience approved by the department:			2-4 sh
MTH	361	Seminar I	
MTH	481	Internship in Mathematics	
MTH	499	Independent Research	
<b>TOTAL</b>			<b>38-40 sh</b>

***Pure Mathematics Concentration***

Core courses			12 sh
MTH	231	Mathematical Reasoning	4 sh
MTH	311	Linear Algebra	4 sh
MTH electives			12 sh
May include one course approved by the Mathematics Department from an allied field. At least 4 hours need to be from mathematics course(s) at the 400 level.			
A related course from outside of the Mathematics Department, approved by the Mathematics Department. Approved courses include:			4 sh

CSC 130	Computer Science I	
PHY 113	General Physics I	
A related experiential/capstone experience approved by the department.		2-4 sh
Approved options include:		
MTH 361	Seminar I	
MTH 481	Internship in Mathematics	
MTH 499	Independent Research	
<b>TOTAL</b>		<b>38-40 sh</b>

The electives and the related course from outside of mathematics are expected to form a cohesive plan and must be approved by the Mathematics Department.

**Teacher Licensure Concentration**

Core courses		12 sh
MTH 212	Statistics in Application	4 sh
MTH 231	Mathematical Reasoning	4 sh
MTH 310	Mathematics for the Secondary Teacher	4 sh
MTH 311	Linear Algebra	4 sh
MTH 312	Abstract Algebra	4 sh
MTH 331	Modern Geometry	4 sh
MTH 341	Probability and Statistics	4 sh
CSC 130	Computer Science I	4 sh
PHY 113	General Physics I	4 sh
Set of professional courses		32 sh
<b>TOTAL</b>		<b>80 sh</b>

A student completing a Bachelor of Arts in Mathematics with the Teacher Licensure Concentration can earn a Bachelor of Science in Mathematics with Teacher Licensure by successfully completing MTH 425, MTH 361 and MTH 461.

**A Bachelor of Science in Mathematics** requires the following courses:

MTH 121	Calculus and Analytic Geometry I	4 sh
MTH 221	Calculus and Analytic Geometry II	4 sh
MTH 231	Mathematical Reasoning	4 sh
MTH 311	Linear Algebra	4 sh
MTH 312	Abstract Algebra	4 sh
MTH 321	Calculus and Analytic Geometry III	4 sh
MTH 425	Analysis	4 sh
MTH 361	Seminar I	2 sh
MTH 461	Seminar II	2 sh
One course selected from:		4 sh
MTH 331	Modern Geometry	
MTH 341	Probability and Statistics	
MTH 351	Theory of Computation	
MTH 415	Numerical Analysis	
MTH 421	Differential Equations	

MTH elective(s) at the 300-400 level (excluding MTH 481)	4 sh
CSC 130 Computer Science I	4 sh
One CSC course numbered 200 or above	4 sh
PHY 113 Physics with Calculus I	4 sh
PHY 114 Physics with Calculus II	4 sh
<b>TOTAL</b>	<b>56 sh</b>

**A Bachelor of Science degree in Engineering Mathematics:** see requirements listed under Engineering.

**A minor in Mathematics** requires the following courses:

MTH 121 Calculus and Analytic Geometry I	4 sh
MTH 221 Calculus II	4 sh
MTH 231 Mathematical Reasoning	4 sh
MTH 311 Linear Algebra	4 sh
Elective(s) from MTH 112 or Mathematics courses numbered 200 or above (excluding MTH 210 and MTH 481) Computer Science courses, or Economics 203	4 sh
<b>TOTAL</b>	<b>20 sh</b>

**A minor in Statistics** requires the following courses:

MTH 212 Statistics in Application	4 sh
Four courses selected from:	16 sh
MTH 112 General Statistics	4 sh
MTH 213 Survey Sampling Methods	4 sh
MTH 232 Statistical Modeling	4 sh
MTH 256 Applied Nonparametric Methods	4 sh
MTH 325 Design and Analysis of Experiments	4 sh
MTH 341 Probability Theory and Statistics	4 sh
One course approved by the Mathematics Department from an allied field	4 sh
<b>TOTAL</b>	<b>20 sh</b>

A student may exempt MTH 112, 115 and/or 121 by demonstrating proficiency.

Once a student has received credit, including transfer credit for a course, credit may not be received for any course with material that is equivalent to it or is a prerequisite for it, without permission of the mathematics department.

**MTH 100. ALGEBRAIC CONCEPTS 4 sh**

This course is designed to develop and maintain proficiency in basic algebra skills and to prepare students for future mathematics work in college courses. Topics include exponents, factoring, equation solving, rational expressions, radicals, quadratic equations and graphs of functions. A specific graphing calculator is required. This course must be completed with "C-" or better before taking any other mathematics course. Elective credit only. No credit will be given to students having passed MTH 115 or higher. Offered fall and spring.

- MTH 112. GENERAL STATISTICS 4 sh**  
 This course provides an introduction to modern statistics. Students will analyze and critically interpret real world data. This course emphasizes written and oral communication, use of technology and collaborative learning. Topics covered include descriptive statistics, basic probability, inferential statistics including one-sample confidence intervals and hypothesis testing and regression analysis. A specific graphing calculator is required. Prerequisite: MTH 100 or placement exemption. Offered fall and spring.
- MTH 115. TRIGONOMETRY 4 sh**  
 This course provides a study of algebraic, trigonometric, exponential and logarithmic functions and their behavior. Constructing, analyzing and describing mathematical models of everyday phenomena is emphasized. A specific graphing calculator is required. Prerequisite: MTH 100 or placement exemption. Offered fall of even years.
- MTH 116. APPLIED CALCULUS 4 sh**  
 This introduction to linear systems and differential calculus emphasizes applications to problem solving in business and economics. Students gain enhanced ability to analyze a problem mathematically and study the following topics: functions, limits, derivatives and applications of derivatives. No credit for students with MTH 121 or its exemption. A specific graphing calculator is required. Prerequisite: MTH 100 or placement exemption. Offered fall, winter and spring.
- MTH 121. CALCULUS AND ANALYTIC GEOMETRY I 4 sh**  
 Students are introduced to analytic geometry, functions, limits and continuity, differentiation of algebraic functions with applications, the definite integral and the fundamental theorem of integral calculus. A specific graphing calculator is required. Prerequisite: MTH 115 or placement exemption. Offered fall and spring.
- MTH 206. DISCRETE STRUCTURES 4 sh**  
 This course offers an intensive introduction to discrete mathematics as it is used in computing sciences. Topics include functions, relations, propositional and predicate logic, simple circuit logic, proof techniques and elementary and discrete probability. Prerequisite: MTH 116 or MTH 121 or CSC 130 or currently taking CSC 130. Offered fall.
- MTH 210. MATHEMATICS FOR ELEMENTARY AND MIDDLE GRADES TEACHERS 4 sh**  
 This course is open only to students majoring in elementary education, special education or middle grades education with a concentration in mathematics. Topics include problem solving, numeration systems, set theory, rational and irrational numbers (concepts, operations, properties and algorithms), geometry, measurement and selected topics in probability and statistics. Prerequisite: General Studies mathematics requirement. Offered fall, winter and spring.
- MTH 212. STATISTICS IN APPLICATION 4 sh**  
 An introduction to concepts in statistics at a deeper quantitative level than that offered in MTH 112 General Statistics. This course emphasizes rationales, applications and interpretations using advanced statistical software. Examples are drawn primarily from economics, education, psychology, sociology, political science, biology and medicine. Topics include introductory design of experiments, data acquisition, graphical exploration and presentation, descriptive statistics, one- and two- sample inferential techniques, simple/multiple regression, goodness of fit and independence, one-way/two-way analysis of variance (ANOVA). Written reports link statistical theory and practice with communication of results. Recommended for students pursuing quantitatively-based careers. Prerequisites: MTH 112, MTH 121, placement exemption or permission of the Statistics Program Coordinator. Offered fall and spring.

- MTH 213. SURVEY SAMPLING METHODS** **4 sh**  
 An introduction to the concepts and methods of statistical reasoning associated with sample surveys. This course emphasizes rationales, applications and interpretations of sampling strategies used for estimation. Advanced statistical software such as SAS or SPlus may be used. Case studies of survey methods are drawn primarily from the social sciences while field sampling applications to ecological and environmental research may be used. Topics include survey design issues, simple random sampling, stratified sampling, single and two-stage cluster sampling, systematic sampling, parameter estimation and sample size calculation. Written reports link statistical theory and practice with communication of results. Prerequisite: MTH 112, MTH 212 or permission of the Statistics Program Coordinator. Offered fall of odd-numbered years.
- MTH 221. CALCULUS AND ANALYTIC GEOMETRY II** **4 sh**  
 Students explore applications of the definite integral, differentiation and integration of transcendental functions, techniques of integration, indeterminate forms, improper integrals, infinite sequences and series. A specific graphing calculator is required. Prerequisite: MTH 121. Offered fall and spring.
- MTH 231. MATHEMATICAL REASONING** **4 sh**  
 This study of proof techniques and reasoning skills introduces the student to another side of mathematics, namely proof. The student's preceding courses (e.g., precalculus and calculus) usually focus on calculations. Topics include mathematical logic, sets, mathematical induction, combinatorics, relations and countability arguments. Prerequisite: MTH 121. Offered fall and spring.
- MTH 232. STATISTICAL MODELING** **4 sh**  
 This course emphasizes rationales, applications and interpretations of regression methods using a case study approach. Advanced statistical software such as SAS or SPlus may be used. Topics include simple linear regression, multiple linear regression, indicator variables, robustness, influence diagnostics, model selection, logistic regression for dichotomous response variables and binomial counts, and non-linear regression models. Written reports link statistical theory and practice with communication of results. Prerequisite: MTH 212 or permission of the Statistics Program Coordinator. Offered spring of even-numbered years.
- MTH 256. APPLIED NONPARAMETRIC STATISTICS** **4 sh**  
 This course focuses on data-oriented approaches to statistical estimation and inference using techniques that do not depend on the distribution of the variable(s) being assessed. Topics include classical rank-based methods, as well as modern tools such as permutation tests and bootstrap methods. Advanced statistical software such as SAS or SPlus may be used, and written reports will link statistical theory and practice with communication of results. Prerequisite: MTH 212 or permission of the Statistics Program Coordinator. Offered spring of odd-numbered years.
- MTH 306. APPLIED MATRIX THEORY** **4 sh**  
 Students are introduced to solutions to systems of linear equations, linear transformations, determinants, vector spaces, orthogonality, matrix algebra, eigenvalues, matrix norms, least squares, singular values, linear programming and approximation techniques. A specific graphing calculator is required. Prerequisite: MTH 206 or MTH 231. Offered spring.
- MTH 310. MATHEMATICS FOR SECONDARY TEACHERS** **4 sh**  
 The course presents students with mathematics problems, open-ended mathematical investigations, challenges to organize and communicate information from these investigations and the use of technology and manipulative tools to accomplish such tasks. Problems consist of applications of mathematics content from the secondary curriculum. The content includes topics such as: relations, functions, and their graphs; geometric concepts and proofs; measurement; conics; trigonometry; graph theory; number theory; data analysis



and probability. The course also provides a historical context for mathematics problems including the contributions from various cultures. Offered spring of alternate years.

**MTH 311. LINEAR ALGEBRA 4 sh**

This introductory course in linear algebra includes systems of linear equations, matrices, determinants, vector spaces, eigenvalues, eigenvectors, orthogonality and linear transformations. Proofs of the major theorems and a variety of applications are also covered. Prerequisites: MTH 221, 231. Offered fall and spring.

**MTH 312. ABSTRACT ALGEBRA 4 sh**

Students who have had an introduction to the rules of logic and proof construction are introduced to abstract algebra, including topics such as functions, groups (cyclic, permutation, normal and quotient), properties of groups, rings, fields, homomorphisms, isomorphisms, real and complex numbers and polynomials. Prerequisites: MTH 231, 311. Offered spring.

**MTH 321. CALCULUS AND ANALYTIC GEOMETRY III 4 sh**

This course provides a study of advanced techniques of differential and integral calculus, including plane curves and polar coordinates, three-dimensional analytic geometry including vectors, differentiation and integration of multivariable functions and applications. A specific graphing calculator is required. Prerequisite: MTH 221.

**MTH 325. DESIGN AND ANALYSIS OF EXPERIMENTS 4 sh**

This course explores methods of designing and analyzing scientific experiments to address research questions. Emphasis is placed on statistical thinking and applications using real data, as well as on the underlying mathematical structures and theory. Topics include completely randomized designs, randomized block designs, factorial treatment designs, hierarchical designs, split-plot designs and analysis of covariance. Advanced statistical software such as SAS or SPlus may be used, and written reports will link statistical theory and practice with communication of results. Prerequisite: MTH 212 or permission of the Statistics Program Coordinator. Offered fall of even-numbered years.

**MTH 331. MODERN GEOMETRY 4 sh**

This rigorous treatment of axiomatic foundations of Euclidean geometry through Hilbert's axioms includes the role and independence of the parallel postulate (revealed through models and neutral geometry), straightedge and compass constructions, historical and philosophical implications of the discovery of non-Euclidean geometry with an introduction to both hyperbolic and elliptic geometry. Prerequisite: MTH 231. Offered fall of odd-numbered years.

**MTH 341. PROBABILITY THEORY AND STATISTICS 4 sh**

Topics include axiomatic probability, counting principles, discrete and continuous random variables and their distributions, sampling distributions, central limit theorem, confidence intervals and hypothesis testing. Prerequisites: MTH 221 and 231. Offered fall of even-numbered years.

**MTH 351. THEORY OF COMPUTATION 4 sh**

(Cross-listed with CSC 351. See CSC 351 for description.)

**MTH 361. SEMINAR I 2 sh**

This course prepares mathematics majors for Seminar II, the capstone seminar, by instruction and experience in library research and formal oral presentations on advanced mathematical topics selected by the instructor and students. Prerequisite: junior/senior standing or permission of the mathematics department. Offered spring.

**MTH 371. SPECIAL TOPICS 2-4 sh**

Topics are selected to meet the needs and interests of students.

- MTH 415. NUMERICAL ANALYSIS** **4 sh**  
 This introduction to numerical analysis includes floating point arithmetic, interpolation, approximation, numerical integration and differentiation, nonlinear equations and linear systems of equations. Prerequisites: CSC 130; MTH 311, 321; or permission of the instructor. (Cross-listed with CSC 415.) Offered spring of even-numbered years.
- MTH 421. DIFFERENTIAL EQUATIONS** **4 sh**  
 Topics in this in-depth study of methods of solution and applications of ordinary differential equations include first-order differential equations (linear and nonlinear), linear differential equations of higher order, mathematical models using second-order equations, systems of differential equations and numerical techniques including Euler, Improved Euler and the Runge-Kutta method. Computers or programmable calculators may be used. Prerequisite: MTH 321. Offered spring.
- MTH 425. ANALYSIS** **4 sh**  
 This course provides an in-depth study of topics introduced in the three-course calculus sequence, including sequences and series, continuity and differentiation of functions of a single variable, the Riemann integral and the fundamental theorem of calculus. Prerequisites: MTH 312 and 321. Offered fall.
- MTH 461. SEMINAR II** **2 sh**  
 In this capstone experience for senior mathematics majors, students conduct extensive research on a mathematical topic and formally present their work in writing and orally. Course requirements include a satisfactory score on the ETS major field achievement test. Prerequisites: MTH 361 and junior/senior standing or permission of the department. Offered fall.
- MTH 471. SPECIAL TOPICS** **2-4 sh**  
 Topics are selected to meet the needs and interests of the students.
- MTH 481. INTERNSHIP IN MATHEMATICS** **1-4 sh**  
 The internship provides advanced work experiences in some aspect of mathematical sciences and is offered on an individual basis when suitable opportunities can be arranged. Prerequisite: permission of the department.
- MTH 491. INDEPENDENT STUDY** **1-4 sh**  
 Prerequisite: permission of the department. May be repeated with different topics for up to a total of eight semester hours.

### **Medical Technology**

*Chair, Department of Biology: Associate Professor Niedziela*

*Program Director: J. Simmons*

*Medical Director: Garvin*

*University Program Director: H. House*

See Biology.

### **Military Science**

Elon University, in cooperative agreement with North Carolina A&T State University, offers an Army Reserve Officers' Training Corps (ROTC) program and Air Force ROTC program. The Air Force ROTC program is offered totally on the North Carolina A&T State University campus. Students must register for the required aerospace science courses through the Greater Greensboro Consortium program in the Elon University Registrar's Office.

The Army Reserve Officers' Training Corps program provides a viable elective program for both male and female students. The program is divided into a basic course and an advanced course. These courses are normally completed during a four-year period. However, it is possible for veterans and other students who elect to undergo special training to complete the program in two years.

### PROGRAMS OF INSTRUCTION

Programs of instruction for the Army ROTC include a four-year program and a two-year program. The four-year program consists of a two-year basic course, a two-year advanced course and the advanced ROTC Summer Camp. The two-year program encompasses a basic ROTC Summer Camp, a two-year advanced course and the advanced ROTC Summer Camp.

### BASIC COURSE

The basic course is normally taken during the freshman and sophomore years. The purpose of this instruction is to introduce the student to basic military subjects: branches of the Army; familiarization with basic weapons, equipment and techniques; military organization and functions; and the techniques of leadership and command. It is from the students who successfully complete this instruction that the best qualified are selected for the advanced course which leads to an officer's commission.

Credit for the basic course can be obtained by successfully completing the following courses:

MSC	111	Introduction of Citizen/Soldier	1 sh
MSC	112	Introduction to U.S. Military Forces	1 sh
MSC	141, 142	Leadership Laboratory (1 sh/ea)	2 sh
MSC	211	Development of Professional Military Skills I	1 sh
MSC	212	Development of Professional Military Skills II	1 sh
MSC	241, 242	Leadership Laboratory (1 sh/ea)	2 sh
<b>TOTAL</b>			<b>8 sh</b>

Successful completion of Military Science 251 or prior service in the Armed Forces can be used to obtain appropriate credit for the basic course.

### ADVANCED COURSE

Students who receive appropriate credit for the basic course and meet eligibility standards are admitted to the advanced course on a best-qualified basis. Successful completion of the advanced course qualifies the student for a commission as a Second Lieutenant in one of the branches of the United States Army, Army Reserves or Army National Guard. The following courses are required for completion of the advanced course:

MSC	311	Leadership Training	2 sh
MSC	312	Introduction to Military Team Theory	2 sh
MSC	341, 342	Leadership Laboratory (1 sh/ea)	2 sh
MSC	351	Army ROTC Advanced Camp	4 sh
MSC	411	Seminars in Leadership and Professional Development	2 sh
MSC	412	Leadership, Law and Ethics	2 sh
MSC	441, 442	Leadership Laboratory (1 sh/ea)	2 sh
<b>TOTAL</b>			<b>16 sh</b>

**TWO-YEAR PROGRAM**

This program is designed for junior college students or sophomores at four-year institutions who have not taken ROTC. A basic six-week summer training period after the sophomore year takes the place of the basic course required of students in the traditional four-year program. When a student with two years of college has successfully completed the basic summer training, he/she is eligible for the advanced ROTC course in his/her junior and senior years. The advanced course, which leads to an officer commission, is the same for students in either the two-year program or the four-year program.

- MSC 111. INTRODUCTION OF CITIZEN/SOLDIER**

1 sh
- MSC 112. INTRODUCTION TO U.S. MILITARY FORCES**  
Introduction to U.S. Military Forces provides an introduction to and fosters the early development of leadership and soldier skills. Topics of training include leadership, drill and ceremonies, first aid and general military subjects.

1 sh
- MSC 141,142. LEADERSHIP LABORATORY (each semester)**  
Hands-on, practical training is the focus of the Leadership Laboratory. Students become proficient in basic military skills, drill and ceremonies, first aid and conducting inspections. Attention is also given to individual arms and marksmanship techniques.

1 sh
- MSC 211. DEVELOPMENT OF PROFESSIONAL MILITARY SKILLS I**  
This course continues the development of cadet leadership and critical skills. Training is basic in scope and includes leadership, written and oral communications, physical fitness and general military subjects.

1 sh
- MSC 212. DEVELOPMENT OF PROFESSIONAL MILITARY SKILLS II**  
Instruction in the second part of this sequence expands the students' frame of reference to include an understanding of roles and responsibilities and fosters internalization of the Professional Army Ethic. Training is basic in scope and includes written and oral communication, military skills, professional knowledge subjects and physical fitness.

1 sh
- MSC 241, 242. LEADERSHIP LABORATORY (each semester)**  
This Leadership Laboratory serves as a learning laboratory for hands-on practical experiences. Training includes instruction on operations, tactics, land navigation, first aid and general military subjects. Key course components emphasize the functions, duties and responsibilities of junior noncommissioned officers. The primary focus is the continued development of leadership potential through practical experience. The APFT is given to assess the state of physical development.

1 sh
- MSC 251. ARMY ROTC BASIC CAMP**  
Basic Camp is six weeks of training at Fort Knox, KY, consisting of Army history, role and mission, map reading/land navigation, rifle marksmanship, basic leadership techniques, physical training/marches, individual and unit tactics and communications. This course can be taken by rising juniors to substitute for MSC 111, 112, 141, 142, 211, 212, 241, 242. Prerequisites: qualification tests.

4 sh
- MSC 311. LEADERSHIP TRAINING**  
Designed to prepare cadets for the full range of responsibilities associated with Advanced Camp, Leadership Training refines the leader development process. Instruction is supplementary in scope and includes leadership, written and oral communications, operations, tactics and general military subjects.

2 sh
- MSC 312. INTRODUCTION TO MILITARY TEAM THEORY**  
This course emphasizes the development of intermediate level cadet leader skills in preparation for Advanced Camp. Training is supplementary in scope and includes leadership, written and oral communications, operations, tactics, land navigation, weapons and general military subjects.

2 sh

- MSC 341, 342. LEADERSHIP LABORATORY (each semester)** **1 sh**  
 In this learning laboratory for hands-on practical experiences, the focus is on soldier team development at a squad/patrol level; supplementary training includes land navigation and weapons. Emphasis is also placed on the development of intermediate leader skills in a field environment. The APFT is administered to assess physical development.
- MSC 351. ARMY ROTC ADVANCED CAMP** **4 sh**  
 Normally taken the summer following the junior year, the six-week Advanced Camp training/internship is conducted at designated U.S. Army installations. Prerequisite: MSC 312.
- MSC 411. SEMINARS IN LEADERSHIP AND PROFESSIONAL DEVELOPMENT** **2 sh**  
 Cadets develop leadership, technical and tactical skills through performance as a trainer/supervisor. Supplementary training includes leadership, written and oral communications, operations and tactics, physical fitness, training management and general military subjects. The focus gradually shifts to familiarize the student with future assignments as an officer.
- MSC 412. LEADERSHIP, LAW AND ETHICS** **2 sh**  
 This course continues the development of critical leadership skills. Training includes leadership, ethics, professionalism, law, written and oral communications, operations, tactics and general military subjects. The course culminates with instruction on making the transition to the Officer Corps.
- MSC 441,442. LEADERSHIP LABORATORY (each semester)** **1 sh**  
 Hands-on practical experiences reinforce cadet training, which is designed to solidify the commitment to officership, reinforce individual competencies and afford maximum practical officer leadership experiences. The laboratory emphasizes the functions, duties and responsibilities of junior Army officers with special attention directed to developing advanced leadership skills through active participation in planning and conducting military drills, ceremonies and field training.
- MSC 451. AIRBORNE TRAINING** **3 sh**  
 Three weeks of intensive airborne training includes physical conditioning, landing techniques, parachute safety, simulated jumps, procedures in and around aircraft and five combat jumps from Air Force aircraft at 1,250 feet. Selection for this opportunity is highly competitive. Only a few cadets nationwide are accepted.

## Multimedia Authoring

*Coordinator: Senior Lecturer Kleckner*

As more and more information is disseminated electronically for personal computers and via the Internet, the artistic design and narrative quality of this digital content become increasingly important. The development of effective multimedia content can be especially challenging in traditionally human-centric disciplines such as training, education, entertainment and advertising. The Multimedia Authoring minor provides an interdisciplinary approach to the development of successful and persuasive digital content for all disciplines. These skills are beneficial for graduates in a variety of fields, but are especially relevant in publishing (both new electronic media, as well as traditional media), business marketing and business consulting.

This minor includes core courses from English, art and computing sciences intended to integrate the study of digital design and writing with a solid technical foundation. The final multimedia authoring project course provides an opportunity for students to apply the skills learned in writing, interface design, digital art and Web development to a significant project that will include both a research and application component. The project will address a multimedia challenge in the student's field of major study or related field of interest.

**A minor in Multimedia Authoring** requires the following courses:

ENG	212	Writing, Rhetoric and Interface Design	4 sh
CIS	310	Interaction Design for Web and Multimedia	4 sh
MMA	460	Multimedia Authoring Studio	4 sh
Eight hours of MMA electives from the following:			8 sh
ART	263	Digital Art I	
ART	363	Digital Art II	
BUS	304	Introduction to Marketing (No credit for both BUS 304 and BUS 311)	
BUS	311	Principles of Marketing (No credit for both BUS 304 and BUS 311)	
CIS	310	User-Centered Web Design	
CIS	320	Building Collaborative Environments	
CIS	325	Web Development	
ENG	311	Collaboration and Publications Management	
ENG	312	Visual Rhetoric and Document Design	
JCM	340	Audio Production	
JCM	345	The Art of Film and Video Editing	
JCM	364	Web Publishing and Design	
Or other approved elective			
<b>TOTAL</b>			<b>20 sh</b>

**MMA 460. MULTIMEDIA AUTHORIZING STUDIO**

**4 sh**

Students will develop an interactive, multimedia project which incorporates text with computer graphics, video and audio. This project will address a multimedia challenge in the student's major field of study or related field of interest. Students will be involved in developing their final products through each stage of the full project lifecycle, including research, planning, design, implementation and maintenance/reflection. Prerequisites: ENG 212, CIS 310 and 8 hours of MMA electives.

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## Music

*Chair, Department of Music: Associate Professor Futrell*

*Professors: Bragg, Erdmann, Fischer Faw*

*Associate Professor: Metzger*

*Assistant Professors: Buckmaster, Coleman, Hogan, Knight*

*Instructor: LaRocco*

*Professor Emeritus: Artley*

*Lecturers: Butler-Cornelius, Sawyer*

*Adjuncts: M. Bragg, Carter, Celona, Cykert, Dharamraj, Dollak, Dollar, Dula,*

*Henderson, Hill, Hopper, Newton, Novine-Whitaker*

*Artist-in-Residence: Metzger*

The Department of Music at Elon University offers four music degrees. The B.S. in Music Education is for those students who wish to teach in elementary, middle or high school music programs. The program is a collaborative effort between the Department of Music and the Department of Education. The A.B. in Music Performance is for those students who wish to emphasize the study of instrumental or vocal music. Students in