
SCHOOL OF SCIENCES

School Dean: Dr. William Lokar

Sciences Resource Manager: Ms. Justis

Sciences Laboratory Coordinators: Ms. Beckner, Mr. Burris

Biology Department Faculty: Dr. Benson, Dr. Blair, Dr. Cowden, Dr. Freier, Dr. Friedman,

Dr. Geszvain, Dr. Jablonski, Dr. Maie, Ms. Stevens, Dr. J. D. Styrsky, Dr. Terry, Dr. Williamson,

Dr. Ziesmann

Biomedical Sciences Department Faculty: Dr. Blair, Dr. Freier, Dr. Jablonski, Dr. Terry

Chemistry Department Faculty: Mr. Burris, Dr. Crumpton, Dr. Gannicott, Dr. Lokar, Dr. Thapa

Claytor Nature Study Center: Dr. Eaton, Director

Computer Science Department Faculty: Dr. Briggs, Dr. Kurdi, Dr. Lobb, Dr. Meehean, Mr. Norko,

Dr. Ribler,

Environmental Science, Studies, and Sustainability Department: Dr. Eaton, Dr. Gannicott, Dr. Haiar, Dr.

Henry-Stone, Dr. Perault, Dr. Shahady, Dr. J. N. Styrsky

Mathematics Department Faculty: Dr. Cline, Dr. Coco, Dr. Hatfield, Dr. Lobb, Dr. Peterson, Dr. Taoufik,

Mr. Thomasey

Physics Department and Engineering Program Faculty: Dr. Goff, Dr. Moorman, Dr. Roach

Psychology Department Faculty: Dr. Corodimas, Dr. Cylke, Dr. Favero, Dr. Hanna, Dr. Hlaing,

Dr. Marciano, Dr. Werner

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The School of Sciences provides curricular and co-curricular activities for students interested in graduate study and careers in the physical and life sciences, mathematics, and computer science. The School also prepares students for advanced study in health sciences such as medicine, dentistry, or veterinary medicine. Through activities at the College's Claytor Nature Study Center, students, faculty, and staff are involved in initiatives that have a positive impact on the quality of the environment of the College and the community.

Majors and Minors Listing

Biology Major

Biology Minor

Biomedical Science Major

Chemistry Major - Bachelor of Arts

Chemistry Major - Bachelor of Sciences

Chemistry Minor

Computer Science Major

Computer Science Minor

Data Science and Statistics Major

Engineering (Dual-Degree Program)

Environmental Science Major

Environmental Science Minor

Environmental Studies Major

Environmental Studies Minor

Mathematics Major

Mathematics Minor

Physics Major

Physics Minor

Psychology Major

Psychology Minor

Statistics Minor

BIOLOGY MAJOR

The science of biology is a process of inquiry, using experimentation and observation to gain understanding of living systems and their interactions with nature. The purpose of the biology major is to acquire knowledge of the basics in the discipline, and, through a modern curriculum, prepare students for careers in the biological sciences. The biology major provides broad preparation appropriate for health-related careers, professional or graduate schools, government or industry, or teacher preparation. The curriculum is designed to ensure that students learn about animals, plants, and microorganisms at the molecular, cellular, organismal, and population levels of analysis. Courses are taught in a variety of styles including lecture, small group collaboration, and hands-on approaches that often involve a range of resources, including computer software, the World Wide Web, and field experiences.

A strong emphasis is placed on developing critical thinking and sound scientific reasoning skills. As part of the student's capstone experience, he/she will work with a faculty member on an independent project, typically a collaborative research project or an internship. Student interns gain practical work-related experience through affiliations with local laboratories, hospitals, physical therapy and veterinary clinics, industries, and government agencies responsible for natural resources.

Students majoring in biology normally must select MATH 103 (Calculus I) as the General Education math requirement. Most health-related careers require additional courses as prerequisites. Each student meets with his/her advisor on a regular basis to ensure that the appropriate courses are being selected.

Required courses:			Hours
BIOL	113	Evolution, Ecology, and Organisms	4
BIOL	114	Cells: Genetic and Molecular Perspectives	4
BIOL	480	Case Studies in Biology	3
BIOL	490	Biology Seminar	1
CHEM	111	Fundamentals of Chemistry I	4
CHEM	112	Fundamentals of Chemistry II	4
CHEM	221	Organic Chemistry I	4
MATH	103	Calculus I	3
STAT	222	Concepts of Statistics	3
One of the following:			4
BIOL	205W	Plant Biology	
BIOL	210	Animal Biology	
BIOL	220W	Cellular Diversity	
One of the following:			4
BIOL	305	Plant Ecology	
BIOL	321W	General Ecology	
BIOL	345	Animal Behavior	
One of the following:			4
BIOL	323	Genetics	
BIOL	360	Molecular Cell Biology	
One of the following:			3
BIOL	399	Internship in Biology	
*BIOL	428	Individual Research in Biology	
Electives:			15
BIOL		Other BIOL courses, excluding 100-level courses	
BIOM		Up to eight hours of BIOM courses, excluding 100-level courses	
CHEM		Up to eight hours of CHEM courses, excluding 100-level courses	
ENVS		Up to four hours of ENVS courses, excluding 100-level courses	
<i>Total Hours Required</i>			<u>60</u>

* Students fulfilling their experiential requirement using BIOL 428 will be required to enroll in at least two semesters for three to six hours total. Additional hours beyond the three required will qualify as elective hours in the major.

BIOLOGY MINOR

BIOL	113	Evolution, Ecology, and Organisms	4
BIOL	114	Cells: Genetic and Molecular Perspectives	4
*BIOL		Other BIOL courses, excluding BIOL 101, 238, 399, 428, 480, and 490	<u>10</u>
<i>Total Hours Required</i>			18

*At least four hours of the minor must be 300-level or higher.

BIOMEDICAL SCIENCE MAJOR

Biomedical science is an interdisciplinary program that includes courses in biology, chemistry, and physics. The core courses provide a foundation in each of the sciences, allowing students to develop broad-based knowledge and skills from classroom and laboratory experiences. These courses may serve as prerequisites for admission to professional schools in the health area (medical, dental, veterinary, physical therapy, optometry, chiropractic, physician assistant, pharmacy, etc.). With appropriately chosen electives, this program will also prepare students for graduate study in a variety of fields, including genetics and molecular biology or employment in the rapidly growing bio-technology industry.

A broad-based technical background, such as that offered by the biomedical science major, coupled

with a business minor or an M.B.A. will provide students with an attractive background for employment in the administrative division of many health-related industries.

Since admission to graduate and professional programs in the health sciences is highly competitive, students will work closely with their academic advisors to ensure that all admission prerequisites are met and courses are properly sequenced.

Applications for the biomedical science major, which may be obtained from the Biomedical Sciences Department chair, must be completed before students can be considered for admission to the program. In order to apply, the student must have completed nineteen hours in the core curriculum with a 3.0 QPA and a 2.75 overall QPA from BIOL 113, 114, CHEM 111, 112, and MATH 103. Typically, application for admission would occur in the spring of the sophomore year. Entry into the major is competitive, and all students who apply may not be accepted into the program.

To maintain status as a biomedical science major, students must maintain a C+ or better in all courses taken to fulfill the major requirements, and a 2.75 QPA overall. If a student is not successful in obtaining the required grade, he or she may repeat the course. If a student feels that he/she has not obtained the required grade in a biomedical science major course due to an extenuating circumstance, he or she may file a written appeal, documenting these circumstances to the school dean. Transfer students are welcome. Placement is based on program admission criteria.

Biomedical science courses:			Hours
BIOL	113	Evolution, Ecology, and Organisms	4
BIOL	114	Cells: Genetic and Molecular Perspectives	4
BIOL	220W	Cellular Diversity	4
BIOM	301W	Biomedical Science Seminar	1
CHEM	111	Fundamentals of Chemistry I	4
CHEM	112	Fundamentals of Chemistry II	4
CHEM	221	Organic Chemistry I	4
CHEM	222	Organic Chemistry II	4
MATH	103	Calculus I	3
Choose one from:			3
BIOM	399	Internship in a Health Profession	
BIOM	428	Individual Research in Biomedical Science	
One of the following Physics courses:			8
PHYS	141-142	College Physics	
PHYS	161-162	Physics I and II	
Biomedical Electives:			10-16
BIOL	323	Genetics	
BIOL	332	Vertebrate Anatomy	
BIOL	333	Vertebrate Physiology	
BIOL	345	Animal Behavior	
BIOL	356	Neurobiology	
BIOL	360	Molecular Cell Biology	
BIOL	424	Microbiology	
BIOM	238	Introduction to Research	
BIOM	312	Forensic Science	
BIOM	420	Cancer Biology	
BIOM	454	Immunology	
CHEM	320	Introductory Biochemistry	
Additional Electives:			0-6
BIOL	480	Case Studies in Biology	
BIOM	398	Special Topics in Biomedical Science	
H P	270	Nutrition	
PHIL	224	Ethical Issues in Medicine	
PSYC	308 or 341W	Abnormal Behavior or Psychology of Development	
PSYC	315	Drugs and Behavior	
STAT	222	Concepts of Statistics	

Total Hours Required

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CHEMISTRY MAJOR

The Chemistry Department offers two degree options. The B.A. is primarily designed for students intending to work in chemical laboratories following graduation, students planning to teach who need an endorsement in chemistry, and pre-professional (pre-medical, pre-dental, pre-veterinary, pre-pharmacy) students. The B.S. is a more rigorous course of study designed for students wishing to continue their study of chemistry at the graduate level.

Students who intend to major in chemistry and students who intend to prepare for medical, dental, veterinary, or pharmacy school are urged to select Fundamentals of Chemistry their first year.

CHEMISTRY MAJOR–BACHELOR OF ARTS

			Hours
CHEM	111	Fundamentals of Chemistry I	4
CHEM	112	Fundamentals of Chemistry II	4
CHEM	221	Organic Chemistry I	4
CHEM	222	Organic Chemistry II	4
CHEM	242W	Research Methodology in Chemistry	3
CHEM	359	Analytical Chemistry I	4
CHEM	360	Analytical Chemistry II	4
CHEM	441	Chemistry Seminar	1
MATH	103	Calculus I	3
One of the following:			8
PHYS	141-142	College Physics	
PHYS	161-162	Physics I and II	
Electives:			3
BIOM	312	Forensic Science	
CHEM		Other CHEM course 200 and above	
<i>Total Hours Required</i>			<u>42</u>

CHEMISTRY MAJOR–BACHELOR OF SCIENCE

CHEM	111	Fundamentals of Chemistry I	4
CHEM	112	Fundamentals of Chemistry II	4
CHEM	221	Organic Chemistry I	4
CHEM	222	Organic Chemistry II	4
CHEM	242W	Research Methodology in Chemistry	3
CHEM	359	Analytical Chemistry I	4
CHEM	360	Analytical Chemistry II	4
CHEM	421	Physical Chemistry I	4
CHEM	422	Physical Chemistry II	4
CHEM	441	Chemistry Seminar	1
CHEM	461	Senior Project I	2
CHEM	462	Senior Project II	1
MATH	103-104	Calculus I, II	6
One of the following:			8
PHYS	141-142	College Physics	
PHYS	161-162	Physics I and II	
Electives:			3
BIOM	312	Forensic Science	
CHEM		Other CHEM course 200 and above	
<i>Total Hours Required</i>			<u>56</u>

CHEMISTRY MINOR

			Hours
CHEM	111	Fundamentals of Chemistry I	4
CHEM	112	Fundamentals of Chemistry II	4
Electives:			10
BIOM	312	Forensic Science	
CHEM		Other CHEM courses excluding CHEM 127, 397, 399, 428, 441	
		<i>Total Hours Required</i>	<u>18</u>

COMPUTER SCIENCE MAJOR

The computer science curriculum is designed to provide students with the broad range of core competencies required of all computer professionals, as well as the opportunity to acquire an understanding of selected advanced topics in computer science.

C S	141-142	Introduction to Computer Science and Structured Programming	8
C S	241-242	Data Structures and Abstraction I, II	8
C S	451-452	Senior Project	6
C S		Other C S courses 300 and above, excluding CS 399	12
MATH	231	Mathematics of Computer Science	3
Three courses from:			9-10
C S	271	Computer Architecture and Assembly Language Programming	
C S	322	Programming Languages	
C S	350	Software Engineering	
C S	360	Operating Systems and Computer Organization	
C S	370	Database Management Systems	
One writing enriched course:			3
ENGL	223W	Academic Writing	
PHIL	200W	Introduction to Philosophy	
		<i>Total Hours Required</i>	<u>49-50</u>

Recommended electives:

Computer science is a large field with a diverse set of specializations. Although the major requires that students take four 300-level electives, students are encouraged to take more 300-level electives if their schedules permit. Computer science majors will typically find that minoring in mathematics, business, or physics will provide a very useful complement to the major.

COMPUTER SCIENCE MINOR

C S	141-142	Introduction to Computer Science and Structured Programming	8
C S		Other C S courses 200 and above, excluding C S 399	9
		<i>Total Hours Required</i>	<u>17</u>

DATA SCIENCE AND STATISTICS MAJOR

Data Science and Statistics is the science of learning from data. It is concerned with the collection, analysis, and interpretation of data, as well as the effective communication and presentation of these results. Statisticians can work in virtually any field, from Business and Social Science to Biology and Medicine. The Data Science and Statistics curriculum is designed to provide students with the broad range of core competencies required of all Statistics professionals, as well as the opportunity to acquire an understanding of selected advanced topics.

MATH	103-104	Calculus I, II	6
MATH	211	Calculus III	3
MATH	307	Linear Algebra	3

			Hours
MATH	311	Introduction to Probability Theory	3
STAT	222	Concepts of Statistics	3
STAT	300	Data Science and Applied Statistics	3
STAT	302	Introduction to Statistical Inference	3
STAT	333	Mathematical Statistics	3
STAT	400	Statistical Methods	3
STAT	399 or 451	Internship in Statistics or Senior Data Science Project	3
STAT		Other STAT courses 300 and above	<u>6</u>
		Total Hours Required	39

DUAL-DEGREE ENGINEERING PROGRAM

DUAL-DEGREE PROGRAM WITH OLD DOMINION UNIVERSITY

Under special agreement with Old Dominion University (ODU), a student may earn a B.S. from Lynchburg College (usually in physics) and a degree in engineering from ODU in a total of five years. Dual-degree candidates enroll at Lynchburg College for the first three years and transfer to the School of Engineering at ODU for approximately two years.

Students must complete prescribed courses, including General Education requirements, with an average grade of B or higher during the first three years at Lynchburg College, before they can transfer to ODU.

Upon completing specified courses and meeting total hour requirements, the student is awarded the bachelor of science from Lynchburg College, usually at the end of the fourth year. At the conclusion of the fifth year, or when all requirements for a degree in engineering have been fulfilled, the appropriate degree is awarded from ODU: bachelor of science in civil, electrical, or mechanical engineering.

DUAL-DEGREE PROGRAM WITH THE UNIVERSITY OF VIRGINIA

Under special arrangement with the University of Virginia (U.Va.), a student may also earn a B.S. in a science or mathematics from Lynchburg College and a Master of Engineering degree from U.Va. in five years. A student will choose an undergraduate major that is best suited for the field of engineering in which she or he wishes to pursue a graduate degree. Recommended major choices are listed below.

<u>Lynchburg College Major</u>	<u>U.Va. Major</u>
Biology/Biomedical Science	Biomedical Engineering
Chemistry	Chemical Engineering
Computer Science	Computer Engineering Computer Science Systems Engineering
Math	Systems Engineering
Physics	Aerospace Engineering Civil Engineering Electrical Engineering Materials Science & Engineering Mechanical Engineering Systems Engineering

A student pursues the dual-degree at Lynchburg College for the first three years. After completing 60 semester credit hours, including the General Education requirements and the required classes listed below, the student becomes eligible to apply to U.Va. as a non-degree seeking student. A minimum quality point average of 3.4, both in the major and overall, is required for acceptance as a non-degree seeking student. If accepted into the program, the student will then enroll in courses at U.Va. that complete the requirements for the undergraduate Lynchburg College major and position her- or himself for graduate studies. Once all of the requirements for the Lynchburg College major are completed, the student earns a B.S. from Lynchburg College, usually at the end of the fourth year.

During the year that the student earns a B.S., she or he is eligible to apply for admission to the U.Va.

graduate engineering program through the normal application process. A student may choose three degree options as part of this application: Master of Engineering, Master of Science, or Ph.D. The Master of Engineering degree is a course-based degree that is typically completed within one year. The Master of Science degree is a research-based degree that requires the completion of a thesis and typically takes 2-3 years to complete.

For more detailed information on this program, please contact the Dual-Degree Program Director, Will Roach (physics).

			Hours
CHEM	111	Fundamentals of Chemistry I	4
CHEM	112	Fundamentals of Chemistry II	4
MATH	103-104	Calculus I, II	6
MATH	211	Calculus III	3
MATH	301	Differential Equations	3
PHYS	161-162	Physics I, II	<u>8</u>
		<i>Total Hours Required</i>	28

ENVIRONMENTAL SCIENCE MAJOR

The environmental science major is an interdisciplinary program for students wishing to pursue careers in natural resources. LC students prepare to become foresters, wildlife or aquatic ecologists, hydrologists, geologists, meteorologists, and GIS technicians. Potential employers include government agencies, commercial environmental laboratories, private consulting firms, and teaching institutions. Graduate studies are also possible.

A key component of the environmental science program is the opportunity to work closely with professors, as well as with professionals from the community. Diverse learning opportunities are available in the classroom, the laboratory, and in the field. Our students develop critical thinking and sound scientific reasoning abilities, as well as a general awareness of the physical and biological factors at work in the environment. Additionally, they engage in a research or intern project that integrates training into an analysis of an environmental problem.

BIOL	321	General Ecology	4
CHEM	111	Fundamentals of Chemistry I	4
ENVS	101-101L	Earth and Environmental Science I and Lab	4
ENVS	102-102L	Earth and Environmental Science II and Lab	4
ENVS	201W	History of Earth and Life	4
ENVS	380	Geographic Information Systems (GIS)	4
ENVS	490	Environmental Science Seminar	1
MATH	103	Calculus I	3
STAT	222	Concepts of Statistics	3
One of the following:			4
CHEM	112	Fundamentals of Chemistry II	
CHEM	206	Environmental Chemistry	
One of the following:			3
ENVS	238	Introduction to Research	
ENVS	377	Study Abroad	
ENVS	399	Internship in Environmental Science	
ENVS	428	Individual Research in Environmental Science	
Electives:			12
ENVS	321	Conservation Ecology	
ENVS	324	Sustainable Forest Management	
ENVS	331	Principles of Hydrology	
ENVS	333	Physical Oceanography	
ENVS	336	Physical Geology	
ENVS	337	Historical Geology	
ENVS	338	Environmental Geology	
ENVS	340	Remote Sensing	
ENVS	345	Meteorology	

ENVS	347	Climatology	Hours
ENVS	365	Wetlands	
ENVS	375	Freshwater Ecology	
Additional Electives:			10
BIOL	205W	Plant Biology	
BIOL	210	Animal Biology	
BIOL	233	Tropical Biology	
BIOL		Other BIOL courses 300 and above, excluding 399 and 428	
CHEM	206	Environmental Chemistry (if CHEM 112 is taken)	
CHEM	221	Organic Chemistry I	
ENST		Other ENST courses 300 and above, excluding 399 and 428	
ENVS	211	Physical Geography	
ENVS		Other ENVS courses 300 and above	
PHYS	141 or 161	College Physics or Physics I	
PHYS	181	Solar System Astronomy	
<i>Total Hours Required</i>			60

ENVIRONMENTAL SCIENCE MINOR

Required courses:			
ENVS	101-101L	Earth and Environmental Science I and Lab	4
ENVS	102-102L	Earth and Environmental Science II and Lab	4
Electives:			10
ENVS	201W	History of Earth and Life	
ENVS	211	Physical Geography	
ENVS	321	Conservation Ecology	
ENVS	324	Sustainable Forest Management	
ENVS	331	Principles of Hydrology	
ENVS	333	Physical Oceanography	
ENVS	336	Physical Geology	
ENVS	337	Historical Geology	
ENVS	338	Environmental Geology	
ENVS	340	Remote Sensing	
ENVS	345	Meteorology	
ENVS	347	Climatology	
ENVS	365	Wetlands	
ENVS	375	Freshwater Ecology	
ENVS	380	Geographic Information Systems (GIS)	
<i>Total Hours Required</i>			18

ENVIRONMENTAL STUDIES MAJOR

The Environmental Studies curriculum encompasses natural sciences, social sciences, humanities, law and business, and includes interdisciplinary core courses, senior seminar, and electives. This major offers the opportunity to build on efforts at Lynchburg College to develop connections between disciplines (via learning communities) and to promote critical thinking skills. Successful completion of an Environmental Studies major opens up to students a wide variety of career and public service options related to environmental protection, conservation, and sustainable growth. Students would also emerge well-prepared for the critical thinking demands of graduate or professional programs in a variety of fields, including law, political science, economics, and sociology.

ENST	210W	People and the Environment	3
ENST	480	Capstone Course in Environmental Studies	3
ENVS	101-101L	Earth and Environmental Science I and Lab	4
ENVS	102-102L	Earth and Environmental Science II and Lab	4
ENVS		Other ENVS courses 300 and above excluding 399 and 428	4

			Hours
Two of the following:			8
ENST	350	Environmental Law and Policy	
ENST	360	Sustainable Living	
ENST	370	Environmental Management	
One of the following:			3
ENVS	211	Physical Geography	
INTL	213	World Regional Geography	
One of the following:			3-4
PSYC	274	Statistics for Psychologists	
SOCI	280	Statistics for Sociologists	
STAT	222	Concepts of Statistics	
One of the following:			3
ENST	238	Introduction to Research	
ENST	377	Study Abroad	
ENST	399	Internship in Environmental Studies	
Electives (must come from at least two different subject areas):			15
COMM	338W	Environmental Communication	
ECON	255	Environmental Economics	
ENGL	209W	Nature Writing	
ENST		Other ENST courses 300 and above	
ENVS		Up to 1 ENVS course excluding 238, 399, 428	
H P	221W	Global Health	
HIST	256	America Since 1877	
HIST	301	Rise of the American City	
HIST	336	American Social History	
PHIL	225	Environmental Ethics	
POLI	220	The American Political Experience	
POLI	258	State and Local Government and Politics	
POLI	290	American Public Policy	
POLI	301	Developing World	
SOCI	202	Sociology of Social Problems	
SOCI	203	Introduction to Cultural Studies	
SOCI	209	Introduction to Applied Sociology	
SOCI	264	Social Inequality and Oppression	
SOCI	363	Urban Sociology	
<i>Total Hours Required</i>			50-51

It is highly recommended that each environmental studies major have a supporting area, some examples of which are an economics minor, political science minor, international studies minor, sociology minor, history minor, etc.

ENVIRONMENTAL STUDIES MINOR

ENST	210W	People and the Environment	3
ENVS	101-101L	Earth and Environmental Science I and Lab	4
ENVS	102-102L	Earth and Environmental Science II and Lab	4
Choose from:			4
ENST	350	Environmental Law and Policy	
ENST	360	Sustainable Living	
ENST	370	Environmental Management	
Elective:			3
COMM	338W	Environmental Communication	

ECON	255	Environmental Economics	Hours
ENGL	209W	Nature Writing	
ENST		Other ENST courses 300 and above, excluding 399 and 428	
H P	221W	Global Health	
HIST	256	America Since 1877	
HIST	301	Rise of the American City	
PHIL	225	Environmental Ethics	
POLI	220	The American Political Experience	
POLI	258	State and Local Government and Politics	
POLI	301	Developing World	
SOCI	202	Sociology of Social Problems	
SOCI	203	Introduction to Cultural Studies	
SOCI	209	Introduction to Applied Sociology	
SOCI	264	Social Inequality and Opression	
<i>Total Hours Required</i>			<u>18</u>

MATHEMATICS MAJOR

The mathematics major seeks to support the College mission by maintaining a strong commitment to the importance of the liberal arts. Since four of the seven original liberal arts (arithmetic, geometry, astronomy, and logic) were mathematical in nature, mathematics has always played an important role in the study of the liberal arts. When properly presented, a mathematics course encompasses the principles of a liberal arts education using logic, numerical concepts, algebraic and geometric principles, mathematical modeling, and sequential development.

Courses in mathematics are offered for the non-major, as well as for the student who plans to major in mathematics. The curriculum is designed to serve the interests and needs of several groups of students, particularly:

1. Those who seek a major in mathematics as background for graduate school or employment (bachelor of science or bachelor of arts);
2. Those who intend to apply mathematics in other disciplines such as the physical sciences, the life sciences, or business and industry;
3. Prospective teachers of mathematics at the elementary or secondary school levels;
4. Those who seek fulfillment of a degree requirement;
5. Those who seek fulfillment of a teaching certificate requirement; and
6. Those who enjoy the stimulation and satisfaction derived from the study of mathematics.

Freshmen who are interested in mathematics as a major usually take MATH 103-104; however, appropriate advanced placement is possible.

C S	131	Fundamentals of Programming in Basic	3
MATH	103-104	Calculus I, II	6
MATH	211	Calculus III	3
MATH	260W	Mathematical Reasoning and Proof	3
MATH	301	Differential Equations	3
MATH	307	Linear Algebra	3
MATH	399 or 451	Internship in Mathematics or Senior Project	3
MATH	405	Abstract Algebra	3
MATH	407	Advanced Calculus	3
MATH		Other MATH courses 300 and above	<u>9</u>
<i>Total Hours Required</i>			39

MATHEMATICS MINOR

MATH	103-104	Calculus I, II	6
MATH	211	Calculus III	3
MATH	307	Linear Algebra	3
MATH		Other MATH courses 250 and above	<u>6</u>
<i>Total Hours Required</i>			18

PHYSICS MAJOR

The physics major is designed to provide solid preparation for technical employment or for graduate study in physics. The major will also prepare prospective secondary teachers to teach physics and will provide a suitable path for local students who want to complete a four-year technical degree, but who cannot leave local employment to do so. In addition, the physics major provides an ideal path for students interested in pursuing careers in various types of engineering.

The mission of the program is to provide:

1. Through support of the College General Education Program, an introduction to the history, thought, and techniques, that distinguish physics as a discipline central to the sciences;
2. Physics curricula that thoroughly ground participating students in the core competencies expected of physics graduates; and
3. Physics curricula that stress the ability to read, calculate, write, and speak effectively about specific physics topics.

Students completing the B.S. major in physics will:

1. Demonstrate conceptual knowledge in the core physics courses outlined below;
2. Demonstrate competence in the application of the methods, techniques, and equipment used in the physical laboratories;
3. Demonstrate knowledge of research methodology in the physical sciences, including the use of appropriate research literature;
4. Demonstrate competence to apply basic concepts to solve physics problems, including those which require mathematics through differential equations; and
5. Obtain information on a general or specialized topic within the physical science disciplines and communicate that information orally and in writing.

			Hours
MATH	103	Calculus I	3
MATH	104	Calculus II	3
MATH	211	Calculus III	3
MATH	301	Differential Equations	3
PHYS	161	Physics I	4
PHYS	162	Physics II	4
PHYS	211	Physics III	4
PHYS	302	Physics IV	4
PHYS	309	Classical Mechanics	4
PHYS	312	Electromagnetic Theory	4
PHYS	333W	Computational Physics	4
PHYS	397	Independent Study in Physics	4
PHYS		Other PHYS courses 300 and above	<u>8</u>
<i>Total Hours Required</i>			52

PHYSICS MINOR

MATH	103	Calculus I	3
MATH	104	Calculus II	3
MATH	211	Calculus III	3
MATH	301	Differential Equations	3
PHYS	161	Physics I	4
PHYS	162	Physics II	4
PHYS	211	Physics III	4
PHYS	302	Physics IV	<u>4</u>
<i>Total Hours Required</i>			28

PSYCHOLOGY MAJOR

Studies in the liberal arts provide the context in which psychology programs are conducted. The following are guiding principles for programs in psychology:

1. To provide the student with a well-rounded foundation based upon a theoretical and conceptual understanding of psychology as a science;
2. To introduce the student to the various research methodologies and techniques used within the discipline to gain an understanding of behavior;

- 3. To prepare the student for further graduate study in psychology and related disciplines;
- 4. To prepare the student for careers in psychology and related areas.

			Hours
PSYC	103-104	General Psychology	6
PSYC	105L-106L	General Psychology Lab	2
PSYC	274	Statistics for Psychologists	4
PSYC	275W	Research Methodology	4
PSYC	355	Behavioral Neuroscience	4
PSYC	401	History and Systems of Psychology	3
PSYC	475W	Research Capstone I	3
PSYC	476W	Research Capstone II	2
Two of the following:			6
PSYC	306	Theories of Personality	
PSYC	308	Abnormal Behavior	
PSYC	392	Psychological Assessment	
Three of the following:			9
PSYC	302	Social Psychology	
PSYC	312	Learning and Behavior	
PSYC	341W	Psychology of Development	
PSYC	344	Cognitive Psychology	
One of the following:			1
PSYC	373	Advanced Methods: Clinical	
PSYC	374	Advanced Methods: Social	
PSYC	375	Advanced Methods: Developmental	
PSYC	376	Advanced Methods: Cognitive	
<i>Total Hours Required</i>			<u>44</u>

Students are encouraged to take other electives available in the program to best meet individual goals. Students wishing to pursue doctoral studies in psychology are encouraged to consider one or more of the following: (1) PSYC 399 Internship, (2) PSYC 397 Independent Study, or (3) Honors in Psychology.

The student must work closely with an advisor in the program to select courses appropriate for his/her goals and interests.

PSYCHOLOGY MINOR

PSYC	103-104	General Psychology	6
PSYC	105L-106L	General Psychology Laboratory	2
PSYC		Other PSYC courses 200 and above	<u>12</u>
<i>Total Hours Required</i>			20

STATISTICS MINOR

MATH	103- 104	Calculus I, II	6
MATH	311	Introduction to Probability Theory	3
STAT	222	Concepts of Statistics	3
STAT	333	Mathematical Statistics	3
STAT		Other STAT courses 300 and above	<u>3</u>
<i>Total Hours Required</i>			18