

College of Sciences and Mathematics

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THE COLLEGE OF SCIENCES AND MATHEMATICS provides programs in the physical sciences, life sciences and mathematics at the undergraduate and graduate levels. The college also offers scientific and mathematical service courses for students enrolled in all of the other colleges and schools. The college includes the departments of Biological Sciences, Chemistry and Biochemistry, Geology and Geography, Mathematics and Statistics, and Physics. The Arboretum and the Leach Science Center are also included in the College of Sciences and Mathematics.

Undergraduate Degrees

1. Four-year bachelor's degree programs are offered in two areas:
 - a) Departmental curricula are available in biomedical sciences, botany, chemistry, biochemistry, geography, geology, laboratory and medical technology, microbiology, molecular biology, marine biology, mathematics, applied mathematics, physics and zoology.
 - b) Pre-professional curricula are offered in pre-dentistry, pre-medicine, pre-optometry, pre-physical therapy, pre-pharmacy and pre-veterinary medicine.

Embodied in these curricula are the requirements of the University Core Curriculum.

2. Admission - The academic requirements and demands on majors in sciences and mathematics necessitate a high school preparation of high intellectual quality. The following courses are recommended as minimum preparation: English, four units; mathematics (including algebra, geometry, trigonometry and pre-calculus), four units; chemistry, one unit; biology, one unit; history, literature, social science, two or three units. Both physics and foreign language are highly recommended.

Many COSAM curricula require students to begin with MATH 1610.

Students not prepared for MATH 1610 must first take a lower-numbered course. See advisor for details.

Transfers from on-campus may declare a major in the College of Sciences and Mathematics if they: (1) have a cumulative Auburn grade-point average of at least 2.0 (on all work attempted) and (2) have completed at least 10 hours of Auburn University course work in the desired major with at least a 2.0 grade-point average in all such courses. Courses in the major are those carrying the appropriate prefix(es) of the intended curriculum. Students not meeting these standards may enroll in the Undeclared Sciences and Mathematics (UNSM) curriculum if they have not reached senior standing. Students in the UNSM curriculum may declare a Sciences and Mathematics major after satisfying the above requirements. A student who enters the UNSM curriculum because he or she is not qualified to declare a major can remain in UNSM for a maximum of one year or until senior standing is reached. After this, if the student is still not qualified to declare a major, he or she will be disenrolled from the College of Sciences and Mathematics.

Graduate Degrees

Master of science and doctor of philosophy degrees are offered in the College of Sciences and Mathematics. Degree programs are described in this bulletin.

Web Page

Further information about the College of Sciences and Mathematics can be found at: <http://www.auburn.edu/cosam/>

Minors

MATHEMATICS MINOR

15 semester hours in minor.

Courses required: Cr. Hr.

MATH/STAT courses at the level of 3000 or higher. At least three courses must be designated MATH.

PHYSICS MINOR

15 semester hours in minor

Courses required		Cr. Hr.
PHYS	2000	Introductory Quantum Physics and Relativity 3
PHYS	2100	Intermediate Mechanics 3
PHYS	3100	Intermediate Electricity & Magnetism 3
PHYS	3200	Statistical Thermodynamics 3
PHYS	4100	Fundamentals of Quantum Mechanics 3

General Sciences and Mathematics Curriculum (UNSM)

This curriculum is primarily for freshmen who have not decided on a specific major field of study and for transfer students having deficiencies which preclude their acceptance in a degree program. Freshmen entering this curriculum must declare a major by the end of their first year. Transfer students must complete a specific approved program to clear their admission to a major field of study.

The General Curriculum (UNSM)

FR	F	S	F	S
MATH	1610	1620	Calculus I & II 4	4
ENGL	1100	1120	English Composition I & II 3	3
			Science 4	4
			Core Social Science Group 1 & 2 3	3
			Career Exp 2	**
			Elective **	2
				16 16

TOTAL HOURS - 32

Departmental Curricula

Departmental curricula leading to the bachelor's degree include botany, chemistry, biochemistry, biomedical sciences, geography, geology, microbiology, molecular biology, marine biology, laboratory and medical technology, mathematics, applied mathematics, physics and zoology.

Botany

The botany major is for students interested in various careers in the plant sciences. Students may pursue either the Ecology and Evolution Track or the Cellular and Molecular Track.

Curriculum in Botany/Ecology and Evolution Track (BTNY, ECEV)

FR	F	S	F	S
BIOL	1020		Principles of Biology and Lab (1021) 4	**
BIOL		1030	Organismal Biology and Lab (1031) **	4
ENGL	1100	1120	English Composition I & II 3	3
MATH	1610	1620	Calculus I & II 4	4
CHEM	1030	1040	Fundamentals of Chemistry I & II 3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab 1	1
				15 15
SO				
ENGL	2200	2210	World Literature I & II 3	3
			Core History I & II 3	3
			Core Social Science Group I & II 3	3
			Core Fine Arts 3	**
CHEM	2070	2080	Organic Chemistry I & II 3	3
CHEM	2071	2081	Organic Chemistry I & II Lab 1	1
BIOL		3000	Genetics **	4
				16 17
JR				
PHYS	1500	1510	General Physics I & II 4	4
			Core Philosophy **	3
STAT		3010	Statistics for Engr. & Sci. **	3
BIOL	3030		Evolution & Systematics 3	**
BIOL	3100		Plant Biology 3	**
BIOL	3101		Plant Biology Lab 1	**
BIOL		3060	Principles of Ecology **	4
			Elective 4	3
				15 17

College of Sciences and Mathematics

SR					
BIOL	5300	Plant Anatomy & Development	4	**	
BIOL	4950	Undergraduate Seminar	1	**	
BIOL	5120	Systematic Botany	**	4	
BIOL	5130	Plant Physiology	4	**	
BIOL	5140	Plant Ecology	**	4	
		Biology Elective	4	4	
UNIV	4AA0	SM1 Undergraduate Graduation	**	0	
			13	12	

TOTAL HOURS – 120

Biology Elective: see advisor for approved course listing.

Students must either pass the computer competency test or take COMP 1000 as one of their electives.

Curriculum in Botany/Cellular and Molecular Track (BTNY, CMLB)

FR	F	S		F	S
BIOL	1020		Principles of Biology and Lab (1021)	4	**
BIOL		1030	Organismal Biology and Lab (1031)	**	4
ENGL	1100	1120	English	3	3
MATH	1610	1620	Calculus I & II	4	4
CHEM	1030	1040	Fundamentals of Chemistry I & II	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab	1	1
				15	15

SO					
ENGL	2200	2210	World Literature I & II	3	3
			Core Social Science Group I & II	3	3
			Core Fine Arts	3	**
			Core History I & II	3	3
CHEM	2070	2080	Organic Chemistry I & II	3	3
CHEM	2071	2081	Organic Chemistry I & II Lab	1	1
BIOL		3000	Genetics	**	4
				16	17

JR					
PHYS	1500	1510	General Physics I & II	4	4
			Core Philosophy	**	3
BIOL	3100		Plant Biology	3	**
BIOL	3101		Plant Biology Lab	1	**
BIOL		4100	Cell Biology	**	3
BIOL	3200		General Microbiology	4	**
			Elective	3	4
				15	14

SR					
BIOL	5300		Plant Anatomy & Development	4	**
BIOL		5220	Molecular Genetics	**	3
BIOL	4950		Undergraduate Seminar	1	**
BIOL		5120	Systematic Botany	**	4
BIOL		5130	Plant Physiology	**	4
			Biology Elective	4	**
BCHE	5180	5190	Biochemistry I & II	3	3
BCHE	5181	5191	Biochemistry I & II Lab	1	1
UNIV		4AA0	SM1 Undergraduate Graduation	**	0
				13	15

TOTAL HOURS – 120

Biology Electives: see advisor for approved course listing.

Students must either pass the computer competency test or take COMP 1000 as one of their electives.

B.S. Curriculum in Chemistry

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II	3	3
MATH	1610	1620	Calculus I & II	4	4
			Core History I & II	3	3
CHEM	1110	1120	General Chemistry I & II	3	3
CHEM	1111	1121	General Chemistry Lab I & II	1	1
				14	14

SO					
PHYS	1600	1610	Engineering Physics I & II	4	4
ENGL		2200	World Literature I	**	3
MATH	2630		Calculus III	4	**
MATH		2650	Linear Differential Equations	**	3
CHEM	2070	2080	Organic Chemistry I & II	3	3
CHEM	2071	2081	Organic Chemistry Lab I & II	1	1
CHEM	3050		Analytical Chemistry	3	**
CHEM	3051		Analytical Chemistry Lab	1	**
			Elective	**	1
				16	15

JR					
ENGL	2210		World Literature II	3	**
			Core Social Science Group I	**	3
			Topics in Linear Algebra	3	**
BCHE	5180	5190	Biochemistry	3	3
BCHE	5181	5191	Biochemistry Lab	1	1
CHEM		3000	Chemical Literature	**	1
CHEM	4070	4080	Physical Chemistry I & II	3	3
CHEM	4071	4081	Physical Chemistry Lab I & II	1	1
			Elective	**	3
				14	15

SR					
			Core Social Science Group II	3	**
			Core Philosophy	**	3
			Core Fine Arts	3	**
CHEM	5280		Computational Chemistry	4	**
CHEM		4901	Special Problems in Chemistry	**	3
CHEM		4950	Undergraduate Seminar	**	1
CHEM	4100	4110	Inorganic Chemistry	3	3
CHEM	4101	4111	Inorganic Chemistry Lab	1	1
CHEM		4130	Instrumental Analysis	**	3
CHEM		4131	Instrumental Analysis Lab	**	1
			Elective	3	**
UNIV		4AA0	SM1 Undergraduate Graduation	**	0
				17	15

TOTAL HOURS – 120

Curriculum in Biochemistry (BCHM)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II	3	3
MATH	1610	1620	Calculus I & II	4	4
			Core History	3	**
BIOL		1020	Principles of Biology and Lab (1021)	**	4
CHEM	1110	1120	General Chemistry I & II	3	3
CHEM	1111	1121	General Chemistry Lab I & II	1	1
				14	15

SO					
PHYS	1600	1610	Engineering Physics I & II	4	4
			Core History	**	3
			Calculus III	4	**
MATH	2630		Linear Differential Equation	**	3
MATH		2650	Linear Differential Equation	**	3
CHEM	2070	2080	Organic Chemistry I & II	3	3
CHEM	2071	2081	Organic Chemistry Lab I & II	1	1
CHEM	3050		Analytical Chemistry	3	**
CHEM	3051		Analytical Chemistry Lab	1	**
			Elective	**	1
				16	15

JR					
ENGL		2200	World Literature I	**	3
BIOL	3200		General Microbiology	4	**
BCHE	5180	5190	Biochemistry I & II	3	3
BCHE	5181	5191	Biochemistry Lab	1	1
BIOL		4100	Cell Biology	**	3
CHEM		3000	Chemical Literature	**	1
CHEM	4070	4080	Physical Chemistry I & II	3	3
CHEM	4071	4081	Physical Chemistry Lab I & II	1	1
			Elective	3	**
				15	15

SR					
ENGL	2210		World Literature II	3	**
			Core Fine Arts	**	3
			Core Philosophy	**	3
			Core Social Science Group I & 2	3	3
CHEM	4901		Special Problems in Chemistry	3	**
CHEM	4950		Undergraduate Seminar	1	**
CHEM	4100		Inorganic Chemistry	3	**
CHEM	4101		Inorganic Chemistry Lab	1	**
CHEM		4130	Instrumental Analysis	**	3
CHEM		4131	Instrumental Analysis Lab	**	1
			Elective	**	3
UNIV		4AA0	SM1 Undergraduate Graduation	**	0
				14	16

TOTAL HOURS – 120

B.A. Curriculum in Chemistry

This curriculum provides a strong background in chemistry while allowing students to specialize in areas of interest. It is especially well suited for students leaning towards medical sciences while allowing more flexibility than that allowed in the American Chemical Society accredited biochemistry curriculum. The program allows for great versatility in the junior and senior years allowing the curriculum to be tailored to individual goals. The curriculum prepares students for professional careers in chemistry or biochemistry and advanced degree programs in chemistry, biochemistry and medically related fields.

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II.....	3	3
MATH	1610	1620	Calculus I & II.....	4	4
BIOL	1020		Principles of Biology and Lab (1021).....	4	**
BIOL		1030	Organismal Biology and Lab (1031).....	**	4
CHEM	1110	1120	General Chemistry I & II.....	3	3
CHEM	1111	1121	General Chemistry Lab I & II.....	1	1
			Elective.....	**	**
				16	15

SO					
ENGL		2200	World Literature I.....	**	3
PHYS	1500	1510	General Physics I & II.....	4	4
CHEM	2070	2080	Organic Chemistry I & II.....	3	3
CHEM	2071	2081	Organic Chemistry Lab I & II.....	1	1
CHEM	3050		Analytical Chemistry.....	3	**
CHEM	3051		Analytical Chemistry Lab.....	1	**
			Elective.....	3	3
				15	14

JR					
ENGL	2210		World Literature II.....	3	**
			Core Social Science Group I.....	**	3
			Core Fine Arts.....	**	3
			Foreign Language.....	4	4
BCHE	5180		Biochemistry.....	3	**
BCHE	5181		Biochemistry Lab.....	1	**
CHEM		3000	Chemical Literature.....	**	1
CHEM		3160	Physical Chemistry.....	3	**
			ROTC or Elective.....	3	3
				17	14

SR					
			Core History I & II.....	3	3
			Core Social Science Group II.....	3	**
			Core Philosophy.....	**	3
			Electives (Chem. Upper-div.).....	4	4
			Electives.....	6	3
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				16	13

TOTAL HOURS — 120

Geography

This curriculum in geography promotes geographic literacy as an indispensable element in any educational program. It focuses on spatial relationships and the view of the Earth as the home of humankind. Geography readies students for careers in public services, consulting companies, state or federal agencies, utilities and other professions, as well as for graduate studies in geography.

Curriculum in Geography (GEOG)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II.....	3	3
MATH	1610		Calculus I.....	4	**
			Core History I & II.....	3	3
			Core Philosophy.....	**	3
COMM		1000	Public Speaking.....	**	3
			Foreign Language.....	4	4
				14	16

SO					
ENGL	2200	2210	World Literature I & II.....	3	3
GEOL	1100		Physical Geology.....	4	**
GEOL		1110	Historical Geology.....	**	4
			Core Fine Arts.....	3	**
			Core Social Science Group I & II.....	3	3
STAT		2510	Statistics for Biology & Health Sciences.....	**	3
GEOG	2010		Cultural Geography.....	3	**
GEOG		2020	Physical Geography.....	**	3
				16	16

JR					
GEOG	2800		Geographic Methods.....	4	**
GEOG	5820		Remote Sensing.....	4	**
GEOG		5830	GIS.....	**	4
			GEOG Elective.....	**	3
			Social Science Elective.....	3	**
			Technical Electives.....	6	3
			Elective.....	**	3
				17	13

SR					
			Technical Elective.....	**	4
GEOG	3810		Cart and Graphics.....	4	**
GEOG		4800	Geographic Thought.....	**	3
			GEOG Elective.....	6	3
			Electives.....	4	4
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				14	14

TOTAL HOURS — 120

Technical Elective: see advisor for approved course listing.
 GEOG Elective: see advisor for approved course listing.
 Students either pass the computer competency test or take COMP 1000 as one of their electives.

Geology

This curriculum provides a background in the geosciences and opportunity to specialize in an area of interest (i.e., environmental geology, paleontology) through elective major or related courses. It is designed for those interested in preparation for graduate studies or employment in the field of geology.

Curriculum in Geology (GEOL)

FR	F	S		F	S
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1	1
			Core History I & II.....	3	3
ENGL	1100	1120	English Composition I & II.....	3	3
GEOL	1100		Physical Geology.....	4	**
GEOL		1110	Historical Geology.....	**	4
				14	14

SO					
BIOL	1020		Principles of Biology and Lab (1021).....	4	**
BIOL		1030	Organismal Biology and Lab (1031).....	**	4
MATH	1610	1620	Calculus I & II.....	4	4
ENGL	2200		World Literature I.....	3	**
GEOL	2010		Min & Opt Cryst.....	5	**
GEOL		2050	Ing & Met Petrol.....	**	4
			Elective.....	**	3
				16	15

JR					
PHYS	1500	1510	General Physics I & II.....	4	4
			Core Social Science Group I.....	**	3
			Core Fine Arts.....	3	**
			Technical Elective.....	3	**
GEOL	3200		Principle Paleontology.....	3	**
GEOL		3400	Structural Geology.....	**	4
			GEOL Elective.....	3	4
				16	15

SUMMER					
	GEOL	3650	Field Camp.....	6	6
SR					
PHIL			1010 or 1020.....	3	**
ECON		2020	Microeconomics.....	**	3
ENGL		2210	World Literature II.....	**	3
			Technical Elective.....	4	**
GEOL	4010		Sed Petrol.....	3	**
GEOL		4110	Stratigraphy.....	**	3
			GEOL Elective.....	4	4
			Elective.....	**	3
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				14	16

TOTAL HOURS — 126

Technical Elective - see advisor for approved course listing.
 GEOL Elective - see advisor for approved course listing.
 Students either pass the computer competency test or take COMP 1000 as one of their electives.

Clinical Laboratory Sciences

The Division of Clinical Laboratory Sciences has two curricula leading to the degree of bachelor of science in laboratory technology or bachelor of science in medical technology. These curricula prepare students for medical laboratory careers in fields such as public health, bacteriology, environmental testing, industrial quality control, research and forensic science. Graduates may choose to qualify as certified medical technologists. This is accomplished by successfully completing a 12-month training period (rotating hospital internship) in an accredited School of Medical Technology and passing a national certifying examination.

Curriculum in Laboratory Technology (LABT)

FR	F	S		F	S
BIOL		1020	Principles of Biology and Lab (1021).....	**	4
ENGL	1100	1120	English Composition I & II.....	3	3
HIST	1010	1020	World History I & II.....	3	3
MATH	1610		Calculus I.....	4	**
CHEM	1110	1120	General Chemistry I & II.....	3	3
CHEM	1111	1121	General Chemistry Lab I & II.....	1	1
LABT	1010		Orientation.....	1	**
STAT		2510	Statistics for Biology & Health Sciences.....	**	3
				15	17

SO	F	S		F	S
ENGL	2200	2210	World Literature I & II.....	3	3
PHIL	1030		Ethics & the Health Sciences.....	3	**
BIOL	2500	2510	Human Anatomy & Physiology I & II.....	4	4
BIOL		3200	General Microbiology.....	**	4
CHEM	1200		Chemical Application.....	1	**
CHEM	2070	2080	Organic Chemistry I & II.....	3	3
CHEM	2071	2081	Organic Chemistry Lab I & II.....	1	1
				15	15

JR	F	S		F	S
			Core Fine Arts.....	**	3
			Core Social Science Group I.....	**	3
BIOL	4200		Clinical Microbiology.....	4	**
BIOL	3000		Genetics.....	4	**
BCHE	5180		Biochemistry I.....	3	**
LABT	4010		Hematology.....	5	**
CHEM		3050	Analytical Chemistry.....	**	3
CHEM		3051	Analytical Chemistry Lab.....	**	1
			Electives.....	**	6
				16	16

SR	F	S		F	S
			Core Social Science Group II.....	3	**
			Technical Electives.....	4	4
LABT	4250		Clinical Biochemistry Instrument.....	4	**
BIOL		5500	Immunology.....	**	3
BIOL		5501	Immunology Lab.....	**	2
LABT		4050	Clinical Immunohematology/Parasit.....	**	5
CHEM	2200		Chemical Application.....	1	**
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				12	14

TOTAL HOURS — 120

Technical Elective: see advisor for approved course listing.

Curriculum in Medical Technology (MEDT)

FR	F	S		F	S
BIOL		1020	Principles of Biology and Lab (1021).....	**	4
ENGL	1100	1120	English Composition I & II.....	3	3
HIST	1010	1020	World History I & II.....	3	3
MATH	1610		Calculus I.....	4	**
CHEM	1110	1120	General Chemistry I & II.....	3	3
CHEM	1111	1121	General Chemistry Lab I & II.....	1	1
LABT	1010		Orientation.....	1	**
				15	14

SO	F	S		F	S
ENGL		2200	World Literature I.....	**	3
PHIL	1030		Ethics & the Health Sciences.....	3	**
PHYS	1500		General Physics I.....	4	**
			Core Social Science Group I.....	**	3
BIOL	2500	2510	Human Anatomy & Physiology I & II.....	4	4
CHEM	1200		Chemical Application.....	1	**
CHEM	2070	2080	Organic Chemistry I & II.....	3	3
CHEM	2071	2081	Organic Chemistry Lab I & II.....	1	1
CHEM		2200	Chemical Application.....	**	1
				16	15

JR	F	S		F	S
ENGL	2210		World Literature II.....	**	3
			Core Fine Arts.....	**	3
COMM	1000		Public Speaking.....	3	**
STAT	2510		Statistics for Biology & Health Sciences.....	3	**
BIOL	3000		Genetics.....	4	**
BIOL		3200	General Microbiology.....	**	4
CHEM	3050		Analytical Chemistry.....	3	**
CHEM	3051		Analytical Chemistry Lab.....	1	**
BCHE	5180		Biochemistry I.....	**	3
			Elective.....	**	1
				14	14

SR	F	S		F	S
			Core Social Science Group II.....	**	3
BIOL	4200		Clinical Microbiology.....	4	**
BIOL		5500	Immunology.....	3	**
BIOL		5501	Immunology Lab.....	2	**
BCHE		5190	Biochemistry II.....	3	**
LABT	4010		Hematology.....	5	**
LABT		4050	Clinical Immunohematology/Parasit.....	**	5
LABT		4250	Clinical Biochemistry/Instrument.....	**	4
			Elective.....	**	3
UNIV	4AA0		SM1 Undergraduate Graduation.....	**	0
				17	15

PROFESSIONAL YEAR

Degree is granted upon successful completion of a clinical internship at an approved school of medical technology affiliated with Auburn University.

TOTAL HOURS — 120

Curriculum in Mathematics (MATH)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II.....	3	3
			Core Philosophy.....	3	**
			Core History I & II.....	3	3
			Core/Natural Science.....	4	4
MATH	1610	1620	Calculus I & II.....	4	4
COMP		1200	(see advisor before selecting section).....	**	2
				17	16

SO	F	S		F	S
			Core Social Science.....	3	**
ENGL	2200	2210	World Literature I & II.....	3	3
MATH	2630		Calculus III.....	4	**
MATH		2650	Linear Differential Equations.....	**	3
MATH	2660		Topics in Linear Algebra.....	3	**
MATH		3100	Introduction to Advanced Math.....	**	3
STAT		3600	Probability & Statistics.....	**	3
			Elective.....	3	3
				16	15

JR	F	S		F	S
			Core Fine Arts.....	**	3
			Core Social Science.....	3	**
			Foreign Language (see advisor).....	4	4
MATH	5200	5210	Analysis I & II.....	3	3
MATH	5310	5320	Introduction to Abstract Algebra I & II.....	3	3
			Elective.....	3	3
				16	16

SR	F	S		F	S
			Applied Math Requisite.....	3	**
MATH	5500		Introduction to Topology.....	3	**
			Math Requisite.....	3	9
			Elective.....	3	3
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				12	12

TOTAL HOURS - 120

Math Elective: see advisor for approved course listing
Applied Math Elective: see advisor for approved course listing.
Core/Nature Science: see advisor for approved course listing.

Applied Mathematics

The Department of Mathematics offers three options in the field of Applied Mathematics. The option in Applied Mathematics is suitable for students who are preparing for graduate work in mathematics as well as for those anticipating careers supported by significant applied mathematics such as the traditional fields of engineering, physical science or computer science and the more recent allied fields of biological, behavioral or managerial sciences. The option in Discrete Mathematics prepares students for graduate work in mathematics or theoretical computer science, and for careers in industry supported by modern applied mathematics dealing with problems in graph theory, operations

research, discrete optimization, computer science, communications and information sciences. The option in Actuarial Science prepares students for a career in the insurance industry and other businesses relying on the expertise of actuaries, but is at the same time flexible enough to allow its graduates to enter graduate programs in Mathematics and related areas.

Students should consult the College of Science and Mathematics to determine appropriate technical electives for the emphasis of their choice. Students who desire more flexibility or emphasis on the liberal arts should pursue the MATH curriculum.

Option in Applied Mathematics (AMTH)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II	3	3
			Core Philosophy	3	**
			Core History I & II	3	3
			Core/Natural Science	4	4
MATH	1610	1620	Calculus I & II	4	4
COMP		1200	(see advisor before selecting section).....	**	2
				17	16
SO					
			Core Social Science I.....	3	**
ENGL	2200	2210	World Literature I & II.....	3	3
MATH	2630		Calculus III.....	4	**
MATH	2650		Linear Differential Equations.....	**	3
MATH	2660		Topics in Linear Algebra	3	**
MATH		3100	Introduction to Advanced Math	**	3
STAT		3600	Probability & Statistics I	**	3
			Interdisciplinary Elective.....	3	3
				16	15
JR					
			Core Fine Arts	**	3
			Core Social Science II.....	3	**
MATH	5200	5210	Analysis I & II.....	3	3
MATH	5630	5640	Numerical Analysis I & II.....	3	3
			Group Requisite.....	3	3
			Electives	4	4
				16	16
SR					
MATH	5000		Math Modeling: Continuous.....	3	**
MATH	5670		Probability & Stochastic Proc I	3	**
			Math Elective	3	9
			Group Elective	3	**
			Elective.....	**	3
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				12	12

TOTAL HOURS - 120

Math Elective: see advisor for approved course listing
Interdisciplinary Elective: see advisor for approved course listing.

Option in Applied Discrete Mathematics (ADSM)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II	3	3
			Core Science (for science majors)	4	4
			Core History I & II	3	3
			Core Philosophy	3	**
COMP	1200		Introduction to Computer Engr. & Sci.....	**	2
MATH	1610	1620	Calculus I & II.....	4	4
				17	16
SO					
ENGL	2200	2210	World Literature I & II.....	3	3
			Core Social Science Group I.....	3	**
COMP	2000		Programming with HTML & Java	3	**
COMP		3000	Object Oriented Program Engr. & Sci.	**	3
MATH	2660		Topics in Linear Algebra	3	**
MATH		3710	Discrete Math	**	3
MATH	2630		Calculus III.....	4	**
MATH		2650	Linear Differential Equations.....	**	3
STAT		3600	Probability & Statistics I.....	**	3
				16	15
JR					
			Core Social Science Group II.....	3	**
			Core Fine Arts	**	3
MATH	5750		Graph Theory	3	**
MATH		5330	Computational Algebra.....	**	3
MATH	5310		Algebra I.....	3	**
			Analysis Elective.....	**	3
			Elective.....	4	4
			Interdisciplinary Elective.....	3	3
				16	16

SR					
			Algebra/Linear Algebra Elective.....	3	**
			Discrete Math Electives.....	6	3
			Elective.....	**	3
			Interdisciplinary Elective.....	3	**
			Math Elective.....	**	6
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				12	12

TOTAL HOURS - 120

Applied Analysis Elective/Discrete Elective/Math Elective/Interdisciplinary Elective: see advisor for approved course listing.

Option in Actuarial Science (ACTU)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II	3	3
			Core Philosophy	3	**
			Core History I & II	3	3
			Core Science I & II.....	4	4
COMP		1200	Introduction to Computer Engr. & Sci.....	**	2
MATH	1610	1620	Calculus I & II	4	4
				17	16
SO					
ENGL	2200	2210	World Literature I & II.....	3	3
ECON	2020	2030	Prin. of Microeconomics & Macroeconomics	3	3
ACCT	2910		Fundamentals of Accounting	3	**
MATH	2790		Mathematics of Interest Theory.....	**	3
MATH	2630		Calculus III.....	4	**
MATH	2650		Linear Differential Equations.....	**	3
MATH	2660		Topics in Linear Algebra	3	**
MATH		3100	Introduction to Advanced Math	**	3
				16	15
JR					
			Core Fine Arts	3	**
			Core Social Science Group I.....	3	**
FINC		3610	Principles of Business Finance	**	3
			Statistics Requisite.....	**	3
STAT	3600		Probability & Stats I	3	**
MATH	4820		Actuarial Seminar Probability.....	**	3
MATH	4790		Actuarial Seminar Finance	3	**
			Math Elective	**	3
			Electives	4	4
				16	16
SR					
FINC	3630		Advanced Business Finance	3	**
MATH	5000		Modeling.....	3	**
MATH	5800	5810	Actuarial Mathematics I & II.....	3	3
			Math Elective	3	3
			Electives	3	3
UNIV		4AA0	SM1 Undergraduate Graduation.....	**	0
				15	9

TOTAL HOURS - 120

Core Science I/II: One of the sequences Engineering Physics I/II, Principles of Biology/Organismal Biology, Fundamentals of Chemistry I/II, Physical/Historical Geology

Math Electives: Courses designated MATH or ADMH at the level of 4000 or higher; no more than one 4000-level course. Subject to advisor's approval.

Statistics Requisite: Any course that will serve as the statistics prerequisite for FINC-3630. See advisor for approved courses.

Coherence Requirement: Course choices for Core Science and Math Electives, together with the required interdisciplinary courses, must constitute a coherent plan of study, chosen with advisor's approval.

Microbiology

This major is for students who wish to pursue careers in one of the various sub-disciplines of the science or for those preparing for professional degree programs in medicine or veterinary medicine. Required courses provide a strong and diverse background. Students have the opportunity through selection of elective courses to concentrate on special areas of interest, including biotechnology, microbial physiology and genetics and environmental, industrial and health-related aspects of microbiology.

Curriculum in Microbiology (MICB)

FR	F	S		F	S
BIOL	1020		Principles of Biology and Lab (1021)	4	**
BIOL		1030	Organismal Biology and Lab (1031).....	**	4
ENGL	1100	1120	English Composition I & II	3	3
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab	1	1
MATH	1610	1620	Calculus I & II.....	4	4
				15	15

SO				
ENGL	2200	2210	World Literature I & II.....	3 3
PHYS	1500	1510	General Physics I & II	4 4
CHEM	2070	2080	Organic Chemistry I & II.....	3 3
CHEM	2071	2081	Organic Chemistry I & II Lab.....	1 1
BIOL	3000		Genetics	4 **
BIOL		3200	General Microbiology.....	** 4
				15 15
JR				
			Core History I & II	3 3
			Cell Biology	** 3
BIOL	4100		Biochemistry I & II.....	3 3
BCHE	5180	5190	Biochemistry I Lab.....	1 **
BCHE	5181			**
BIOL	4200		Clinical Microbiology.....	4 **
BIOL	5210		Microbial Physiology.....	3 **
BIOL	5220		Introductory Molecular Genetics.....	** 3
			Electives	3 2
				17 14
SR				
			Core Philosophy.....	** 3
			Core Fine Arts	** 3
			Core Social Science Group I & II.....	3 3
BIOL	5230		Virology.....	** 3
BIOL	4950		Undergraduate Seminar.....	1 **
BIOL	5500		Immunology	** 3
BIOL	5501		Immunology Lab.....	2 **
			Biology Elective.....	3 3
			Elective.....	3 **
UNIV	4AA0		SM1 Undergraduate Graduation.....	** 0
				15 15

TOTAL HOURS - 122

Students either pass the computer competency test or take COMP 1000 as one of their electives.

Curriculum in Molecular Biology (MOLB)

FR	F	S		F	S
BIOL	1020		Principles of Biology and Lab (1021).....	4 **	
BIOL		1030	Organismal Biology and Lab (1031).....	** 4	
ENGL	1100	1120	English Composition I & II	3 3	
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3 3	
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1 1	
MATH	1610	1620	Calculus I & II.....	4 4	
				15 15	
SO					
ENGL	2200	2210	World Literature I.....	3 3	
PHYS	1500	1510	General Physics I & II	4 4	
CHEM	2070	2080	Organic Chemistry I & II.....	3 3	
CHEM	2071	2081	Organic Chemistry I & II Lab.....	1 1	
BIOL		3000	Genetics	** 4	
BIOL	3200		General Microbiology.....	** 4	
				15 15	
JR					
			Core History I & II	3 3	
			Core Fine Arts	3 **	
			Core Philosophy.....	** 3	
BIOL	4100		Cell Biology	** 3	
BIOL	5210		Microbial Physiology.....	** 3	
BIOL	5220		Introduction to Molecular Genetics.....	** 3	
BIOL	5521		Gene Expression & Rec DNA Lab.....	** 2	
			Elective.....	3 4	
				15 15	
SR					
			Social Science Core Group I & II.....	3 3	
BCHE	5180	5190	Biochemistry I & II	3 3	
BCHE	5181	5191	Biochemistry I & II Lab.....	1 1	
BIOL	4950	4950	Undergraduate Seminar.....	1 1	
BIOL	4980	4980	Undergraduate Research	3 3	
			Biology Elective/Molecular Biology Elective	4 4	
UNIV	4AA0		SM1 Undergraduate Graduation.....	** 0	
				15 15	

TOTAL HOURS - 120

Biology Electives: see advisor for approved course listing.

Students either pass the computer competency test or take COMP 1000 as one of their electives.

Physics

Physics majors acquire a firm foundation for careers in physics and related fields and excellent preparation for further study. Through the judicious use of electives, this curriculum provides not only a thorough understanding of physics, but also the ability to solve problems in other fields of interest to the student.

Curriculum in Physics (PHYS)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II	3 3	
MATH	1610	1620	Calculus I & II OR.....	4 4	
MATH	1710	1720	Calc Eng. Science I & II.....	4 4	
PHYS	1600	1610	Engineering Physics I & II OR.....	4 4	
PHYS	1607	1617	Honors Physics I & II.....	** 3	
			Core Philosophy.....	3 **	
			Fine Art.....	14 14	
SO					
ENGL	2200	2210	World Literature I & II.....	3 3	
COMM	1000		Public Speaking	3 **	
			Core History I & II	3 3	
MATH	2630/2730		Calculus III or Calc. Eng. Science III.....	4 **	
MATH	2650		Differential Equations.....	** 3	
PHYS	2200		Intro. Quantum Physics & Relativity.....	3 **	
PHYS	2300		Physics Laboratory Skills.....	** 2	
PHYS	2100		Intermediate Mechanics.....	** 3	
				16 14	
JR					
			Core Social Science Group I & II.....	3 3	
PHYS	3100		Professional Elective*.....	** 3	
PHYS	3200		Intermediate E & M.....	3 **	
PHYS	4100		Statistical Thermodynamics.....	** 3	
			Fundamentals of Quantum Mech.....	3 **	
			Sci Elective-Chem/Biolog/Geol.....	4 4	
			Electives	3 3	
				16 16	
SR					
PHYS	4200		Fund Experiments in Physics.....	2 **	
			Professional Elective *.....	3 7	
			Physics Elective.....	** 3	
			Electives	9 6	
UNIV	4AA0		SM1 Undergraduate Graduation.....	** 0	
				14 16	

TOTAL HOURS - 120

* See advisor for approved courses.

Zoology

This curriculum prepares students for graduate study and a variety of careers in animal biology. The student has the choice of several options depending on the student's particular interest.

Curriculum in Zoology (ZOOL)

FR	F	S		F	S
BIOL	1020		Principles of Biology and Lab (1021).....	4 **	
BIOL		1030	Organismal Biology and Lab (1031).....	** 4	
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3 3	
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1 1	
ENGL	1100	1120	English Composition I & II	3 3	
			Core History I & II	3 3	
				14 14	
SO					
MATH	1610	1620	Calculus I & II.....	4 4	
ENGL	2200	2210	World Literature I & II	3 3	
			Core Social Science	** 3	
CHEM	2070	2080	Organic Chemistry I & II.....	3 3	
CHEM	2071	2081	Organic Chemistry I & II Lab.....	1 1	
BIOL	3000		Genetics	4 **	
BIOL	3030		Evolution & Systematics.....	** 3	
				15 17	
JR					
PHYS	1500	1510	General Physics I & II	4 4	
			Core Social Science.....	3 **	
			Core Fine Arts	** 3	
			Public Speaking	3 **	
COMM	1000		Ecology.....	4 **	
BIOL	3060		Cell Biology	** 3	
BIOL	4100		Animal Physiology.....	** 4	
BIOL	5240		4010 or 4020.....	4 **	
			Elective.....	** 3	
				18 17	
SR					
			Core Philosophy.....	** 3	
STAT	3010		Statistics for Engr. & Sci.....	3 **	
			Biology Elective.....	11 11	
UNIV	4AA0		SM1 Undergraduate Graduation.....	** 0	
				14 14	

TOTAL HOURS - 123

Biology Electives: see advisor for approved course listing.

Students either pass the computer competency test or take COMP 1000 as one of their electives.

Zoology/Cellular Biology/Physiology Track (ZOOL, CBPS)

FR	F	S	F	S
BIOL	1020		Principles of Biology and Lab (1021).....	4 **
BIOL		1030	Organismal Biology and Lab (1031).....	** 4
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3 3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1 1
ENGL	1100	1120	English Composition I & II.....	3 3
			Core History I & II.....	3 3
			Core Philosophy.....	** 3
				14 17
SO				
MATH	1610	1620	Calculus I & II.....	4 4
ENGL	2200	2210	World Literature I & II.....	3 3
			Core Social Science.....	** 3
CHEM	2070	2080	Organic Chemistry I & II.....	3 3
CHEM	2071	2081	Organic Chemistry I & II Lab.....	1 1
BIOL	3000		Genetics.....	4 **
BIOL		3030	Evolution & Systematics.....	** 3
				15 17
JR				
PHYS	1500	1510	General Physics I & II.....	4 4
			Core Social Science.....	** 3
BIOL		3060	Ecology.....	** 4
BIOL	4100		Cell Biology.....	3 **
BIOL	4101		Cell Biology Lab.....	2 **
BIOL		4410	Vertebrate Development.....	** 5
BIOL			4010 or 4020.....	4 **
			Elective.....	3 **
				16 16
SR				
			Core Fine Arts.....	3 **
COMM	1000		Public Speaking.....	** 3
STAT	3010		Statistics for Engr. & Sci.....	** 3
BIOL	5240		Animal Physiology.....	** 4
			Biology Elective.....	11 4
UNIV		4AA0	SM1 Undergraduate Graduation.....	** 0
				14 14

TOTAL HOURS - 123

Biology Electives: see advisor for approved course listing.

Students either pass the computer competency test or take COMP 1000 as one of their electives.

Zoology/Conservation and Biodiversity Track (ZOOL, CONS)

FR	F	S	F	S
BIOL	1020		Principles of Biology and Lab (1021).....	4 **
BIOL		1030	Organismal Biology and Lab (1031).....	** 4
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3 3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1 1
ENGL	1100	1120	English Composition I & II.....	3 3
MATH	1610		Calculus I.....	4 **
			Core History.....	** 3
			Core Social Science.....	** 3
				15 17
SO				
ENGL	2200	2210	World Literature I & II.....	3 3
			Core History.....	3 **
			Core Philosophy.....	** 3
			Core Social Science.....	3 **
			Core Fine Arts.....	3 **
BIOL		3000	Genetics.....	** 4
BIOL		3060	Ecology.....	** 4
CHEM	2070		Organic Chemistry I.....	3 **
PHYS		1500	General Physics.....	** 4
				15 18
JR				
BIOL	3030		Evolution & Systematics.....	3 **
BIOL	5090		Conservation Biology.....	3 **
BIOL	4010	4020	Vertebrate & Invert. Biodiversity.....	4 4
BIOL		5240	Animal Physiology.....	** 4
BIOL	4100		Cell Biology.....	3 **
			Diversity Elective.....	** 4
			Elective.....	** 3
				13 15

SR

BIOL	5120	Systematic Botany.....	** 4
WILD	3280	Principles of Wildlife Management.....	3 **
WILD	3281	Principles of Wildlife Management Lab.....	1 **
		Diversity Elective.....	4 4
		Ecology Elective.....	3 **
STAT	3010	Statistics for Engr & Sci.....	** 3
ENTM	3040	General Entomology.....	4 **
COMM	1000	Public Speaking.....	** 3
UNIV	4AA0	SM1 Undergraduate Graduation.....	** 0
			15 14

TOTAL HOURS - 122

Students either pass the computer competency test or take COMP 1000 as one of their electives.

Zoology/Ecology, Evolution & Behavior Track (ZOOL, ECEB)

FR	F	S	F	S
BIOL	1020		Principles of Biology and Lab (1021).....	4 **
BIOL		1030	Organismal Biology and Lab (1031).....	** 4
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3 3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1 1
ENGL	1100	1120	English Composition I & II.....	3 3
MATH	1610	1620	Calculus I & II.....	4 4
			Core Social Science.....	** 3
				15 18
SO				
ENGL	2200	2210	World Literature I & II.....	3 3
			Core History.....	3 **
			Core Philosophy.....	** 3
			Core Social Science.....	3 **
			Core Fine Arts.....	3 **
BIOL	3000		Genetics.....	** 4
CHEM	2070		Organic Chemistry.....	3 **
PHYS	1500		General Physics.....	** 4
				15 14
JR				
BIOL	4100		Cell Biology.....	3 **
COMM	1000		Public Speaking.....	3 **
STAT	3010		Statistics for Engr. & Sci.....	3 **
BIOL	3030		Evolution & Systematics.....	** 3
BIOL	3060		General Ecology.....	4 **
BIOL	4020	4010	Vertebrate & Invert. Biodiversity.....	4 4
BIOL	5240		Animal Physiology.....	** 4
			Elective.....	** 3
				17 14
SR				
			Core History.....	3 **
BIOL	5650		Ethology.....	4 **
BIOL	5140		Plant Ecology.....	** 4
			Ecology Elective.....	3 **
			Anat/Cell Phys Elective.....	** 7
			Diversity Elective.....	4 4
UNIV	4AA0		SM1 Undergraduate Graduation.....	** 0
				14 15

TOTAL HOURS - 122

Anat/Cell/Phy Elective: see advisor for approved course listing.

Diversity Elective: see advisor for approved course listing.

Students either pass the computer competency test or take COMP 1000 as one of their electives.

Curriculum in Marine Biology (MARB)

FR	F	S	F	S
BIOL	1020		Principles of Biology and Lab (1021).....	4 **
BIOL		1030	Organismal Biology and Lab (1031).....	** 4
ENGL	1100	1120	English Composition I & II.....	3 3
			Core Social Science Group I & II.....	3 3
MATH	1610	1620	Calculus I & II.....	4 4
				14 14
SO				
CHEM	1030	1040	Fundamentals Chemistry I & II.....	3 3
CHEM	1031	1041	Fundamentals Chemistry I & II Lab.....	1 1
PHYS	1500	1510	General Physics I & II.....	4 4
ENGL	2200		World Literature I.....	** 3
BIOL	3000		Genetics.....	4 **
BIOL	3060		Ecology.....	** 4
				12 15
JR				
HIST	1010	1020	World History I & II.....	3 3
			Biology Elective.....	** 7
CHEM	2070	2080	Organic Chemistry I & II.....	3 3
CHEM	2071	2081	Organic Chemistry I & II Lab.....	1 1
STAT	3010		Statistics for Engr. & Sci.....	3 **
ENGL	2210		World Literature II.....	3 **
				13 14

SUMMER MARINE LAB ***

Marine Botany or Oceanography or Marine Geology 8

SR

		Core Fine Arts	3	**
		Core Philosophy	**	3
COMM	1000	Public Speaking	**	3
BIOL	4010	Invertebrate Biodiversity.....	4	**
BIOL	4100	Cell Biology	3	**
BIOL	4101	Cell Biology Lab.....	2	**
BIOL	5240	Animal Physiology.....	**	4
		Elective	**	3
UNIV	4AA0	SM1 Undergraduate Graduation.....	**	0
			12	13

SUMMER MARINE LAB ***

Adv Electives in Marine Science..... 8

TOTAL HOURS - 123

Summer Marine Lab - see advisor for approved course listing.

Biology Elective - see advisor for approved course listing.

Students either pass the computer competency test or take COMP 1000 as one of their electives.

Curriculum in Biomedical Sciences

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II	3	3
MATH	1610		Calculus I.....	4	**
HIST		1010	World History I.....	**	3
CHEM	1110	1120	General Chemistry I & II	3	3
CHEM	1111	1121	General Chemistry I & II Lab	1	1
SCMH	1990		Prehealth Orientation.....	1	**
BIOL	1020		Principles of Biology and Lab (1021).....	4	**
BIOL	1030		Organismal Biology and Lab (1031).....	4	**
				16	14
SO					
PHYS	1500	1510	General Physics I & II	4	4
ENGL	2200	2210	World Literature I & II.....	3	3
HIST	1020		World History.....	3	**
CHEM	2070	2080	Organic Chemistry I & II	3	3
CHEM	2071	2081	Organic Chemistry I & II Lab	1	1
COMM	1000		Public Speaking	3	**
BIOL	3000		Genetics	**	4
				17	15
JR					
PHIL		1030	Ethics & the Health Sciences.....	**	3
PSYC	2010		Introduction to Psychology	3	**
			Core Fine Arts	3	**
			Core Social Science Group II.....	**	3
STAT	2510		Statistics for Biology & LS	3	**
BIOL	3200		Microbiology	4	**
BIOL	4100		Cell Biology	**	3
BIOL	4101		Cell Biology Lab.....	**	2
BIOL	4410		Vertebrate Development.....	**	5
			Professional Elective	**	4
				18	15
SR					
BCHE	5180	5190	Biochemistry I & II.....	3	3
BIOL	3010		Comp. Anat. OR BIOL 4000 Histology.....	4	**
BIOL	5500		Immunology	3	**
BIOL	5600		Mammalian Physiology.....	**	6
BIOL	4980		Undergraduate Research	2	**
			Electives	2	4
UNIV	4AA0		SM1 Undergraduate Graduation.....	**	0
				14	13

TOTAL HOURS - 122

It is recommended that a student take the equivalent of one year of a foreign language or CHEM 3160

Student must either pass the computer competency test or take COMP 1000 as one of their electives.

Professional Curricula

Pre-Health professional curricula are offered in pre-dentistry, pre-medicine, pre-optometry, pre-physical therapy, pre-pharmacy and pre-veterinary medicine. Advisers are available in each curriculum to guide the students concerning admissions requirements to the professional schools. The department in which students major will advise them where applicable. Completion of these curricula does not assure admission to a professional school. Competition for admission to professional schools is keen; the number of qualified applicants exceeds the number of places available.

Pre-Dentistry and Pre-Medicine

These programs are designed to prepare students for medical and dental schools and lead to a bachelor of science in one of several majors offered through the college. The requirements are very exacting and demand high scholastic competence and performance.

Students in pre-dentistry or pre-medicine should take the national Dental Admissions Test or the Medical College Admission Test at least a year in advance of the date of entry to professional school, and follow with applications to the professional schools of their choice. Early in the junior year, the student should seek information from the chairman of the Pre-Health Advisory Committee concerning procedures to follow to obtain the necessary committee evaluation and recommendation to professional school. Forms and instructions are available in the office of the dean of Sciences and Mathematics. Most American medical schools recommend that medical and dental school applicants have (1) an academic year each of freshman biology, general chemistry, organic chemistry, and physics; (2) breadth in the educational experience; and (3) in-depth experience in a single discipline. Auburn University students accomplish the above by enrolling in a core of courses as outlined in the following curriculum model. Each student then elects a major from the College of Sciences and Mathematics. The college offers majors in biomedical sciences, chemistry, microbiology, physics and zoology. Students should confer with the college for specific course requirements. Students may also choose to major in a curriculum in another college or school, but they must work with the director for Pre-Health Professions in COSAM for information on the application process.

Curriculum in Pre-Dentistry and Pre-Medicine

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II.....	3	3
MATH	1610		Calculus I.....	4	**
HIST		1010	World History I.....	**	3
CHEM	1110	1120	General Chemistry I & II	3	3
CHEM	1111	1121	General Chemistry I & II Lab	1	1
SCMH	1990		Pre-Health Orientation.....	1	**
BIOL	1020		Principles of Biology and Lab (1021).....	4	**
BIOL	1030		Organismal Biology and Lab (1031).....	**	4
				16	14
SO					
PHYS	1500	1510	General Physics I & II	4	4
HIST	1020		World History II.....	3	**
ENGL	2200	2210	World Literature I & II.....	3	3
CHEM	2070	2080	Organic Chemistry I & II	3	3
CHEM	2071	2081	Organic Chemistry I & II Lab	1	1
COMM	1000		Public Speaking	3	**
BIOL	3000		Genetics	**	4
				17	15
JR					
PHIL		1030	Ethics & the Health Sciences.....	**	3
PSYC	2010		Introduction to Psychology	3	**
			Core Social Science Group II.....	**	3
			Core Fine Arts	3	**
STAT	2510		Statistics for Biology & Life Sciences	3	**
BIOL	3200		Microbiology	4	**
BIOL	4101		Cell Biology Lab.....	**	2
BIOL	4100		Cell Biology	**	3
BIOL	4410		Vertebrate Development.....	**	5
				18	11

At the end of the sophomore year or in the fall of the junior year, the student must declare a major.

Student must either pass the computer competency test or take COMP 1000 as one of their electives.

Pre-Optometry

This program leads to a bachelor of science and prepares students for the rigorous demands of American optometry schools.

Students must select a major in the College of Sciences and Mathematics or another college. The college offers majors in biomedical sciences, chemistry, microbiology, physics and zoology. Students should confer with the college for specific course requirements. Students may also choose to major in a curriculum in another college or school, but they must work with the director for Pre-Health Professions in COSAM for information on the application process.

Pre-Optometry students should write for an official bulletin from each of the professional schools of their choice during the freshman year and discuss with the Pre-Optometry advisor any special requirements of those schools. The requirements of most U.S. schools of optometry are

covered in the suggested program below, either as required subjects or as electives. The student should take the Optometry Admission Test and make official application for admission to the professional schools about a year in advance of the expected date of matriculation.

Curriculum in Pre-Optometry (POPT)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II.....	3	3
MATH	1610		Calculus I.....	4	**
HIST		1010	World History I.....	**	3
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1	1
SCMH	1990		Pre-Health Orientation.....	1	**
BIOL	1020		Principles of Biology and Lab (1021).....	4	**
BIOL		1030	Organismal Biology and Lab (1031).....	**	4
				16	14
SO					
PHYS	1500	1510	General Physics I & II	4	4
HIST	1020		World History II.....	3	**
ENGL	2200	2210	World Literature I & II.....	3	3
CHEM	2070	2080	Organic Chemistry I & II.....	3	3
CHEM	2071	2081	Organic Chemistry I & II Lab.....	1	1
COMM	1000		Public Speaking	3	**
BIOL		3000	Genetics	**	4
				17	15
JR					
PHIL		1030	Ethics & the Health Sciences.....	**	3
PSYC	2010		Introduction to Psychology.....	3	**
			Core Social Science Group II.....	**	3
			Core Fine Arts	3	**
STAT	2510		Statistics for Biology & Life Sciences.....	3	**
BIOL	3200		Microbiology	4	**
BIOL		4101	Cell Biology Lab.....	**	2
BIOL		4100	Cell Biology.....	**	3
BIOL	4410		Vertebrate Development.....	5	**
				18	11

At the end of the sophomore year, or in the fall of the junior year, the student must declare a major.

Student must either pass the computer competency test or take COMP 1000 as one of their electives.

Pre-Physical Therapy

This program prepares students applying to schools of physical therapy at the master's level and leads to a bachelor's degree in one of the majors offered in the College of Sciences and Mathematics or another college. The college offers majors in biomedical sciences, chemistry, microbiology, physics and zoology. Students should confer with the college for specific course requirements. Students may also choose to major in a curriculum in another college or school, but they must work with the director for Pre-Health Professions in COSAM for information on the application process. Students should write for an official bulletin from each of the professional schools of their choice during their freshman year and discuss with the director any special requirements of those schools.

Curriculum in Pre-Physical Therapy (PPHS)

FR	F	S		F	S
ENGL	1100	1120	English Composition I & II.....	3	3
MATH	1610		Calculus I.....	4	**
HIST		1010	World History I.....	**	3
CHEM	1030	1040	Fundamentals of Chemistry I & II.....	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab.....	1	1
SCMH	1990		Pre-Health Orientation.....	1	**
BIOL	1020		Principles of Biology	4	**
BIOL		1030	Organismal Biology	**	4
COMP	1000		**	2
				16	16
SO					
PHYS	1500	1510	General Physics I & II	4	4
HIST	1020		World History II.....	3	**
ENGL	2200	2210	World Literature I & II.....	3	3
PSYC		2010	Introduction to Psychology.....	**	3
			Core Social Science Group II.....	**	3
CHEM	2070		Organic Chemistry I	3	**
CHEM	2071		Organic Chemistry I Lab.....	1	**
COMM	1000		Public Speaking	3	**
BIOL		3000	Genetics	**	4
				17	17

JR					
PHIL	1030		Ethics & Health Sciences.....	**	3
			Core Fine Arts	3	**
STAT	2510		Statistics.....	3	**
PSYC	2120		Developmental Psychology.....	3	**
BIOL	2500	2510	Anatomy & Physiology I & II	4	4
BIOL	3200		Microbiology	4	**
			Psychology Elective	**	3
				17	10

At the end of the sophomore year or fall of the junior year, the student must declare a major.

Student must either pass the computer competency test or take COMP 1000 as one of their electives.

Pre-Pharmacy

This program meets the requirements for admission to the Auburn University James Harrison School of Pharmacy, which is fully accredited by the American Council on Pharmaceutical Education. Complete information about the professional curriculum in pharmacy may be found in the James Harrison School of Pharmacy section.

To be considered for admission, the applicant must complete the basic three-year requirements below and must have a 2.5 (C) grade-point average based on all courses attempted as well as a 2.5 (C) science index (grade-point average on the biological and physical science courses and mathematics). A grade of D in any required course will not be accepted.

Curriculum in Pre-Pharmacy (PPHR)

FR	F	S		F	S
HIST	1010		World History I.....	3	**
MATH	1610		Calculus I.....	4	**
ENGL	1100	1120	English Composition I & II	3	3
CHEM	1030		Fundamentals of Chemistry I	3	**
CHEM	1031		Fundamentals of Chemistry I Lab.....	1	**
CHEM		1040	Fundamentals of Chemistry II.....	**	3
CHEM		1041	Fundamentals of Chemistry II Lab.....	**	1
			Core Fine Arts	**	3
BIOL		1020	Principles of Biology and Lab (1021).....	**	4
SCMH	1990		Pre-Health Orientation.....	1	**
				15	14
SO					
ENGL	2200	2210	World Literature I & II.....	3	3
HIST	1020		World History II.....	3	**
CHEM	2070		Organic Chemistry I.....	3	**
CHEM	2071		Organic Chemistry I Lab	1	**
CHEM		2080	Organic Chem II	**	3
CHEM		2081	Organic Chem II Lab	**	1
BIOL	2500	2510	Anatomy/Physiology I & II	4	4
BIOL		3020	Genomic Biology	**	4
				14	15
JR					
			Core Social Science Group I & II.....	3	3
PHIL		1030	Ethics & the Health Sciences.....	**	3
PHYS	1500		General Physics I	4	**
BCHE		3200	Biochemistry.....	**	3
BIOL		3500	Perspectives in Immunology	**	3
BIOL	3200		Microbiology.....	4	**
STAT	2510		Statistics for Biology & Health Sciences.....	3	**
				14	12

TOTAL HOURS - 84

Students are expected to demonstrate competency in computer skills; COMP 1000 is recommended if your computer skills need improvement.

This program contains the pre-requisites for the Auburn University James Harrison School of Pharmacy. It may not include pre-requisites for other pharmacy schools.

Although not required, students may want to complete an undergraduate degree before entering pharmacy school. Any major may be acceptable so long as the pre-pharmacy requirements as listed in the above curriculum model are completed. The College of Sciences and Mathematics offers a major in biomedical sciences that is quite seamless for students interested in this option. Students should confer with the college for specific course requirements.

Pre-Veterinary Medicine

Students in the Pre-Veterinary Medicine (PVET) curriculum must select a major by the end of their sophomore year. Students in Sciences and Mathematics may select microbiology (MICB, PVET) or zoology (ZOOL, PVET) as majors. Pre-Veterinary options in the College of Agriculture include animal and dairy science (ANDS, PVET) and poultry science (POUL, PVET). A pre-vet option in wildlife (WILD, PVET) sciences also exists in the School of Forestry and Wildlife Sciences. The minimum requirements for admission to the College of Veterinary Medicine at Auburn University are incorporated into the curriculum models for all these majors.

It is possible to gain admission to the College of Veterinary Medicine by completing only the minimum requirements listed. However, it is preferable to select a major and earn a baccalaureate degree. If a student is admitted to the College of Veterinary Medicine prior to completion of the full four years, he or she may obtain a B.S. degree by successfully completing the first three years of some of the Pre-Veterinary curricula and the first year of veterinary school. Students should consult their advisers regarding which curricula offer this option.

Application for admission to the College of Veterinary Medicine must be submitted to the dean of that college. A minimum grade-point average of 2.5 is required for application; D grades in required courses are unacceptable. All minimum requirements, including courses repeated due to time limitations, must be completed by the end of the spring term preceding the date of admission, and all advanced required courses in physical and biological sciences (organic chemistry and physics) must have been completed within six calendar years prior to the anticipated entrance date. Competition for admission to the professional schools is keen with the number of qualified applicants exceeding the number of places available. For additional information, see College of Veterinary Medicine section and the Pre-Veterinary Medicine curricula in the College of Agriculture.

Curriculum in Pre-Veterinary Medicine (PVET)

FR	F	S		F	S
MATH		1150	Pre-Calculus Algebra & Trigonometry	4	**
			Core History	**	3
ENGL	1110	1120	English Composition I & II	3	3
BIOL	1020		Principles of Biology and Lab (1021)	4	**
BIOL		1030	Organismal Biology and Lab (1031)	**	4
CHEM	1030	1040	Fundamentals of Chemistry I & II	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab	1	1
			Elective	**	3
				15	17
SO					
ENGL	2200	2210	World Literature I & II	3	3
			Core History	3	**
			Core Philosophy	**	3
			Core Social Science	3	**
			Core Fine Arts	3	**
CHEM	2070	2080	Organic Chemistry I & II	3	3
CHEM	2071	2081	Organic Chemistry I & II Lab	1	1
BIOL		3000	Genetics	**	4
				16	14
JR					
PHYS	1500	1510	General Physics I & II	4	4
			Core Social Science	**	3
BCHE	3200		Principles of Biochemistry	3	**
BIOL		3200	Microbiology	**	4
COMM	1000		Public Speaking	3	**
COMP		1000	Personal Computer Application	**	2
			Elective	3	**
				13	13

At the end of the sophomore year, or in the fall of the junior year, the student must declare a major.

**Curriculum in Microbiology/
Pre-Veterinary Medicine Option (MICB, PVET)**

FR	F	S		F	S
BIOL	1020		Principles of Biology and Lab (1021)	4	**
BIOL		1030	Organismal Biology and Lab (1031)	**	4
ENGL	1100	1120	English Composition I & II	3	3
CHEM	1030	1040	Fundamentals of Chemistry I & II	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab	1	1
			Core History	**	3
MATH	1610		Calculus I	4	**
				15	14

SO					
ENGL	2200	2210	World Literature I & II	3	3
PHYS	1500	1510	General Physics I & II	4	4
CHEM	2070	2080	Organic Chemistry I & II	3	3
CHEM	2071	2081	Organic Chemistry I & II Lab	1	1
BIOL		3000	Genetics	4	**
BIOL		3200	General Microbiology	**	4
				15	15

JR					
			Core Social Science Group I & II	3	3
			Core Philosophy	**	3
			Core Fine Arts	**	3
			Core History	3	**
BIOL		4100	Cell Biology	**	3
BCHE	3200		Principles of Biochemistry	3	**
BIOL		4200	Clinical Microbiology	4	**
BIOL		5220	Introductory Molecular Genetics	*	3
BIOL	5210		Microbial Physiology	3	**
BIOL		4950	Undergraduate Seminar	**	1
				16	16

Students who complete the above 6 semesters and successfully complete the first year of veterinary school may be awarded a B.S. in Microbiology. In the event the first year Veterinary College alternative is not followed, the indicated senior year courses must be successfully completed to receive the B.S. in Microbiology.

SR					
BCHE	5180	5190	Biochemistry I & II	3	3
BCHE	5181		Biochemistry I Lab	1	**
BIOL		5230	Virology	**	3
BIOL		5500	Immunology	3	**
BIOL		5501	Immunology Lab	2	**
			Biology Elective	3	3
			ROTC/Free Elective	4	4
UNIV		4AA0	SM1 Undergraduate Graduation	**	0
				16	13

TOTAL HOURS - 120

Biology Electives - see advisor for approved course listing.
Student must either pass the computer competency test or take COMP 1000 as one of their electives.

Curriculum in Zoology/

Pre-Veterinary Medicine Option (ZOOL, PVET)					
FR	F	S		F	S
MATH	1610		Calculus I	4	**
ENGL	1100	1120	English Composition I & II	3	3
CHEM	1030	1040	Fundamentals of Chemistry I & II	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab	1	1
			Core History	**	3
BIOL	1020		Principles of Biology and Lab (1021)	4	**
BIOL		1030	Organismal Biology and Lab (1031)	**	4
				15	14
SO					
ENGL	2200	2210	World Literature I & II	3	3
PHYS	1500	1510	General Physics I & II	4	4
			Core Social Science Group I & II	3	3
			Organic Chemistry I & II	3	3
CHEM	2070	2080	Organic Chemistry I & II Lab	1	1
CHEM	2071	2081	Organic Chemistry I & II Lab	1	1
COMP		1000	Personal Computer Application	2	**
				16	14
JR					
			Core Fine Arts	**	3
			Core History	3	**
			Core Philosophy	**	3
BCHE	3200		Principles of Biochemistry	3	**
COMM	1000		Public Speaking	3	**
BIOL		3000	Genetics	4	**
BIOL		3030	Evolution and Systematics	**	3
BIOL		3060	BIOL 4010 OR 4020 OR Vert BIOL	4	**
BIOL		3060	Ecology	**	4
			Elective	**	3
				17	16

Students who complete the above 6 semesters and successfully complete the first year of veterinary school may be awarded a B.S. in Zoology. In the event the first year Veterinary College alternative is not followed, the indicated senior year courses must be successfully completed to receive the B.S. in Zoology.

SR					
STAT	3010		Stat for Engr. & Sci	3	**
BIOL	3200		Microbiology	4	**
BIOL	4100		Cell Biology	3	**
BIOL		5240	Animal Physiology	**	4
			Biology Elective	5	9
			Elective	**	3
UNIV		4AA0	SM1 Undergraduate Graduation	**	0
				15	16

TOTAL HOURS - 123

Biology Elective - See Advisor for approved course listing.