

College of Sciences and Mathematics

STEWART W. SCHNELLER, *Dean*
 LAWRENCE C. WIT, *Associate Dean for Academic Affairs*
 VELMA RICHARDSON, *Associate Dean for Diversity and Multicultural Affairs*
 MARIE W. WOOTEN, *Associate Dean for Research*

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

- Four-year bachelor's degree programs are offered in two areas:
 - 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.
 - Pre-professional curricula are offered in pre-dentistry, premedicine, pre-optometry, pre-physical therapy, pre-pharmacy and pre-veterinary medicine.

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

- 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.

On-campus transfers 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 specific 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

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

Minors

MATHEMATICS MINOR

Fifteen semester hours of courses labeled MATH or STAT at the level of 3000 or higher; At least three courses must be designated MATH. A minor grade of C in each of these courses is required.

PHYSICS MINOR

15 semester hours in minor

Courses required		Cr. Hr.
PHYS	2000	Introductory Quantum Physics and Relativity3
PHYS	2100	Intermediate Mechanics3
PHYS	3100	Intermediate Electricity & Magnetism3
PHYS	3200	Statistical Thermodynamics3
PHYS	4100	Fundamentals of Quantum Mechanics3

STATISTICS MINOR

Fifteen hours of course from the following list.

Course required: STAT 3600 and 3610 or STAT 3010 and 4020.

Electives: 9 hours from: STAT 4610, 4620, 4630, 5110, 5630.

A minimum grade of C in each of these course is required.

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 & II4	4
ENGL	1100	1120	English Composition I & II3	3
			Science4	4
			Core Social Science Group 1 & 23	3
			Career Exp2	**
			Elective2	**
			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 & II3	3
MATH	1610	1620	Calculus I & II4	4
CHEM	1030	1040	Fundamentals of Chemistry I & II3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab1	1
			15	15
SO				
ENGL	2200	2210	World Literature I & II3	3
			Core History I & II3	3
			Core Social Science Group I & II3	3
			Core Fine Arts3	**
CHEM	2070	2080	Organic Chemistry I & II3	3
CHEM	2071	2081	Organic Chemistry I & II Lab1	1
BIOL		3000	Genetics**	4
			16	17

College of Sciences and Mathematics

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	2	3		
				13	17		
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		
			Free Elective	**	2		
UNIV	4AA0		SM1 Undergraduate Graduation	**	0		
				13	14		

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.

JR							
ENGL	2210		World Literature II	3	**		
			Core Social Science Group I	**	3		
MATH	2660		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	**	**		
UNIV	4AA0		SM1 Undergraduate Graduation	**	0		
				17	15		

TOTAL HOURS – 120

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.

BS 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

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
MATH	2630		Calculus III	4	**
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

BA 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.

College of Sciences and Mathematics

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.....	1	**
				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.....	4	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.....	4	**
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	Ign & 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	World Literature II.....	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, which 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					
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

College of Sciences and Mathematics

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					
			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					
			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					
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					
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					
			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

Mathematics and Statistics

The department of Mathematics and Statistics offers degree curricula in mathematics and in applied mathematics (with its various options), as well as minors and a minor in statistics. Majors acquire a firm foundation in mathematics preparing them for further study, or for careers in mathematics or statistics, and related fields. For a minor in MATH or STAT see the "Minors" heading earlier in this section.

Mathematics

This curriculum provides students with a general background in mathematics preparing them for graduate studies or careers that require mathematical knowledge and problem solving skills. This curriculum is well suited for students who desire more flexibility or emphasis on the liberal arts.

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					
			Core Social Science	3	**
ENGL	2200	2210	World Literature I & II.....	3	3
MATH	2630		Calculus III.....	4	**
MATH	2650	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

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

TOTAL HOURS - 120

See our Web page

Applied Mathematics

The Department of Mathematics and Statistics 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, or applied mathematics, as well as for those anticipating careers which are supported by significant applied mathematics such as the traditionally mathematical fields engineering, physical science, or computer science, and the more recently mathematicized 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 discrete 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 in 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 departmental advisor to determine appropriate technical electives for the emphasis of their choice.

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	2650	Linear Differential Equations.....	**	3
MATH	2660		Topics in Linear Algebra	3	**
MATH	3100		Introduction to Advanced Math	**	3

College of Sciences and Mathematics

STAT	3600	Probability & Statistics I.....	**	3			
		Interdisciplinary Elective		3			
				16	15		
JR		Core Fine Arts	**	3			
		Core Social Science II	**	3			
MATH	5200	Analysis I & II	**	3			
MATH	5630	Numerical Analysis I & II	**	3			
	5640	Interdisciplinary Elective	**	3			
		Electives	**	4			
				16	16		
SR		Math Modeling: Continuous.....	**	3			
MATH	5000	Probability & Stochastic Proc I	**	3			
MATH	5670	Math Elective	**	3			
		Interdisciplinary Elective	**	3			
		Elective.....	**	3			
UNIV	4AA0	SM1 Undergraduate Graduation.....	**	0			
				12	12		

TOTAL HOURS - 120

For definitions see our Web page and click on "curriculum" models

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	1200	Introduction to Computer Engr. & Sci.	**	2
MATH	1610	1620	Calculus I & II	4	4
				17	16
SO			World Literature I & II	3	3
ENGL	2200	2210	Core Social Science Group I	3	**
			Programming with HTML & Java	3	**
COMP	2000		Object Oriented Program Engr. & Sci.	**	3
COMP	3000		Topics in Linear Algebra	3	**
MATH	2660		Discrete Math	**	3
MATH	3710		Calculus III.....	4	**
MATH	2630		Linear Differential Equations.....	**	3
MATH	2650		Probability & Statistics I.....	**	3
STAT	3600			16	15
JR			Core Social Science Group II.....	3	**
			Core Fine Arts	**	3
			Graph Theory.....	**	3
MATH	5750		Computational Algebra.....	**	3
MATH	5330		Algebra I	3	**
MATH	5310		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

See our Web page

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	1200	Introduction to Computer Engr. & Sci.	**	2
MATH	1610	1620	Calculus I & II	4	4
				17	16
SO			World Literature I & II.....	3	3
ENGL	2200	2210	Prin. of Microeconomics & Macroeconomics	3	3
ECON	2020	2030	Fundamentals of Accounting	3	**
ACCT	2910		Mathematics of Interest Theory.....	**	3
MATH	2790		Calculus III.....	4	**
MATH	2630		Linear Differential Equations.....	**	3
MATH	2650		Topics in Linear Algebra	**	3
MATH	2660		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		Advanced Business Finance.....	3	**
FINC	3630	Modeling	3	**
MATH	5000	Actuarial Mathematics I & II	3	3
MATH	5800	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/Chemical/Geology
 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.

Microbial, Cellular and Molecular Biology (MCMB)

The Microbial Cellular and Molecular Biology major provides students with an excellent foundation in the areas of microbiology, cellular and molecular biology that emphasize the understanding of life at the cellular and molecular level. The choice of a formal option within the major allows students to concentrate on a particular area of interest. Each option provides a wide variety of courses and opportunities for undergraduate research. Students selecting the Microbiology option will be well prepared for postgraduate work or career advancement in a number of areas including food, environmental and medical microbiology. Students selecting the Cell and Molecular Biology option would also be well prepared for postgraduate study or career advancement in any area of eukaryotic cell or molecular biology. Both options provide excellent preparation for students interested in biotechnology or professional programs in the health sciences.

Curriculum in Microbiology

FR	F	S		F	S
BIOL	1020		Principles of Biology and Lab (1021)	4	**
BIOL	1030	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			World Literature I & II	3	3
ENGL	2200	2210	General Physics I & II	4	4
PHYS	1500	1510	Organic Chemistry I & II.....	3	3
CHEM	2070	2080	Organic Chemistry I & II Lab.....	1	1
CHEM	2071	2081	Genetics	4	**
BIOL	3000		General Microbiology.....	**	4
BIOL	3200			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		Clinical Microbiology	4	**
BIOL	4200		Microbial Physiology.....	**	3
BIOL	5210		Introductory Molecular Genetics.....	**	3
BIOL	5220		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 Cell and Molecular Biology

FR	F	S		F	S
BIOL	1020		Principles of Biology and Lab (1021).....	4	**
BIOL		1030	Ogranismal Biology and Lab (1031).....	**	4
ENGL	1100	1120	English Composition I & II.....	3	3
CHEM	1030	1040	Funda mentals 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	**
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
			COMP 1000.....	**	2
			Elective.....	3	5
				14	16
SR					
			Social Science Core 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
			Molecular Biology Elective.....	**	5
			Core Philosophy.....	3	**
UNIV	4AA0		SM1 Undergraduate Graduation.....	**	0
				14	16

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.....	3	**
				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
			Professional Elective*.....	**	3
			Intermediate E & M.....	**	3
PHYS	3100		Statistical Thermodynamics.....	**	3
PHYS		3200	Fundamentals of Quantum Mech.....	**	3
			Sci Elective-Chem/Biology/Geol.....	4	4
			Electives.....	3	3
				16	16
SR					
PHYS	4200		Fund Experiments in Physics.....	2	**
			Professional Elective *.....	**	3
			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	Ogranismal 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, Group I.....	**	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, Group II.....	**	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.....	**	**
			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	Ogranismal 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, Group I.....	**	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, Group II.....	**	3
			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
				**	14
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.

College of Sciences and Mathematics

Zoology/Conservation & Biodiversity Track (ZOO, CONS)

FR	F	S	F	S
BIOL	1020		Principles of Biology and Lab (1021)	4 **
BIOL		1030	Ogranismal Biology and Lab (1031)	** 4
CHEM	1030	1040	Fundamentals of Chemistry I & II	** 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		Invert. Biodiversity	** 4
BIOL		5240	Animal Physiology	** 4
BIOL	4100		Cell Biology	** 3
			Diversity Elective	** 4
BIOL	4020		Vertebrate Biodiversity	** 4
			Elective	** 3
				14 14
SR				
BIOL		5120	Systematic Botany	** 4
WILD	3280		Principles of Wildlife Management	** 3
WILD	3281		Principles of Wildlife Management Lab	** 1
			Diversity Elective	** 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 (ZOO, ECEB)

FR	F	S	F	S
BIOL	1020		Principles of Biology and Lab (1021)	4 **
BIOL		1030	Ogranismal Biology and Lab (1031)	** 4
CHEM	1030	1040	Fundamentals of Chemistry I & II	** 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 **
STAT	3010		Statistics for Engr. & Sci	** 3
STAT		3010	Stats for Eng. & Sci	** 3
PHYS		1500	General Physics	** 4
				15 17
JR				
BIOL	4100		Cell Biology	** 3
COMM	1000		Public Speaking	** 3
BIOL		3030	Evolution & Systematics	** 3
BIOL	3060		General Ecology	** 4
BIOL	4020		Vertebrate Biodiversity	** 4
BIOL		5240	Animal Physiology	** 4
BIOL	4010		Invert Biodiversity	** 4
			Elective	** 3
				14 14
SR				
			Core History	3 **
BIOL		5650	Ethology	** 4
BIOL		5140	Plant Ecology	** 4
			Ecology Elective	** 3
			Anat/Cell Phys Elective	** 4
			Diversity Elective	** 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	Ogranismal Biology and Lab (1031)	** 4
ENGL	1100	1120	English Composition I & II	3 3
			Core Social Science Group I & II	3 3
			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				
			Core 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
			Public Speaking	** 3
COMM		1000	Invertebrate Biodiversity	** 4
BIOL	4010		Cell Biology	** 3
BIOL	4100		Cell Biology Lab	** 2
BIOL	4101		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

College of Sciences and Mathematics

SR					
BCHE	5180	5190	Biochemistry I & II	3	3
BIOL	3010		Comparative Anatomy 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					

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 Admission 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 Premedical Professions Advisory Committee (PPAC) 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 two semesters of freshman biology, general chemistry, organic chemistry, and physics with labs; (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, microbiology, physics and zoology. Students should confer with the COSAM pre-health advisors for specific course requirements. Students may also choose to major in a curriculum in another college or school, but they should work with the Director of Pre-Health Programs 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, 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 should must work with the Director of Pre-Health Programs 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, microbiology, physics and zoology. Students should confer with the COSAM pre-health advisors for specific course requirements. Students may also choose to major in a curriculum in another college or school, but they should work with the Director of Pre-Health Programs 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 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-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)

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 an excellent choice for students interested in this option. Students should confer with the COSAM pre-health advisors for specific course requirements.

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	1040	Fundamentals of Chemistry I & II	3	3
CHEM	1031	1041	Fundamentals of Chemistry I & II Lab	1	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.

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 (ZOO, 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 BS 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.

College of Sciences and Mathematics

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	Ogranismal 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	**
			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 BS 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 BS in microbiology.

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
CHEM	2070	2080	Organic Chemistry I & II	3	3
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			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 BS 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 BS in zoology.

TOTAL HOURS - 123

Biology Elective - See advisor for approved course listing.