DEPARTMENT OF NATURAL SCIENCES

The Department of Natural Sciences provides a solid educational foundation in both theoretical and investigative science with an emphasis on critical thinking and problem solving skills. The department prepares students for productive careers in natural sciences and entry into graduate or professional schools. The department offers two majors leading to the Bachelor of Science Degree: Bachelor of Science in Biology and Bachelor of Science in Chemistry. The department offers one major leading to the Master of Science Degree with a concentration in Biological Sciences or Biology Education.

Students have the option of selecting a minor in Comprehensive Science which prepares them to receive a Class "A" public instruction license. Students also have the option of selecting a concentration from the following:

Biochemistry
Biophysics
General Biology
Medical Physics
Pre-health Professionals
Pre-medicine/Pre-dentistry
Molecular Biology/Biotechnology

PROGRAM GOALS

1. Assist students in understanding basic unifying scientific principles through the provision of relevant facts, concepts, and theories;
2. Provide learning experiences to stimulate critical thinking and problem solving skills;
3. Enhance the overall educational experience of students with an interdisciplinary curriculum designed to enhance student performance on professional examinations;
4. Prepare students to be competitive for entry into the workforce or graduate and professional programs;
5. Collaborate with public school teachers, graduates, and professional institutions to broaden scientific career opportunities;
6. Attract, recruit, retain and produce more competitive students by enhancing program offerings and requirements to meet the global needs of the science major; and
7. Provide an atmosphere that will promote participation of faculty and students in professional development and community outreach activities.

MAJOR: B.S. Degree in Biology (Concentration - General Biology)

A. General Education Core		**47**
B. Major Core Requirements		
1. Core Courses		45
BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
BIOL 210	Genetics/Lab	4
BIOL 220	General Zoology/Lab	4
BIOL 221	General Botany/Lab	4
BIOL 300	General Ecology/Lab	4
BIOL 304	Organic Evolution	3
BIOL 307	Human Physiology/Lab	4
BIOL 341	Microbiology/Lab	4
BIOL 352	Molecular Biology/Lab	4
BIOL 486	Scientific Communication/Capstone	3
BIOL 487	Statistical Applications in the Sciences	3
2. Concentration or Cluster of Restricted Electives		**7**
BIOL 300/400	Restricted Electives	7
C. Related Area Course Requirements		**20**
CHEM 301/L	Organic Chemistry I/Lab	4
CHEM 302/L	Organic Chemistry II/Lab	4
CHEM 401/L	Biochemistry I/Lab	4
PHYS 181/L	General Physics I/Lab	4
PHYS 182/L	General Physics II/Lab	4
D. Free Electives		**6**

**Students must obtain a minimum grade of "C" in all Major Core Requirements and Related Area Course Requirements.*

(Note: GE 118, CHEM 101/101L and 102/102L must be taken to satisfy the Mathematics and Natural Science Requirements for General Education)

Total Required for Degree **125**

Curriculum Guide for Majors in Biology General Biology

Freshman Year
First Semester

Course and number		**Semester hrs**
BIOL 101	General Biology for Majors I/Lab	4
CHEM 101/L	General Chemistry I/Lab	4
GE 185	Health Concepts	2
GE 102	English Comp. & Grammar	3
GE 135	Intro. to Music Literature	2
GE 122	Freshman Seminar	1
		16

Second Semester

BIOL 102	General Biology for Majors II/Lab	4
CHEM 102/L	General Chemistry II/Lab	4
GE 118	Precalculus	3
GE 103	English Comp. & Vocabulary	3
GE	Physical Ed. Activity	1
		15

Sophomore Year
First Semester

Course and number		Semester hrs
BIOL 210	Genetics/L	4
BIOL 220	General Zoology/L	4
CHEM 301/L	Organic Chemistry I/Lab	4
GE 140	World Civilization I	3
GE 201	World Literature I	3
		18

Second Semester

BIOL 221	General Botany/L	4
BIOL 341	Microbiology/L	4
CHEM 302/L	Organic Chemistry II/Lab	4
GE 141	World Civilization II	3
GE 202	World Literature II	3
		18

Junior Year
First Semester

Course and number		Semester hrs
PHYS 181/L	General Physics I/Lab	4
CHEM 401/L	Biochemistry/Lab	4
BIOL 304	Organic Evolution	3
PSY 212	General Psychology	3
GE 130	Art Appreciation	2
		16

Second Semester

PHYS 182/L	General Physics II/Lab	4
BIOL 300	General Ecology/L	4
BIOL 487	Stat. Applic. In the Sciences	3
GE	Social/Behavioral Science	3
GE	Phys. Ed. Activity	1
		15

Senior Year
First Semester

Course and number		Semester hrs
BIOL 352	Molecular Biology/L	4
BIOL 307	Human Physiology/L	4
BIOL 300/400	Biology Electives	3
CSC 114	Computer Science	3
		14

Second Semester

BIOL 486	Scientific Comm./Capstone	3
BIOL 300/400	Biology Electives	4
	Free Electives	6
		13

Total Requirements for the Degree **125**

MAJOR: B.S. Degree in Biology (Concentration - Molecular Biology/Biotechnology)

A. General Education Core		**48**
B. Major Core Requirements*		**51**
1. Core Courses		**37**
BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
BIOL 210	Genetics/Lab	4
BIOL 220	General Zoology/Lab	4
BIOL 221	General Botany/Lab	4
BIOL 341	Microbiology/Lab	4
BIOL 352	Molecular Biology/Lab	4
BIOL 380	Cell Biology	3
BIOL 486	Scientific Communication/Capstone	3
BIOL 487	Stat. Appl. in the Sciences	3
2. Concentration or Cluster of Restricted Electives		14
CSC 115	Programing 1	3
BIOL 499	Biological Research	3
BIOL 300/400	Biology Electives	8
C. Related Area Course Requirements		**20**
CHEM 301/L	Organic Chemistry I/Lab	4
CHEM 302/L	Organic Chemistry II/Lab	4
CHEM 401/L	Biochemistry/Lab	4
PHYS 181/L	General Physics I/Lab	4
PHYS 182/L	General Physics II/Lab	4
D. Free Electives		**6**

** Students must obtain a minimum grade of C in all Major Core Requirements and Related Area Course Requirements.*

(Note: Math 165, CHEM 101/101L and 102/102L must be taken to satisfy the Natural Science Requirements for General Education)

Total Required for Degree **125**

Curriculum Guide for Majors in Biology Molecular Biology/Biotechnology

Freshman Year
First Semester

Course and number		Semester hrs
BIOL 101	General Biology for Majors I/Lab	4
CHEM 101/L	General Chemistry I/Lab	4
GE 185	Health Concepts	2
GE 102	English Comp. & Grammar	3
GE 135	Intro. to Music Literature	2
GE 122	Freshmen Seminar	1
		16

Second Semester

BIOL 102	General Biology for Majors II/Lab	4
CHEM 102/L	General Chemistry II/Lab	4
MATH 165	Calculus of Single Variable I	4
GE 103	English Comp. & Vocabulary	3
GE	Physical Ed. Activity	1
		16

Sophomore Year
First Semester

Course and number		Semester hrs
BIOL 210	Genetics/L	4
BIOL 220	General Zoology/L	4
CHEM 301/L	Organic Chemistry I/Lab	4
GE 140	World Civilization I	3
GE 201	World Literature I	3
		18

Second Semester

BIOL 221	General Botany/L	4
BIOL 341	Microbiology/L	4
CHEM 302/L	Organic Chemistry II/Lab	4
GE 141	World Civilization II	3
GE 202	World Literature II	3
		18

Junior Year
First Semester

Course and number		Semester hrs
PHYS 181/L	General Physics I/Lab	4
CHEM 401/L	Biochemistry I/Lab	4
PSY 212	General Psychology	3
BIOL 487	Stat. Appl. In the Sciences	3
CSC 114	Computer Science	3

		17

Second Semester

PHY 182/L	General Physics II/Lab	4
GE	Social/Behavioral Science	3
BIOL 300/400	Biology Electives	4
BIOL 352	Molecular Biology/L	3
GE	Physical Ed. Activity	1
		16

Senior Year

First Semester

Course and number		**Semester hrs**
BIOL 380	Cell Biology	3
BIOL 499	Biological Research	3
CSC 155	Programing I	3
GE 130	Art Appreciation	2
	Free Electives	1
		12

Second Semester

BIOL 486	Scientific Communication/Capstone	3
BIOL 300/400	Biology Electives	4
	Free Electives	5
		12
Total Requirements for the Degree		**125**

MAJOR: B.S. Degree in Biology (Comprehensive Science Licensure)

A. General Education Core		**42**
B. *Major Core Requirements		**34**
1. Core Courses		**30**
BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
BIOL 210	Genetics/Lab	4
BIOL 220	General Zoology/Lab	4
BIOL 221	General Botany/Lab	4
BIOL 304	Organic Evolution	3
BIOL 352	Molecular Biology/Lab	4
BIOL 486	Scientific Communication/Capstone	3
2. Concentration or Cluster of Restricted Electives		**4**
BIOL 300	General Ecology/Lab	4
C. Related Area Course Requirements		**19**
CHEM 301/L	Organic Chemistry I/Lab	4
GE 142	Introduction to Geography	3
GE 158/L	Prin. of Geol. Sci./Lab	4
PHYS 181/L	General Physics I/Lab	4
PHYS 182/L	General Physics II/Lab	4
D. Comprehensive Science Licensure**		**30**
EDUC 203	Intro to Computer Inst. Technology	3
EDUC 210	Prof. Studies I; Intro to Education	3
EDUC 211	Prof. Studies I Field Experience	P/F
EDUC 310	Prof Studies II: Sp Ed & Div Learners	3
EDUC 311	Prof Studies II: Field Experience	P/F
EDUC 350	Teaching Intern. & Content Reading	3
EDUC 351	Teach Intern & Cont. Reading: Field Expr	P/F
EDUC 360	Prof Studies III; Teach and Assessment	3
EDUC 430C	Secondary & Mid Grades Sci Inst Meth	3
EDUC 476	Obs & Supervised Student Teach in Bio	12
EDUC 478	Seminar in Contemp. Ed issues	P/F
Total Required for Degree		**125**

** Students must obtain a minimum grade of C in all Major Core Requirements, Related Area Core Requirements and Minor Core Requirements.*

(Note: MATH 165, CHEM 101/101L and 102/102L must be taken to satisfy the Natural Science Requirements for General Education)

*** Students who have not passed TEP entry exam are required to take EDUC 190 – Pre Professional Studies (2 credit hours). To assist in meeting test score requirements for admittance to Teacher Education, students may take the following electives EDUC 160 – Pre Professional Studies I: Reading (2 credit hours); EDUC 170 Pre Professional Studies II: Mathematics (2 credit hours) and/or EDUC 180 Pre Professional Studies III: Writing (2 credit hours)*

Curriculum Guide for Majors in Biology (Comprehensive Science Licensure)

Freshman Year

First Semester

Course and number		**Semester hrs**
BIOL 101	General Biology for Majors I	4
CHEM 101/L	General Chemistry I/L	4
GE 102	English Comp and Grammar	3
GE 185	Health Concepts	2
GE 135	Introduction to Music Literature	2
GE 122	Freshman Seminar	1
		16

Second Semester

BIOL 102	General Biology for Majors II	4
CHEM 102/L	General Chemistry II/L	4
MATH 165	Calculus Single Variable I	4
GE 103	English Comp and Vocabulary	3
SPCH 214	College Speech	2
		17

Sophomore Year

First Semester

Course and number		**Semester hrs**
BIOL 220	General Zoology/L	4
CHEM 301/L	Organic Chemistry I/L	4
GE 140	World Civilization I	3
GE	Physical Ed. Activity	1
EDUC 203	Intro to Comp. Instr. Tech	3
		15

Second Semester

BIOL 221	General Botany/L	4
BIOL 210	Genetics	4
GE 141	World Civilization II	3
PSY 212	General Psychology	3
EDUC 210	Prof Studies I: Intro Education	3
EDUC 211	Prof Studies I: Field Exp	P/F
		17

Junior Year

First Semester

Course and number		**Semester hrs**
BIOL 300	General Ecology/L	4
BIOL 304	Organic Evolution	3
PHY 181/L	General Physics I/L	4
EDUC 310	Prof Studies II: Diverse Lear	3
EDUC 311	Prof Studies II: Field Exp	P/F
EDUC 350	Teaching Inter & Content Reading	3
EDUC 351	Teach Inter &Cont Read Field Exp	P/F
		17

Second Semester

BIOL 352	Molecular Biology/L	4
PHY 182/L	General Physics II/L	4
GE 142	Introduction to Geography	3
SPAN 101	Spanish I	3
EDUC 360	Prof Stud III: Teach & Assessment	3

		17

Senior Year
First Semester

Course and number		**Semester hrs**
BIOL 486	Scientific Comm./Capstone	3
GE	Physical Ed. Activity	1
GE 158/L	Principles of Geology	4
GE 201	World Literature	3
EDUC 430C	Secondary & Middle Grades Methods	3
		14

Second Semester

EDUC 476	Observation + Supervised Teach	12
EDUC 478	Seminar in Contemp. Issues	P/F
		12
Total Requirements for the Degree		**125**

MAJOR: B.S. Degree in Biology (Concentration - Pre-Medicine/Pre-Dentistry)

A. General Education Core

B. *Major Core Requirements		**51**
1. Core Courses		**45**
BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
BIOL 210	Genetics/Lab	4
BIOL 220	General Zoology./Lab	4
BIOL 221	General Botany/Lab	4
BIOL 306	Human Anatomy/Lab	4
BIOL 307	Human Physiology/Lab	4
BIOL 341	Microbiology/Lab	4
BIOL 352	Molecular Biology/Lab	4
BIOL 380	Cell Biology	3
BIOL 486	Scientific Communication/Capstone	3
BIOL 487	Stat. Appl. in the Sciences	3
2. Concentration or Cluster of Restricted Electives		**6**
BIOL 300/400	Biology Electives	6
C. Related Area Course Requirements		**20**
CHEM 301/L	Organic Chemistry I/Lab	4
CHEM 302/L	Organic Chemistry II/Lab	4
CHEM 401/L	Biochemistry/Lab	4
PHYS 181/L	General Physics I/Lab	4
PHYS 182/L	General Physics II/Lab	4
D. Free Electives		**6**
Total Semester Hours Required for Degree		**125**

**Students must obtain a minimum grade of C in all Major Core Requirements and Related Area Course requirements.*

(Note: MATH 165, CHEM 101/101L and CHEM 102/102L must be taken to satisfy the Natural Science requirements for General Education)

Curriculum Guide for Majors in Biology Pre-Medicine/Pre-Dentistry

Freshman Year
First Semester

Course and number		**Semester hrs**
BIOL 101	General Biology for Majors I/L	4
CHEM 101/L	General Chemistry I/Lab	4
GE 185	Health Concepts	2
GE 102	English Comp. & Grammar	3
GE 122	Freshman Seminar	1
GE 135	Intro to Music Literature	2
		16

Second Semester

BIOL 102/L	General Biology for Majors II/L	4
CHEM 102	General Chemistry II/Lab	4
MATH 165	Calculus of Single Variable I	4
GE 103	English Comp. & Vocabulary	3
GE	Physical Ed. Activity	1
		16

Sophomore Year
First Semester

Course and number		**Semester hrs**
BIOL 210	Genetics/L	4
BIOL 220	General Zoology/L	4
CHEM 301/L	Organic Chemistry I/Lab	4
GE 140	World Civilization I	3
GE 201	World Literature I	3
		18

Second Semester

BIOL 341	Microbiology/Lab	4
BIOL 221	General Botany/L	4
CHEM 302/L	Organic Chemistry II/Lab	4
GE 141	World Civilization II	3
GE 202	World Literature II	3
		18

Junior Year
First Semester

Course and number		**Semester hrs**
PHYS 181/L	General Physics I/Lab	4
CHEM 401/L	Biochemistry I/Lab	4
PSY 212	General Psychology	3
BIOL 306	Human Anatomy/L	4
BIOL 487	Stat. Application. In the Sciences	3
		18

Second Semester

PHY 182/L	General Physics II/Lab	4
BIOL 307	Human Physiology	4
BIOL 352	Molecular Biology/L	4
GE	Social and Behavioral Science	3
		15

Senior Year
First Semester

Course and number		**Semester hrs**
BIOL 380	Cell Biology	3
CSC 114	Computer Science	3
GE 130	Art Appreciation	2
GE	Phys. Ed. Activity	1
	Free Electives	3
		12

Second Semester

BIOL 486	Scientific Communication/Capstone	3
BIOL 300/400	Biology Electives	6
	Free Electives	3
		12

Total Requirements for the Degree **125**

ACADEMIC CONCENTRATION: Biology

BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
BIOL 207	Human Anatomy/Lab	4
BIOL 307	Human Physiology/Lab	4
BIOL 341	Microbiology/Lab	4
BIOL 380	Cell Biology	3
BIOL 441	Genetics	3
BIOL 300	General Ecology	3
Total Semester Hours Required for Academic Concentration		**29**

MINOR: Biology

BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
BIOL 201	Comp. Vert. Anat./Lab	4
BIOL 307	Human Physiology/Lab	4
BIOL 341	Microbiology/Lab	4
Total Semester Hours Required for Minor		**20**

MINOR: Biotechnology

BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
BIOL 350	Intro. Experimental-Methods	3
BIOL 405	Animal Biotechnology/Lab	4
BIOL 406	Plant Biotechnology/Lab	4
BIOL 490	Ethics in Biotechnology	1
Total Semester Hours Required for Minor		**20**

CHEM 301/L is a required co-requisite for the Biotechnology minor.

MINOR: Marine Environmental Science

BIOL 101	General Biology for Majors I/Lab	4
BIOL 102	General Biology for Majors II/Lab	4
MAS 331	Marine Biology	3
MAS 333	Wetlands and Ocean Chemistry	4
MAS 402	Physical Oceanography	3
Total Semester Hours Required for Minor		**18**