

**UNDERGRADUATE MAJOR: *B.S. Biology: Human Biology Concentration***  
**2021/22**

**CREDITS REQUIRED IN MAJOR: 78**

A grade of C- or higher is required in all courses for the major.

**FOUNDATION/REQUIRED MAJOR COURSES**

<b>COURSE NUMBER</b>	<b>COURSE NAME</b>	<b>CREDITS</b>	<b>PREREQUISITES</b>	<b>OFFERED</b>	<b>Online</b>
BIO 105	Biological Principles I: Cellular Biology	3	Grade of C or higher in any 100-level or higher MAT course, or appropriate placement test score.	Fall, Spring, Summer	
BIO 106	Biological Principles I Laboratory	1.5	BIO 105 with a minimum grade of C- or concurrent enrollment	Fall, Spring, Summer	
BIO 107	Biological Principles II: Evolution, Biodiversity, and Ecology	4.5	Grades of C- or higher in BIO 105 and BIO 106.	Fall, Spring	
BIO 221	Human Anatomy and Physiology I for Biology Majors	3	BIO 107 with a minimum grade of C- or better or concurrent	Fall	
BIO 112	Practical Human Anatomy and Physiology I	1.5	BIO 111 or BIO 221 or concurrent.	Fall, Summer	
BIO 223	Human Anatomy and Physiology II for Biology Majors	3	Grade of C- or higher in BIO 221 or permission of instructor.	Spring	
BIO 114	Practical Human Anatomy and Physiology II	1.5	Grade of C- or higher in BIO 112; BIO 113 or BIO 223 or concurrent.	Spring, Summer	
BIO 345	Pathophysiology	3	Grade of C- or higher in BIO 109, BIO 113, or BIO 223, or permission of instructor.	Fall, Spring, Summer	

**Choose 15 credits from the following, including at least two laboratory courses:**

<b>COURSE NUMBER</b>	<b>COURSE NAME</b>	<b>CREDITS</b>	<b>PREREQUISITES</b>	<b>OFFERED</b>	<b>Online</b>
BIO 201	Genetics	3	Grade of C- or higher in BIO 105 or BIO 111, or permission of instructor.	Fall	

BIO 305	Developmental Biology	3	Grade of C- or higher in BIO 107	Fall	
BIO 306	Developmental Biology Laboratory	2	Prior or concurrent registration in BIO 305.	Fall	
BIO 309	Comparative Vertebrate Anatomy	4.5	Grade of C- or higher in BIO 109 or BIO 223.	Spring (even years)	
BIO 311	Microbiology	3	CHY 115 and grade of C- or higher in BIO 107 or BIO 113; or permission of instructor.	Spring	
BIO 282	Microbiology Laboratory	2	Grade of C- or higher or concurrent enrollment in BIO 281 or BIO 311; or permission of instructor.	Fall, Spring, Summer	
BIO 321	Neurobiology	3	Grade of C- or higher in BIO 109 or BIO 111 or BIO221, or permission of instructor.	Fall	
BIO 322	Neurobiology Laboratory	2	Prior or concurrent registration in BIO 321.	Fall	
BIO 361	Parasitology	2	Grade of C- or higher in BIO 107.	Spring (variable)	
BIO 362	Parasitology Laboratory	2	BIO 361 or concurrently.	Spring (variable)	
BIO 401	Animal Physiology	3	CHY 115, either PHY 111 or PHY 121, and grade of C- or higher in either BIO 107 or BIO 113; or permission of instructor.	Spring (variable)	
BIO 402	Animal Physiology Laboratory	2	BIO 401 or concurrently; MAT 220.	Spring (variable)	
BIO 407	Environmental Modulation of Developmental Mechanisms	3	Grades of C- or higher in BIO 201 and BIO 305, or permission of instructor.	Spring (odd years)	
BIO 409	Cell and Molecular Biology	3	CHY 115 and either grade of C- or higher in BIO 201 or concurrent enrollment in BIO 201.	Spring	
BIO 410	Cell and Molecular Biology Laboratory	2	BIO 409 or concurrently.	Spring	
BIO 413	Applied Biostatistics	3	Grade of C- or higher in MAT 220 or permission of instructor.	Fall	

BIO 423	Topics in Genetics	3	Grade of C- or higher in BIO 201 or concurrent, or permission of instructor	Spring	
BIO 431	Principles of Immunology	3	CHY 107 or CHY 115, junior standing, and grade of C- or higher in either BIO 107 or BIO 113; or permission of instructor.	Fall	
BIO 432	Principles of Immunology Laboratory	2	Grade of C- or higher or concurrent enrollment in BIO 431, or permission of instructor.	Fall	

**NON MAJOR REQUIREMENTS: 42-43 CREDITS**

COURSE NUMBER	COURSE NAME	CREDIT S	PREREQUISITES	OFFERED	Online
MAT 152	Calculus A	4	MAT 140 or appropriate score on the College Level Math exam	Fall, Spring, Summer	Yes
MAT 220	Statistics for the Biological Sciences	4	MAT 152	Fall, Spring, Summer	Yes
CHY 113	Principles of Chemistry I	3	Pre- or co-requisite: MAT 108 (or concurrent) or MAT 140 (placement or concurrent) or MAT 152 (placement or concurrent) or permission.	Fall, Spring	
CHY 114	Laboratory Techniques I	1.5	CHY 113 (or concurrent)	Fall, Spring	
CHY 115	Principles of Chemistry II	3	Grade of C or better in CHY 113	Spring, Summer	
CHY 116	Laboratory Techniques II	1.5	Grade of C or better in CHY 114; CHY 115 (or concurrent)	Spring, Summer	
CHY 251	Organic Chemistry I	3	Grade of C or better in CHY 115	Fall, Summer	
CHY 252	Organic Chemistry Laboratory	2	Grade of C or better in CHY 116; CHY 251 (or concurrent)	Fall, Summer	

CHY 253	Organic Chemistry II	3	Grade of C or better in CHY 251	Spring, Summer	
CHY 254	Organic Chemistry Laboratory II	2	Grade of C or better in CHY 252; CHY 253 or concurrent	Spring, Summer	
CHY 461	Biochemistry	3	Grade of C or better in CHY 253 or by instructor permission	Fall	
CHY 462	Biochemistry Laboratory	2	Grade of C or better in CHY 254; CHY 461 or concurrent	Fall	
	OR				
CHY 463	Biochemistry II	3	Grade of C or better in CHY 461	Spring	

**SELECT One of the following two sequences:**

**Sequence 1:**

COURSE NUMBER	COURSE NAME	CREDITS	PREREQUISITES	OFFERED	Online
PHY 111	Elements of Physics I	4	Grade of C or higher in MAT 108 or MAT 140 (or concurrently) or MAT 152 (or concurrently), or permission of instructor.	Fall, Summer	
PHY 114	Introductory Physics Laboratory I	1	Co-requisite: PHY 111 or PHY 121	Fall, Summer	
PHY 112	Elements of Physics II	4	PHY 111 or equivalent. Co-requisite: PHY 116.	Spring, Summer	
PHY 116	Elements of Physics II Laboratory	1	Co-requisite: PHY 112 or 123.	Spring, Summer	

**Sequence 2:**

COURSE NUMBER	COURSE NAME	CREDITS	PREREQUISITES	OFFERED	Online
PHY 121	General Physics I	4	Prior completion of MAT 152 (highly recommended) or concurrent registration in MAT 152, or equivalent.	Fall, Spring, Summer	

PHY 114	Introductory Physics Laboratory I	1	Co-requisite: PHY 121	Fall, Spring, Summer	
PHY 123	General Physics II	4	PHY 121 or equivalent and one semester of calculus.	Fall, Spring, Summer	
PHY 116	Introductory Physics Laboratory II	1	Co-requisite: PHY 112 or PHY 123	Fall, Spring, Summer	

### **CAPSTONE: 2-3 CREDITS**

Students must fulfill the University Core curriculum requirements, including a Capstone course in the biology major (course varies by term).

### **MAJOR COURSES OVERLAPPING IN THE CORE:**

CORE AREA	COURSE NUMBER	COURSE NAME	REQUIRED BY MAJOR?
SE	BIO 107	Biological Principles II: Evolution, Biodiversity, Ecology	Yes
QR	MAT 152	Calculus A	Yes
SE	PHY 121	General Physics I	Must select either PHY 121 or PHY 111
SE	PHY 111	Elements of Physics	Must select either PHY 121 or PHY 111
SE	PHY 114	Introductory Physics Laboratory I	Yes (co-requisite with PHY 121 or PHY 111)
SE	CHY 113 CHY 114	Principles of Chemistry I Laboratory Techniques I	Yes
EL	BIO 441	Problems in Biology	No
EL	BIO 442	Honors Thesis in Biology	No
EL	BIO 443	Internship	No
EL	CHY 113	Principles of Chemistry I	Yes
EL	CHY 252	Organic Chemistry Lab I	Yes
CAP	BIO ____	Varies	Yes (see biology department)

### **CORE CURRICULUM CODES**

**WRI 1** – Writing, Reading, & Inquiry 1 (ENG 100)

**WRI 2** – Writing, Reading, & Inquiry 2 (ENG 102)

**WRI 3** – Writing, Reading, & Inquiry 3 (SOC 210)

**QR** – Quantitative Reasoning

**CE** – Creative Expression

**SCA** – Socio-cultural Analysis

**CI** – Cultural Interpretation

**SE** – Science Exploration

**EISRC** – Ethical Inquiry, Social Responsibility, & Citizenship

**DIV** – Diversity

**INT** – International

**EL** – Engaged Learning

**CAP** – Capstone