

## **College of Arts and Sciences**

Center for Life Sciences Education

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clse.osu.edu

7 February 2025

Vice Provost W. Randy Smith Council on Academic Affairs Office of Academic Affairs University Square South 15 E. 15<sup>th</sup> Avenue Columbus, OH 43210

Dear Dr. Smith,

The Center for Life Sciences Education is respectfully submitting revisions to the Biology Major and Minor as detailed below. These changes have been unanimously approved by the CLSE Curriculum Committee and we request they be formally approved for implementation effective for the Summer 2025 Semester.

## Updates to the Major and Minor

These requested changes are printed in red on the attached advising sheets (BS = <u>Appendix A</u>, BA = <u>Appendix B</u>, Minor = <u>Appendix C</u>).

- Biology 1111 and 1112 are recently approved courses that, when combined, address the same course learning outcomes as Biology 1113. We propose to allow the combination of 1111 and 1112 to satisfy the same requirement as Biology 1113 in all areas of the Major and Minor.
- The Department of Evolution, Ecology, and Organismal Biology (EEOB) has replaced their *Human Anatomy* course, EEOB 2510, with a new course, EEOB 2511, and will cease offering the previous version as of Spring 2025. We request to update our advising sheets to allow 2511 wherever 2510 was previously approved.
- For both the BA and BS in the *Life Science Education* Specialization, we propose to add an additional checkbox options in the area of Ecology for the Pick 2 Additional Major Coursework. These courses are to include EEOB 3270, 3410, 3420, and 4240.



- For all Specializations of the Biology BA, we propose to add Math 1120 AND 1121 as an option to fulfill the Mathematics Supporting Course requirement. This combination is considered the *de facto* equivalent of Math 1075 through 1150 and therefore mirrors other previously approved options.
- For all Specializations of the Biology BA and BS, we propose allowing the 'stretch' version of the existing supporting course, Physics 1250, as the two-semester version of Physics 1248 + 1249. The course learning outcomes for the two-semester version mirror those of the single semester offering and are therefore appropriate equivalents to allow on the Major.
- For all Specializations of the Biology BS, we propose allowing the 'stretch' version of the existing supporting course, Math 1151, as the two semester version of the combination Math 1140 + 1141. The course learning outcomes for the two-semester version mirrors those of the single semester offering and are therefore appropriate equivalents to allow on the Major.
- We wish to correct an error in a recently approved proposal affecting the Biology Minor. In the proposal, a discrepancy exists between the proposal and the advising sheet relative to the required Core Course options. Students completing the Minor will not be required to complete the Capstone course, Biology 4901. The advising sheet mistakenly included this course despite the proposal explicitly indicating the course would be required only of the Biology Major.

I welcome any questions or concerns about these proposed changes and appreciate your consideration of the request.

Sincerely,

Adam L. Condreus

Adam Andrews Assistant Director for Curriculum & Instruction

Attachments

Appendix A: Advising sheets for the four BS Specializations of the Biology Major Appendix B: Advising sheets for the four BA Specializations of the Biology Major Appendix C: Advising sheet for the Biology Minor

## Appendix A: Advising sheets for the four BS Specializations of the Biology Major

## Biology Major Checklist Bachelor of Science Forensics Biology Specialization





## Biology Major Checklist Bachelor of Science Forensics Biology Specialization

#### Core Course (4-5 credit hours) – Required (Check 1 box) □ Biology 3401 (4) – Integrated Biology Biology 3501 (3) and 4901 (2) Forensic Biology (14-22 credit hours) Required (Check 2 boxes) Additional Coursework (Check at least 3 boxes)\*\*\* □ Biochem 4511 (4), or 5613 AND 5614 (6) Anthro 5607 (3) – Human Osteology Anthro 5608 (3) – Skeletal Biology MolGen 4500 (3) or 4606 (4) □ Anthro 5609 (3) – Dental Anthropology Anthro 5610 (3) – Bioarchaeology Anthro 5644 (3) – Forensic Anthropology □ BioChem 5615 (3) – Biochemistry and Molecular Biology III □ MolGen 5601<sup>+</sup> (3-4) – Eukaryotic Molecular Genetics Lab □ MolGen 5607 (3) – Cell Biology □ MolGen 5701 (3) – DNA Transactions and Gene Regulation Micro 4000<sup>+</sup> or 4000.01<sup>+</sup> or 4000.02<sup>+</sup> (4) or 4100 (5) □ MolGen 4581S or 4591S or equiv. (1) – DNA Fingerprinting Workshop in Columbus Public Schools

### Electives

Embedded Literacies (	no additional credit hours	

_		<b>B</b> : 1 <b>B1</b>
	Advanced Writing	Biology 3401 or 3501
	Advanced Data Analytics	Biology 3401 or 3501
	Technology Literacy	Biology 3401 or 3501

TOTAL BioSci HOURS

TOTAL SEMESTER UNITS

- Core, specialization, and elective courses must total 32 semester units, and must include three laboratory courses.
- At least 25 of the 32 semester units must be courses in Biochemistry, Biology, EEOB, Microbiology, or Molecular Genetics, and courses outside these departments must be pre-approved by a Biology advisor. At most 7 credit hours from Anthropology may be counted toward the Biology major.
- Electives must be at the 2000 level or above, except for Biology and Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.



The Ohio State University

### **Biology Major Checklist Bachelor of Science Integrated General Biology Specialization**

JATION		
Requirements (32-39 credit hours	)	
nar (1) riting and Information Literacy (3) athematics & Quantitative Reasoning / Data Analysis (3-5) eracy, Visual & performing Arts (3) storical & Cultural Studies (3) utural Sciences (4-5) cial & Behavioral Sciences (3) ce, Ethnicity and Gender Diversity (3) hip for a Diverse & Just World (4-6) Choice (4-6) )	GENED 1201	
	JATION Requirements (32-39 credit hours nar (1) riting and Information Literacy (3) athematics & Quantitative Reasoning / Data Analysis (3-5) eracy, Visual & performing Arts (3) storical & Cultural Studies (3) itural Sciences (4-5) cial & Behavioral Sciences (3) ce, Ethnicity and Gender Diversity (3) hip for a Diverse & Just World (4-6) Choice (4-6) )	DATE

Required Arts & Sciences Courses (1-13 Credit Hours)

Arts & Sciences Survey (1)

□ World Language (0-12)

Required Supporting Courses (48-61 credit hours)

### **Biology (Check 2 boxes)**

- □ Biology 1113.01 (4) or 1113.02 (5)\*
- or Biology 1111 (3) and 1112 (4)\*
- Biology 1114.01 (4) or 1114.02 (5)\*
- Substitution

 $\ensuremath{^*}$  Can be used to fulfill the GEN Foundation: Natural Sciences requirement

### Mathematics/Statistics (Check 2 boxes)

- Math 1151 or 1156 (5)\*\*
- OR 1140 (4) AND 1141 (4)
- Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3)

Substitution \*\* Can be used to fulfill the GEN Foundation; MQR/DA requirement

### Physics (Check 2 boxes)

Physics 1200 (alg) or 1250 (calc) (5) OR 1248 (4) AND 1249 (3)

Physics 1201 (alg) or 1251 (calc) (5)

- Substitution

### Chemistry (Check 2 boxes)

- Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5)
- Chemistry 1220 or 1620 or 1920H (5)
- Substitution

## Organic Chemistry (Check boxes for 2 lectures + 2 labs)

- Chemistry 2510 or 2610 or 2910H (4) Lecture 1
- Chemistry 2520 or 2620 or 2920H (4) Lecture 2
- Chemistry 2540 or 2940H (2) - Lab 1
- □ Chemistry 2550 or 2950H (2) Lab 2
- Substitution



## Biology Major Checklist Bachelor of Science Integrated General Biology Specialization

Core	Course (4-5 credit hours) – Requ	uired (Check	1 box)		
	Biology 3401 (4) – Integrated Biology			Biology 3501 (3) and 4901 (2)	1
Integ	rated Biology Specialization (28	-36 credit ho	ours)		
Require	ed (Check 6 boxes)		Two Advan	ced (4000+) electives (6-10)	
	Micro 4000† or 4000.01† or 4000.02†	† (4) or 4100†	□		( )
	Biochem 4511 (4), or 5613 AND 5614 EEOB 3510 or MolGen 4700 or MolGe	(6) en 5607 or	□		( )
	MolGen 5608 (3) – <i>Cell Biology</i> EEOB 3310 or 3310.01 or 3310.02 <sup>+</sup> (4	) – Evolution			
IJ	EEOB 3410 <sup>+</sup> (4) - <i>Ecology</i>				
Elect	ives				
-			-		
-			-		
Embe	edded Literacies (no additional o	credit hours)			
	Advanced Writing	iology 2401 or 3	2501		
	Advanced Data Analytics Bi	iology 3401 or 3	3501		
	Technology Literacy Bi	iology 3401 or 3	3501		
TOTA	AL BioSci HOURS		TOTAL SEN	MESTER UNITS	

- Core, specialization, and elective courses must total 32 semester units, and must include three laboratory courses.
- At least 25 of the 32 semester units must be courses in Biochemistry, Biology, EEOB, Microbiology, or Molecular Genetics, and courses outside these departments must be preapproved by a Biology advisor.
- Electives must be at the 2000 level or above, except for Biology and Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.



## Biology Major Checklist Bachelor of Science Life Science Education Specialization

	DATE
SEMESTER OF GRADUATION	
General Education Requirements (32-39 credit ho	ırs)
GE Launch Seminar (1)	GENED 1201
Foundations: Writing and Information Literacy (3)	
Foundations: Mathematics & Quantitative Reasoning     (Data Analysis (2, 5))	
/ Data Analysis (5-5)	
Foundations: Electricity, Visual & performing Arts (5)	
Foundations: Natural Sciences (4-5)	
Foundations: Social & Behavioral Sciences (3)	
Foundations: Race, Ethnicity and Gender Diversity (3)	
Theme: Citizenship for a Diverse & Just World (4-6)	
□ Theme: Student Choice (4-6)	
	GENED 4001
Required Arts & Sciences Courses (1-13 Credit Hou	ırs)
Arts & Sciences Survey (1)	
World Language (0-12)	
Required Supporting Courses (48-61 credit hours)	
Biology (Check 2 hoves)	Chemistry (Check 2 hoves)
Biology (Check 2 boxes)	Chemistry (Check 2 boxes)
Biology (Check 2 boxes) Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)*	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5)
Biology (Check 2 boxes) Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)*	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5)
Biology (Check 2 boxes) Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Substitution	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry Substitution
Biology (Check 2 boxes) <ul> <li>Biology 1113.01 (4) or 1113.02 (5)*</li> <li>or Biology 1111 (3) and 1112 (4)*</li> <li>Biology 1114.01 (4) or 1114.02 (5)*</li> <li>Substitution</li> </ul> * Can be used to fulfill the GEN Foundation: Natural	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or Substitution
Biology (Check 2 boxes) <ul> <li>Biology 1113.01 (4) or 1113.02 (5)*</li> <li>or Biology 1111 (3) and 1112 (4)*</li> <li>Biology 1114.01 (4) or 1114.02 (5)*</li> <li>Substitution</li> </ul> * Can be used to fulfill the GEN Foundation: Natural Sciences requirement	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry Check boxes for 2 lectures + 2 labs) Organic Chemistry (Check boxes for 2 lectures + 2 labs)
Biology (Check 2 boxes) <ul> <li>Biology 1113.01 (4) or 1113.02 (5)*</li> <li>or Biology 1111 (3) and 1112 (4)*</li> <li>Biology 1114.01 (4) or 1114.02 (5)*</li> <li>Substitution</li> </ul> * Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics (Statistics (Check 2 boxes))	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Substitution Organic Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2020H (4) – Lecture 1
Biology (Check 2 boxes) <ul> <li>Biology 1113.01 (4) or 1113.02 (5)*</li> <li>or Biology 1111 (3) and 1112 (4)*</li> <li>Biology 1114.01 (4) or 1114.02 (5)*</li> <li>Substitution</li> </ul> * Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)**	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1
Biology (Check 2 boxes) <ul> <li>Biology 1113.01 (4) or 1113.02 (5)*</li> <li>or Biology 1111 (3) and 1112 (4)*</li> <li>Biology 1114.01 (4) or 1114.02 (5)*</li> <li>Substitution</li> </ul> * Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) <ul> <li>Math 1151 or 1156 (5)**</li> <li>OR 1140 (4) AND 1141 (4)</li> </ul>	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 1
Biology (Check 2 boxes) <ul> <li>Biology 1113.01 (4) or 1113.02 (5)*</li> <li>or Biology 1111 (3) and 1112 (4)*</li> <li>Biology 1114.01 (4) or 1114.02 (5)*</li> <li></li></ul>	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2 Substitution
Biology (Check 2 boxes) Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3)	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Substitution	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Substitution ** Can be used to fulfill the GEN Foundation; MQR/DA	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2 Chemistry 2550 or 2950H (2) – Lab 2 Substitution
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Substitution ** Can be used to fulfill the GEN Foundation; MQR/DA requirement	Chemistry (Check 2 boxes) Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Substitution Organic Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Substitution Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Substitution ** Can be used to fulfill the GEN Foundation; MQR/DA requirement Physics (Check 2 boxes)	Chemistry (Check 2 boxes)  Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5)  Chemistry 1220 or 1620 or 1920H (5)  Chemistry 1220 or 1620 or 2920H (5)  Chemistry 2510 or 2610 or 2910H (4) – Lecture 1  Chemistry 2520 or 2620 or 2920H (4) – Lecture 2  Chemistry 2540 or 2940H (2) – Lab 1  Chemistry 2550 or 2950H (2) – Lab 2  Substitution
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Substitution Can be used to fulfill the GEN Foundation: Natural Sciences requirement  Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Math 2450 (3) Substitution ** Can be used to fulfill the GEN Foundation; MQR/DA requirement  Physics (Check 2 boxes) Physics 1200 (alg) or 1250 (calc) (5)	Chemistry (Check 2 boxes)  Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2 Chemistry 2550 or 2950H (2) – Lab 2 Substitution
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Substitution Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Math 2450 (3) Physics (Check 2 boxes) Physics (Check 2 boxes) Physics (Check 2 boxes) Physics 1200 (alg) or 1250 (calc) (5) OR 1248 (4) AND 1249 (3)	Chemistry (Check 2 boxes)  Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2 Chemistry 2550 or 2950H (2) – Lab 2 Substitution
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Substitution Can be used to fulfill the GEN Foundation: Natural Sciences requirement  Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Physics (Check 2 boxes) Physics (Check 2 boxes) Physics (2boxes) Physics 1200 (alg) or 1250 (calc) (5) OR 1248 (4) AND 1249 (3) Physics 1201 (alg) or 1251 (calc) (5)	Chemistry (Check 2 boxes)  Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2 Chemistry 2550 or 2950H (2) – Lab 2 Substitution
Biology (Check 2 boxes) Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Substitution Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3) Substitution ** Can be used to fulfill the GEN Foundation; MQR/DA requirement Physics (Check 2 boxes) Physics 1200 (alg) or 1250 (calc) (5) OR 1248 (4) AND 1249 (3) Physics 1201 (alg) or 1251 (calc) (5) Physics 1201 (alg) or 1251 (calc) (5) Calculation	Chemistry (Check 2 boxes)  Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry 1220 or 1620 or 1920H (5) Chemistry (Check boxes for 2 lectures + 2 labs) Chemistry 2510 or 2610 or 2910H (4) – Lecture 1 Chemistry 2520 or 2620 or 2920H (4) – Lecture 2 Chemistry 2540 or 2940H (2) – Lab 1 Chemistry 2550 or 2950H (2) – Lab 2 Chemistry 2550 or 2950H (2) – Lab 2 Chemistry Substitution

## Biology Major Checklist Bachelor of Science Life Science Education Specialization

Core Course (4-5 credit hours) – Required (Check 1 box)

- □ Biology 3401 (4) Integrated Biology
- □ Biology 3501 (3) and 4901 (2)

Life Science Education Specialization (21-28 credit hours)

### Required (Check 5 boxes)

- Biochem 4511 (4), or 5613 AND 5614 (6)
- MolGen 4500 (3) or 4606 (4)
- EEOB 3310 or 3310.01 or
- 3310.02<sup>+</sup> (4) *− Evolution* □ Micro 4000<sup>+</sup> or 4000.01<sup>+</sup> or
- 4000.02<sup>+</sup> (4) or 4100 (5) ☐ MolGen 3300<sup>+</sup> (3) – General
  Plant Biology

#### Additional Coursework (Check at least 2 boxes)

- EEOB 2220<sup>+</sup> (2) Biodiversity of Ohio: Birds
- EEOB 2510<sup>+</sup> (3) or 2511<sup>+</sup> (4) Human Anatomy
- EEOB 2520 (3) Human Physiology
- EEOB 3320 (strongly recommended) † (3) – Organismal Diversity
- EEOB 3270 (3) Infectious Disease Ecology, Evolution, and Transmission
- EEOB 3410 (4) Ecology
   EEOB 3420 (4) Behavioral Ecology

- EEOB 4210 (2) Ecology and Evolution: Vertebrates
- EEOB 4220<sup>+</sup> (3) Ecology and Evolution: Mammals
- EEOB 4230 (2) Ecology and Evolution: Invertebrates
- EEOB 4240 (3) Ecology & Evolution of Plants & People
- EEOB 5430<sup>+</sup> (3) Fish Ecology OR EEOB 5930<sup>+</sup> (3) -Ichthyology
- Entomology 4000 (3) General Entomology Lecture
- MolGen 4581S or 4591S or equiv. (1) – DNA Fingerprinting Workshop with Columbus Public Schools

#### Electives

Embedded Literacies (no additional credit hours)

Advanced Writing
 Biology 3401 or 3501
 Advanced Data Analytics
 Biology 3401 or 3501
 Technology Literacy
 Biology 3401 or 3501

## TOTAL BioSci HOURS

### TOTAL SEMESTER UNITS

Notes:

- Core, specialization, and elective courses must total 32 semester units, and must include three laboratory courses.
- At least 25 of the 32 semester units must be courses in Biochemistry, Biology, EEOB, Microbiology, or Molecular Genetics, and courses outside these departments must be pre-approved by a Biology advisor.
- Electives must be at the 2000 level or above, except for Biology or Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval
  of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.



## Biology Major Checklist Bachelor of Science Pre-Health Professions Specialization

NAME	DATE
SEMESTER OF GRADUATION	
General Education Requirements (32-39 credit ho	ours)
<ul> <li>GE Launch Seminar (1)</li> <li>Foundations: Writing and Information Literacy (3)</li> <li>Foundations: Mathematics &amp; Quantitative Reasoning / Data Analysis (3-5)</li> <li>Foundations: Literacy, Visual &amp; performing Arts (3)</li> <li>Foundations: Historical &amp; Cultural Studies (3)</li> <li>Foundations: Natural Sciences (4-5)</li> <li>Foundations: Race, Ethnicity and Gender Diversity (3</li> <li>Theme: Citizenship for a Diverse &amp; Just World (4-6)</li> <li>Theme: Student Choice (4-6)</li> <li>GE Reflection (1)</li> </ul>	GENED 1201
Required Arts & Sciences Courses (1-13 Credit Ho	ours)
<ul> <li>Arts &amp; Sciences Survey (1)</li> <li>World Language (0-12)</li> </ul>	
Required Supporting Courses (48-61 credit hours	)
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5)* or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)*  Can be used to fulfill the GEN Foundation: Natural Sciences requirement  Mathematics/Statistics (Check 2 boxes) Math 1151 or 1156 (5)** OR 1140 (4) AND 1141 (4) Math 1152 (5) or Stat 1450 (3) or Stat 2480 (3) or Stat 2450 (3)  Substitution ** Can be used to fulfill the GEN Foundation; MQR/DA requirement	Chemistry (Check 2 boxes)  Chemistry 1206 (3) and 1208 (4) or 1210 or 1610 or 1910H (5)  Chemistry 1220 or 1620 or 1920H (5)  Chemistry 1220 or 1620 or 2920H (5)  Chemistry 2510 or 2610 or 2910H (4) – Lecture 1  Chemistry 2520 or 2620 or 2920H (4) – Lecture 2  Chemistry 2540 or 2940H (2) – Lab 1  Chemistry 2550 or 2950H (2) – Lab 2  Substitution
Physics (Check 2 boxes)           Physics 1200 (alg) or 1250 (calc) (5)           OR 1248 (4) AND 1249 (3)           Physics 1201 (alg) or 1251 (calc) (5)           Substitution	



## Biology Major Checklist Bachelor of Science Pre-Health Professions Specialization

	Biology 3401 (4) – Integrated B	liology		Biology 3501 (3) and 4901 (2)
Pre-H	lealth Professions Speciali	zation (15-25 credit hou	rs)	
equire	ed MolGen 4500 (3) or 4606 (4)	Additi	onal Bio	Coursework (Check at least 4 boxes) ochem 4511 (4), or 5613 AND 5614 (6)
			EE Mi EE	OB 3310 or 3310.01 or 3310.02+ (4) – Evolution icro 4000+ or 4000.01+ or 4000.02+ (4) or 4100 (5 OB 3510 or MolGen 4700 or MolGen 5607 or
			EE An	Olgen 5608 (3) – <i>Cell Biology</i> OB 3520† (3) – <i>Microscopic Anatomy / Histology</i> Jatomy 2300.01† (4) or 3300.01† (5)
			EE Ph	OB 4510 <sup>+</sup> (3) – Comparative Vertebrate Anatomy ysio 3200 (5) or EEOB 2520 (3) – Human
			Pn EE 42	ysiology of EEOB 4520 (3) <i>Comparative Physiolog</i> OB 3270 (3) or 3320 (3) or 3410 (4) or 3420 (4) or 40 (3) – <i>Ecology</i>
Elect	ives			
-				
-				
Embe	edded Literacies (no additi	onal credit hours)		
	Advanced Writing Advanced Data Analytics	Biology 3401 or 3501 Biology 3401 or 3501 Biology 2401 or 3501		
		BIOLOGY 3401 01 3301		
τοτα	L BioSci HOURS	TOTA	. SEI	MESTER UNITS
lotes: • (	: Core, specialization, and elect	ive courses must total 32 s	eme	ster units, and must include three laboratory

- Electives must be at the 2000 level or above, except for Biology or Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.

## Appendix B: Advising sheets for the four BA Specializations of the Biology Major

### Biology Major Checklist Bachelor of Arts Forensic Biology Specialization

NAME	DATE
SEMESTER OF GRADUATION	
General Education Requirements (32-39 credit hol	urs)
<ul> <li>GE Launch Seminar (1)</li> <li>Foundations: Writing and Information Literacy (3)</li> <li>Foundations: Mathematics &amp; Quantitative Reasoning / Data Analysis (3-5)</li> <li>Foundations: Literacy, Visual &amp; performing Arts (3)</li> <li>Foundations: Historical &amp; Cultural Studies (3)</li> <li>Foundations: Natural Sciences (4-5)</li> <li>Foundations: Social &amp; Behavioral Sciences (3)</li> <li>Foundations: Race, Ethnicity and Gender Diversity (3)</li> <li>Theme: Citizanchia for a Diverse &amp; Just World (4-6)</li> </ul>	GENED 1201
Theme: Student Choice (4-6)	
GE Reflection (1)	GENED 4001
Required Arts & Sciences Courses (1-13 Credit Hou	ırs)
Arts & Sciences Survey (1) World Language (0-12)  Required Supporting Courses (32-53 credit bours)	
Required Supporting Courses (52-55 Credit Hours)	
Biology (Check 2 boxes)  Biology 1113.01 (4) or 1113.02 (5) or Biology 1111 (3) and 1112 (4)* Biology 1114.01 (4) or 1114.02 (5)* Can be used to fulfill the GEN Foundation: Natural Sciences requirement Mathematics/Statistics (Check 1 box) Math 1148 (4)** - College Algebra AND Math 1149 (3) - Trigonometry, OR Math 1148 (4) and Stat 1450 (3), OR Math 1140 (5) AND 1121 (5) OR Math 1150 (5)** - Pre-Calculus Substitution	Chemistry (Check 2 boxes)  Chemistry (Check 2 boxes)  Chemistry 1206 (3) AND 1208 (4) or 1210 or 1610 or 1910H (5)  Chemistry 1220 or 1620 or 1920H (5)  Chemistry (Check 1 box)  Chemistry 2310 (4) OR 2510 AND 2520 (8) OR 2510 AND 2540 (6)  Chemistry Substitution  Anthropology (1 course) Anthro 2200 (4)
** Can be used to fulfill the GEN Foundation: MQR/DA requirement	(optional, necessary for Anthro prereq)
requirement	
Physics (Check 1 box)           Physics 1200 (alg) or 1250 (calc) (5)           OR 1248 (4) AND 1249 (3)           Substitution	



## Biology Major Checklist Bachelor of Arts Forensic Biology Specialization

Core	Course (4-5 credit hours) – Requ	uired (Check 1 b	ox)	
	Biology 3401 (4) – Integrated Biology			Biology 3501 (3) and 4901 (2)
Fore	nsic Biology Specialization (14-22	2 credit hours)		
Require	ed (Check 2 boxes) Biochem 4511 (4), or 5613 AND 5614 MolGen 4500 (3) or 4606 (4)	Addition (6)	al Cours Anthro 5 Anthro 5 Anthro 5 Anthro 5 BioChen MolGen MolGen Micro 40 MolGen	ework (Check at least 3 boxes)*** 6607 (3) – Human Osteology 6608 (3) – Skeletal Biology 6609 (3) – Dental Anthropology 6610 (3) – Bioarchaeology 6644 (3) – Forensic Anthropology 1 5615 (3) – Biochemistry and Molecular Biology III 5601† (3-4) – Eukaryotic Molecular Genetics Lab 5607 (3) – Cell Biology 5701 (3) – DNA Transactions and Gene Regulation 000† or 4000.01† or 4000.02† (4) or 4100 (5) 4581S or 4591S or equiv. (1) – DNA Fingerprinting
Elect	ives		-	
Embe	edded Literacies (no additional c	redit hours)		
	Advanced WritingBisAdvanced Data AnalyticsBisTechnology LiteracyBis	ology 3401 or 3501 ology 3401 or 3501 ology 3401 or 3501		
TOTA	AL BioSci HOURS	ТОТ	TAL SEN	AESTER UNITS
Notes:	Core, specialization, and elective cou courses.	urses must total 3	2 semes	ster units, and must include three laboratory

- At least 25 of the 32 semester units must be courses in Biochemistry, Biology, EEOB, Microbiology, or Molecular Genetics, and courses outside these departments must be pre-approved by a Biology advisor. At most 7 credit hours from Anthropology may be counted toward the Biology major.
- Electives must be at the 2000 level or above, except for Biology and Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.



## Biology Major Checklist Bachelor of Arts Integrated General Biology Specialization

NAME		DATE	
SEMES	STER OF GRADUATION		
Gene	ral Education Requirements (32-39 credit hours)		
	GE Launch Seminar (1)	GENED 1201	
	Foundations: Writing and Information Literacy (3)		
	Foundations: Mathematics & Quantitative Reasoning		
	/ Data Analysis (3-5)		
	Foundations: Literacy, Visual & performing Arts (3)		
	Foundations: Historical & Cultural Studies (3)		
	Foundations: Natural Sciences (4-5)		
	Foundations: Social & Behavioral Sciences (3)		
	Foundations: Race, Ethnicity and Gender Diversity (3)		
	Theme: Citizenship for a Diverse & Just World (4-6)		
	Theme: Student Choice (4-6)		
	World Language (0-12)		
	GE Reflection (1)	GENED 4001	

## Required Arts & Sciences Courses (1-13 Credit Hours)

- Arts & Sciences Survey (1)
- □ World Language (0-12)

Required Supporting Courses (32-49 credit hours)

### Biology (2 courses)

- □ Biology 1113.01 (4) or 1113.02 (5)\*
- or Biology 1111 (3) and 1114 (4)\*
- □ Biology 1114.01 (4) or 1114.02 (5)\*
- □ \_\_\_\_\_Substitution

\* Can be used to fulfill the GEN Foundation: Natural Sciences requirement

### Mathematics/Statistics

 Math 1148 (4)\*\* - College Algebra AND Math 1149 (3) - Trigonometry, OR Math 1148 (4) AND Stat 1450 (3), OR Math 1120 (5) AND 1121 (5) OR Math 1150 (5) \*\*- Pre-Calculus
 Substitution

\*\* Can be used to fulfill the GEN Foundation: MQR/DA requirement

### Physics (1 Course)

- Physics 1200 (alg) or 1250 (calc) (5)
   OR 1248 (4) AND 1249 (3)
- Substitution

### Chemistry (2 courses)

- Chemistry 1206 (3) and 1208 (4)
   Or 1210 or 1610 or 1910H (5)
- Chemistry 1220 or 1620 or 1920H (5)
- Substitution

### Organic Chemistry

- Chemistry 2310 (4),
   OR 2510 AND 2520 (8)
   OR 2510 AND 2540 (6)
- Substitution
- Waived



## Biology Major Checklist Bachelor of Arts Integrated General Biology Specialization

Core	Course (4-5 credit hours) – Required	(Check 1 bo	x)		
	Biology 3401 (4) – Integrated Biology			Biology 3501 (3) and 4901 (2)	
Integ	rated Biology Specialization (28-36 c	redit hours)			
Require	d (Check 6 boxes) MolGen 4500 (3) or 4606 (4) Micro 4000† or 4000.01† or 4000.02† (4) or (5) Biochem 4511 (4), or 5613 AND 5614 (6) EEOB 3510 or MolGen 4700 or MolGen 560 MolGen 5608 (3) – <i>Cell Biology</i> EEOB 3310 or 3310.01 or 3310.02† (4) – <i>Evo</i> EEOB 3410† (4) - <i>Ecology</i>	Two 4100† 7 or olution	Advanc	ed (4000+) electives (6-10)	( ) ( )
Elect	ves				
-			-		
Embe	edded Literacies (no additional credit	hours)			
TOTA	Advanced WritingBiologyAdvanced Data AnalyticsBiologyTechnology LiteracyBiologyL BioSci HOURS	3401 or 3501 3401 or 3501 3401 or 3501 TOT/	AL SEN		

- Core, specialization, and elective courses must total 32 semester units, and must include three laboratory courses.
- At least 25 of the 32 semester units must be courses in Biochemistry, Biology, EEOB, Microbiology, or Molecular Genetics, and courses outside these departments must be preapproved by a Biology advisor.
- Electives must be at the 2000 level or above, except for Biology and Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.



### Biology Major Checklist Bachelor of Arts Life Science Education Specialization

NAME		DATE
SEMES	STER OF GRADUATION	
Gene	ral Education Requirements (32-39 credit hours)	
	GE Launch Seminar (1)	GENED 1201
	Foundations: Writing and Information Literacy (3)	
	Foundations: Mathematics & Quantitative Reasoning / Data Analysis (3-5)	
	Foundations: Literacy, Visual & performing Arts (3)	
	Foundations: Historical & Cultural Studies (3)	
	Foundations: Natural Sciences (4-5)	
	Foundations: Social & Behavioral Sciences (3)	
	Foundations: Race, Ethnicity and Gender Diversity (3)	
	Theme: Citizenship for a Diverse & Just World (4-6)	
	Theme: Student Choice (4-6)	<u> </u>
	GE Reflection (1)	GENED 4001
Requ	ired Arts & Sciences Courses (1-13 Credit Hours)	
	Arts & Sciences Survey (1)	

□ World Language (0-12)

Required Supporting Courses (32-49 credit hours)

## Biology (Check 2 boxes)

- □ Biology 1113.01 (4) or 1113.02 (5)\*
- or Biology 1111 (3) and 1112 (4)\*
- □ Biology 1114.01 (4) or 1114.02 (5)\*

□ \_\_\_\_\_Substitution

\* Can be used to fulfill the GEN Foundation: Natural Sciences requirement

### Mathematics/Statistics (Check 1 box)

 Math 1148 (4)\*\* - College Algebra AND Math 1149 (3) - Trigonometry, OR Math 1148 (4) and Stat 1450 (3), OR Math 1120 (5) AND 1121 (5) OR Math 1150 (5)\*\* - Pre-Calculus
 \_\_\_\_\_\_Substitution

\*\* Can be used to fulfill the GEN Foundation: MQR/DA requirement

### Physics (Check 1 box)

Physics 1200 (alg) or 1250 (calc) (5)

- OR 1248 (4) AND 1249 (3)
- Substitution

## Chemistry (Check 2 boxes)

- Chemistry 1206 (3) and 1208 (4)
- or 1210 or 1610 or 1910H (5)
- Chemistry 1220 or 1620 or 1920H (5)
- Substitution

### Organic Chemistry (Check 1 box)

- Chemistry 2310 (4) OR 2510 AND 2520 (8)
- OR 2510 AND 2540 (6)
- □ Waived



## The Ohio State University

## Biology Major Checklist Bachelor of Arts Life Science Education Specialization

### Core Course (4-5 credit hours) – Required (Check 1 box)

□ Biology 3401 (4) – Integrated Biology

Biology 3501 (3) and 4901 (2)

## Life Sciences Education Specialization (21-28 credit hours)

### **Required (Check 5 boxes)**

## Biochem 4511 (4), or 5613 AND

- 5614 (6) MolGen 4500 (3) or 4606 (4)
- □ EEOB 3310 or 3310.01 or
- 3310.02<sup>+</sup> (4) Evolution
- Micro 4000<sup>+</sup> or 4000.01<sup>+</sup> or 4000.02<sup>+</sup> (4) or 4100 (5)
- □ MolGen 3300<sup>+</sup> (3) General Plant Biology

#### Additional Coursework (Check at least 2 boxes)

## □ EEOB 2220<sup>+</sup> (2) − *Biodiversity of*

- Ohio: Birds
  □ EEOB 2510<sup>+</sup> (3) or 2511<sup>+</sup> (4) Human Anatomy
- EEOB 2520 (3) Human
   Physiology
- EEOB 3320 (strongly recommended) † (3) –
   Organismal Diversity
- EEOB 3270 (3) Infectious Disease Ecology, Evolution, and Transmission
- EEOB 3410 (4) Ecology
- EEOB 3420 (4) Behavioral Ecology

- EEOB 4210 (2) Ecology and Evolution: Vertebrates
- EEOB 4220<sup>+</sup> (3) Ecology and Evolution: Mammals
- EEOB 4230 (2) Ecology and Evolution: Invertebrates
- EEOB 4240 (3) Ecology & Evolution of Plants & People
- EEOB 5430<sup>+</sup> (3) Fish Ecology OR EEOB 5930<sup>+</sup> (3) – Ichthyology
- Entomology 4000 (3) General Entomology Lecture
- □ MolGen 4581S or 4591S or equiv. (1) – DNA Fingerprinting Workshop with Columbus Public Schools

### Electives

### Embedded Literacies (no additional credit hours)

Advanced Writing
 Biology 3401 or 3501
 Advanced Data Analytics
 Biology 3401 or 3501
 Technology Literacy
 Biology 3401 or 3501

## TOTAL BioSci HOURS

## TOTAL SEMESTER UNITS

- Core, specialization, and elective courses must total 32 semester units, and must include three laboratory courses.
- At least 25 of the 32 semester units must be courses in Biochemistry, Biology, EEOB, Microbiology, or Molecular Genetics, and courses outside these departments must be pre-approved by a Biology advisor.
- Electives must be at the 2000 level or above, except for Biology and Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.



## **Biology Major Checklist Bachelor of Arts Pre-Health Professions Specialization**

NAME	DATE	
SEMESTER OF GRADUATION		
General Education Requirements (32-39 credit hours	s)	
<ul> <li>General Education Requirements (32-39 credit hours</li> <li>GE Launch Seminar (1)</li> <li>Foundations: Writing and Information Literacy (3)</li> <li>Foundations: Mathematics &amp; Quantitative Reasoning / Data Analysis (3-5)</li> <li>Foundations: Literacy, Visual &amp; performing Arts (3)</li> <li>Foundations: Historical &amp; Cultural Studies (3)</li> <li>Foundations: Natural Sciences (4-5)</li> <li>Foundations: Social &amp; Behavioral Sciences (3)</li> <li>Foundations: Race, Ethnicity and Gender Diversity (3)</li> <li>Theme: Citizenship for a Diverse &amp; Just World (4-6)</li> </ul>	5) GENED 1201 	
<ul> <li>World Language (0-12)</li> </ul>		
GE Reflection (1)	GENED 4001	

## Required Arts & Sciences Courses (1-13 Credit Hours)

Arts & Sciences Survey (1)

□ World Language (0-12)

### Required Supporting Courses (32-49 credit hours)

### **Biology (Check 2 boxes)**

- □ Biology 1113.01 (4) or 1113.02 (5)\* or Biology 1111 (3) and 1112 (4)\*
- Biology 1114.01 (4) or 1114.02 (5)\*
- Substitution

\* Can be used to fulfill the GEN Foundation: Natural Sciences requirement

### Mathematics/Statistics (Check 1 box)

□ Math 1148 (4)\*\* – College Algebra AND Math 1149 (3) - Trigonometry, OR Math 1148 (4) and Stat 1450 (3), OR Math 1120 (5) AND 1121 (5) OR Math 1150 (5) \*\*- Pre-Calculus 

\_Substitution

\*\* Can be used to fulfill the GEN Foundation: MQR/DA requirement

### Physics (Check 1 box)

Physics 1200 (alg) or 1250 (calc) (5) OR 1248 (4) AND 1249 (3)

\_\_\_\_\_Substitution

† Courses within the major with a laboratory component

### Chemistry (Check 2 boxes)

- Chemistry 1206 (3) and 1208 (4)
- or 1210 or 1610 or 1910H (5)
- Chemistry 1220 or 1620 or 1920H (5)
- \_\_\_Substitution

## Organic Chemistry (Check 1 box)

- **Chemistry 2310 (4)**, OR 2510 AND 2520 (8) OR 2510 AND 2540 (6)
- Substitution □ Waived



## Biology Major Checklist Bachelor of Arts Pre-Health Professions Specialization

Core	e Course (4-5 credit hours) – I	Required (Check 1 bo	ох)		
	Biology 3401 (4) – Integrated Bio	logy		□ Biology 3501 (3) and 4901 (2)	
Pre-	Health Professions Specializa	ition (15-25 credit ho	ours	;)	
Requir	ed	Add	ditional Coursework (Check at least 4 boxes)		
IJ	Molgen 4500 (3) or 4606 (4)			EEOB 3310 or 3310.01 or 3310.02 <sup>+</sup> (4) – <i>Evolution</i>	
				Micro 4000 <sup>+</sup> or 4000.01 <sup>+</sup> or 4000.02 <sup>+</sup> (4) or 4100 (5	
				EEOB 3510 or MolGen 4700 or MolGen 5607 or	
				EEOB 3520 <sup>+</sup> (3) – <i>Microscopic Anatomy / Histology</i>	
				Anatomy 2300.01 <sup>+</sup> (4) or 3300.01 <sup>+</sup> (5)	
			_	or EEOB 2510 <sup>+</sup> (3) or 2511 <sup>+</sup> (4) – Human Anatomy	
				ELOB 45101 (3) – Comparative Vertebrate Anatomy Physio 3200 (5) or EEOB 2520 (3) – Human	
			3	Physiology or EEOB 4520 (3) Comparative Physiology	
				EEOB 3270 (3) or 3320 (3) or 3410 (4) or 3420 (4) or	
				4240 (3) – Ecology	
Electives					
Engle					
Emp	edded Literacies (no additio	nal credit nours)			
	Advanced Writing	Biology 3401 or 3501			
	Advanced Data Analytics	Biology 3401 or 3501			
IJ	Technology Literacy	Biology 3401 or 3501			
TOT	AL BioSci HOURS	тот	AL S	SEMESTER UNITS	
Notes:					
•	Core, specialization, and elective	courses must total 32 se	eme	ster units, and must include three laboratory	
•	tourses. At least 25 of the 32 semester un	its must be courses in B	lioch	emistry, Biology, FEOB, Microbiology, or Molecula	
	Genetics, and courses outside the	ese departments must b	be pr	e-approved by a Biology advisor.	

- Electives must be at the 2000 level or above, except for Biology and Biochemistry which must be at the 3000 level or above.
- Up to 3 credit hours of research, individual study, or internship may be counted toward the major and, with approval of a major advisor, may be counted as a laboratory course.
- Transfer credit allowed no more than one half of the credit hours required on the major.
- Honors versions of courses substitute freely.



## Appendix C: Advising sheet for the Biology Minor

**Biology Minor Checklist** 

NAME	DATE			
SEMESTER OF GRADUATION				
Required Supporting Courses (23-33 credit hours)				
Biology (Check 2 boxes)				
Biology 1113.01 (4) OR 1113.02 (5)	Substitution			
or Biology 1111 (3) and 1112 (4)	* Can be used to fulfill the GEN Foundation: Natural			
□ Biology 1114.01 (4) OR 1114.02 (5)*	Sciences requirement			
Mathematics/Statistics (Check 1 box)				
Math 1148 (4)** AND Math 1149 (3), OR Math	Substitution			
1148 (4)** AND STAT 1450 (3), OR Math 1150				
(5)**	** Can be used to fulfill the GEN Foundation: MQRM			
	requirement			
Chemistry (Lneck 2 boxes)				
Chemistry 1200 (3) AND 1208 (4), OK 1210, OK 1010,	OK 19101 (5)			
Substitution				
0				
Core Course (3-4 credit hours) – Required (Check 1 box)				
□ Biology 3401 (4) – Integrated Biology	Biology 3501 (3) – <i>Biological Skills</i>			
Biology Minor (6-8 credit hours)				
Additional Required Courses (Check 2 boxes)				
Biochem 4511 (4)	$\square$ EEOB 3410 (4) – Ecology			
EEOB 2510 <sup>+</sup> (3) or 2511 <sup>+</sup> (4) – Human Anatomy	Micro 4000 <sup>+</sup> or 4000.01 <sup>+</sup> or 4000.02 <sup>+</sup> (4)			
EEOB 2520 (3) – Human Physiology	MolGen 4500 (3)			
EEOB 3310 or 3310.01 or 3310.02 <sup>+</sup> (4) – Evolution				
Flectives				

- Core, required, and elective courses must total at least 15 semester units.
- 15 semester units must be courses in Biochemistry, Biology, EEOB, Microbiology, or Molecular Genetics, and courses outside these departments must be pre-approved by a Biology advisor.
- Electives must be at the 2000 level or above, except for Biology which must be at the 3000 level or above.
- Transfer credit is allowed no more than six of the credit hours required on the major.
- Honors versions of courses substitute freely.