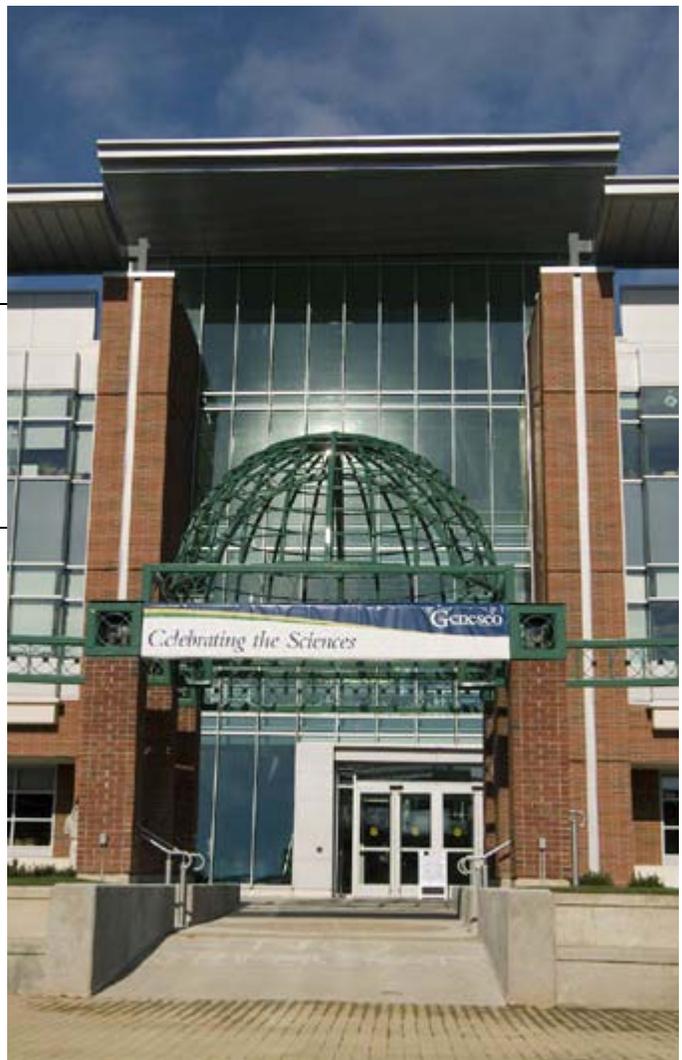


Biology Department SUNY Geneseo

Student Handbook



BIOLOGY DEPARTMENT STUDENT HANDBOOK

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Revised 10 October 2013

This guide is intended to inform students of the requirements of the Biology programs, some of the opportunities that are available, and the expectations of the faculty.

Our Educational Philosophy

The mission of the Biology Program is to provide students with a broad background in biology, which can be used as a solid foundation for various careers in the biological sciences and medicine. Students in the program gain an understanding of the basic principles of genetics, ecology, evolution, cell biology, anatomy and physiology. Students also gain skills in scientific decision-making, and in presenting scientific research in oral and written formats. We also want students to appreciate and value biological diversity and to leave the program with an increased sense of stewardship for the earth.

Our program is designed to ensure that our students leave Geneseo with the following skills:

1. Critical Thinking and Problem Solving

Students will have the knowledge base and intellectual (conceptual) framework to use reasoning and problem-solving skills to: (1) read critically; (2) evaluate support for competing hypotheses; and (3) critique experimental design.

2. Laboratory Inquiries and Technique

Students will have the laboratory and inquiry skills and technical ability to formulate hypotheses, design and run experiments using instruments to test their hypotheses, and analyze and interpret the results. They will be able to build on earlier work to design further experiments.

3. Communication

Students will be able to communicate biological ideas from literature or their own laboratory investigations to audiences of biologists and non-biologists in a variety of formats including written reports, poster and oral presentations.

4. Attitudes and Personal and Professional Development

Students will recognize the importance of scientific integrity and ethical research and applications of biology to science policy. They will be able to work independently and in teams for life long learning.

Content-Related Skills:

5. Students will be able to demonstrate a broad and diverse background in biology and related sciences and a strong foundation for graduate and professional programs of study or employment.

6. Students will recognize evolution as the central tenet of biology, which explains the unity and diversity of life and interrelatedness of levels of biological organization.

Degrees in Biology and Interdepartmental Majors

We offer two programs of study in Biology:

The Bachelor of Arts Degree in Biology is recommended for students preparing for secondary certification, dual majors or those planning to pursue graduate work outside of life sciences (e.g., law, M.B.A., psychology, public policy, or some areas of environmental studies). It is also recommended for students in accelerated programs such as the 3 + 3 Doctor of Physical Therapy.

The Bachelor of Science Degree in Biology is recommended for students preparing for graduate work in the biological sciences or veterinary school.

More discussion of the B.A. and B.S. degrees, including specific course requirements, is included on pages 5-12.

Interdepartmental Majors: In addition to the two degrees in Biology students can also choose between two other majors related to Biology.

The Bachelor of Science Degree in Biochemistry is an interdepartmental degree between Biology and Chemistry, which stresses basic science and analytical skills. Extensive laboratory experience is acquired making use of the modern instrumentation in both the Biology and Chemistry departments. Graduates of this program are well prepared for employment in the fields of Biochemistry, Biotechnology, Cell Biology, and Molecular Biology. The program also provides excellent preparation for the pursuit of advanced academic or professional degrees (<http://www.geneseo.edu/biochemistry/home>). The Program Coordinator for the Biochemistry Program is Dr. Ruel McKnight (Department of Chemistry).

The Bachelor of Science Degree in Biophysics is an interdepartmental degree between Biology and Physics. The program began in the early 1990's to prepare students for graduate programs at the interface of biology and physics. The program requirements expose students to basic techniques in biology, physics, and mathematics. Students completing this program typically go on to graduate programs in biology, physics, and medical school. More information can be found at <http://www.geneseo.edu/biophysics>. The Program Coordinator for the Biophysics Program is Dr. Gregg Hartvigsen.

Biology Academic Programs

The Biology Department offers two majors, a Bachelor of Arts (B.A.) Degree and a Bachelor of Science (B.S.) degree. The requirements of B.S. and B.A. degrees are not standardized across the U.S., meaning that one college might have substantially different requirements for a particular degree than another college or university. In general, B.S. degrees have more requirements and are more specialized than B.A. degrees, which consequently have greater opportunity for more intellectual exploration outside of a particular discipline. Some employers and graduate programs view the B.S. more favorably, as it is a more rigorous major. In particular, those considering medical or veterinary school, graduate programs in cell biology or biochemistry, or working in biotechnology should elect the B.S. degree. However, the B.A. degree is a better fit for many students, as described below.

The B.A. offers more flexibility than the B.S., and so can be a good choice for students seeking to develop knowledge and skills that fit his or her interests. Also, many employers and graduate program admissions committees look for 'well-rounded' students (a common phrase these days), and might prefer a B.A. to a B.S. In particular, the B.A. degree is useful for students thinking about a dual major, adolescent education, physician assistant programs, graduate programs outside of biology, or for any student who wants to 'customize' their program. Your academic advisor can give you advice on if the B.A. or B.S. is the best match for your career goals.

How does coursework for the B.A. and B.S. differ? Both require the same core biology courses (refer to pages 6-7). In terms of biology electives, the B.S. requires 19 Biology electives with 12 at the 300 level; whereas the B.A. requires 16 Biology electives with 5 credits at the 300 level. The B.A. also has different related requirements in science and math than the B.S. (refer to pages 6-7).

The college also offers a B.S. degree in Biochemistry. There is no Department of Biochemistry at SUNY Geneseo; the degree is administered through the cooperation of both the Biology and Chemistry Departments. Key differences between the B.S. in Biology and Biochemistry are that the Biochemistry degree requires Physical Chemistry (the calculus-based physics), a two-semester sequence in Biochemistry, and more laboratory courses; it also allows electives to be taken in both Biology and Chemistry (for the Biology degrees, electives can only be taken in Biology).

The college also offers a B.S. degree in Biophysics. There is no Department of Biophysics at SUNY Geneseo; the degree is administered through the cooperation of both the Biology and Physics Departments. Key differences between the B.S. in Biology and that in Biophysics are that the Biophysics degree requires four semesters of calculus-based physics, one semester of Biochemistry, one semester of Physical Chemistry and particular laboratory courses; it also allows electives to be taken in both Biology and Physics (for the Biology degrees, electives can only be taken in Biology).

Requirements for the Biology Degrees

(Note: These requirements are specific to the Biology major. All students must also satisfy the college-wide General Education requirements. See online bulletin for details: <http://www.geneseo.edu/bulletin>.)

B.S. Degree

Required Biology courses (Biology majors must take these specific courses):

116 (General Biology Laboratory), 117 (General Biology: Cells, Genetics, Evolution), 119 (General Biology: Diversity, Physiology, Ecology), 203 (Principles of Ecology), 222 (Principles of Genetics), 300 (Cell Biology)

Elective Biology courses (Electives are courses you 'elect' (i.e. choose) to take; choices include nearly all of the courses offered by the department above the 200 level except Biol 210 (Nutrition) and Biol 271 (Heredity))

19 hours of Biology **electives**, 200 level or higher. These elective hours must include:

- Twelve credits from courses at the 300 level or above, i.e. with a course number higher than 300.
- Four laboratory courses, one of which must be at the 300 level. Some courses (e.g. Ecology Laboratory, Biol 204) are solely laboratory, others have both lecture and laboratory components (e.g. Biol 264, Human Physiology), has three credits of lecture and one of lab. You can tell if a course has lab credits by looking at its description in the Bulletin (available online at <http://www.geneseo.edu/bulletin>). The numbers at the end of the description describe the total number of credits and the number of 'hours' of lecture and lab there are in a week of classes. In general one hour of lecture per week earns one credit hour and three hours of lab per week earn one credit hour. The designation 4 (3-3) describes a course earning four credits (the first number), three credits coming from lecture (because there are three lecture hours per week) and 1 credit from lab (because there are three lab hours per week). Using the same designation Ecology Lab, which only meets as a lab for 3 hours is listed as 1 (0-3) and Molecular Techniques is listed as 2 (0-6), two credits all from lab meeting 6 hours per week. Laboratory credits count towards elective hours.
- Note: A maximum of four credit hours can come from the following: Biol 299, Biol 395, Biol 399.

Required courses outside of Biology

- Math 221 (Calculus I) and either 222 (Calculus II) or 228 (Calculus II for Biologists)
- Chem 116 (Chemistry I), 118 (Chemistry II), 119 (Introductory Chemistry Lab – 1 semester, 2 credits); Chem 211 (Organic Chemistry I), 213 (Organic Chemistry II), 216 (Organic Chemistry Lab – 1 semester, 2 credits). [Alternatively, students with a strong background in chemistry may enroll in an accelerated chemistry lecture sequence (Chem 203, 204, 223, 224) which can be completed in 3 semesters instead of 4 (Chem 204 and 223 are half-semester courses taken in the spring semester).]
- Phys 113/114 (General Physics I/Physics I Lab) and 115/116 (General Physics II/Physics II Lab) **or** Phys 123/114 (Analytical Physics I/Physics I Lab) and 124/116 (Analytical Physics II/Physics II Lab) (Analytical Physics is calculus-based)
- One course from among the following: CSci 114, 119, 120, 141, 216, 230; Math 262, 361; Psyc 250; Biol 250 (Biol 250 credits cannot count both for this requirement and as Biology elective hours). Note: Few, if any, CSci courses will be available after Spring 2014.

B.A. Degree

Required Biology courses (Biology majors must take these specific courses):

116 (General Biology Lab), 117 (General Biology: Cells, Genetics, Evolution), 119 (General Biology: Diversity, Physiology, Ecology), 203 (Principles of Ecology), 222 (Principles of Genetics), 300 (Cell Biology)

Elective Biology courses (see the description in the BS requirements for definition of ‘Electives’)

16 hours of Biology **electives**, 200 level or higher. These elective hours must include:

- Five credits from courses at the 300 level or above, i.e. with a course number higher than 300.
- Three laboratory courses, one of which must be at the 300 level. (See the discussion in the BS requirements for how to find out whether a course counts as laboratory.)
- A maximum of four credit hours from the following: Biol 299, Biol 395, Biol 399.

Required courses outside of Biology

- Math 221 (Calculus I) and either 222 (Calculus II) or 228 (Calculus II for Biologists) **or** Math 112 (Precalculus) and 221 **or** Math 112 and 262 (Applied Statistics) **or** Math 221 and 262
- Chem 116 (Chemistry I), 118 (Chemistry II), 119 (Introductory Chemistry Lab – 1 semester, 2 credits), 211 (Organic Chemistry I), 213 (Organic Chemistry II), 216 (Organic Chemistry Lab – 1 semester, 2 credits) [Alternatively, students with a strong background in chemistry may enroll in an accelerated chemistry lecture sequence (Chem 203, 204, 223, 224) which can be completed in 3 semesters instead of 4 (Chem 204 and 223 are half-semester courses taken in the spring semester).]
- Phys 113/114 (General Physics I/Physics I Lab) and 115/116 (General Physics II/Physics II Lab) **or** Phys 123/114 (Analytical Physics I/Physics I Lab) and 125/116 (Analytical Physics II/Physics II Lab) **or** GSci 160 (Physical Geology) and 161 (Physical Geology Lab), and GSci 170 (Historical Geology) **or** Phys 113/114 and GSci 160/161

PreBiology Major Policy

Students entering Geneseo in the Fall of 2013 (either as incoming freshman or as transfer students) and students wishing to become Biology/Biochemistry majors in the Fall of 2013 or later are 'premajors' in Biology/Biochemistry. To be able to declare a major in Biology/Biochemistry premajors must first earn **at least a C+ average** (2.3 GPA) in their **first two required biology lecture** courses **taken at Geneseo**. For most students this would be BIOL 117 and 119. Students unsure of their readiness for college science may choose to start with BIOL 105/106 as a preparatory course before taking BIOL 117/119.

If students have credit for BIOL 117/119 (from an AP Biology score of 5 or from the transfer of college credits) the first two required courses (and the ones that will count in terms of advancing to the major) are BIOL 203 and 222 (for pre-Biology majors) or BIOL 222 and 300 (for pre-Biochemistry majors). Students with AP or college credit for BIOL 117/119 are **strongly encouraged** to talk with someone from the Biology Department before choosing courses. Pre-Biology students who have credit for 117, 119, 203 and 222 and pre-Biochemistry students with credit for 117, 119 and 222 will be evaluated on the basis solely of BIOL 300.

[Note: Although you can repeat courses if you withdraw or earn a D or E, you **cannot** repeat courses with a C- or C and earning these grades in a 'premajor course' makes it difficult to achieve a C+ average and to become a Biology/Biochemistry major. Students performing poorly as a PreBiology major may choose to withdraw from a required lecture course rather than earn a grade that will make it difficult to achieve a C+ average; however, this may make it difficult to graduate in eight semesters.]

Minimum Competence Requirements

To complete the degree a student must satisfy the requirements listed on pp. 9-12. In addition, students must satisfy the following:

- At least a C- grade in all required biology courses (BIOL 117, 119, 116, 203, 222, 300)
- At least a 2.0 average in all biology courses taken as part of the major
- At least a 2.0 average in all courses required for the major outside of biology (i.e. chemistry, math, physics/geology)

(Note: GPA calculations only include classes taken at Geneseo; if you take a required course at another institution to fulfill a requirement for the major, the grade earned there does not figure into your Geneseo GPA and thus might not help you raise your GPA to meet these standards. In addition, you can only repeat courses in which you earned a D and E. You cannot repeat a course in which you earned a C- or above just to improve your GPA.)

D and E Grades: A grade of E earns no credits and does not count towards the degree. A grade of D does count towards General Education requirements. Also, a D in a Biology elective does count towards your major. However, a grade of D in a biology course required for the major (Biol 116, 117, 119, 203, 222, 300), does NOT count towards the major. If you get a D or an E in a biology course required for the major you MUST retake the course the next semester that it is offered. If you do not, or if you do not obtain a C- or better the second time, you will not be allowed to graduate with a Biology degree. (See the PreMajor policy above for the GPA requirement to enter the Biology or Biochemistry majors.) Also note that a grade of D does not allow the course to satisfy as a prerequisite--e.g. Cell Biology (Biol 300) requires prior completion of Genetics (Biol 222); if you have a D in Genetics you will not be allowed to enroll in Cell Biology. This is also true of some related requirements outside of biology: for example, you must earn at least a C- in Chem 211 (Organic Chemistry I) to move on to Chem 213. Consult the online bulletin to find minimum grade requirements for prerequisites in departments other than Biology.

Waivers: In unusual circumstances, specific requirements for the biology major may be 'waived' (i.e. not required). An example would if a student has taken courses that do not transfer into Geneseo as a specific requirement, but the course is acceptable to the department as an alternative. Waiver forms can be obtained in the biology department office. If you are thinking about trying to obtain a waiver you should speak with your advisor; his or her support is generally required.

Sample program outline/advising guide for the B.A. in Biology

B. A. in Biology			
Sample Program Outline/Advising Guide			
FIRST YEAR			
Fall	Hours	Spring	Hours
BIOL 117	3	BIOL 119	3
CHEM 116	3	CHEM 118	3
BIOL 116 OR CHEM 119	2	CHEM 119 OR BIOL 116	2
MATH 112 OR MATH 221	4	MATH 221, 222 or 228, OR 262	3-4
INTD 105 OR other Gen Ed	3	INTD 105 OR other Gen Ed	3
Total	15	Total	14-15
SECOND YEAR			
BIOL 203 OR 222	3	BIOL 203 OR 222	3
CHEM 211	3	CHEM 213	3
CHEM 216 (fall or spring)	2	BIOL 200-level lab elective (fall or spring, recommended)	1
*PHYS 113/114 OR 123/114 OR GSCI 160/161	4	*PHYS 115/116 OR 125/116 OR GSCI 170	4
F/ OR S/U/ OR Foreign Language	3	F/ OR S/U/ OR Foreign Language	3
Total	15	Total	14
THIRD YEAR			
BIOL 300	3	BIOL elective	3
BIOL elective	3	BIOL elective	4
*HUMN 220	4	*HUMN 221	4
M/ OR F/ OR S/ Elective or Foreign Language	3	Electives or Gen Eds	6
Total	16	Total	17
FOURTH YEAR			
BIOL elective	3	BIOL elective	2
F/ OR S/ OR M/	3	F/ OR S/ OR M/	3
Electives	9	Electives	9
Total	15	Total	14
Total Credits — 120-121			
<p>Program notes: CHEM 119 and BIOL 116 are both 2-credit labs; generally students take one in the fall and one in the spring, in either order. Students typically take their mathematics courses in their freshman year, but this is not required. Several biology electives have BIOL 300 as a prerequisite, and BIOL 300 has BIOL 222 as a prerequisite. Consequently, putting off either of these courses beyond the above recommendations is not a good idea. Several 200-level biology laboratory courses are available to sophomores; taking a lab in the second year is recommended but not required. An alternative accelerated chemistry lecture sequence (CHEM 203, 204, 223, 224) completes general and organic chemistry in 3 semesters (204 and 223 are each half-semester courses) and might be appropriate for students with strong chemistry backgrounds.</p> <p>* HUMN 221/222 (or another Gen Ed) might be taken sophomore year instead of Physics/Geology.</p> <p>Electives in Biology: Sixteen credits must include (1) at least one biology laboratory course at the 300 level and at least two biology laboratory courses at the 200 level or above; and (2) at least five hours of biology at the 300 level or above.</p> <p><i>Note: Where no prerequisites apply, some variation in the order or semester in which courses are taken is possible. Students should consult their academic advisors for additional information.</i></p>			

The general education requirements of a foreign language (through the 201 level), two fine arts courses (F/), two social science courses (S/), a U.S. history course (U/), an other world civilizations course (M/), INTD 105, and HUMN 220/221 need to be completed for graduation. (The natural science (N/) and mathematics (R/) requirements are completed by the Biology major's related requirements in Chemistry, Physics/Geology, and Mathematics.)

Curriculum Guide Sheet for the B.A. in Biology

BACHELOR OF ARTS

BIOLOGY (0600)

Gen Education Requirements:

SUNY Gen Ed Requirements (GER)

Mathematics	R/ **	_____	3-4
Basic Com	INTD 105	_____	3
Nat Sci I Lec/Lab	N/	_____	3-4
Social Sciences	S/*	_____	3
American History	U/	_____	3
Other World Civ	M/**	_____	3
The Arts	F/*	_____	3

Geneseo Breadth Requirements:

Nat Sci II Lec/Lab	N/	_____	4
Social Science II	S/ *	_____	0-3
Fine Arts II	F/ *	_____	0-3
Humanities I	H/	_____	4
Humanities II	H/	_____	4
Foreign Lang	L/	_____	0-3
LANG 102	L/	_____	0-3
LANG 201	L	_____	0-3

TOTAL: 33-50

20-22 MAJOR (See notes on back)

Biol 116	_____	2
Biol 117	_____	3
Biol 119	_____	3
Biol 203	_____	3
Biol 222	_____	3
Biol 300	_____	3

Biol Electives

(16 credits including labs)
 -Five credits at the 300 level
 -Three laboratory courses at or above the 200 level with at least one at the 300 level.

_____ (300 level)

-Other Biology courses:

-Maximum of four credits from:
 BIOL 299, 395, 399

Related Requirements

Chem 116 or 203	_____	3
Chem 118 or 204	_____	3
Chem 119	_____	2
Chem 211, 213, 216 or		
Chem 223, 224, 216	_____	8
Math 112&262 or		
Math 112&221 or		
Math 221 & 222 or 228 or		
Math 221&262 R/	_____	7-8
Phys 113/114, 115/116, or		
Phys 123&114, 125&116, or		
GSci 160, 161, 170 or		
GSci 160, 161, Phys 113/114	_____	8

Biology Electives tally:

300 level _____ **5 credits (min)**

Total _____ **16 credits**

NOTES:

120 credits are required to graduate (69 credits must be non-Biology).

Optional Teaching

Certification-

See School of Education for information.

courses offered by major department may not be used to fulfill N/, S/, or F/areas

*may overlap with U/ and M/ requirements

**may overlap with courses offered by major department

courses from the Geneseo Breadth Requirements may be used to meet the 30-credit Gen Ed Requirement

Semester _____	Semester _____	Semester _____	Semester _____
Hrs	Hrs	Hrs	Hrs
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total	Total	Total	Total
_____	_____	_____	_____
Hrs	Hrs	Hrs	Hrs
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total	Total	Total	Total

Revised: 10/13

Total Semester Hours = 120

Sample program outline/advising guide for the B.S. in Biology

B. S. in Biology			
Sample Program Outline/Advising Guide			
FIRST YEAR			
Fall	Hours	Spring	Hours
BIOL 117	3	BIOL 119	3
CHEM 116	3	CHEM 118	3
BIOL 116 OR CHEM 119	2	CHEM 119 or BIOL 116	2
MATH 221	4	MATH 222 OR 228	4
INTD 105 OR other Gen Ed	3	INTD 105 OR other Gen Ed	3
Total	15	Total	15
SECOND YEAR			
BIOL 203 OR 222	3	BIOL 203 OR 222	3
CHEM 211	3	CHEM 213	3
CHEM 216 (fall or spring)	2	BIOL 200-level lab elective (fall or spring, recommended)	1
*PHYS 113/114 OR 123/114	4	*PHYS 115/116 OR 125/116	4
F/ OR S/U/ OR Foreign Language	3	MATH (262 OR 361) OR BIOL 250 OR PSYC 250 (or Gen Ed)	3
Total	15	Total	14
THIRD YEAR			
BIOL 300	3	BIOL elective	3
BIOL elective	3	BIOL elective	4
*HUMN 220	4	*HUMN 221	4
M/ OR F/ OR S/	3	Elective	3
Elective or Foreign Language	3	Elective or Foreign Language	3
Total	16	Total	17
FOURTH YEAR			
BIOL elective	4	BIOL elective	4
F/ OR S/ OR M/	3	F/ OR S/ OR M/	3
Electives	6-9	Electives	6-9
Total	13-16	Total	13-16
Total Credits — 120-121			
<p>Program notes: CHEM 119 and BIOL 116 are both 2-credit labs; generally students take one in the fall and one in the spring, in either order. Students typically take their mathematics courses in their freshman year, but this is not required. Several biology electives have BIOL 300 as a prerequisite, and BIOL 300 has BIOL 222 as a prerequisite. Consequently, putting off either of these courses beyond the above recommendations is not a good idea. Several 200-level biology laboratory courses are available to sophomores; taking a lab in the second year is recommended but not required. An alternative accelerated chemistry lecture sequence (CHEM 203, 204, 223, 224) completes general and organic chemistry in 3 semesters (204 and 223 are each half-semester courses) and might be appropriate for students with strong chemistry backgrounds.</p> <p>* HUMN 221/222 (or another Gen Ed) might be taken sophomore year instead of Physics.</p> <p>Electives in Biology: Nineteen credits must include (1) at least one biology laboratory course at the 300 level and at least three biology laboratory courses at the 200 level or above; and (2) at least twelve hours of biology at the 300 level or above.</p> <p><i>Note: Where no prerequisites apply, some variation in the order or semester in which courses are taken is possible. Students should consult their academic advisors for additional information.</i></p>			

The general education requirements of a foreign language (through the 201 level), two fine arts courses (F/), two social science courses (S/), a U.S. history course (U/), an other world civilizations course (M/), INTD 105, and HUMN 220/221 need to be completed for graduation. (The natural science (N/) and mathematics (R/) requirements are completed by the Biology major's related requirements in Chemistry, Physics, and Mathematics.)

Curriculum Guide Sheet for the B.S. in Biology

BACHELOR OF SCIENCE

Gen Education Requirements: 20-22

SUNY Gen Ed Requirements (GER)

Mathematics	R/ **	_____	3-4
Basic Com	INTD 105	_____	3
Nat Sci I Lec/Lab	N/	_____	3-4
Social Sciences	S/*	_____	3
American History	U/	_____	3
Other World Civ	M/**	_____	3
The Arts	F/*	_____	3

Geneseo Breadth Requirements: 21-23

Nat Sci II Lec/Lab	N/	_____	4
Social Science II	S/ *	_____	0-3
Fine Arts II	F/ *	_____	0-3
Humanities I	H/	_____	4
Humanities II	H/	_____	4
Foreign Lang	L/	_____	0-3
LANG 102	L/	_____	0-3
LANG 201	L	_____	0-3

TOTAL: 33-50

MAJOR (See notes on back)

Biol 116	_____	2
Biol 117	_____	3
Biol 119	_____	3
Biol 203	_____	3
Biol 222	_____	3
Biol 300	_____	3

Biology Electives (19 credits with at least 12 credits at 300 level)

-Four laboratory courses at or above the 200 level with at least one at the 300 level.

_____ (300 level)

-Other Biology courses:

-Maximum of four credits from:
BIOL 299, 395, 399

Biology Electives tally:

300 level _____ 12 credits (min)

Total _____ 19 credits

BIOLOGY (0600)

Related Requirements

Chem 116 & 118 or	_____	6
Chem 203 & 204	_____	6
Chem 119	_____	2
Chem 211, 213, 216 or	_____	8
Chem 223, 224, 216	_____	8
Math 221 R/	_____	4
Math 222 or 228	_____	4
Phys 113/114, 115/116	_____	8

OR

Phys 123/114,
125/116 _____ 8

One of the following:

(Tool requirement)

Biol 250; CSci 114, 119, 120,
CSci 141, 216, 230; Math 262,
361; or Psyc 250

_____ 3-4

(Note: Few, if any, CSci courses will be available after Fall 2013)

NOTES:

120 credits are required to graduate (69 credits must be non-Biology).

courses offered by major department may not be used to fulfill N/, S/, or F/areas

*may overlap with U/ and M/ requirements

**may overlap with courses offered by major department

courses from the Geneseo Breadth Requirements may be used to meet the 30-credit Gen Ed Requirement

Semester _____	Semester _____	Semester _____	Semester _____
Hrs	Hrs	Hrs	Hrs
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total _____	Total _____	Total _____	Total _____

Semester _____	Semester _____	Semester _____	Semester _____
Hrs	Hrs	Hrs	Hrs
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Total _____	Total _____	Total _____	Total _____

Revised: 10/13

Total Semester Hours = 120

Statement of Professional Behavior Expectations

These are specific guidelines for professional behavior that students should follow.

Academic Responsibilities:

- Plan your academic program to fulfill all degree requirements, with assistance from your faculty advisor as needed.
- Enrich your academic program by actively seeking assistance from appropriate College resources regarding opportunities for internships, minors, study abroad, work experience, etc.
- Develop your interpersonal skills
- Advance your career prospects by actively seeking information about employment, graduate school, and job search strategies available from Career Services.
- Get to know one or more of the faculty well enough that they can provide a meaningful reference for you.

General Student Behavior:

- Be respectful of faculty and other students - exhibit “good citizen behavior” regularly.
- Visit faculty during their office hours – these are posted outside their office and on the course syllabus. If you can’t make their office hours, contact faculty by email to try to arrange a time that is convenient for both of you.
- Don’t interrupt conversations already in progress, even if you just have a “quick question” for someone.
- Wait until you are welcomed into a faculty office - don’t just walk in assuming they can see you right then.
- If you schedule an appointment with a faculty member, be there on time. If something arises so that you will be late or miss the appointment, email/call the faculty member and let them know.
- It is always appropriate to address faculty members as Professor _____. It may be considered rude to call faculty by their surname alone or by their first name only. Do so only with explicit permission.
- Some people may be offended by dress that is too casual for the classroom. Respect individual instructor’s positions on this issue and dress accordingly.

Email Behavior:

- Set up your email so that your name is conveyed with the message, not just your email address. In addition, you should usually identify (in the subject line or in the message) the class that you are in--faculty sometimes are teaching several large classes and may not know which class a student is in, especially early in the semester.
- Use the ‘subject’ line to identify what the email is about--some mail filters label messages as spam if they have no subject. Some faculty may give you directions as to what they want in the subject line to aid in their sorting of emails.
- Check your email daily - important information from instructors and the Biology Department may be conveyed only via email.
- Email should not be used to ask questions to which you can find the answer by reading the syllabus, the student guidebook, the undergraduate bulletin, etc.
- In general, if you miss a class it is **NOT** appropriate to email to find out what you missed or what assignments were given, etc. Coming to class is your duty and if you fail to do so you should not burden the instructor when trying to assess what you missed--the exception to this is illness.
- Email is an asynchronous communication method (the participants are not communicating at the same time) and should not be used for discussions that are better held using a synchronous communication method.

- Appreciate that email is not always reliable--faculty computers crash, emails are sometimes mis-addressed, or spam filters sometimes remove messages for unforeseen reasons. If you don't get a response to an important email, **try a different communication method.**
- Email should have the appropriate tone for your audience - don't use slang or profanity when emailing a faculty member - you are not "IMing" your friends.

Classroom Behavior:

- Attend all classes; be on time and prepared to participate.
- Be attentive for the entire class period - don't fall asleep, study for another class, or "pack up" before the instructor dismisses the class.
- Make an active contribution to each class.
- Complete all exams, papers, and projects on time.
- Utilize the instructor as a resource for learning.
- Do not have side conversations with classmates.
- Do not leave the room during class - bring whatever you need with you.
- Turn off your cell phone before class starts.
- If you are using a computer in a class, restrict your use to the class work. Do not email, IM, surf the web, play games, etc.
- If you miss a class, take responsibility for it - don't ask the instructor "did you do anything?" Don't expect the instructor to "repeat" the lecture for you in her office.
- The course syllabus contains important information - keep it handy and refer to it before asking the instructor for information that is provided in the syllabus.
- Understand that each instructor may have different classroom policies. If the instructor has a stated policy (for example on make-up exams, or late assignments) respect that policy and don't expect an exception.
- Anticipate and make allowances for computer problems. A printer "dying" the morning that an assignment is due may not be deemed to be an acceptable excuse for the assignment being late.
- If you are uncertain about the material being covered in a class – ask questions! There is a good chance other students have the same question and many of you will benefit from hearing the answer.
- Take personal responsibility for your academic progress. Don't wait until just before an exam to start studying or ask the instructor for extra help.

Laboratory Behavior:

- Attend all laboratory sessions; they meet less frequently than lectures and consequently missing one is proportionately more significant than missing one lecture. Some faculty give E's if students miss 'only' one laboratory session
- Treat equipment with respect; if you don't know how to use it properly ask your instructor
- Wear appropriate clothing; some faculty require lab coats to be worn. Some labs work with chemicals where shorts and sandals are NOT appropriate. Many faculty and fellow students do not appreciate exposed bare skin and underwear.
- Watch your language!!! Profanity may sound 'hip' to you but many faculty don't appreciate it and think less of those that use it; gossiping about others also may be viewed as a very poor reflection on your character. Letters of recommendation do NOT just discuss academic characteristics!
- Work effectively in a group, most of the labs require it
- Make an active contribution to each laboratory.

Academic Policies of the Biology Department

ACADEMIC DISHONESTY

Students are expected to be aware of and to obey the College policies concerning academic dishonesty. Any alleged cheating and/or plagiarism may be dealt with by the School as a **disciplinary** problem in accord with College policies as stated in the Bulletin. Be especially aware that academic honesty includes putting your name on a group project that you did not contribute to and turning in lab reports where material has been copied from reports from previous semesters' classes. Group members beware--if your name is on a project you need to be sure that the work is authentic and properly referenced; you are responsible if one of the group has plagiarized material. The faculty of the School will take all necessary steps to deter academic dishonesty, all cases of which will be reported to the Dean of the School for possible disposition as a College disciplinary matter.

ADVISEMENT AND REGISTRATION PROCEDURES

Advisement is **required** for: 1) all **freshmen**, 2) any student who at the start of the semester had a **cumulative GPA of 2.3 or less** or who is on **academic probation**, and 3) all **transfer students** during their first semester at Geneseo. Advisement is **encouraged** for all students.

All students are assigned a faculty advisor and may consult with him/her before pre-registration. While every attempt is made to maintain faculty advisor assignments for students, sabbaticals and personnel changes may necessitate a new advisor assignment.

Students will receive pre-registration information via email (check your email daily!!!). Students for whom advisement is required must schedule an advisement appointment. Please sign up for an appointment with your advisor – do not expect to just “walk-in” to your advisor’s office. Faculty are required to post a sign-up sheet outside their door or to provide some other means of scheduling appointments (e.g., Google Calendar). Please do not email your advisor to schedule an appointment during the academic advisement period – use the sign-up sheet or follow the instructions of your advisor for setting up a time. Students who are required to go to advisement need to see their advisor in order to get the registration hold removed before they will be allowed to register.

Students should come prepared to their advisement appointment with a desired schedule of courses for the upcoming semester.

All students must complete a Pre-graduation check (referred to as a CAPP report) prior to registering for their senior year. The Assistant Dean normally completes these forms after the completion of 70 credits. Students must review and sign the Pre-graduation check prior to advisement acknowledging their degree status. Students are notified by e-mail when to sign-up for an appointment with their advisor when it is time to complete this process.

Prerequisites: A number of Biology courses have prerequisites (courses that must be taken before a particular course) or co-requisites (courses that need to be taken before or at the same time as a particular course). Pre- and co- requisites are listed in the course descriptions in the bulletin and students will NOT be permitted to register for such courses unless the prerequisites are met. If the prerequisite course is a transfer course or from AP credit it is important to make sure that Geneseo has acquired the credits; otherwise you will not be able to register. In some instances pre- or co-requisites can be waived at the discretion of the instructor.

If you are thinking that you might do this be sure to check with the instructor before registration because you need to have paperwork filled out in order to register and classes do fill up.

Closed classes: Biology classes often fill up. In some instances additional positions are added throughout the registration process, as demand requires. In other instances a new section of the course will be added (i.e. a different instructor, time, room). In some instances the instructor will keep a 'waiting list' and in some instances once a course is filled no accommodation can be made. When you talk to your advisor, they may be able tell you how likely it is for slots in a course to be available at the time a student is registering.

APPLICATION FOR PERMISSION TO TAKE COURSES AT OTHER COLLEGES

Students who desire to take courses required for the Biology major from other colleges should first check the 'Transfer Articulation' page available on Knightweb. On that page you can check to see if the course you want to take is already considered equivalent to a particular course at Geneseo. If this is the case, complete a Course Approval Form and bring it to appropriate department (the department in which the course is normally offered, e.g., Mathematics Department if you want the course to count as Math 222). But if the course you wish to take does not already have an equivalent course at Geneseo and you want it to count towards your degree, then you need have the course approved by the appropriate department. Be sure to do this before taking the course, or you may end up taking (and paying for) for a course that does not suit your needs. Take the Course Approval Form and a course description (i.e. from that college's Bulletin) to the appropriate department. That department will advise you of its decision and, if approved, forward the form to the records office.

WRITING REQUIREMENTS IN UPPER LEVEL COURSES

The college has a writing requirement that has been passed on to the departments. For the Biology Department the requirement consists of completing laboratory and upper level courses that include writing. If significant deficiencies in writing skills are detected a student may be required to take specific courses or to develop their writing skills using aid that is available on campus.

EMAIL

All Geneseo students should have an e-mail account. The Biology Department maintains an email list of all biology students and frequently sends important information to students via e-mail.

Some Helpful Hints

DO

- read the undergraduate bulletin for policies and procedures
- be prepared when you talk with your advisor; gather as much information as you can before your appointment
- see your advisor early and often in your academic career
- check your advisor's office hours and registration sign-up sheets when making an appointment

DON'T

- wait until the day before registration to seek advisement
- expect your advisor to give you a specific instructor recommendation for a course that you are interested in taking
- expect your advisor to know the answer to every possible question; he/she may need to get information from another office on campus

Everything you wanted to know about advisement but were afraid to ask...

1. What is an academic advisor?

An academic advisor is a Biology faculty member who has been assigned to help **YOU** with your academic career while at Geneseo. You can expect that your advisor will help you to plan your semester class schedule and answer your questions about degree requirements. Your advisor can answer questions about graduate school and careers. But remember **YOU** must seek this assistance – your advisor is not going to know when you have questions.

2. How are academic advisors assigned?

Advisors are assigned in the fall of the freshman year or when students elect the biology major. To the extent possible we try to match student interests to faculty advisors (e.g. students interested in dentistry go to Dr. O'Donnell), but this is not always possible.

3. When should I see my academic advisor?

Any time you have a question related to courses, prerequisites, requirements, etc. Many students make an appointment with their advisor prior to registration for the next semester – just to check to make sure that they are taking the appropriate courses for their major. But don't restrict your visits to your advisor to just this time – your advisor is a good person from whom to seek help with other kinds of academic-related questions.

4. How can I change my academic advisor?

Decide which Biology faculty member you would like to have as your advisor. Obtain a note from that faculty member indicating that he/she will accept you as an advisee. Bring that note to Yvonne in the Biology Department Office.

5. When should a student withdraw from a class?

It sometimes is a hard decision to make, but if the deadline for withdrawal is approaching and if you have a grade of D or E you should at least consider the option of withdrawing.

The reason for withdrawing is that a grade of D or E is damaging to your record. It is especially damaging if you are trying to transfer to a program that has GPA requirements, such as the School of Education or the School of Business. Not withdrawing is a reasonable decision **ONLY** if you have some reason to think that you can do significantly better before the end of the semester, especially if your grade is now an E. Wanting/hoping to do better is not enough; you need to have a particular reason why your performance will improve--e.g. you are studying **much** more than you did at the start of the semester; you had emotional or health problems at the start of the semester that are now resolved. Although one might hope that your grade will improve dramatically, that is rarely the case. Historically, most students do NOT change their grade substantially at the end of the semester.

Withdrawals do not look good on your record, but in almost all circumstances they are preferable to an E; hence the choice between an E and W is obvious. A 'D' grade does give you credits for the class but it damages your GPA and it does NOT allow the course to serve as a prerequisite for additional biology courses. In the case of Biol 117 and 119, a D grade will count for natural science core (assuming you switch you major outside of biology) but **ONLY** if you complete the laboratory course, Biol 116. Therefore, we suggest that you talk with

your academic advisor to determine if withdrawing from the course might be in your best interest. If you withdraw, you would have a "W" on your transcript but would have no grade in the course to affect your GPA. This is important if you need a certain GPA to get into a different major or a graduate/professional school in the future. Note that withdrawing from a course may result in dropping below the 12 credits needed to maintain full-time status at the college and could have consequences for financial aid or insurance coverage; consult with the Office of Financial Aid if you are dropping below 12 hours.

Individuals who receive a grade of D or E are allowed to take the course a second time (assuming space allows), and the higher of the two grades is used in your GPA calculations (but only within the Geneseo GPA). Applications to professional schools may average the two grades rather than take the higher grade. But even here, our experience shows that many individuals who retake the course do not do better in the second try and end up wasting 3 credits that could have been used towards their graduation requirements.

Note: While you may be able to satisfy a requirement for a course for which you received a D or E by taking it at another college, the grade you earn in that class will **not** count toward your GPA at Geneseo, and thus your GPA will still be negatively affected by the D or E you earned at Geneseo.

With this in mind, as the withdrawal deadline approaches consider the following:

- If you have an 'E' grade it rarely makes sense to stay in the course.
- If you have a 'D' grade you might stay in the course if you have a good reason to think that your grade will improve. To help you make the decision whether to stay in the course or withdraw you should speak with the instructor(s) to find out how close to a 'C-' grade you are and speak with your advisor about the advisability of staying in the course.

How to withdraw from a course: You can withdraw from a course online using KnightWeb. Make sure to consult the academic calendar to determine the deadline for withdrawing from a course. On KnightWeb, choose "Student Menu" and then select "Registration." Select "Add/Drop/Withdraw Classes" and read the text to make sure you understand the consequences of withdrawing from the course, particularly if you drop below 12 credit hours. Choose the class you wish to withdraw from and select "Web Course Withdrawal," and then select "Submit Changes at the bottom of the page.

6. How do I change majors?

It is very easy to change majors. Forms can be obtained in departmental offices. They need to be signed by the chair of the department for your new major. After filling out the form, you need to obtain your folder, which is either with your advisor or with the departmental secretary. Then deliver the form and the folder to the office of your new major. If you are switching between a B.S. and a B.A. all you need to do is inform the Biology Department secretary and fill out the change of major form.

7. I am interested in going into education, to graduate school, to medical school, etc....Who can help me?

Again, your assigned academic advisor will very likely be able to provide you with the basic information on preparing for most schools. Again, **YOU** must seek this assistance. Some faculty members specialize in providing advisement for particular professional and graduate programs. See pp. 18-20 for these specialty area advisors and general requirements for different programs.

Requirements for Professional Programs, Secondary Education Certification, and Graduate Study

(rev. 6/20/2013)

Pre-dentistry (based on the requirements of SUNY-Buffalo where a 3/4 program is available). Advisor: Dr. O'Donnell

1 Year Biology	1 Year Physics
2 Years of Chemistry, General and Organic	1 Year English

Pre-medical (based on the requirements of most medical schools, some variation, in areas of Mathematics and English). A 3/4 program between Geneseo and the New York College of Osteopathic Medicine.

Advisors: Drs. J. Ballard, J. Boiani, G. Briggs, R. O'Donnell and W. Pogozelski

1 Year Biology	1 Year Physics
2 Years of Chemistry, General and Organic	1 Semester Calculus
1 Year English	1 Semester Statistics

2015 MCATs will require the following additions: 1 semester of Intro Biochemistry, 1 semester of Intro Psychology and 1 semester of Intro Sociology

Pre-optometry (based on the requirements of SUNY-Optometry where a 3/4 program is available). Advisor: Dr. O'Donnell

1 Year Biology	1 Year Physics
2 Years of Chemistry, General and Organic	1 Semester Calculus
1 Semester Statistics	1 Year English
1 Year Social Science	1 Semester Psychology

Pre-podiatry (minimum requirements). Advisor: Dr. O'Donnell

1 Year Biology	1 Year Physics
2 Years of Chemistry, General and Organic	1 Year English

Pre-Chiropractic (based on the requirements for NY Chiropractic College, tends to vary for each school). Advisor: Dr. Lewis

1 Year Biology	1 Semester of Psychology
15 credits of Humanities/Social Science	6 credits of English/communications
2 Years of Chemistry, General and Organic	1 Year Physics

Pre-Pharmacy (based on the requirements of SUNY-Buffalo, tends to vary for each school). Advisor: Dr. Militello

1 Year Biology	1 Semester General Physics
2 Semesters of Calculus	1 Semester of statistical methods
2 Years of Chemistry, General and Organic	1 Year of anatomy/physiology
1 Semester of Microbiology	1 semester of Biochemistry (effective 2012)

In addition, 2 semesters of Writing Skills and one course in social behavioral science

Pre-Physician Assistant (minimum requirements, tends to vary for each school; most schools require health care experience, some up to 2000 hours). Advisor: Dr. O'Donnell

1 Year Biology	1 Year Humanities/Social science
1 Year of Chemistry	1 Semester Psychology
1 Year English	1 Semester Statistics or College Level Math

Microbiology and Human Anatomy/Human Physiology are required by many schools

Pre-Physical Therapy (based on the general requirements for the Entry-Level Doctor of Physical Therapy at SUNY Upstate, tends to vary for each school). The requirements at Upstate include a baccalaureate degree from an accredited college or university including completion of 40 credits of prerequisite course work, first aid and CPR certification, GRE scores and volunteer and work experience in physical therapy of no less than 80 hours. Advisor: Dr. Lewis

General Biology I with laboratory (5 hours)

Human Anatomy and Human Physiology with laboratories (8 hours)

General Physics I and II with laboratories (8 hours)

General Chemistry I and II with laboratories (8 hours)

English (composition recommended) (3 hours)

Statistics (3 hours)

Psychology (Child Psychology **or** Developmental Psychology recommended) (3 hours) Social Science (3 hours)

Individual school requirements may vary from those listed above and students should go to the websites of their schools of interest for a complete listing of prerequisites. To see a complete list of accredited schools offering DPT degrees go to www.apta.org.

Geneseo and Upstate have an established 3+3 program. Please note that SUNY Upstate presently only accepts applications to this program from students in their senior year of high school. The advantage of 3+3 is that it allows a student to complete both an undergraduate and a doctoral degree in six years rather than seven years. The 3+3 **DPT** program requires three years at Geneseo and three years of study at Upstate. Students transfer to Upstate after three years of college. The first year at Upstate in the **DPT** program will count for both the fourth year of undergraduate and the first year of graduate study. Upon completion of their first year at Upstate, students receive a Bachelor's Degree in Biology from Geneseo. Upon successful completion of an additional two years at Upstate in the entry level **DPT** program, students will be awarded a **DPT** degree from SUNY Upstate Medical University. **Advisor: Dr. Lewis**

Pre-Nursing. Advisor: Dr. Lewis

The prerequisites for *most* Bachelors in Nursing (BSN) Programs are:

1 semester Human Anatomy

1 semester Human Physiology

1 semester Microbiology

2 semesters General Chemistry with lab.

1 semester Nutrition

INTD 105 or similar 1 semester of English

1 semester of Hum I or similar Literature course 1 Semester of Statistics

Intro. to Psychology

Human Growth and Development or Developmental Psychology covering the lifespan*.

* SUNY Geneseo does not offer a Human Growth and Development or Developmental Psychology course but does offer the equivalent in 3 courses: Psyc 215, Child; Psyc 216 Adolescent; and Psyc 217 Adult Development and Aging. Psyc 100 is a prerequisite for all of these courses.

In addition to these prerequisites you will be required to take the general biology, Biol 117 and 119 and the general biology laboratory, Biol 116. There are other requirements depending on whether you are a biology major or in another major which will be necessary to finish in order to fulfill those majors. Some nursing schools do require additional prerequisites and should be investigated individually. See the following site for a list of accredited programs: <http://www.nursingschoolsearch.com/%20>

Please subscribe to the Prehealth listserver, which will keep you updated on important meetings, seminars and dates regarding professional school applications.

To log on to the prehealth listserver go to the following site: <http://mail.geneseo.edu/mailman/listinfo/prehealth-l>

There also is a website with useful information at the following address: <http://www.geneseo.edu/premed>

Pre-Veterinary (based on the requirements for College of Veterinary Medicine at Cornell University, tends to vary for each school, but extensive experience working with animals is essential in the selection process (>1000 hours and the hours must include both large and small animal veterinary settings)).

Advisor: Dr. Muench

1 Year Biology	1 Year Physics
2 Years of Chemistry, General and Organic	1 Semester of Microbiology with a lab
Biochemistry, either Biochemistry I and II or Elementary Biochemistry (seek advisor input)	
2 Semesters of English composition or 1 semester of composition and 1 semester of oral communication	

Biology/Secondary Education Students complete either a **B.A.** or **B.S.** in Biology and the coursework for initial certification in Adolescence Education. Students follow the sequence of courses listed for the biology major. In the spring of their freshmen or sophomore year (if they plan to student teach in their ninth semester) students apply for admission to the School of Education. Admission requires that students have a cumulative G.P.A. of 2.75 and 15 hours of approved service learning. Students planning on student teaching in the ninth semester follow the same course sequence listed in the Adolescence Education advising guide but a year later. Note, once you begin the education courses the sequence should not be interrupted. **Advisors: Dr. Lovett and Dr. Spear**

Graduate Study. Advisor: Dr. Hannam

Requirements vary for each program and specialty. Dr. Hannam typically runs a series of workshops in the fall semester to help students prepare for applying to graduate school. It can be helpful to speak to professors that have training in the field that you are considering for graduate school (faculty areas of expertise are listed on page 28). For many graduate schools it is recommended that you contact faculty members whose research programs interest you to find out if they are accepting students. The support of a potential advisor in the department of interest may be essential for your acceptance to some graduate programs.

Here are a few websites (among many in existence) that provide advice for applying to graduate school:

<http://www.biology.pitt.edu/undergraduate/careers-postgraduate-education/gradu> (primarily for ecology and evolutionary biology, but general information for all)

<http://polaris.gseis.ucla.edu/pagre/grad-school.html> (general advice about writing statements, contacting faculty, choosing programs)

Career Opportunities in Biology

Visit the website of the American Institute of Biological Sciences at <http://www.aibs.org/careers/> or the website of the Society for Integrative and Comparative Biology at <http://www.sicb.org/careers/>.

Special Academic Programs

INTERNSHIPS

Dr. Isidro Bosch is the Biology Department internship coordinator
(http://www.geneseo.edu/biology/internships_research)

The Internship Program provides upper-division students at SUNY Geneseo with an opportunity to gain meaningful field experience with public and private companies and agencies. Qualified students supplement classroom learning with first-hand experience in professional settings that are appropriate for their academic background and career objectives. We expect that the student will gain from the experience, and that the intern will be of assistance to the sponsoring agency.

Admissions Requirements and Procedures

The following minimum requirements establish eligibility for admission to the Internship Program:

1. Normally Junior or Senior class standing (may include selected sophomores).
2. A **cumulative GPA of 2.75 and a 3.0 in major prerequisite courses** (exceptions may be made at the discretion of the Department Chair.)
3. Submission to departmental internship coordinator or other departmental representative of application form, current resume, and latest unofficial transcript. Recommendations may be required, forms will be provided.
4. An interview with the departmental internship coordinator or other departmental representative may be required.
5. Students who are accepted into a departmental internship program will need to work with a faculty advisor and the onsite supervisor to develop specific guidelines for the internship. These guidelines must be included on a contract form to be completed before the work begins.
6. Any student who secures an outside position for which she/he hopes to receive college internship credit must meet the above requirements and must complete all paperwork before the internship begins. **Internship credit cannot be arranged after the work is underway.**

Registration and Credit

- Students cannot register for the Internship Program by themselves. The student and faculty director will fill out a contract form. Registration for the internship is completed by the departmental coordinator (or other departmental representative) the first week of classes, upon receipt of the internship contract.
- Failure to complete all requirements for the internship will lead to an incomplete or an Unsatisfactory grade to be given by the faculty director.
- Internship credits will be counted as part of the maximum semester hours allowed within a Department.
- The maximum number of internship credits which may be applied toward requirements in the major will be six credits or less, as determined by the major department. The maximum number of internship credits allowed in a minor will be three credits, unless the internship is a specified requirement in the minor.
- **The maximum number of internship credits allowed for the degree is 15.**
- We encourage students to register for no more than 16 hours (including the internship) during a semester in which they are doing an internship.

- The intern will be enrolled in either Biol 395 or INTD 395 depending on the nature of the internship and the discretion of the advisor and internship coordinator. The student can earn a total of 1-15 credits according to the contact hour chart listed below.

Number of Credits	Minimum hours work required for semester Divide into a weekly schedule
1	37.5
2	75
3	113
4	150
6	225
9	338
12	450
15	563

(1 credit = minimum of 37.5 hours of work)

Requirements and Evaluation

- The specific field duties and responsibilities of the intern will be agreed to by the intern coordinator, faculty director, field supervisor, and the intern, and will be outlined in the internship contract.
- Interns should understand that their field performance will be evaluated by their field supervisor and that unsatisfactory performance may result in the field supervisor's terminating the field placement.
- Student interns shall keep confidential any information designated by the sponsor as privileged. The course grade will be determined by specific academic requirements that are appropriate to the field placement, and are established by the faculty director. The requirements may differ slightly from department to department, but will generally include the following:
 1. A written/graphical report outlining and describing the nature of the internship project, problems encountered, methodology employed, and conclusions from the project.
 2. An oral report on the internship project and experience.
 3. Work experience evaluation by the field supervisor, to include attendance.
 4. Seminar/academic requirements (as determined by the department).

Students interested in obtaining more information on completing an internship in their major should contact their departmental internship coordinator or department chairperson. Any student may also contact the College Internship Coordinator, Erwin 106, for further information.

STUDY ABROAD PROGRAMS

There are various ways to pursue a study abroad program. Several courses offered by our department and other departments are carried out off campus and some internationally. These are 2 to 4 week courses and, when offered, will be advertised by the department. In addition, several biology majors have pursued semester or year-long study abroad programs offered by other institutions that will accommodate study in at a foreign institution and provide you with credits that will transfer back to SUNY Geneseo to help you fulfill your degree requirements. These include places such as South Africa, Australia and New Zealand. The best way to find out about these programs is to visit with someone at the Office of International Programs.

RESEARCH OPPORTUNITIES

Doing research in collaboration with faculty in the biology department can be a rewarding endeavor and provide valuable experience, especially for students planning to go on to graduate school in the biological sciences.

If you are interested in doing research in the biology department, here are the steps we recommend you take:

1. It's best to begin investigating research opportunities during your sophomore year and begin the research during your junior year. You, of course, can begin earlier or later!
2. Decide whether you really want to commit to doing research. Research is generally rewarding and challenging. Taking Biol 281 (available only in the Fall semester) may help you in your decision as to whether to do research. This course (or a significant summer research experience) is a prerequisite if you plan to "**graduate with Biology honors**" by completing two semesters of Biol 393 (Honors Thesis), which involves performing research, writing a thesis that is approved by a faculty committee, and giving an oral presentation of your work at G.R.E.A.T. Day.
3. Determine which professor appears to be the best qualified person to supervise **you** and **your** research. Start with the information provided by faculty members. Talk to them in person or begin your search by browsing [faculty websites](#), reading research posters in the halls of the ISC, or examining the list of faculty research interests on page 28. Talking to students in these labs also is really helpful.
4. Determine whether there is room for you in the faculty member's lab. It's possible there is no room. If you are hardworking and have demonstrated the ability to work independently, you may have better luck. Note that some professors have ongoing projects with which students are involved, while other professors support students doing fully independent projects. Sometimes there are both going on at the same time.
5. Arrange a time to meet with the professor to discuss research opportunities. Offer to provide an informal research plan or proposal. A research plan (no more than one page) will help convince the professor you are serious about research (it will likely be modified later). This might be best based on what other students have done in that professor's lab. Check the [professor's website](#) to refine your ideas.
6. Plan to **complete your research project** by presenting the work on G.R.E.A.T Day or at a professional conference and/or publish your results in a scientific journal.

A few more tips: Often professors do not have a lot of time during the academic year to train students in research techniques. If you want to work in a particular professor's lab, you might consider taking courses that will give you experience using the necessary methods. Ask a professor for recommendations. If you can volunteer to work with a professor over the summer when he or she has more time to train you, you may have a better chance of being able to join a research lab. There are also opportunities to apply for fellowships that provide a stipend for student researchers over the summer. For information on how you can apply for summer funding as well as funding for supplies during the academic year, see this website: http://www.geneseo.edu/sponsored_research/undergrad_research.

Summer research opportunities can also be found at local or regional institutions (e.g., University of Rochester, SUNY Upstate Medical Center) as well as across the country (e.g., Research Experiences for Undergraduate sites funded by the National Science Foundation, http://www.nsf.gov/crssprgm/reu/reu_search.cfm).

Biology Department Awards

Guy Bailey Award for the Outstanding Biology Graduate

1. Nominees will be selected from among the graduating seniors with the highest GPA for coursework in Biology.
2. In addition to the Biology GPA consideration will be given to:
 - a. election of biology coursework beyond the minimum required for the major,
 - b. strong performance in coursework in other sciences and mathematics beyond the minimum required for the major,
 - c. evidence of professional activity; such as, independent research either local or in a summer research program, presentation(s) at the local, regional or national level, publication(s).

Robert A. Greene Service Award

1. Nominees should be active participants and contributors to the Biology student clubs.
2. Nominees should participate in and contribute to departmental activities and functions; e.g. student representative to departmental committees, trips, mixers, service projects, etc.
3. There is no minimum GPA requirement for nomination for the Greene Service Award.

Nominations can come from either faculty or the student organizations of the department.

Leadership Award

1. Nominees should have a strong GPA in their Biology coursework since they serve as role models for other students in the major.
2. Nominees should have served as officers in biology or campus organizations.
3. Nominees should have served the department as ULAs or ULIs.
4. Nominees may have demonstrated their leadership in other ways.

Nominations can come from either faculty or students of the department.

Lawrence J. King Plant Science Award

1. Nominees should have plans for a post-graduate career in the plant sciences.
2. Nominees should show evidence of their interest and ability in the plant sciences. This would include the number of plant based courses they have taken, the grades earned in those courses and any independent research in the plant sciences.

Nominations can come from any faculty or student (self nominations are acceptable).

Herman Forest Gaia Award (*The Herman Forest Environmental Science Award*)

Qualifications: Nominees should be a Biology/Biochemistry major or a Biology minor.

1. Nominees should have plans for a post-graduate career in environmental science or management.
2. Nominees should show evidence of their interest in environmental science and management.
 - a. This should include projects/research done here that relate to environmental issues.
 - b. This may include their performance and number of courses that they have taken in ecological and environmental-related courses in biology or other departments.
 - c. This may include their activity in campus environmentally related clubs.
3. Seniors will have preference.

A. Henry Latorella Genetics Award

Qualification: Nominees should be a Biology or Biochemistry major.

1. Nominees should have plans for a post-graduate career in genetics related fields.
2. Nominees should show evidence of their interest and ability in genetics. This includes the number of genetics related courses that they have taken, the grades earned in those courses and any independent research in the related field.
3. Seniors will have preference.

Nominations may come from the nomination committee or students may self-nominate.

Dr. Mark Diamond Memorial Research Awards (Oral Presentation and Poster Presentation)

Qualification: Nominees should be a Biology major selected on the basis of his/her independent research project by Biology faculty. Supported by contribution from friends of Dr. Mark Diamond.

Jane and Arch Reid Endowed Scholarship

Qualification: Nominees must be a Biology major with Adolescent Ed certification pursuing a career as a biology teacher. Selection is made by the Biology Department. Endowed by Mrs. Jane Reid and her husband, the late Emeritus Professor Dr. Archibald Reid.

Dr. Lucien A. Potenza Memorial Scholarship

Qualifications: Nominees must be a senior student planning to attend medical school, in recognition of his/her outstanding academic achievement, leadership, and community service. The fund is supported by colleagues, family, and friends.

Donald Michael Brown Science Scholarship

Qualifications: Nominees must be a pre-vet Science major (Biology, Chemistry, Biochemistry) showing academic promise/success and demonstrating financial need. Awarded through a faculty nomination process and selection by the head of the three departments. Supported by an endowment established by Audrey Embling (1966) and her husband, Rev. Dr. Clyde H. Embling, in memory of their son-in-law who was a student at SUNY Geneseo with plans to pursue a degree in veterinary science.

See the most recent recipients of the Biology Department's awards here: http://www.geneseo.edu/biology/latest_award_recipients

Biology Student Organizations

TriBeta (Lambda Kappa Chapter) - Faculty Advisor: Dr. Jan Lovett

TriBeta is a national biology honors society that is “dedicated to improving the understanding and appreciation of biological study and extending boundaries of human knowledge through scientific research.” TriBeta holds annual local and national research conferences, has a scholarly publication (BIOS), and also offers various awards to support and recognize undergraduate research. Members of our chapter attend the Northeast TriBeta conference, held each spring. Biology and Biochemistry majors with 11 credits of biology courses, a GPA in biology of 3.0, and an overall GPA of 2.7 are eligible for membership.

<http://www.geneseo.edu/tribeta>

The Biology Club - Faculty Advisor: Dr. Jani Lewis

The mission of the Biology Club is to “give all students interested in biology and related sciences an opportunity to increase their knowledge and enjoyment of these subjects, and to promote a greater appreciation of these subjects within the college community.” The Biology Club also hosts social events to increase student-faculty interaction. Any SUNY Geneseo student majoring in biology or biochemistry is eligible for membership.

<http://knightlink.geneseo.edu/organization/biologyclub>

http://www.geneseo.edu/biology_club

Pre-Vet Club – Faculty Advisor: Dr. Susan Bandoni-Meunch

Aids students interested in the field of veterinary medicine by providing information and support for application to a veterinary college; as well as informational seminars to gain knowledge in the field.

<http://knightlink.geneseo.edu/organization/prevetclub/about>

Pre-Dental Club – Faculty Advisor: Dr. Robert O’Donnell

The purpose of this club is to unite students with an interest in dental medicine to create a more enriching undergraduate experience.

<https://knightlink.geneseo.edu/organization/predentalclub/about>

FACULTY/STAFF DIRECTORY - Biology Department

Faculty or Staff Member	Office	Phone	Email	Area of Expertise	Courses Taught
Apple, Jennifer (Jenny)	ISC 258	5442	applej	Ecology, Molecular Ecology	Biol 203, 204, 327
Bailey, Travis	ISC 350	5437	baileyt	Cell and Developmental Biology	Biol 300, 354
Bosch, Isidro (Sid)	ISC 260	5303	bosch	Invertebrate Biology	Biol 241, 312, 314
Briggs, Cindy	ISC 139	5808	briggsc	Entomology	Biol 210, 271, 345
Briggs, George Biology Department Chair	ISC 332A	5307 *4301	briggs	Plant Physiology	Biol 215, 311, 361
Chang, Ming-Mei	ISC 352	5416	chang	Plant Molecular Biology	Biol 300, 304, 390
Clinton, Regina	ISC 139	6051	clinton	Agriculture, Plant Biology	Biol 116, 117, 119, 204
Feissner, Robert	ISC 332B	5022	feissner	Microbiology, Plant Biology	Biol 116, 399 (Undergraduate Lab Instruction)
Hannam, Kristina	ISC 259	5790	hannam	Animal Behavior, Conservation Biology	Biol 305, 338, 339
Hartvigsen, Gregg	ISC 360	5448	hartvig	Ecology, Modeling	Biol 203, 250, 340
Haynie, John	ISC 351	5306	haynie	Development	Biol 222, 223, 354
Holtzman, David	ISC 139	6050	holtzman	Vertebrate Biology, Neuroscience	Biol 207, 208, 242, 338, 339, 388 (Neural Dev't)
Hoops, Harold	ISC 353	5378	hoops	Cell Biology	Biol 117, 300, 301, 378, 391
Hutchison, Elizabeth (Betsy)	ISC 356	5038	hutchison	Microbiology	Biol 222, 230
Lewis, Jani	ISC 354	5310	lewisj	Cancer Biology	Biol 117, 264, 300, 335
Lovett, Janice	ISC 349	5413	lovett	Genetics	Biol 222, 223, 322

Faculty or Staff Member	Office	Phone	Email	Area of Expertise	Courses Taught
McPherson, Duane	ISC 255	5302	mcperso	Animal Physiology	Biol 364, 375, 394
Militello, Kevin	ISC 357	5312	militello	Genetics	Biol 117, 222, 392
Muench, Susan Bandoni	ISC 257	5309	bandoni	Evolution and Parasitology	Biol 117, 119, 235, 306, 342
O'Donnell, Robert	ISC 355	5313	odonnell	Cancer Biology	Biol 117, 119, 330, 334
Simon, Robert	ISC 358	5279	simon	Microbiology	Biol 105, 106, 230
Spear, Ray	ISC 256	5311	spear	Paleoecology	Biol 117, 119, 204, 376
Spicka, Edwin	ISC 359	5634	spicka	Human Anatomy	Biol 103, 207, and 208
SUPPORT STAFF					
Beary, Edward	ISC 016	5304	beary		
Mehlenbacher, Yvonne	ISC 332	5301 *4305	yvonnem		
Reho, Tom	ISC 113	5632	reho		Biol 104, 399 (Undergraduate Lab Instruction)
Reynolds, Cheryll	ISC 332	5301 *4303	reynoldc		

NOTE: * indicates internal campus number only Off-campus prefix for all other numbers is 245-