

BIOLOGICAL SCIENCES DEPARTMENT MAJOR

Course requirements for all students majoring in **BIOLOGY**

<u>Required Courses</u>	<u>Hours</u>
Biology 121 General Biology	4
Biology 122 Introductory Zoology	4
Biology 123 General Botany	4
AASG 190 First Year Experience, Fall quarter (the hour does not count in the major)	1
Biology 195 (the hour does not count in the major), Winter quarter	1
1- "Capstone Experience" BIOL 494 - The Senior Test and Seminar	1
1 - Molecular/Cellular course BIOL 217 Intro to Mol. Biol. <u>OR</u> BIOL 351 Cell Biol. <u>OR</u> BIOL 210 Intro. Genetics	4
1 - Physiology/Anatomy content course BIOL 310 Plant Physiology, <u>OR</u> BIOL 308 Plant Anatomy, <u>OR</u> BIOL 231 Anatomy-Physiology, BIOL 301 Embryology, <u>OR</u> BIOL 302 Human Anatomy, <u>OR</u> BIOL 324 Medical Physiology 1 (All must include a lab component).	4
1 - Systematics/Evolution course BIOL 204 Systematic Plant Survey BIOL 223 Invertebrate Zoology, <u>OR</u> 2 - of the following: BIOL 363 Ornithology , BIOL 364 Herpetology, BIOL 368 Ichthyology, BIOL 490 Mammalogy.	4
1 - Field Biology/Ecology course BIOL 213 Natural History <u>OR</u> BIOL 251 Ecology, <u>OR</u> BIOL 271 Marine Biology	4

29 Quarter Hours and an
additional 16-18 hours of Electives
(Total Biology Quarter Hours must
Total 47 not counting Biology 195)

Electives Available

Any course listed under the departmental offerings in the catalog except Biology 238, 240, 241, 242, 243, 245, and 280.

Dual majors (biology and pharmacy) and transfer students from pharmacy may use either microbiology 311 or 313 course and pharmacy immunology course as electives in their biology major.

Each student is expected to annually join to a professional organization pertinent to their field of study or interest and be able to show evidence of this membership. See the bulletin board outside the department office or your advisor for information.

Only 7 hours from Biology 481 or 497 may count toward the 47 required hours in the major. The additional hours from these courses may count as towards graduation hours in the B.S.

Total quarter hours required = 47

Cognates - at least 25 hours are required for the B.S. degree.

Cognates are courses in chemistry, physics, mathematics, computer science and may include specific earth science and other courses taught in the College of Engineering and Pharmacy as approved by this department. Kinesiology may be used as a cognate with the permission of the biological sciences department.

B. S. (Biology) cognate requirements: 1 year of chemistry and 1 additional course in the non-biological sciences (additional chemistry, math, physics, geology), 1 year of math (the level 120 or above) and one course in computer science (ABUS 201 or TECH 139). Any of these hours over 25 can be applied to the B.S. additional science requirement below.

B. S. (Biology) additional science requirement: 20 quarter hours of science electives and/or biology (grade of C or better in biology courses). (These are in addition to the 25 above).

Additional Requirements:

AASG 300 Job and Graduate School Search Techniques

2.00 minimum cumulative GPA in all biology courses taken.

OHIO NORTHERN UNIVERSITY
Department of Biological Sciences
Required and/or Recommended Curriculum for Biology Majors (B.S.)

Course offerings are not always necessarily taught in the quarters listed below.

FIRST YEAR:

AASG 190 1 st Yr Experience	2	BIOL 122 General Zoology	4	BIOL 123 General Botany	4
BIOL 121 General Biology	4	ENGL 111 Writing 2	4	AHPE – Wellness	1
CHEM 100 Chemistry 1 or CHEM 171 Intro Chemistry 1	4- 5	CHEM 114 Chemistry of Life or CHEM 172 Intro Chemistry 2	4 - 5	CHEM 115 Environ. Chem or CHEM 173 Intro Chemistry 3	4 – 5
MATH 120 College Algebra or MATH 154 Calc for Life Sci 1	4	MATH 122 College Trigonometry or MATH 155 Calc for Life Sci 2 or STAT 156 Biostatistics 1	4	COMM 211 Public Speaking or COMM 225 Interpersonal Comm	4
ENGL 110 Writing 1	4	BIOL 195 Orientation	1	STAT 256 Biostatistics 2	4
	18-		17		17-
	19		18		18

Each student must belong to a professional organization pertinent to their field of study and be able to show evidence of such membership. See bulletin board for applications.

SECOND YEAR:

* BIOL 204 Sys Plant Survey or BIOL 223 Invertebrate Zoology or 2 Courses listed on page 1	4	Religion	4	Biology Elective	4
HIST 110 Western Civ 1	4	HIST 111 Western Civ 2	4	Science Elective	4
AHPE – Fitness	1	Biology Elective	4	ENGL 204 Great Works	4
Science Elective	4	Science Elective	4	* Anatomy/Physiology	4
General Elective	4				
	17		16		16

During the fall quarter of the third year, students must apply for a “Summary of Unfulfilled Requirements” from the Dean’s office, in Duke’s Bldg. Rm 207.

THIRD YEAR:

Biology Elective	4	Science Elective	4	Biology Elective	4
Biology Elective	4	General Elective	4	General Elective	4
TECH 139 Intro Infor Sys or ABUS 201 Comp Apps for Bus	4	1 – cell/molecular course	4	General Elective	4
General Elective	4	Social Science	4	Social Science	4
AHPE – Life Skills	1	AASG 300 Job/Grad School Search	1		
	17		17		16

An Application for Graduation must be filed with the Registrar two quarters prior to graduation date.

FOURTH YEAR:

Non-Western Culture	4	Biology Elective	4	General Elective	4
BIOL 494 Senior Test & Seminar	1	Fine Arts	4	Biology Elective	4
1-field course (BIOL 213, 251 or 271)	4	Biology Elective	4	General Elective	4
General Elective	4	General Elective	4	General Elective	4
General Elective	4	Philosophy 238 or 240	4		
	17		16		16

For a list of the biology electives please refer back to your Course Catalog * Refer to page 1 for course selection.

05.15.09

* Each student is expected to annually belong to a professional organization pertinent to their field of study or interest and be able to show evidence of this membership. See the bulletin board or your advisor for information.

Required Biology Core Courses. One anatomy/physiology content course, one systematics course, one field biology course, and one molecular-cellular course are also required. BIOL 494 is required as your capstone experience. See catalog of entry for specific and acceptable courses to meet these core requirements.

After the completion of Biology 121, 122, and 123 the sequence of Biology courses may be altered as long as prerequisites are met.

Virology 462 offered in the Pharmacy College may be taken as a Biology elective. Biochemistry 341 and 342 in the Pharmacy College may be used as a cognate or in the additional twenty science hours for the B.S.

Dual majors in pharmacy and biology and transfer students from pharmacy may use medical microbiology 312 and the Pharmacy immunology course in the biology major requirement of 47 hours. **Biology majors may not.**

Math 163, 261, and 262 are recommended for those students with a strong high school math background.

Chemistry 171, 172, and 173 are recommended along with Organic Chemistry for those contemplating graduate study.

A total of 182 quarter hours is required for graduation.

5.15.09

CHECKLIST OF REQUIRED and/or RECOMMENDED CURRICULUM
FOR
BIOLOGY

	ENGL 110 Writing 1		BIOL 195 Orientation
	ENGL 111 Writing 2		BIOL 121 General Biology
	ENGL 204 Great Works		BIOL 122 General Zoology
	Religion		BIOL 123 General Botany
	COMM 211 Public Speaking or COMM 225 Interpersonal Comm		One Systematics/Evolution Course: BIOL 204 Systematic Plant Survey or BIOL 223 Invertebrate Zoology
	Fine Arts		
	HIST 110 Western Civilization 1		OR Two of the following:
	HIST 111 Western Civilization 2		BIOL 363 Ornithology
	Social Science		BIOL 364 Herpetology
	Social Science		BIOL 368 Ichthyology
	Philosophy 238 or 240		BIOL 490 Mammalogy
	CHEM 100 Chemistry 1 or CHEM 171 Intro Chemistry 1		One Molecular/Cell Course above 100: BIOL 210 Intro Genetics BIOL 217 Intro Molecular Biology BIOL 351 Cell Biology
	CHEM 114 Chemistry of Life or CHEM 172 Intro Chemistry 2		One Physiology/Anatomy Course*: BIOL 231 Anatomy/Physiology or BIOL 301 Embryology or BIOL 302 Human Anatomy or BIOL 308 Plant Anatomy or BIOL 310 Plant Physiology or BIOL 324 Medical Physiology *All must include a lab component
	CHEM 115 Environmental Chemistry or CHEM 173 Intro Chemistry 3		One Field Biology/Ecology Course: BIOL 213 Natural History or BIOL 251 Ecology or BIOL 271 Marine Biology
	MATH 120 College Algebra or MATH 154 Calculus for Life Sciences 1		
	MATH 122 College Trigonometry or MATH 155 Calc for Life Sciences 2		One "Capstone Experience: BIOL 494 The Senior Test and Seminar
	STAT 156 Biostatistics 1		
	STAT 256 Biostatistics 2		
	Non-Western Culture		Biology Elective
			Biology Elective
	AHPE – Wellness		Biology Elective
	AHPE – Fitness		Biology Elective
	AHPE – Life Skills		Biology Elective
	General Elective		
	General Elective		Science Elective
	General Elective		Science Elective
	General Elective		Science Elective
	General Elective		Science Elective
	General Elective		
			TECH 139 Intro Information Systems or ABUS 201 Computer Apps for Business
	AASG 190 1 ST Year Experience		
			AASG 300 Job/Grad School Search Tech