



UNIVERSITY OF MINNESOTA – COLLEGE OF BIOLOGICAL SCIENCES



BIOCHEMISTRY MAJOR

REQUIREMENT	SEMESTER COURSE	COMMENTS	<input checked="" type="checkbox"/>
Freshman Writing Requirement	Writ 1301 or 1401		<input type="checkbox"/>
Writing Intensive Requirement	4 Writing intensive courses; at least two must be 3xxx or above including one in the major		<input type="checkbox"/>
LIBERAL EDUCATION REQUIREMENTS: Biological, Physical Sciences and Mathematical Thinking satisfied by major requirements.			
History and Social Sciences – at least 6 credits in the social sciences	Historical Perspective (at least 3 credits)		<input type="checkbox"/>
	Social Sciences		<input type="checkbox"/>
	Social Sciences		<input type="checkbox"/>
Arts and Humanities – at least 6 credits in the arts and humanities with one course from each group	Literature		<input type="checkbox"/>
	Other Humanities		<input type="checkbox"/>
Designated Themes – At least 3 credits in each area	Citizenship and Public Ethics		<input type="checkbox"/>
	Cultural Diversity		<input type="checkbox"/>
	Environment		<input type="checkbox"/>
	International Perspectives		<input type="checkbox"/>
MAJOR REQUIREMENTS:			
Quantitative and Physical Sciences			
Quantitative Requirement:	Math 1271 and Math 1272		<input type="checkbox"/>
General Chemistry	Chem 1021		<input type="checkbox"/>
	Chem 1022		<input type="checkbox"/>
Organic Chemistry	Chem 2301		<input type="checkbox"/>
	Chem 2302		<input type="checkbox"/>
	Chem 2311 (Laboratory)		<input type="checkbox"/>
Physical Chemistry: Choose one track	BioC 4521 or Chem 3501 and 3502		<input type="checkbox"/>
Physics: Choose one track	Phys 1201W and Phys 1202W or Phys 1301W and Phys 1302W		<input type="checkbox"/>

GENERAL BIOLOGY			
General Biology	Biol 2002 and 2003/2004		<input type="checkbox"/>
BIOLOGY CORE:			
One course from attached list: Courses used in this area cannot be used to complete other major requirements.	See next page for list of courses		<input type="checkbox"/>
Genetics	Biol 4003		<input type="checkbox"/>
Cell Biology	Biol 4004		<input type="checkbox"/>
MAJOR REQUIREMENTS:			
Biochemistry Seminar	BioC 3960		<input type="checkbox"/>
Biochemistry Sequence	BioC 4331 and 4332		<input type="checkbox"/>
Biochemistry Lab	BioC 4025		<input type="checkbox"/>
MAJOR ELECTIVES: 6 additional upper division credits in biochemistry or biological sciences including at least one upper division laboratory course. (Lab course listing on next page.)	Lab/Field Course – see next page for list of courses		<input type="checkbox"/>
	Additional upper division course work		<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
Additional electives to reach 120 credits for the degree	All students need 120 credits to graduate, so additional credits may be needed. Many students have room for electives such as languages, prerequisites for professional school programs and graduate school, additional courses in the major, more research, courses that apply toward double majors or minors, or courses for personal enrichment.		<input type="checkbox"/>

BIOCHEMISTRY MAJOR CHECKLIST 5.08.07

Additional Core Course: Course used to complete this requirement cannot be used to meet other major requirements. *****Preferred course is MicB 3301**

<u>Course Number</u>	<u>Course Name</u>	<u>fall (f) or spring (s) or summer (ss)</u>
Biol 3211 + 2005**	Animal Physiology and Animal Diversity Lab (4 cr)	f, s, summer
Biol 3002 + 3005W	Plant Biology: Function Lecture and Lab (4 cr)	s
Biol 3007W	Plant Biology: Diversity and Adaptation (4 cr)	f
Biol 3407/3408W/3807	Ecology: (f), Writing Intensive (s), Itasca (ss) (3 cr)	f, s, ss
Biol 3409	Evolution (3 cr)	f
Biol 3411/ 3811	Introduction to Animal Behavior (3 cr)/Itasca	s, ss
MicB 3301***	Biology of Microorganisms (5 cr)	f,s
Phsl 3051 + Biol 2005**	Human Physiology and Animal Diversity Lab (5 cr)	f,s
Phsl 3061 + Biol 2005**	Principles of Physiology and Animal Diversity Lab (5cr)	f,s

* **Course offerings are subject to change**

Lab/Field Courses: Includes 3xxx level or higher courses offered at the Lake Itasca Forestry and Biological Station with an x8xx designation. Course used to complete this requirement cannot be used to meet other major requirements.

BioC 4125	Laboratory in Molecular Biology and Biotechnology (3 cr)	s, May session
BioC 4994/4794W*	Directed Research (minimum 2 cr)	all terms
Biol 3211 + 2005**	Animal Physiology and Animal Diversity Lab (4 cr)	f,s
Biol 3002 + 3005W	Plant Biology: Function Lecture and Lab (4 cr)	s
Biol 3007W	Plant Biology: Diversity and Adaptation (4 cr)	f
EEB 4014W	Ecology of Vegetation (3 cr)	f
EEB 4016W	Ecological Biogeography (3 cr)	s
EEB 4129	Mammalogy (4 cr)	f
EEB 4134	Introduction to Ornithology (4 cr)	s
FW 3136	Ichthyology (3 cr)	s
EEB 4607	Plankton Ecology (4 cr)	s
EEB 4994/4794W*	Directed Research (minimum 2 cr)	all terms
EEB 5605	Limnology Lab (2 cr)	s
GCD 4015	Genetics Lab (2 cr)	s
GCD 4025	Cell Biology Lab (2 cr)	s
GCD 4111	Histology (4 cr)	s
GCD 4994/4794W*	Directed Research (minimum 2 cr)	all terms
MicB 3301	Biology of Microorganisms (5 cr)	f,s
MicB 4215	Microbial Physiology and Diversity (3 cr)	f
MicB 4235	Virology, Immunology and Microbial Genetics (3 cr)	s
MicB 4994/4794W*	Directed Research (minimum 2 cr)	all terms
NSci 4994/4794W*	Directed Research (minimum 2 cr)	all terms
PBio 4321	Taxonomy of Minnesota Flora (3 cr)	f
PBio 4404	Developmental Plant Anatomy (3 cr)	s
PBio 4511	Flowering Plant Systematics (3 cr)	s
PBio 5416	Plant Morphology, Development, and Evolution (4 cr)	rarely offered
PBio 4994/4794W*	Directed Research (minimum 2 cr)	all terms
Phsl 3051+Biol 2005**	Human Physiology and Animal Diversity Lab (5 cr)	f,s
Phsl 3061+Biol 2005**	Principles of Physiology and Animal Diversity Lab (5cr)	f,s

*To apply a Directed Research course toward the upper division lab requirement, students must complete at least 2 credits under the 4794W or 4994 course numbers. A maximum of 6 credits of Directed Research can be used toward upper division major electives.

**Students can only use credit from one of Biol 3211, PHSL 3051, or PHSL 3061 toward major requirements.