Genetics

Curriculum in Genetics - Requirements

In addition to basic degree requirements listed in the Curricula in Liberal Arts and Sciences, genetics majors must satisfy the following requirements:

1.

BIOL 211	Principles of Biology I	3
BIOL 211L	Principles of Biology Laboratory I	1
BIOL 212	Principles of Biology II	3
BIOL 212L	Principles of Biology Laboratory II	1
BIOL 313	Principles of Genetics	3
BIOL 313L	Genetics Laboratory	1
BIOL 314	Principles of Molecular Cell Biology	3
BIOL 315	Biological Evolution	3
MICRO 302	Biology of Microorganisms	3

2.

GEN 110	Genetics Orientation	1
GEN 409	Molecular Genetics	3
GEN 410	Analytical Genetics	3
GEN 491	Undergraduate Seminar	1
GEN 462	Evolutionary Genetics	3
or EEOB 563	Molecular Phylogenetics	

3. Eleven credits of calculus and Statistics including at least one course in each.

4. Three years of chemistry and biochemistry.

5. Eight credits of general college physics.

6. Six additional credits of biological science support electives chosen from an approved list.

7. Majors in the college of Liberal Arts ans Sciences must take one course that involves both humanities and biology such as history of science or bioethics. This course may also count toward a college group requirement. A list of acceptable courses is available from the program office.

The minor is genetics may be earned by completing:

GEN 313	Principles of Genetics	3
GEN 313L	Genetics Laboratory	1
BIOL 314	Principles of Molecular Cell Biology	3
GEN 409	Molecular Genetics	3
GEN 410	Analytical Genetics	3
and a minimum of two additional credits in Genetics at the 300 level or above. At least nine of these credits must be used only to fulfill the requirement of the minor.		

A Genetics major may not double major or minor in Biology.

Curriculum in Genetics - Undergraduate Study

Undergraduate study in genetics is jointly administered by the Department of Biochemistry, Biophysics, and Molecular Biology; the Department of Genetics, Development, and Cell Biology; and the Department of Ecology, Evolution, and Organismal Biology.

Total Degree Requirements: 120 cr.

Only 65 cr. from a two-year institution may apply which may include up to 16 technical cr.; 9 P-NP cr of free electives; 2.00 minimum GPA.

International Perspective: 3 cr.

U.S. Diversity: 3 cr

Communication/Library:

With a C or better:

ENGL 150	Critical Thinking and Communication	3
ENGL 250	Written, Oral, Visual, and Electronic Composition	3
LIB 160	Information Literacy	1
Total Credits		7

Advanced English writing from department-approved list: 3 cr.

Choose 3 credits from the following:

ENGL 302	Business Communication	3
ENGL 303	Free-Lance Writing for Popular Magazines	3
ENGL 304	Creative Writing--Fiction	3
ENGL 305	Creative Writing--Nonfiction	3
ENGL 306	Creative Writing--Poetry	3
ENGL 309	Report and Proposal Writing	3
ENGL 310	Rhetorical Analysis	3
ENGL 312	Biological Communication	3
ENGL 313	Rhetorical Website Design	3
ENGL 314	Technical Communication	3
ENGL 315	Creative Writing--Screenplays	3
ENGL 316	Creative Writing--Playwriting	3
JL MC 347	Science Communication	3

Humanities and Social Sciences: 21 cr.

Humanities *		12
Social Science		9

*3 cr of Humanities from Science/Humanities Bridge course from department-approved list

Life Sciences: 6 cr.

BIOL 211	Principles of Biology I	3
Approved Life Sciences course		3

Mathematical Sciences: 11-12 cr

Complete at least one calculus course from MATH, minimum of 4 credits.		4
MATH 160	Survey of Calculus	
MATH 165	Calculus I	
MATH 181	Calculus and Mathematical Modeling for the Life Sciences I	
Complete at least one course from STAT, minimum of 3 credits.		3-4
STAT 101	Principles of Statistics	
STAT 104	Introduction to Statistics	
Complete one additional course from MATH or STAT, minimum of 4 credits.		4
MATH 166	Calculus II	
MATH 182	Calculus and Mathematical Modeling for the Life Sciences II	
STAT 401	Statistical Methods for Research Workers	

Supporting Sciences 31-32 cr.

CHEM 177	General Chemistry I	4
CHEM 177L	Laboratory in General Chemistry I	1
CHEM 178	General Chemistry II	3
CHEM 178L	Laboratory in College Chemistry II	1
CHEM 331	Organic Chemistry I	3
CHEM 331L	Laboratory in Organic Chemistry I	1
CHEM 332	Organic Chemistry II	3
CHEM 332L	Laboratory in Organic Chemistry II	1
PHYS 111	General Physics	5
or PHYS 221	Introduction to Classical Physics I	
PHYS 112	General Physics	5
or PHYS 222	Introduction to Classical Physics II	
Choose one of the following options		6-7
Option 1		
BBMB 404	Biochemistry I	
Choose one of the following:		
BBMB 405	Biochemistry II	
BBMB 411	Techniques in Biochemical Research	
CHEM 211 & 211L	Quantitative and Environmental Analysis and Quantitative and Environmental Analysis Laboratory	

CHEM 325	Chemical Thermodynamics	
Option 2		
BBMB 420	Physiological Chemistry	
Choose one of the following:		
BBMB 411	Techniques in Biochemical Research	
CHEM 211 & 211L	Quantitative and Environmental Analysis and Quantitative and Environmental Analysis Laboratory	
CHEM 325	Chemical Thermodynamics	
Total Credits		33-34

Genetics and Life Sciences 32 cr.

GEN 110	Genetics Orientation	1
BIOL 211	Principles of Biology I	3
BIOL 211L	Principles of Biology Laboratory I	1
BIOL 212	Principles of Biology II	3
BIOL 212L	Principles of Biology Laboratory II	1
MICRO 302	Biology of Microorganisms	3
GEN 313	Principles of Genetics	3
GEN 313L	Genetics Laboratory	1
BIOL 314	Principles of Molecular Cell Biology	3
BIOL 315	Biological Evolution	3
GEN 409	Molecular Genetics	3
GEN 410	Analytical Genetics	3
GEN 462	Evolutionary Genetics	3
or EEOB 563	Molecular Phylogenetics	
GEN 491	Undergraduate Seminar	1
Total Credits		32

Advanced Science Electives: 6 cr.

C- minimum grade; 6 cr. of advanced electives from approved department list.