

**CHECKLIST for B.S. in GENETICS**

updated 4/14/17

<b>University Discovery and Inquiry Requirements<sup>1</sup></b>			
<b>Course</b>	<b>Semester</b>	<b>Credits</b>	<b>Grade</b>
Writing ENGL 401 (WI) First-Year Writing <sup>2</sup>		4	
Quant. Reasoning MATH 424B Calculus		4	
Biological Science BIOL 411 Biology		4	
Physical Science PHYS 401 Physics		4	
Environ., Technol. & Society			
Fine & Performing Arts			
Historical Perspectives			
Humanities			
Social Science			
World Cultures			
Capstone			
capstone experiences for seniors include approved coursework, research projects (GEN 795 or 799), 790 teaching experience, internship, etc. - see <a href="http://genetics.unh.edu">genetics.unh.edu</a>			

<b>University Writing Intensive Requirements</b>			
<b>Course</b>	<b>Semester</b>	<b>Credits</b>	<b>Grade</b>
ENGL 401 First-Year Writing		4	
Course in major <sup>3</sup>			
600/700-level course <sup>3</sup>			
Elective course			

<b>Foundation Courses</b>	<b>Semester</b>	<b>Credits</b>	<b>Grade</b>
CHEM 403 General Chemistry I		4	
CHEM 404 General Chemistry II		4	
CHEM 545/546 Organic Chemistry/Lab <sup>2</sup>		3 / 2	
MATH 424B Calculus for Life Sciences		4	
BIOL 528 Applied Biostatistics I		4	
PHYS 401 Introduction to Physics I		4	
PHYS 402 Introduction to Physics II		4	

<b>Biological Science Foundation Courses</b>	<b>Semester</b>	<b>Credits</b>	<b>Grade</b>
BIOL 411 Intro Biology:Molecular & Cellular		4	
BIOL 412 Intro Biology:Evolution, Biodivers & Ecol		4	
GEN 604 Principles of Genetics		4	
BMS 503/504 General Microbiology/Laboratory		3/2	
BMCB 605 Eukaryotic Cell&Developmental Biology		4	
BMCB 658/659 General Biochemistry/Laboratory		3 / 2	

<b>Genetics Core Courses</b>	<b>Semester</b>	<b>Credits</b>	<b>Grade</b>
GEN 401 Professional Perspectives in Genetics		1	
GEN 606 Genetics Lab		4	
GEN 704 or 771			
GEN 711 Genomics & Bioinformatics		4	

<b>Major Elective Courses</b>	<b>Semester</b>	<b>Credits</b>	<b>Grade</b>
<p><b>FIVE</b> courses that include:</p> <ul style="list-style-type: none"> <li>* ONE course in Population or Evolutionary Genetics - GEN 705 or 715</li> <li>* AT LEAST ONE course from the Laboratory Techniques list</li> <li>* Two courses from the Bioscience Electives list</li> </ul>			
GEN 705 <sup>C</sup> or 715 <sup>C</sup>			
Lab Techniques			
Bioscience Elective			
Bioscience Elective			

**A total of 128 credits needed for graduation. A grade of C- or better required in all COLSA courses.**

<sup>1</sup> Inquiry requirement is met by BIOL 411

<sup>2</sup> Students applying to health profession schools need a full year of English, a full year of Organic Chemistry, and a full year of Introductory Biology. ENGL 502 or 503 should be taken in addition to ENGL 401; CHEM 651/653 and CHEM 652/654 should be taken in place of CHEM 545/546. See <http://www.unh.edu/premed-advising/curric.htm>

<sup>3</sup> The same course may be used to fulfill the requirements for a writing intensive course in the major and for a 600/700 level course but every student must have 4 writing-intensive courses

## Major elective courses for Genetics<sup>4</sup>

<b>Laboratory Techniques</b>		
BMCB 753	<i>Cell Culture</i>	
BMCB 754	<i>Lab. Biochem. Mol. Biol. Nucleic Acids</i>	WI
BMS 714	<i>Research Methods in Endocrinology</i>	WI
GEN 704 <sup>5</sup>	<i>Genetics of Prokaryotic Microbes</i>	WI, C
GEN 717	<i>Molecular Microbiology</i>	WI, C
GEN 774	<i>Techniques Plant Gen Engineer &amp; Biotech</i>	
GEN 795 <sup>6</sup>	<i>Investigations (4 credit minimum)</i>	C
GEN 799 <sup>6</sup>	<i>Senior Thesis</i>	WI, C
INCO 790 <sup>6</sup>	<i>Advanced Research Experience (4 cr min)</i>	C

<b>Bio science Electives</b>		
BIOL 702	<i>Techniques in Plant Physiology &amp; Biochemistry</i>	
BIOL 704	<i>Plant Microbe Interactions</i>	
BIOL 711	<i>Applied Biostatistics II</i>	
BMCB 750	<i>Physical Biochemistry</i>	
BMCB 753	<i>Cell Culture</i>	
BMCB 754	<i>Lab. Biochem. Mol. Biol. Nucleic Acids</i>	WI
BMCB 763	<i>Biochemistry of Cancer</i>	
BMCB 783	<i>Proteomics for Biological Discoveries</i>	
BMCB 794	<i>Protein Structure and Function</i>	
BMS 702	<i>Endocrinology</i>	
BMS 705	<i>Immunology</i>	
BMS 706	<i>Virology</i>	
BMS 714	<i>Research Methods in Endocrinology</i>	WI
GEN 704	<i>Genetics of Prokaryotic Microbes</i>	C
GEN 705	<i>Population &amp; Quantitative Genetics</i>	C
GEN 706	<i>Human Genetics</i>	
GEN 712	<i>Intro. Program. for Bioinformatics</i>	
GEN 713	<i>Microbial Ecology and Evolution</i>	WI
GEN 715	<i>Molecular Evolution</i>	C
GEN 717	<i>Molecular Microbiology</i>	WI, C
GEN 721	<i>Comparative Genomics</i>	
GEN 771	<i>Molecular Genetics</i>	
GEN 772	<i>Evolutionary Genetics of Plants</i>	WI
GEN 774	<i>Techniques Plant Gen Engineer &amp; Biotech</i>	
GEN 795	<i>Investigations (4 credit minimum)</i>	
GEN 799	<i>Senior Thesis</i>	WI
PBIO 752	<i>Mycology</i>	
ZOOL 777	<i>Neurobiology and Behavior</i>	
ANSC 602	<i>Animal Rights and Societal Issues</i>	WI
ANSC 701	<i>Physiology of Reproduction</i>	
BMCB 760	<i>Pharmacology</i>	
BMS 650	<i>Molecular Diagnostics</i>	
BMS 718	<i>Mammalian Physiology</i>	WI
NR 706	<i>Soil Ecology</i>	
ZOOL 625/6	<i>Principles of Animal Physiology with Lab</i>	WI
ZOOL 690	<i>Evolution</i>	WI

<sup>4</sup> **WI = writing intensive; L = with laboratory; C = capstone**

<sup>5</sup> Students who take GEN 704 to fulfill the Genetics Core requirement may also count it toward their Laboratory Techniques requirement IF they take one additional Bioscience Elective course.

<sup>6</sup> Must be a laboratory-based project with a genetics focus; approval form available on genetics website

### Sample Course Sequence for Genetics Majors

	Fall	Spring
<b>1st Year</b>	GEN 401 – Professional Perspectives in Genetics	BIOL 412 - Intro. Biology: Evol., Biodiv., & Ecology
	BIOL 411 - Intro. Biology: Molecular & Cellular	MATH 424B - Calculus for Life Sciences
	ENGL 401 - First-Year Writing	CHEM 404 - General Chemistry II
	CHEM 403 - General Chemistry I	Discovery Course
	Discovery Course	
<b>2nd Year</b>	GEN 604 - Principles of Genetics	GEN 606 - Genetics Lab
	CHEM 545/546 - Organic Chemistry/Lab	BMS 503/504 - General Microbiology/Lab
	BIOL 528 - Applied Biostatistics	Major Elective (Bioscience)
	Discovery Course	Discovery Course
<b>3rd Year</b>	BMCB 658/659 - General Biochem/Lab	Major Elective (Pop Gen / Mol Evol)
	PHYS 401 - Introduction to Physics I	PHYS 402 - Introduction to Physics II
	Discovery Course	Genetics Core course
	Elective	Discovery Course
<b>4th Year</b>	Major Elective (Lab Techniques)	Capstone
	GEN 711 - Genomics and Bioinformatics	BMCB 605 - Eukaryotic Cell & Developmental Biol
	Major Elective (Bioscience)	Elective
	Elective	Elective

shading = course should be taken in the indicated semester