Genetics (Minor)

The Department of Genetics offers an undergraduate Minor in Genetics to provide students with strong preparation in the principles of Genetics and Molecular Biology, as well as preparation in ancillary fields such as Statistics and Biochemistry. This Minor is appropriate for (but not limited to) students with majors in Plant and Soil Sciences, Animal Science, Biochemistry, Biological Sciences, Computer Science, Crop Science, Environmental Technology, Mathematics, Microbiology, Natural Resources, Nutrition Science, Plant Biology, Poultry Science, and Zoology.

Admissions

Students may declare their intention to complete the Genetics minor by consulting with Dr. Gardner as listed below. Students are strongly encouraged to declare the minor early in their programs so they receive information on Genetics courses and activities from the Undergraduate Coordinator.

Certification

The advisor will certify the minor prior to graduation. The minor must be completed no later than the semester in which the student expects to graduate from his or her degree program.

Contact Person

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919.515.5776
bgardner@ncsu.edu

SIS Code: 17GNM

Plan Requirements

- Completion of 17 credit hours -- 8 credit hours of required core courses and 9 credit hours of electives.
- A grade of ‘C’ or better is required for all Genetics Minor courses.
- No course used in the minor can be taken for credit only (S/U) with the exception of the Research/Teaching Experience courses.
- Courses taken for the minor can also be used toward major requirements, GEP electives, or free electives.
- At least 9 credit hours used toward the minor must be completed at NC State University.
- The Genetics Minor is available to all students except those majoring in Genetics.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Core Courses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GN 311</td>
<td>Principles of Genetics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>GN 312</td>
<td>Elementary Genetics Laboratory</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>GN 421</td>
<td>Molecular Genetics (OR)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>or BCH 453</td>
<td>Biochemistry of Gene Expression</td>
<td></td>
<td></td>
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<tr>
<td>Elective Courses Category A</td>
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</tbody>
</table>

Select three credit hours from the following courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>GN 423</td>
<td>Population, Quantitative and Evolutionary Genetics</td>
</tr>
<tr>
<td>GN 427</td>
<td>Introductory Bioinformatics</td>
</tr>
<tr>
<td>GN 428</td>
<td>Introduction to Machine Learning in Biology</td>
</tr>
<tr>
<td>GN 434</td>
<td>Genes and Development</td>
</tr>
<tr>
<td>GN 441</td>
<td>Human and Biomedical Genetics</td>
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<tr>
<td>GN 450</td>
<td>Conservation Genetics</td>
</tr>
<tr>
<td>GN 451</td>
<td>Genome Science</td>
</tr>
<tr>
<td>GN 456</td>
<td>Epigenetics, Development, and Disease</td>
</tr>
<tr>
<td>GN 457</td>
<td>Genetics Research/Teaching Experience (3 cr)</td>
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</table>

Elective Courses Category B

Select 6 credit hours from the following courses with at least 3 credit hours at the 300 level or higher.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>ANSI 215</td>
<td>Agricultural Genetics</td>
</tr>
<tr>
<td>ANSI 440</td>
<td>Animal Genetic Improvement</td>
</tr>
<tr>
<td>BIO 270</td>
<td>Introduction to Evolution</td>
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<tr>
<td>BIO 310</td>
<td>Quantitative Approaches to Biological Problems</td>
</tr>
<tr>
<td>BIO 330</td>
<td>Evolutionary Biology</td>
</tr>
<tr>
<td>BIO 361</td>
<td>Developmental Biology</td>
</tr>
<tr>
<td>BIO 432</td>
<td>Evolutionary Medicine</td>
</tr>
<tr>
<td>BIT 471</td>
<td>RNA Interference and Model Organisms</td>
</tr>
<tr>
<td>BIT 474</td>
<td>Plant Genetic Engineering</td>
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<tr>
<td>BIT 477</td>
<td>Metagenomics</td>
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<tr>
<td>BIT 479</td>
<td>High-Throughput Discovery</td>
</tr>
<tr>
<td>BIT 480</td>
<td>Yeast Metabolic Engineering</td>
</tr>
<tr>
<td>CS 211</td>
<td>Plant Genetics</td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>CS 413</td>
<td>Plant Breeding</td>
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<tr>
<td>FOR 411</td>
<td>Forest Tree Genetics and Biology</td>
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<tr>
<td>GN 301</td>
<td>Genetics in Human Affairs</td>
</tr>
<tr>
<td>HS 215</td>
<td>Agricultural Genetics</td>
</tr>
<tr>
<td>MB 455</td>
<td>Microbial Biotechnology</td>
</tr>
<tr>
<td>PB 480</td>
<td>Introduction to Plant Biotechnology</td>
</tr>
</tbody>
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**Total Hours** 17

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1. Course options include GN 496 Genetics Research Experience, GN 497 Genetics Teaching Experience, BSC 498 Biological Sciences Honors Project Part 2, and ALS 499 Honors Research or Teaching II. To use any of these toward the Genetics Minor, the experience must involve a genetics topic and must be approved in writing by the Director of the Undergraduate Genetics Program prior to beginning the project.

2. Course must be taken prior to GN 311 in order to count for the Genetics minor.