Genetics and Development Biology

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Degrees Offered

• Master of Science
• Doctor of Philosophy

Nature of the Program

The objective of this program is an increased level of understanding of modern concepts and methodologies employed in genetic and developmental biological work and to prepare a student to pursue a career in teaching and/or research. Responsibility for a student’s program is vested in a graduate committee charged with arranging the student’s coursework, conducting examinations, and supervising the research.

Concentrations

The degree is offered in genetics and developmental biology, an interdisciplinary program involving the faculty and facilities of a number of departments in the various colleges and schools of the university. A student may concentrate in genetics or developmental biology. The areas in which emphases are offered are as follows:

GENETICS

Biochemical and molecular genetics, developmental genetics, plant genetics, and population and quantitative genetics.

DEVELOPMENTAL BIOLOGY

Molecular aspects of development.

The student may also minor in one or more other scientific fields.

Admissions

For regular admission, a student must:

• Possess a baccalaureate degree from a college or university and have at least a grade point average of 2.75 on a 4.0 scale (or an average of 3.0 or higher for the last sixty credit hours).
• Provide three letters of reference from persons acquainted with the applicant’s professional work, experience, or academic background.
• Submit a written statement of 500 words or more indicating the applicant’s goals and objectives relative to receiving a graduate degree, and identify a potential faculty advisor.
• Have an adequate academic aptitude at the graduate level as measured by the Graduate Record Examination (GRE) or the New Medical College Admissions Test (New MCAT).

* International students have the additional requirement to submit a minimum score of 550 on the paper TOEFL examination or 213 on the electronic TOEFL examination if their native language is not English.

A candidate for the M.S. degree in Genetics and Developmental Biology must meet all University, College, Division, and Program requirements as outlined in the WVU Graduate Catalog.

Program Requirements

All M.S. degree candidates are required to follow a planned program of study. The student develops the plan of study during their first year in the program in conjunction with the graduate committee. The plan must be approved by the Director of the Division and the Associate Dean for Academic Affairs of the Davis College. For a more complete statement of requirements, the student is referred to the program’s Guidelines for Graduate Students in the Genetics and Developmental Biology Program.

A minimum cumulative GPA of 3.0 is required in all courses applied toward degree requirements.

Select one of the following:

- STAT 511 Statistical Methods 1
Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>BIOS 601 &amp; BIOS 602</td>
<td>Applied Biostatistics 1 and Applied Biostatistics Lab</td>
</tr>
<tr>
<td>STAT 512</td>
<td>Statistical Methods 2</td>
</tr>
<tr>
<td>BIOS 603</td>
<td>Applied Biostatistics 2</td>
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<tr>
<td>BIOS 604</td>
<td>Applied Biostatistics 3</td>
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Select three of the following:

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<tr>
<td>AGBI 514</td>
<td>Animal Biotechnology</td>
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<tr>
<td>AGBI 612</td>
<td>General Biochemistry</td>
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<tr>
<td>BIOL 611</td>
<td>Epigenetics</td>
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<td>BIOL 658</td>
<td>Systems Biology</td>
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<td>GEN 535</td>
<td>Population Genetics</td>
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<tr>
<td>GEN 726</td>
<td>Advanced Biochemical Genetics</td>
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<tr>
<td>WMAN 630</td>
<td>Conservation Genetics</td>
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</tbody>
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Seminar: 3
- GEN 796 Graduate Seminar

Research: 6
- GEN 797 Research

Required Coursework:
- GEN 521 Basic Concepts of Modern Genetics
- AGBI 610 General Biochemistry

Total Hours: 31

* Substitution of a course containing some genetics and of special interest to the student may be allowed when approved by the student's committee.

A candidate for the Ph.D. degree in Genetics and Developmental Biology must meet all University, College, Division, and Program requirements as outlined in the WVU Graduate catalog.

Program Requirements

All Ph.D. degree candidates are required to follow a planned program of study. The student develops the plan of study during their first year in the program in conjunction with the graduate committee. The plan must be approved by the Director of the Division and the Associate Dean for Academic Affairs of the Davis College. Students are expected to maintain at least a 3.0 (B) grade point average in all work offered in fulfillment of the degree program. For a more complete statement of requirements, the student is referred to the program's Guidelines for Graduate Students in the Genetics and Developmental Biology Program.

A minimum cumulative GPA of 3.0 is required in all courses applied toward degree requirements.

Major Learning Outcomes

GENETICS AND DEVELOPMENT BIOLOGY

Students will acquire fundamental knowledge of genetics and associated fields such as biochemistry, chemistry, and biology.
Students will acquire detailed knowledge of their particular subdiscipline or research area, including the scientific literature fundamental to their discipline and the ability to stay current on scientific literature.

Students will acquire technical skills in the laboratory.

Students will develop the ability to communicate in writing and orally about scientific concepts and the results of their research.

Student will develop the ability to design, conduct, and interpret the results of experiments.