GENES, GENOMES, AND EVOLUTION (GGE)

AY 2025-26

CONTACT

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DECLARE A PRE-MAJOR

Declaring the biology pre-major allows you to formally indicate your plan to major in biology while completing the requirements necessary to apply for admission to the program. Pre-majors are assigned to a faculty advisor within their area of interest.

Click here or Scan QR to access eSign form.

RESEARCH

Participation in research deepens learning, teaches students to apply biological knowledge to real-world questions, and provides an introduction to modern scientific techniques. Students may volunteer or choose to register for academic credit while working on a research team.

FACULTY

WWU Biology is distinguished by small class sizes and a student-centered approach to education. Explore our directory to learn more about the teaching and research areas of our faculty.

biology.wwu.edu/directory/faculty

OVERVIEW

The Genes, Genomes, and Evolution (GGE) concentration provides a deep understanding of genetics and its fundamental role in shaping biological variation. Modern genetics spans all levels of biology, from uncovering how genes function at the molecular level to understanding the genetic architecture of medically important traits and deciphering the evolutionary forces shaping biological diversity. Advances in high-throughput sequencing have transformed genetics into a data-driven field, and this concentration will equip you with the analytical and computational skills needed for cutting-edge research.

At the heart of the GGE concentration is a hands-on lab course focused on genetic analysis using model organisms. You will also take two additional courses associated with the GGE concentration, including another upper-level lab, to further integrate genetics with other areas of biology. These courses emphasize data analysis and interpretation skills, preparing you for a range of career paths. By selecting from a diverse range of electives, you can develop expertise in key areas of biology while building skills in laboratory or field techniques and experimental design.

GGE COURSE HIGHLIGHTS

BIOL 404: Evolution & Development
BIOL 405: Microbial Ecology
BIOL 425: Ecological Genetics
BIOL 445: Host-Microbe Interactions
BIOL 447: Cancer Biology
BIOL 470: Functional Genomics
BIOL 473: Topics in Gene Expression
BIOL 475: Molecular Mech. Trait Variation
BIOL 477: Genomic Data Analysis Lab
BIOL 480: Sequence Analysis w/Lab
BIOL 487: Adv. Molecular and Cell Lab
CSCI 482: Computational Neuroscience

APPLICATION TO THE MAJOR

Pre-majors are eligible to apply when the following criteria are met:

- completion of BIOL 204, BIOL 205, CHEM 161, and CHEM 162 (or equivalent transfer coursework) with C- or higher.
- prior completion of or currently enrolled in BIOL 206 (and CHEM 163 if applicable) at the time of application.

Applications are reviewed by faculty committee in fall, winter and spring quarters and admission is based on GPA and completion of short essay responses. Additional details are available at biology.wwu.edu/admission-biology-majorminor

CURRICULUM

Refer to the University Catalog or Degree Works for a current and complete list of course requirements and approved electives for this biology major concentration.

CORE REQUIREMENTS (79 Credits)

All biology majors, regardless of chosen concentration, will complete the following coursework:

- [ ] MATH 124: Calculus I
- [ ] CHEM 161: General Chemistry I
- [ ] CHEM 162: General Chemistry II
- [ ] CHEM 163: General Chemistry III
- [ ] BIOL 204: Intro to Evolution, Ecology & Biodiversity w/lab
- [ ] BIOL 205: Intro to Cellular & Molecular Biology w/lab
- [ ] BIOL 206: Intro to Organismal Biology w/lab
- [ ] CHEM 351: Organic Chemistry
- [ ] PHYS 114: Principles of Physics I
- [ ] PHYS 115: Principles of Physics II
- [ ] PHYS 116: Principles of Physics III

Students are advised to complete the following courses as outlined in the example to ensure that the prerequisites are fulfilled for each course.

- [ ] BIOL 340: Biostatistics
- [ ] BIOL 327: Molecular Biology
- [ ] BIOL 321: Genetics
- [ ] BIOL 328: Cell Biology
- [ ] BIOL 325: Ecology
- [ ] BIOL 432: Evolutionary Biology

GGE DEPTH REQUIREMENTS (20 Credits)

In addition to the above core, the following must be completed to fulfill the depth requirements for the GGE concentration:

- [ ] BIOL 322: Genetics Lab
- [ ] One additional Lab or Lecture/Lab (must be 300 or 400-level with the GGE tag).
- [ ] One additional course (must be 300 or 400-level with the GGE tag).
- [ ] Additional courses from the list of electives to reach the minimum credit requirement for the concentration.*

ELECTIVE OPTIONS

Current WWU students may use the interactive Biology Advising Tool to identify elective courses associated with each concentration.

*up to 4 cumulative credits of BIOL 300, 400, 490, 496, and 498 may be applied towards this concentration.

Example 4 Year Course Plan:

YEAR 1

FALL	WINTER	SPRING
MATH 114	MATH 115	MATH 124
GUR	CHEM 161	CHEM 162
GUR	GUR	GUR

YEAR 2

FALL	WINTER	SPRING
		Apply to Major
BIOL 204	BIOL 205	BIOL 206
CHEM 163	CHEM 351	GUR
GUR	GUR	GUR

YEAR 3

FALL	WINTER	SPRING
PHYS 114	PHYS 115	PHYS 116
BIOL 327	BIOL 328	BIOL 325
BIOL 340	BIOL 321	BIOL 432

YEAR 4

FALL	WINTER	SPRING
BIOL 322	LAB	DEPTH
ELECTIVE	ELECTIVE	ELECTIVE
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