KINESIOLOGY

Degree: B.S., Biology

Department of Biological Sciences (https://cas.umw.edu/biology/)

Biology encompasses the study of all living things and their interactions with the environment. The Department faculty is dedicated to providing students with a strong undergraduate education in the fundamental principles of biology, while offering opportunities and encouraging students to pursue specialized interests in the field of kinesiology.

The Kinesiology major is designed for students pursuing careers in Physical Therapy, Occupational Therapy, Sports Medicine, and Athletic Training, or graduate study in Exercise Sciences, Kinesiology, and Physiology. This major track provides students with the disciplinespecific knowledge and skills to be successful candidates for careers and graduate study in a broad range of exercise/ rehabilitation/ sports and medical fields. Students who complete all requirements earn the degree of Bachelor of Science (B.S.) in Biology with a major in Kinesiology.

This core curriculum provides a thorough foundation of biology's fundamental principles, including organism function, cell biology, and the research process, as well as an understanding of the basis of movement and physical activity, through courses in physics, anatomy, and biomechanics, and exercise physiology. The curriculum is rounded out with relevant upper-level biology electives, and one course from a list of non-BIOL courses examining societal perspectives on health and sport.

To promote skills that students need to be effective health practitioners, athletic trainers, and researchers, this track also includes both a "Practical Kinesiology" requirement and a "Research Capstone" requirement. Majors can select one of three options to fulfill the Practical Kinesiology requirement: Introduction to Coaching (PHYD 230 Introduction to Coaching), or a 2-credit internship through Biological Sciences (BIOL 499 Internship) or Physical Education (PHYD 499K Kinesiology Internship). For the "Research Capstone," students may complete a Research-Intensive laboratory course that explores aspects of kinesiology, and present their findings at a University research symposium. Alternatively, majors may conduct independent research in kinesiology under the mentorship of a faculty. On many occasions this independent work results in presentations at state, regional, and national scientific meetings. Research students who meet minimum requirements (3.00 overall GPA and a 3.25 major GPA) may pursue Honors in Biology by writing and defending a thesis on their independent research. Financial support for student research is available.

All of the equipment and facilities in the department are available for undergraduate student use. Collections of microscope slides and anatomical specimens are available to enhance learning. Physiology labs include electrocardiograph and neurophysiology equipment, dynamometers, and respirometers. Additional advanced laboratory equipment includes spectrophotometers, thermal cyclers, fluorescent plate readers, ultracentrifuges, tissue culture facilities, and a wide variety of high-quality microscopes (light, fluorescent, scanning electron, and transmission electron) to allow students to engage in sophisticated research. Additionally, an extensive range of exercise and training equipment is available at the University fitness center and athletic training facility.

Students can also gain focused research experience via participation in the UMW Summer Science Institute. Additionally, biology faculty offer research opportunities through the university's undergraduate research (URES 197 Undergraduate Research) program. Students may also take advantage of Biology service-learning opportunities (BIOL 000 Community Service Learning).

Student Learning Outcomes

Students will demonstrate knowledge of Core Concepts for Biological Literacy. Students will demonstrate knowledge of:

- 1. Core Concept of the concepts and processes of evolution.
- 2. Core Concept of the nature of structure and function.
- Core Concept of information flow, exchange, and storage.
 Core Concept of the pathways and transformations of energy and matter.
- 5. Core Concept of the nature of biological entities as systems.

Students will demonstrate abilities of Core Competencies for the Practice of Biology. Students will be able to:

6. Core Competency for the practice of Biology of how to apply the processes of science.

- 7. Core Competency for the practice of Biology of how to use quantitative reasoning.
- 8. Core Competency of the practice of Biology of how to use modeling and simulation.

Students will demonstrate abilities of Core Competencies for Societal Issues in Biology. Students will be able to:

9. Core Competency for societal issues in Biology of the ability to tap into the interdisciplinary nature of science.

10. Core Competency for societal issues in Biology of the ability to communicate and collaborate with other disciplines.

11. Core Competency for societal issues in Biology of the ability to understand the relationship between science and society.

Students must earn a C- or better in most BIOL required courses that serve as prerequisites for other BIOL courses. Students must also earn a C- or better in the core courses (BIOL 260 (https://catalog.umw.edu/ search/?P=BIOL%20260) Biostatistics and Research Design, BIOL 340 (https://catalog.umw.edu/search/?P=BIOL%20340) Cellular Biology, BIOL 384 Human Anatomy, BIOL 414 Exercise Physiology), and BIOL 471 (https://catalog.umw.edu/undergraduate/majors/biomedicalsciences/ #requirementstext) Biomechanics to graduate with a major in Kinesiology. See also the Department of Chemistry's minimum grade requirements for CHEM 111 (https://catalog.umw.edu/search/?P=CHEM %20111) General Chemistry I, CHEM 112 (https://catalog.umw.edu/ search/?P=CHEM%20112) General Chemistry II.

Major Requirements

Code	Title	Credits
BIOL 126	Phage Hunters II	4
or BIOL 132	Organism Function and Diversity	
BIOL 260	Biostatistics and Research Design	4
BIOL 340	Cellular Biology	4
BIOL 414	Exercise Physiology	3
BIOL 471	Topics in Biology (Biomechanics)	4
BIOL 384	Human Anatomy	4
PHYS 102	General Physics w/Lab	4
or PHYS 106	University Physics w/Lab	

Total Credits		40
BIOL 472K	Research in RNA Technology	
BIOL 419	Neuroethology	
BIOL 481 & BIOL 491	Research Design & Proposal Development in Biology and Special Problems in Biology	
BIOL 472	Research-Intensive Topics in Biology	
One Research I	ntensive Course or Course Sequence	4
PHYD 230	Introduction to Coaching	
or PHYD 4	199 Kinesiology Internship	
BIOL 499	Internship	
Applied Elective	28	2
BIOL 471	Topics in Biology ¹	
BIOL 451	Seminar ¹	
BIOL 416	Vertebrate Endocrinology	
BIOL 415	Nutrition and Metabolism	
BIOL 413	Human Physiology	
BIOL 410	Neurobiology	
Upper level Biology		
PHIL 226	Medical Ethics	
SOCG 334	Medical Sociology	
COMM 378	Health Communication	
PSYC 339	Health Psychology	
PSYC 354	Sport Psychology	
courses:		Ū
One of the follo	wing Societal Perspectives on Health Elective	3

¹ Approved sections only.

General Education Requirements

The general education requirements for Bachelor of Arts/Bachelor of Science degrees (https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-arts-bachelor-science-degrees/) apply to all students who are seeking to earn an undergraduate B.A., B.S. or B.S.Ed. degree.

Students seeking a Bachelor of Liberal Studies degree have a separate set of BLS general education requirements (https://catalog.umw.edu/undergraduate/general-education/requirements-bachelor-liberal-studies-degrees/).

Electives

Elective courses are those that are not needed to fulfill a general education requirement or major program requirement but are chosen by the student to complete the 120 credits required for graduation with a B.A./B.S./B.S.Ed. degree or the BLS degree. These courses may be taken graded or pass/fail (or S/U in the case of physical education and 100-level dance). No student in a regular B.A./B.S./B.S.Ed. program may count more than 60 credits in a single discipline toward the 120 credits required for graduation.

Total Credits Required for the Degree: 120 credits

Plan of Study

For a suggested plan of study for the Kinesiology major, please contact the Department of Biological Sciences directly.

Biological Sciences Faculty

Dianne M. Baker, Chair

Professors

Dianne M. Baker Andrew S. Dolby Alan B. Griffith Lynn O. Lewis Deborah A. O'Dell

Associate Professors

Swati Agrawal Theresa M. Grana Bradley A. Lamphere Ginny R. Morriss Abbie M. Tomba R. Parrish Waters April N. Wynn

Assistant Professors

Lauren A. Cirino Laura M. Sipe

Senior Lecturer Michael C. Stebar