

## DEPARTMENT OF BIOLOGY

*College of the Sciences and Mathematics*

175 Schmucker Science Center North

West Chester University

West Chester, PA 19383

610-436-2538

Department of Biology (<http://www.wcupa.edu/biology>)

Dr. Casotti ([gcasotti@wcupa.edu](mailto:gcasotti@wcupa.edu)), *Chairperson*

Dr. Auld ([jauld@wcupa.edu](mailto:jauld@wcupa.edu)), *Assistant Chairperson*

Dr. Boettger ([sboettger@wcupa.edu](mailto:sboettger@wcupa.edu)), *Graduate Coordinator*

### Programs

#### Master's Program in Biology

- M.S. in Biology (<http://catalog.wcupa.edu/graduate/sciences-mathematics/biology/biology-ms>)

#### Accelerated Bachelor's to Master's

- B.S. in Biology - Integrative Biology Concentration to M.S. in Biology (Thesis Option) (<http://catalog.wcupa.edu/undergraduate/sciences-mathematics/biology/biology-bs-integrative-concentration>)

### Admissions

All applicants to one of West Chester University's graduate programs will be held to the graduate admissions requirements (<http://catalog.wcupa.edu/general-information/admissions-enrollment/graduate-admissions>). When applicable, additional requirements for admission into specific department program(s) may be listed below.

Applicants must meet the general requirements for admission to degree study at West Chester University. Applicants must submit two letters of recommendation as part of their application to graduate study. Applicants must include a one-page written statement that outlines their reasons for pursuing graduate study in biology and the specific area of biology in which they are interested. Applicants must fill out a supplemental application for graduate study in biology by the end of their first semester of study, available from the biology coordinator, in which they identify their preferred advisor and indicate whether they intend to pursue the thesis or nonthesis option, and whether they intend to be a full-time or part-time student.

Minimum academic prerequisites for admission include two semesters of general chemistry, two semesters of organic chemistry, one semester of physics, one semester of calculus, one course in statistics, one course in statistics, and 17 semester credits of course work in the biological sciences. Because of space and personnel limitations, admission of academically qualified applicants is contingent upon the availability of laboratory space, the advisor whom they identify, and the appropriateness of the student's background to the chosen area of concentration.

The M.S. in Biology may be completed under either the thesis or nonthesis option. Switching between the two options is possible early in the program, but will require the student to organize a new advisory committee, take additional courses, and spend additional time completing the program.

The supplemental application form will not be required to be admitted into the graduate program. Instead, students (thesis and nonthesis) will have until the end of their first semester to choose an advisor and a committee. Continued enrollment in the program is contingent upon the student finding a faculty member who is willing to act as his or her advisor.

#### Deadline Dates for Applications

For all students wishing to be considered for graduate assistantships, the deadlines are as follows:

- April 15 for the fall semester
- October 15 for the spring semester

Students who do not wish an assistantship can apply throughout the year to enter the program.

### Policies

All graduate students are held to the academic policies and procedures (<http://catalog.wcupa.edu/graduate/academic-policies-procedures>) outlined in the graduate catalog. Students are encouraged to review departmental handbooks for program tips, suggested course sequences, and explanations of procedures. When applicable, additional policies for specific department programs may be listed below.

#### Additional Policies

##### General Information and Restrictions on Electives

With the prior consent of his or her advising committee, a thesis student may take a maximum of six semester hours at the graduate level in allied disciplines, and a maximum of six biology semester hours at the 400 level. A nonthesis student may take a maximum of nine semester hours at the graduate level in allied disciplines, and a maximum of six biology semester hours at the 400 level, where no 500-level component is available.

With the consent of his or her advising committee, any student also may transfer in six semester hours of graduate-level work from another university.

BIO 593 may not be counted towards the 30 semester hours required for graduation in the thesis option.

BIO 609, BIO 593, and BIO 610 may not be counted towards the 36 semester hours required for graduation in the nonthesis option.

##### Undergraduate Courses for Graduate Credit

The following courses are senior-level undergraduate courses that are acceptable for graduate students. Graduate students should expect to be graded by the same standards as the undergraduate students. Selection of these courses must be done with the approval of the student's advisor. (Maximum six credits for both thesis and nonthesis students)

BIO 412	Organic Evolution	3
BIO 414	Applied and Industrial Microbiology	3
BIO 421	Cellular and Molecular Biology	4
BIO 428	Animal Histology	3
BIO 435	Course Topics in Biology	1-3
BIO 436	Course Topics in Biology	1-3
BIO 437	Course Topics in Biology	1-3
BIO 448	Animal Development	4
BIO 440	Human Genetics	3
BIO 443	Introduction to Gene Expression Methodology	3
BIO 452	Parasitology	3
BIO 453	Marine Mammals	3
BIO 454	Mycology	3
BIO 456	Virology	3
BIO 457	Functional Animal Morphology	3
BIO 468	Comparative Vertebrate Physiology	4
BIO 473	Conservation Biology	3
BIO 474	Microbial Ecology	4
BIO 478	Plant Evolution	3
BIO 485	Systematic Botany	3

## Faculty

### Professors

- Sharon Began (sbegan@wcupa.edu) (1992)  
B.S., Kutztown University; M.S., East Tennessee State University;  
Ph.D., Southern Illinois University at Carbondale
- John T. Beneski (jbeneski@wcupa.edu) (1986)  
A.A., Southwestern College; B.A., M.A., Humboldt State University;  
Ph.D., Washington State University
- Giovanni Casotti (gcasotti@wcupa.edu) (1996)  
Chairperson, Biology  
B.S., Hons, Ph.D., Murdoch University (Australia)
- Xin Fan (xfan@wcupa.edu) (2006)  
B.S., Jiangxi College of Medicine; M.S., Kunming Medical College;  
Ph.D., University of Pennsylvania
- Frank E. Fish (ffish@wcupa.edu) (1980)  
B.A., State University of New York at Oswego; M.S., Ph.D., Michigan  
State University
- Gustave N. Mbuy (gmbuy@wcupa.edu) (1985)  
B.A., University of California; M.M., Ph.D., University of Cincinnati
- Oné R. Pagán (opagan@wcupa.edu) (2005)  
B.S., M.S., University of Puerto Rico; Ph.D., Cornell University
- Harry Tiebout (htiebout@wcupa.edu) (1992)  
B.A., University of Illinois; Ph.D., University of Florida
- Gregory Turner (gtturner@wcupa.edu) (2004)  
B.S., Virginia Commonwealth University; M.A., Hunter College;  
M.Ed., Columbia University; Ph.D., Fordham University
- Jack Waber (jwaber@wcupa.edu) (1976)  
B.A., Hope College (Mich.); Ph.D., University of Hawaii

### Associate Professors

- Josh R. Auld (jauld@wcupa.edu) (2011)  
Assistant Chairperson, Biology  
B.S., Duquesne University; Ph.D., University of Pittsburgh
- Stefanie Anne Boettger (sboettger@wcupa.edu) (2008)  
Graduate Coordinator, Biology  
B.S., Aberdeen University (Scotland); Ph.D., University of Alabama at  
Birmingham
- Jessica Schedlbauer (jschedlbau@wcupa.edu) (2010)  
B.A., Hartwick College; M.S., University of Maine; Ph.D., University  
of Idaho/Centro Agronomico Tropical de Investigacion y Ensenanza

### Assistant Professors

- Teresa Donze-Reiner (tdonze@wcupa.edu) (2016)  
B.S., University of Nebraska; Ph.D., Molecular Biology and  
Microbiology University of Nebraska-Lincoln
- Erin Gestl (egestl@wcupa.edu) (2007)  
B.S., Ph.D., Pennsylvania State University
- Jennifer L. Maresh (jmaresh@wcupa.edu) (2016)  
B.S., West Chester University; M.S., Duke University; Ph.D.,  
University of California, Santa Cruz
- John M. Pisciotta (jpisciotta@wcupa.edu) (2012)  
B.A., Eckerd College; M.S., University of South Florida; Ph.D., Johns  
Hopkins University
- Jessica Sullivan-Brown (jsullivan@wcupa.edu) (2014)  
B.S., James Madison University; Ph.D., Princeton University
- Eric S. Sweet (esweet@wcupa.edu) (2016)  
B.S. Virginia Tech; Ph.D. Rutgers University

## Courses

### BIO

- BIO 511. Experimental Design and Analysis. 3 Credits.**  
An introduction to the design and analysis of biological research. An independently conducted research project is a required part of the course. Lab BIL 511.  
Typically offered in Spring.
- BIO 513. Research Techniques in Bio Scil I. 3 Credits.**  
An introduction to the theory and application of histological techniques, and light and electron microscopy.  
Typically offered in Fall.
- BIO 514. Research Techniques in Bio Sci II. 3 Credits.**  
Introduces students to the theory and practical application of selected techniques in biological research, such as radioisotope labeling techniques, spectrophotometry, and various chromatographic procedures.  
Typically offered in Spring.
- BIO 515. Res Tech III: Computer App in Bio. 3 Credits.**  
Use of computers in biological research and data analysis. Topics include image analysis, modeling, and database access for proposal or presentation preparation.  
Typically offered in Fall.
- BIO 531. Molecular Genetics. 3 Credits.**  
This course exposes graduate students interested in gene manipulation to up-to-date information in prokaryotic and eukaryotic genetics.  
Typically offered in Fall.
- BIO 535. Course Topics in Biology I. 3 Credits.**  
Lecture/seminar course on the latest topics in ecology, evolution, or organismal biology. Specific content varies depending on faculty involved. Offered in rotation with BIO 536 and 537. May be repeated for credit if a different topic is presented.  
Repeatable for Credit.
- BIO 536. Course Topics in Biology II. 3 Credits.**  
Lecture/seminar course on the latest topics in microbiology, immunology, or molecular genetics. Specific content varies depending on faculty involved. Offered in rotation with BIO 535 and 537. May be repeated for credit if a different topic is presented.  
Repeatable for Credit.
- BIO 537. Course Topics in Biology III. 3 Credits.**  
Lecture/seminar course on the latest topics in cell biology, physiology, or development. Specific content varies depending on faculty involved. Offered in rotation with BIO 535 and 536. May be repeated for credit if a different topic is presented.  
Repeatable for Credit.
- BIO 540. Design, Analysis & Adapt Concept Sci I. 3 Credits.**  
The pragmatic application of advanced biological content in secondary science lesson design, implementation, and assessment with respect to contemporary science education curricular standards.
- BIO 541. Design, Analysis & Adapt Concept Sci II. 3 Credits.**  
Lecture/ seminar course on the latest topics in microbiology, immunology, or molecular genetics. Specific content varies depending on faculty involved.
- BIO 564. Microbial Physiology. 3 Credits.**  
LEC (2), LAB (4)  
Physiology and biochemical variations are studied in the prokaryotes and lower eukaryotes. Lab BIL 564.  
Typically offered in Spring.
- BIO 565. Immunology. 4 Credits.**  
LEC (3), LAB (3)  
Immunoglobulin structure and function, nature of antigens, cell-mediated immunity, hypersensitivity, regulation of immunity, and immunological diseases. Laboratory experience in immunological techniques. Lab BIL 565.  
Typically offered in Fall.
- BIO 566. Plant Physiology and Biochemistry. 3 Credits.**  
LEC (2), LAB (3)  
Plant-cell physiology, including respiration, photosynthesis, enzyme catalysis, auxins, and membrane phenomena. Lab BIL 566.  
Typically offered in Spring.

**BIO 567. Endocrinology. 3 Credits.**

An integrative look at the physiology of the mammalian endocrine system in the regulation and maintenance of homeostasis. The pathology associated with hormone imbalance will be included.

Typically offered in Fall.

**BIO 570. Population Biology. 3 Credits.**

LEC (2), LAB (3)

A quantitative second course in ecology, emphasizing distributional patterns and fluctuations in abundance of natural populations. Lab BIL 570.

Typically offered in Fall.

**BIO 571. Wetlands. 3 Credits.**

LEC (2), LAB (3)

A course designed to provide practical experience in wetlands classification, delineation, regulation, management, and mitigation practices. The abiotic and biotic characteristics of inland and coastal wetlands are emphasized. Lab BIL 571.

Typically offered in Summer.

**BIO 575. Plant Communities. 3 Credits.**

LEC (2), LAB (3)

A survey of ecological, morphological, and physiological strategies of plants from seed through adult stages. The integration of these strategies to explain the major plant communities of North America will be covered. Lab BIL 575.

Typically offered in Fall.

**BIO 576. Freshwater Ecology. 3 Credits.**

LEC (2), LAB (3)

The environmental and biological characteristics of freshwater. Emphasis is placed on field methods, water quality evaluation based on the interpretation of comprehensive datasets, and management strategies for lakes, ponds and streams. Lab BIL 576.

Typically offered in Fall.

**BIO 580. Light Microscopy and the Living Cell. 3 Credits.**

Theory and practical techniques of all types of light microscopy and their uses in investigating living cells. Also includes techniques such as microinjection, cell electrophysiology, and others. Strong emphasis on 'hands-on' work with equipment.

Typically offered in Spring.

**BIO 584. Epidemiology. 3 Credits.**

A general study of the epidemiology of both infectious and environmentally related health problems. Methods of interviewing and data collecting also are included.

Typically offered in Fall.

**BIO 590. Directed Study in Biology. 3 Credits.**

In depth study of the literature of a specific topic in biology, under the direction of a faculty member of the Biology Department. Students will read, analyze, discuss, and summarize relevant peer reviewed journal articles. Field or laboratory work may be part of the course, but no research project is to be required.

Consent: Permission of the Department required to add.

**BIO 591. Directed Research I. 1-3 Credits.**

To be taken when the student begins his/her nonthesis research. Includes a comprehensive literature search and/or development of specialized techniques. This course should culminate in the acceptance of the nonthesis proposal by an appropriate committee of faculty and is required for degree candidacy.

**BIO 593. Directed Research III. 1-3 Credits.**

A continuation of the research proposed and initiated in BIO 591. To be taken for credit only with the approval of the graduate coordinator. (Does not count towards 30 credits required for graduation.)

**BIO 608. Thesis Research I. 3 Credits.**

To be taken when the student begins his/her thesis research. Includes a comprehensive literature search and development of specialized techniques. This course should culminate in the acceptance of the thesis proposal by an appropriate committee of faculty and is required for degree candidacy.

**BIO 609. Thesis Research II. 1-3 Credits.**

A continuation of the research proposed and initiated in BIO 591. To be taken for credit only with the approval of the graduate coordinator. (Does not count towards 30 credits required for graduation.)

**BIO 610. Thesis. 3 Credits.**

Contact department for more information about this course.