

# Department of Biological and Health Sciences

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## Contact Information

**Chair:** Richard Laughlin  
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**Building Name:** Biological and Health Sciences Building  
**Room Number:** 105

The Department of Biological and Health Sciences offers a Master of Science degree in Biology.

A variety of research projects are available: a student can select a field or a laboratory oriented project. Fiscal support for qualified graduate students is available through scholarships, research assistantships and teaching assistantships. Many research projects are funded through federal and private sources.

## Department Faculty

**Aguiar, Shannon** Assistant Professor of Practice, Department of Biological and Health Sciences; B.S., Texas A&M University-Kingsville; M.S., Texas A&M University-Kingsville.

**Bohm, Rudolf** Associate Professor, Department of Biological and Health Sciences; B.S., The University of Texas at Austin; Ph.D., The University of Texas at Austin.

**Deyhim, Farzad** Professor, Department of Biological and Health Sciences; B.S., California State University; M.S., California State University; Ph.D., Colorado State University; Ph.D., Oklahoma State University.

**Galloway, Cynthia M** Professor, Department of Biological and Health Sciences; B.S., California State Polytechnic University-Pomona; M.S., California State Polytechnic University-Pomona; Ph.D., University of California, Riverside.

**He, Fang** Assistant Professor, Department of Biological and Health Sciences; B.S., Jiangxi Institute of Education (China); M.S., Nanjing University (China); Ph.D., Louisiana State University.

**Kim, Haeyoung** Assistant Professor, Department of Biological and Health Sciences; B.A., Chonnam National University (South Korea); M.A., Chonnam National University (South Korea).

**Kumro, Shawnda** Lecturer I, Department of Biological and Health Sciences; B.S., Texas A&M University-Kingsville; M.S., Texas A&M University-Kingsville.

**Laughlin, Richard** Associate Professor, Department of Biological and Health Sciences; B.S., Stetson University; Ph.D., Clemson University.

**Massa, Enrique** Associate Professor, Department of Biological and Health Sciences; Chair; B.S., Pan American University; M.S., University of Michigan; Ph.D., University of Michigan.

**Perez-Ballester, Rafael** Professor, Department of Biological and Health Sciences; B.S., Universidad Autónoma de Madrid; M.S., University of Michigan; Ph.D., University of Michigan.

**Powell, Randy** Professor, Department of Biological and Health Sciences; B.S., Logan College of Chiropractic; D.C., Logan College of Chiropractic; B.S., Southern Illinois University at Carbondale; M.S., Southern Illinois University at Carbondale; Ph.D., The University of Texas at El Paso.

**Soto, Manuel A** Associate Professor, Department of Biological and Health Sciences; B.S., Texas A&M University-Kingsville; M.A., Texas A&M University-Kingsville; Ph.D., University of Southern Mississippi.

**Sung, Chang K** Associate Professor, Department of Biological and Health Sciences; B.S., Yeungnam University (South Korea); M.S., Illinois Institute of Technology; Ph.D., University of Illinois.

**Velez-Hernandez, Maria** Associate Professor, Department of Biological and Health Sciences; Associate Dean, College of Arts & Sciences; B.S., University of Puerto Rico at Mayaguez (Puerto Rico); Ph.D., University of Puerto Rico at Mayaguez (Puerto Rico).

**Xi, Weimin** Associate Professor, Department of Biological and Health Sciences; B.S., Capital Normal University (China); M.S., Southwest University (China); Ph.D., University of North Carolina at Chapel Hill.

## Emeritus

**Peacock, J. Talmer** Professor of Biology, Department of Biological and Health Sciences; B.S., Maryville College; M.S., University of Alabama; Ph.D., The University of Texas at Austin.

**Perez, John** Professor of Biological and Health Sciences, Department of Biological and Health Sciences; Regents Professor; B.S., University of Utah; M.A., Mankato State College; Ph.D., Utah State University.

**Wood, Carl** Professor of Biology, Department of Biological and Health Sciences; B.S., Texas A&M University; M.S., Texas A&M University; Ph.D., Texas A&M University.

## Biology (BIOL)

### **BIOL 5102** Research Problems I **1 SCH (0-1)**

Individual problems assigned, defined and supervised by a Biology graduate faculty member with permission of the department chair. Provides experience in individual design, execution and reporting of small units of research of professional caliber. The Research Problems I, II and III courses may be repeated in any combination for a total maximum of 6 semester credit hours applied towards the graduate degree.

### **BIOL 5104** Graduate Seminar **1 SCH (0-1)**

An advanced study of biological literature and research with critical class reports. Must be taken four times for credit.

### **BIOL 5202** Research Problems II **2 SCH (0-2)**

Individual problems assigned, defined and supervised by a biology graduate faculty member with permission of the department chair. Provides experience in individual design, execution and reporting of small units of research of professional caliber. The Research Problems I, II and III courses may be repeated in any combination for a total maximum of 6 semester credit hours applied towards the graduate degree.

### **BIOL 5302** Advanced Topics in Biology **3 SCH (3-0)**

Lectures in selected topics. May be repeated for credit once under a different topic. Prerequisites: 12 semester hours of biology or equivalent.

### **BIOL 5305** Graduate Research Project **3 SCH (3)**

Designed for project option students and requires completion of research project. Prerequisite: departmental approval. May be repeated for a maximum of 6 semester hours.

### **BIOL 5306** Thesis **3 SCH (3)**

Designed for thesis option students. The course requires completion of thesis research. Prerequisite: departmental approval. May be repeated for maximum of 6 semester hours.

### **BIOL 5308** Advanced Molecular Genetics **3 SCH (3-0)**

This course will familiarize students with fundamental concepts of molecular genetics, including gene structure and diversity, transcription and advanced concepts in cellular and molecular genetics.

### **BIOL 5309** Epigenetics **3 SCH (3-0)**

This course will introduce fundamental concepts of epigenetics, including chromatin structure, DNA and histone modifications, and non-coding RNAs, and advanced concepts in gene expression regulation. Furthermore, this course will discuss up-to-date research articles to correlate concepts in epigenetics to practical examples.

### **BIOL 5310** Systems Neurobiology **3 SCH (3-0)**

This course covers the fundamental concepts of systems neurobiology, including neuronal physiology, sensory and motor systems and complex brain functions like addiction and memory.

### **BIOL 5311** Advanced Immunology **3 SCH (3-0)**

The fundamentals of immunology, including the anatomical, physiological, cellular and molecular aspects of both innate and adaptive immunity will be covered. Basic diagnostic tools, counter measures against infections, and provide an overview of human and animal immunity will also be discussed.

### **BIOL 5312** Advanced Bacteriology **3 SCH (3-0)**

A showcase of current topics in microbiology including antibiotic resistance, microbiome, metabolism, or any other topic agreed upon. Students will be expected to read, understand, and analyze published literature, present these papers in front of the class, and dissect the strengths and weaknesses of the published work.

### **BIOL 5320** Research Problems III **3 SCH (0-3)**

Individual problems assigned, defined and supervised by a biology graduate faculty member with permission of the department chair. Provides experience in individual design, execution and reporting of small units of research of professional caliber. The Research Problems I, II and III courses may be repeated in any combination for a total maximum of 6 semester credit hours applied towards the graduate degree.

### **BIOL 5402** Advanced Topics in Biology **4 SCH (3-3)**

Lectures, literature, investigation and research at the graduate level in selected advanced topics. May be repeated for credit under different topics.

Fee: \$20.00

## Biology, M.S.

The Thesis option is research-oriented and requires completion of a thesis. This program is for students who plan to pursue a Ph.D. or who want research experience. The Research Project option is content-oriented, and a shorter research problem is required. This program is for those needing more background in formal course work. The coursework-only option is for students who are interested in earning an MS degree but do not intend to complete a thesis or project. The prerequisites for full admission are a grade point average of 3.0 on a 4.0 scale and a Graduate Record Examination (quantitative plus verbal) score of 294. Additional information is provided in the *Biology Graduate Handbook*, which may be obtained from the Graduate Coordinator or Department Chair.

### Master of Science in Biology (Thesis Degree; 30 credit hours)

Course	Title	Semester Credit Hours
<b>Year 1</b>		
BIOL 5104	Graduate Seminar	1
Prescribed Elective Courses <sup>1</sup>		7
Free Elective Courses <sup>2</sup>		6
<b>Semester Credit Hours</b>		<b>14</b>
<b>Year 2</b>		
BIOL 5104	Graduate Seminar	1
BIOL 5306	Thesis	3
BIOL 5306	Thesis	3
Prescribed Elective Courses <sup>1</sup>		3
Free Elective Courses <sup>2</sup>		6
<b>Semester Credit Hours</b>		<b>16</b>
<b>Total Credit Hours Required:</b>		<b>30</b>

<sup>1</sup> Graduate courses offered by the Department of Biological and Health Sciences

<sup>2</sup> Graduate courses offered by any department

Students may take a maximum of 6 credit hours of the Research Programs courses including BIOL 5102, BIOL 5202 and BIOL 5320 (these courses are repeatable).

### Master of Science in Biology (Research Projects Degree Plan; 36 Credit hours)

Course	Title	Semester Credit Hours
<b>Year 1</b>		
BIOL 5104	Graduate Seminar	1
Prescribed Elective Courses <sup>1</sup>		11
Free Elective Courses <sup>2</sup>		6
<b>Semester Credit Hours</b>		<b>18</b>
<b>Year 2</b>		
BIOL 5104	Graduate Seminar	1
BIOL 5305	Graduate Research Project	3
Prescribed Elective Courses <sup>1</sup>		8
Free Elective Courses <sup>2</sup>		6
<b>Semester Credit Hours</b>		<b>18</b>
<b>Total Credit Hours Required:</b>		<b>36</b>

<sup>1</sup> Graduate courses offered by the Department of Biological and Health Sciences

<sup>2</sup> Graduate courses offered by any department

Students may take a maximum of 6 credit hours of the Research Problems courses, including BIOL 5102, BIOL 5202, and BIOL 5320 (these courses are repeatable).

**Master of Science in Biology (Course-Work Only Degree Plan; 36 credit hours)**

Course	Title	Semester Credit Hours
<b>Year 1</b>		
BIOL 5104	Graduate Seminar	1
Prescribed Elective Courses <sup>1</sup>		11
Free Elective Courses <sup>2</sup>		6
<b>Semester Credit Hours</b>		<b>18</b>
<b>Year 2</b>		
BIOL 5104	Graduate Seminar	1
Prescribed Elective Courses <sup>1</sup>		11
Free Elective Courses <sup>2</sup>		6
<b>Semester Credit Hours</b>		<b>18</b>
<b>Total Credit Hours Required:</b>		<b>36</b>

<sup>1</sup> Graduate courses offered by the Department of Biological and Health Sciences

<sup>2</sup> Graduate courses offered by any department

Students may take a maximum of 6 credit hours of the Research Programs courses, including BIOL 5102, BIOL 5202 and BIOL 5320 (these courses are repeatable).