

# DEPARTMENT OF BIOLOGICAL AND HEALTH SCIENCES

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## Contact Information

**Chair:** Enrique Massa

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**Building Name:** Biological and Health Sciences Building

**Room Number:** 101

The mission of the Department of Biological and Health Sciences at Texas A&M University-Kingsville is to provide excellence in teaching, research and service in a unique biotic and cultural region of Texas. The strong research and teaching base of our faculty allows us to provide the latest information in the biological sciences, including strong programs in biomedical science and organismal biology. Our commitment, as always, is to the success of our students.

Students must earn a C or better in English 1302 to meet the department's communication skills requirement. See chair for alternative exam.

## Faculty

### Department Faculty

**Baskin, Jon A** Professor, Department of Biological and Health Sciences; B.A., New York University; M.A., University of Arizona; Ph.D., University of Florida.

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

**Galloway, Cynthia** 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** Assistant 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.

**Perrigo, Glenn H** Professor, Department of Biological and Health Sciences; B.S., State University College, Brockport; Ph.D., The University of Texas at Austin.

**Powell, Randy** Associate 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** Assistant 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** Assistant Professor, Department of Biological and Health 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.

## Courses

### Biology (BIOL)

**BIOL 1106** General Biology Laboratory I **1 SCH (3)**

A laboratory experience that focuses on laboratory techniques, data collection and analysis. The experience reinforces and promotes an understanding of the cell structure, energy transformation, reproduction and genetic variability. Pre- or corequisite: BIOL 1306.

Fee: \$6.00

**BIOL 1107** General Biology Laboratory II **1 SCH (3)**

Experimental and observational techniques used to study plant and animal life at the organismal, population and community levels including morphology, physiology, reproduction and ecology. Pre- or corequisite: BIOL 1307.

Fee: \$6.00

**BIOL 1111** Introd Botany Laboratory **1 SCH (2)**

A laboratory experience that reinforces an understanding of plant form, function and identification. Prerequisites: exemption from or credit in WRIT 0300, READ 0300 and ALGE 0301. Pre or corequisite: BIOL 1311.

Fee: \$5.00

**BIOL 1113** Introd Zoology Laboratory **1 SCH (2)**

A laboratory experience that reinforces an understanding of animal form, function and identification. Prerequisites: exemption from or credit in WRIT 0300, READ 0300 and ALGE 0301. Pre or corequisite: BIOL 1313.

Fee: \$5.00

**BIOL 1306** General Biology I **3 SCH (3-0)**

Survey of contemporary biology that covers the chemical basis of life, structure, function and physiology of the cell, molecular biology and microevolution. Three lecturer hours and one discussion hour a week for one semester. Concurrent enrollment in BIOL 1106 recommended.

**BIOL 1307** General Biology II **3 SCH (3-0)**

Continuation of a two-semester course in biological concepts; will emphasize organismal diversity and comparative anatomy, reproduction, physiology, ecology, behavior and evolution. Three lecture hours and one discussion hour a week for one semester. Concurrent enrollment in BIOL 1107 recommended. Prerequisite: BIOL 1306.

**BIOL 1311** Introductory Botany **3 SCH (3)**

Survey of the plant kingdom with emphasis on the evolution and diversity of form, function followed by a survey of plant diversity and ecology. Concurrent enrollment in BIOL 1111 is recommended. Prerequisites: exemption from or credit in WRIT 0300, READ 0300 and ALGE 0301.

**BIOL 1313** Introductory Zoology **3 SCH (3)**

Survey of the animal kingdom with emphasis on the evolution, structure and function followed by a survey of animal diversity and ecology. Concurrent enrollment in BIOL 1113 is recommended. Prerequisites: exemption from or credit in WRIT 0300, READ 0300 and ALGE 0301.

**BIOL 1372** Biological Connections **3 SCH (3)**

Role of biological sciences in issues of world concern. Some experience in biology assumed (either one year of high school biology or credit or registration in BIOL 1306). Prerequisite: ENGL 1301.

**BIOL 2375** Life Science **3 SCH (3-2)**

A survey of the basic concepts of biology. Emphasizes cell structure, energy transformation, plant and animal structures and functions, diversity, and classification.

Fee: \$5.00

**BIOL 2401** Human Anatomy and Physiol **4 SCH (3-3)**

Gross and microscopic anatomy and physiology of the cells and tissues, integument, skeletal, muscular and nervous systems. Six hours of chemistry recommended.

Fee: \$6.00

**BIOL 2402** Human Anat and Physiology II **4 SCH (3-3)**

Gross and microscopic anatomy and physiology of the circulatory, respiratory, digestive, excretory, endocrine and reproductive systems. Prerequisites: READ 0300, BIOL 2401; 6 hours of chemistry recommended.

Fee: \$6.00

**BIOL 2421 Elementary Microbiology 4 SCH (3-3)**

Fundamental principles of the relationship of microorganisms to the life of human beings, including their morphology, growth, nutrition, and study. Prerequisites: C or better in both BIOL 1306 and BIOL 1106; 6 hours of chemistry recommended.

Fee: \$6.00

**BIOL 3301 Evolutionary Theory 3 SCH (3)**

A study of Darwinism, mechanisms of evolutionary change and a history of life in the context of contemporary biology. Prerequisite: 12 semester hours of biology are required.

**BIOL 3401 Invertebrate Zoology 4 SCH (3-3)**

Classification, anatomy, life history and evolution of invertebrates exclusive of insects. Prerequisite: 12 semester hours of biology.

Fee: \$5.00

**BIOL 3402 Genetics 4 SCH (0-3-0-3)**

Fundamental concepts of heredity, including cell reproduction, transmission genetics, biochemistry of genetics, gene structure and function and genetics of population. Lecture and recitation meetings. Prerequisites: 12 semester hours of biology; 6 semester hours of chemistry recommended.

**BIOL 3403 Plant Taxonomy 4 SCH (3-3)**

An introductory course concerned with developing skill in recognition and identification of seed plants at the species and family levels. Emphasis will be placed on collection, use of keys and manuals and herbarium techniques. Prerequisite: 12 semester hours of biology.

Fee: \$6.00

**BIOL 3404 Biotechniques 4 SCH (3-3)**

Focus on applications of modern molecular techniques that are used in biology. Technical report writing and computer skills will be emphasized. Prerequisite: freshman biology.

**BIOL 3405 Vertebrate Zoology 4 SCH (3-3)**

Anatomy, classification and natural history of the vertebrates; methods of collecting, preserving and identifying local vertebrates. Prerequisite: 12 semester hours of biology.

Fee: \$4.00

**BIOL 3407 Ecology 4 SCH (0-3-0-3)**

Ecology of water and land forms of South Texas. Prerequisite: 12 semester hours of biology.

Fee: \$5.00

**BIOL 3408 Animal Physiology 4 SCH (3-3)**

A study of the fundamental process of the animal systems. Prerequisites: 12 semester hours of biology and 6 semester hours of chemistry.

Fee: \$6.00

**BIOL 3409 Field Biology I 4 SCH (3-3)**

A study of the ecology and conservation of southern Texas flora and fauna. Prerequisite: 6 semester hours of biology.

Fee: \$5.00

**BIOL 4102 Seminar (WI) 1 SCH (1)**

Current biological literature with critical class reports. Course may be repeated for credit. Prerequisite: 12 semester hours of biology. Assessment Exam Fee, \$21.

Fee: \$21.00

**BIOL 4304 Research Projects in Biol 1-3 SCH (1-3)**

An independent review of literature and a laboratory or field problem yielding a formal report on the research. Variable credit dependent upon the project. May be repeated not to exceed accumulated total of 3 semester hours applicable to requirements for the major in biology. Prerequisite: advanced standing and prior approval of the problem by the supervising instructor.

**BIOL 4332 Pathophysiology 3 SCH (3)**

Fundamental concepts of pathophysiology, including changes at the cellular, organ, system, and whole-organism levels during the disease state.

Prerequisites: BIOL 1306/BIOL 1106, BIOL 1307/BIOL 1107, BIOL 2421, and BIOL 3402. BIOL 2401 and 2402, or BIOL 3408 is recommended.

**BIOL 4334 Molecular Neurobiology 3 SCH (3)**

Fundamental concepts of neurobiology, including neuronal electrical signaling, synaptic transmission, signal transduction, neurotransmitter diversity, neural development, and synaptic. Prerequisites: BIOL 1306/BIOL 1106, BIOL 1307/BIOL 1107, BIOL 2421, and BIOL 3402. Either BIOL 2401 and BIOL 2402, or BIOL 3408 is recommended.

**BIOL 4335 Molecular Genetics 3 SCH (3)**

Fundamental concepts of molecular genetics, including gene structure and diversity, chromatin organization, nucleosomes, gene expression, and epigenetics. BIOL 1306/BIOL 1106, BIOL 1307/BIOL 1107, BIOL 2421, and BIOL 3402.

**BIOL 4355 Topics in Biology 3 SCH (3)**

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

**BIOL 4360** Internship in Biology **3 SCH (3)**

**BIOL 4401** Molecular Biology **4 SCH (3-3)**

The application of modern molecular techniques to manipulate the replication and expression of genes. The laboratory will introduce basic and advanced molecular techniques. Prerequisites: 12 semester hours of biology and BIOL 3402.

Fee: \$6.00

**BIOL 4402** Vertebrate Embryology **4 SCH (3-3)**

Embryonic development of the frog, chick, and pig. Prerequisite: 12 semester hours of biology.

Fee: \$5.00

**BIOL 4406** Bacteriology **4 SCH (3-3)**

Survey of medical, public health, water, sewage and milk bacteriology. Bacteriological technique is emphasized. Prerequisites: 12 semester hours of biology, including BIOL 2421; 6 semester hours of chemistry recommended.

Fee: \$6.00

**BIOL 4408** Immunology **4 SCH (3-3)**

Experimental studies in the principles of infection and immunity. Prerequisite: 12 semester hours of biology, including BIOL 4406; organic chemistry recommended.

Fee: \$6.00

**BIOL 4410** Topics in Biology **4 SCH (3-3)**

Lectures, literature investigation and research in selected topics. May be repeated for credit once under different topic. Prerequisite: 12 semester hours of biology or equivalent.

Fee: \$5.00

**BIOL 4411** Plant Physiology **4 SCH (3-3)**

The study of the physiological functions of vascular plants including water relations, photosynthesis, respiration and hormone synthesis.

Prerequisites: 12 hours of biology including BIOL 1107/BIOL 1307.

Fee: \$6.00

**BIOL 4413** Nonflowering Plants **4 SCH (3-3)**

The study of structure, physiological function, life cycles and the economical and biological importance of algae, bryophytes, lichens, ferns and gymnosperms. Prerequisites: 12 hours of biology including BIOL 1107/BIOL 1307.

Fee: \$6.00

**BIOL 4425** Ornithology **4 SCH (3-3)**

Classification, structures, physiology, natural history and field identification of birds. Prerequisite: 12 semester hours of biology.

Fee: \$5.00

**BIOL 4426** Cellular Physiology **4 SCH (3-3)**

Physiochemical function at the cellular level. Prerequisites: 12 semester hours of biology and CHEM 3323/3123, CHEM 3325/3125; PHYS 1301/1101 and PHYS 1302/1102 recommended.

Fee: \$6.00

**BIOL 4427** Herpetology **4 SCH (3-3)**

Classification, anatomy, life history and distribution of reptiles and amphibians with special emphasis on local forms. Prerequisite: 12 semester hours of biology.

**BIOL 4429** Mammalogy **4 SCH (3-3)**

Classification, distribution, life histories, economic importance, techniques of field study, methods of collection and preservation of mammals.

Prerequisite: 12 semester hours of biology.

Fee: \$6.00

**BIOL 4430** Parasitology **4 SCH (3-3)**

Introduction to parasitism with special reference to human and other vertebrate hosts. Prerequisite: 12 semester hours of biology.

Fee: \$5.00

**BIOL 4431** Ichthyology **4 SCH (3-3)**

Classification, anatomy, life history and distribution of fishes, with special emphasis on local fresh water forms. Prerequisite: 12 semester hours of biology.

**BIOL 4433** Histology **4 SCH (3-3)**

Fundamental concepts of histology, including microanatomy of tissues, organ systems, and organ physiology. Prerequisites: BIOL 1306/BIOL 1106, BIOL 1307/BIOL 1107, BIOL 2421, and BIOL 3402.

**BIOL 4434** Biology of Forensic Science I **4 SCH (3-1)**

Study of crime scene protocol, evidence collection, and analysis of trace evidence such as finger prints, hairs and fibers, DNA and blood. Prerequisite: 12 semester hours of biology or permission from the instructor.

**BIOL 4435** Biology of Forensic Science II **4 SCH (3-1)**

Concepts of forensic science such as determining time and place of death as well as methods of rigor mortis, algor mortis, and livor mortis. Identification of bodies by analysis of trace evidence such as pollen and diatoms as well as anthropology and odontology. Prerequisites: 12 semester hours of biology or permission from the instructor.

## Degree Requirements

### Majors

- Biology with Teaching Certification, B.S. (<https://catalog.tamuk.edu/undergraduate/arts-sciences/biological-health-sciences/biology-teaching-certification-bs>)
- Biology, B.A. (<https://catalog.tamuk.edu/undergraduate/arts-sciences/biological-health-sciences/biology-ba>)
- Biology, B.S. (<https://catalog.tamuk.edu/undergraduate/arts-sciences/biological-health-sciences/biology-bs>)
- Biomedical Sciences Pre-Professional Option, B.S. (<https://catalog.tamuk.edu/undergraduate/arts-sciences/biological-health-sciences/biomedical-sciences-pre-professional-option-bs>)
- General Biomedical Sciences Option (Minor in Chemistry), B.S. (<https://catalog.tamuk.edu/undergraduate/arts-sciences/biological-health-sciences/general-biomedical-sciences-option-minor-chemistry-bs>)