

# Department of Biological and Health Sciences

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## Contact Information

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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. We offer undergraduate degrees in Biology, Biomedical Science, and Human Nutrition.

## Biology and Biomedical Sciences

Our undergraduate programs in **Biology** and **Biomedical Sciences** are diverse and designed to offer students the most flexibility in perusing their academic interests. Our program offers the following undergraduate degrees:

- Bachelor of Arts in Biology
- Bachelor of Science in Biology
- Bachelor of Science in Biology with Teaching Certification
- Bachelor of Science in Biomedical Sciences (Minor in Chemistry)
- Bachelor of Science in Biomedical Sciences – Pre-Professional Option
- Minor – Biology

Our faculty have wide-ranging areas of expertise including cellular physiology, genetics, cancer biology, microbiology, epigenetics, molecular biology, neurobiology, infectious disease, human physiology, ecology, GIS, evolution, ornithology, herpetology, mammalogy, plant biology, systematics, and ecological modeling. Regardless of your academic track, faculty have high expectations for their students in the classroom, laboratory, or research settings. Our graduates successfully matriculate to graduate and professional schools within Texas, across the country, and internationally.

## Human Nutrition

The major in Human Nutrition prepares students for careers in dietetics, food systems management and community nutrition. Students may find jobs in hospitals, community nutrition programs, wellness programs, school lunch programs, restaurants, hotels, catering establishments and a variety of management positions in the food service industry. Concepts studies include food principles, nutrition, medical nutrition therapy, experimental foods, community nutrition, quantity food preparation and food service management. The Human Nutrition program is a Didactic Program in Dietetics (DPD) accredited by the Academy of Nutrition and Dietetics (AND) Accreditation Council for Education in Nutrition and Dietetics (ACEND). This program is designed to meet the educational requirements for acceptance into an accredited dietetic internship program.

## Didactic Program in Dietetics Verification Statement Policy

A verification statement is required in order to apply to dietetic internship programs. To be eligible to receive a verification statement, students in the Didactic Program in Dietetics (DPD) must have a minimum GPA of 3.0 overall in required DPD courses and hold a baccalaureate degree. Receipt of a verification statement, alone, does not guarantee acceptance into an ACEND accredited dietetic internship as programs are highly competitive. Students who do not meet the grade point requirement for a verification statement, but satisfy graduate requirements, remain eligible to graduate with a Bachelors of Science in Human Nutrition. For more detailed information, please see the Didactic Program in Dietetics Student Handbook available online.

## Biology (BIOL)

### **BIOL 1106** General Biology Laboratory I **1 SCH (0-3)**

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. Concurrent enrollment in BIOL 1306 recommended.

Fee: \$20.00

### **BIOL 1107** General Biology Laboratory II **1 SCH (0-3)**

Experimental and observational techniques used to study plant and animal life at the organismal, population and community levels including morphology, physiology, reproduction and ecology. Concurrent enrollment in BIOL 1307 recommended.

Fee: \$20.00

**BIOL 1306 General Biology I 3 SCH (3-0-1)**

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 (3-0-1)**

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 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: \$20.00

**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: \$20.00

**BIOL 2420 Principles of Microbiology 4 SCH (3-3)**

Introduction to the fundamentals of microbes with an emphasis on microbe diversity, physiology, and morphology including principles of disinfection, sterilization, immunity, and pathogenicity. This class is intended for nursing, veterinary technician, nutrition, kinesiology, or biology programs. It cannot be substituted for BIOL 2421. Prerequisites: BIOL 1306 and BIOL 1106 or BIOL 2401 and BIOL 2402. Fee: \$6.00

Fee: \$20.00

**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: \$20.00

**BIOL 3301 Evolutionary Theory 3 SCH (3-0)**

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 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: \$20.00

**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: \$20.00

**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: \$20.00

**BIOL 4102 Seminar (WI) 1 SCH (1-0)**

Current biological literature with critical class reports. Course may be repeated for credit. Prerequisite: 12 semester hours of biology.

**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 (3-0)**

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 (3-0)**

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 (3-0)**

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 under a different topic. Prerequisite: 12 semester hours of biology or equivalent.

**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: \$20.00

**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 under a different topic. Prerequisite: 12 semester hours of biology or equivalent.

Fee: \$20.00

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

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

Fee: \$20.00

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

Physiochemical function at the cellular level. Prerequisites: 12 semester hours of Biology and CHEM 3312/CHEM 3123, CHEM 3325/3125; PHYS 1301/1101 and PHYS 1302/1102 recommended.

Fee: \$20.00

**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.

Fee: \$20.00

**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: \$20.00

**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.

Fee: \$20.00

**BIOL 4433 Histology 4 SCH (0-3-0-3)**

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.

Fee: \$20.00

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

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.

Fee: \$20.00

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

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.

## Human Nutrition (HMNT)

### **HMNT 1350** Food Prep. and Meal Mgt. **3 SCH (2-2)**

Management of resources in selection, purchasing, preparation and serving of foods. Basic principles and fundamental knowledge of standard food preparation are included. Meals and special occasion menus which meet the dietary needs of family members are planned, prepared and served. Fee: \$20.00

### **HMNT 2150** Intro to Human Nutrition **1 SCH (1-0)**

Understand the process and expectations in the Didactic Program in Dietetics at TAMUK. Offer assistance in the understanding the importance of mentoring and precepting others. Demonstrate how to evaluate and use professional literature to make ethical and evidence based practice decisions and help to understand the governance of nutrition and dietetics practice. Gain experience that focuses on assessment of nutritional status of an individual.

### **HMNT 2350** Introductory Nutrition **3 SCH (3-0)**

Basic principles of human nutrition with emphasis on the nutrients and factors which affect their utilization in the human body. Prerequisite: 4 semester hours of Biology or Chemistry.

### **HMNT 3350** Nutrition Through Life Cycle **3 SCH (3-0)**

An in-depth study of the normal growth, development and nutrition associated with pregnancy, infancy, childhood, adolescence, adulthood and aging. Review of appropriate nutritional assessment methods. Prerequisite: junior standing.

### **HMNT 3352** Experimental Food Science **3 SCH (2-3)**

Food preparation designed to consolidate previous food studies and to develop experimental attitudes and techniques. Emphasis is placed on basic scientific principles. Includes fundamentals of quality assurance and the various subjective and objective methods of evaluation. Prerequisites: CHEM 2421 (or CHEM 3123 and CHEM 3323), HMNT 1350.

Fee: \$20.00

### **HMNT 3353** Medical Nutrition Therapy I **3 SCH (3-0)**

Fundamentals of nutritional assessment techniques and management of diseases of infancy and childhood, diabetes, diseases of the heart, diseases of the upper and lower GI tract. Emphasis on physiology as related to disease and practical application of nutritional support. Includes case studies, practice problems, counseling methods and documentation. Prerequisites: Credit in HMNT 2150 and HMNT 2350 with a minimum grade of "C".

### **HMNT 3363** Medical Nutrition Therapy II **3 SCH (3-0)**

Advanced study of medical nutrition therapy. Course includes fundamentals of enteral and parenteral support and study of physiology as related to acute and chronic kidney disease, surgery, liver disease and acid/base balance. Prerequisite: Credit in HMNT 2150, HMNT 2350, and HMNT 3353 with a minimum grade of "C".

### **HMNT 4312** Nutr. Couns and Diet Instr. **3 SCH (3-0)**

Provide step-by-step approach guide for entry-level practitioners through basic components of changing food behavior and improving nutritional status. Prerequisites: HMNT 2350 is required (Recommended to take HMNT 3353 & HMNT 3363 prior to taking this course).

### **HMNT 4351** Foods and Nutrition I **3 SCH (3-0)**

Study of the influence of socioeconomic, cultural and psychological trends, issues and other impacts on food and nutrition behaviors of individuals and communities.

### **HMNT 4352** Foods and Nutrition II (WI) **3 SCH (3-0)**

Global overview of agencies from community to international levels with emphasis on planning, marketing, implementing and evaluating nutrition programs. Prerequisites: Credit in HMNT 2150, HMNT 2350 and HMNT 3353 with a minimum grade of "C".

### **HMNT 4360** Quant. Food Prep & Mgt. **3 SCH (1-4)**

Meal planning, food purchasing and preparation of food in large quantities. Introduction to systems management and employer-employee relations. Prerequisite: Credit in HMNT 1350 with a minimum grade of "C".

Fee: \$20.00

### **HMNT 4366** Adv. Inst Foodservice Mgt. **3 SCH (3-0)**

Advanced studies in institutional foodservice administration including computer applications in foodservice management. Prerequisites: Credit in HMNT 4360 with a minimum grade of "C".

### **HMNT 4367** Advanced Nutrition I **3 SCH (3-0)**

Study of nutrients and their relation to the chemistry and physiology of the human body, including metabolism of energy and macronutrients in chronic diseases. Analysis and interpretation of current nutrition research. Prerequisites: CHEM 1312, CHEM 1112, credit in HMNT 2150 and HMNT 2350 with a minimum grade of "C", or permission of instructor.

### **HMNT 4368** Advanced Nutrition II **3 SCH (3-0)**

Study of nutrients and their relation to the chemistry and physiology of the human body, including regulatory nutrients and micronutrients and homeostatic maintenance in chronic diseases. Analysis and interpretation of current nutrition research. Prerequisites: Credit in HMNT 4367 with a minimum grade of "C", or permission of instructor.

**HMNT 4371 Topics in Nutrition 3 SCH (3-0)**

Detailed study of one or more specific sub-disciplines of human nutrition. Course may be repeated for credit when topic changes. Prerequisite: Junior-level (or higher) standing.

**Majors**

- Biology with Teaching Certification, B.S.
- Biology, B.A.
- Biology, B.S.
- Biomedical Sciences Pre-Professional Option, B.S.
- General Biomedical Sciences Option (Minor in Chemistry), B.S.
- Human Nutrition, B.S.

**Minors**

- Biology, Minor
- Human Nutrition, Minor