

# BIOMEDICAL SCIENCES (BIMS)

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## **BIMS 2171 Medical Terminology**

### **1 Semester Credit Hour (2 Lecture Hours)**

This course stresses familiarity with and facility in scientific terminology. Areas of focus include: an introduction to scientific terminology, word analysis, etymologies, spelling and pronunciation. Offered fall and spring semesters every year.

**Prerequisite:** (BIOL 1406 and 1407) or (BIOL 2401 and 2402).

## **BIMS 2200 Professional Skills**

### **2 Semester Credit Hours (2 Lecture Hours)**

Presentation and discussion of selected topics relating to the professional skills of practicing scientists including literature searches, reviews, paper presentation, professional opportunities and job requirements. Biomedical Sciences and Biology majors only.

## **BIMS 3100 Essentials for Applied Forensics Laboratory Sciences**

### **1 Semester Credit Hour (1 Lecture Hour)**

Introduction to general laboratory procedures related to the criminal investigation system and regulations (especially related to Texas), lab safety, quality assurance and quality control, professional ethics, specimen acquisition and maintenance and chain of custody.

**Prerequisite:** (BIOL 1407 and CHEM 1412).

**Co-requisite:** BIMS 3103, SMTE 0092.

## **BIMS 3103 Essentials Laboratory for Forensic Science**

### **1 Semester Credit Hour (1 Lab Hour)**

Application of essential practices for forensic science. Offered fall semester every year.

**Prerequisite:** BIMS 3200\*.

\* May be taken concurrently.

**Co-requisite:** SMTE 0092.

## **BIMS 3300 Animal Nutrition**

### **3 Semester Credit Hours (3 Lecture Hours)**

Examines the dietary requirements of both companion animals and livestock. Includes the anatomy, physiology and biochemistry of the gastrointestinal system, nutrient procurement and use, feed additives, growth stimulants, metabolic diseases, and diet therapy. Cross listed with BIOL 3300. Offered spring semester every year.

**Prerequisite:** BIOL 1407, CHEM 3411 and 3412 or CHEM 3412\*.

\* May be taken concurrently.

## **BIMS 3301 Introduction to Animal Science**

### **3 Semester Credit Hours (3 Lecture Hours)**

This course is an orientation into animal science as it relates to agriculture and veterinary medicine. Students will also be guided on issues to ensure successful veterinary school matriculation.

## **BIMS 3320 Survey of Forensic Science**

### **3 Semester Credit Hours (3 Lecture Hours)**

A survey of the methods and materials used to gather and process evidence at potential crime scenes. Students are introduced to the legal rules of evidence and their practical ramifications during scientific criminal investigations. In laboratory, students use commonly available processing items and tools to investigate a simulated crime scene. Offered fall semester every year.

**Co-requisite:** SMTE 0092.

## **BIMS 3325 Professional Practice in Forensic Science**

### **3 Semester Credit Hours (3 Lecture Hours)**

An introduction to industry standards and ethics for professional forensic scientists. This course analyzes cognitive processes, scientific methods and quality control/quality assurance issues in forensic investigations. It also stresses maintaining credibility in an adversarial legal system through the development of technical/scientific speaking and writing skills. Offered spring semester every year.

**Prerequisite:** BIMS 3320.

## **BIMS 3401 Pathophysiology**

### **4 Semester Credit Hours (4 Lecture Hours)**

This course is a study of the biological basis of human disease. It includes an investigation of inflammation, immunity, and neoplasia, as well as the more common presenting dysfunctions of body systems. Offered every fall. Offered fall semester every year.

**Prerequisite:** CHEM 1411 and BIOL 1407 or BIOL 2401.

## **BIMS 3402 Introduction to Forensic Anthropology and Osteology**

### **4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

This course introduces the student to the osteological examination of the human skeletal system as practiced by professional forensic anthropologists. It is designed to equip the student with introductory understanding of the anatomy and normal appearance of the human skeleton as well as some of its variations, including pathological conditions, traumatic injury, and postmortem damage.

**Prerequisite:** BIOL 2401, 2402, 3425 or 3430.

**Co-requisite:** SMTE 0092.

## **BIMS 3403 Molecular Biology**

### **4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

Principles of molecular biology including advanced concepts of gene structure, expression and regulation, chromatin structure, recombination, and current molecular biology techniques. Laboratory emphasis is on basic skills for nucleic acid analyses, including extraction, PCR amplification, quantification, restriction, and electrophoresis. DNA sequencing-based approaches are covered including bioinformatics for sequence comparisons, polymorphisms, and molecular identification. Cross listed with BIOL 3403. Offered spring semester every year.

**Prerequisite:** BIOL 2416, 2421 and SMTE 0092\*.

\* May be taken concurrently.

**Co-requisite:** SMTE 0092.

## **BIMS 4085 Major Field Test in Biology**

### **0 Semester Credit Hours**

The Major Field Test (MFT) in Biology is a national examination given in the Fall and Spring semesters only. It is a graduation requirement for all Biology and some Biomedical Sciences students. Students enroll in this course during the semester that they plan to take the MFT. There is no cost to the student for either this course or for the MFT. Admission is limited to students who have completed 90 or more semester credit hours.

## **BIMS 4111 Contemporary Scientific Readings**

### **1 Semester Credit Hour (1 Lecture Hour)**

Students read one non-fiction book per month addressing some aspect of medicine, science or history (four books per semester), then meet once per month to discuss, analyze and defend their perceptions about the book. Preference will be given to students accepted into the Partnership for Primary Care and the Joint Admissions Medical Program (JAMP), those who are seeking admission into JAMP by participating in the pre-JAMP and students in other sponsored programs. Other students may be allowed to take upon permission of instructor. This course may be repeated once for full credit in subsequent semesters.

**BIMS 4170 Biomedical Seminar****1 Semester Credit Hour (1 Lecture Hour)**

A series of seminars on current topics of biomedical research. This course may be repeated once for full credit in subsequent semesters.

**Prerequisite:** BIOL 1407.

**BIMS 4295 Biomedical Practicum****2 Semester Credit Hours**

Supervised learning experience with a community professional in health care (e.g., physician, dentist, veterinarian, chiropractor, pharmacist, physician assistant or physical therapist). On-campus meetings, oral and written reports are required. (Cannot be taken by Clinical Laboratory Science students in lieu of CLSC 4297 - Professional Practicum I.) This course may be repeated once for full credit in subsequent semesters.

Requires permission of instructor. Offered fall and spring semesters every year.

**Prerequisite:** BIOL 1407.

**Co-requisite:** SMTE 0092.

**BIMS 4296 Clinical Research****2 Semester Credit Hours**

Students will actively perform clinical research and learn from and interact with health care professionals such as physicians, nurses, physical therapists, pharmacists, etc. The student will be a functioning member of a research team with specific, measurable responsibilities in clinical studies.

**Prerequisite:** BIOL 1407.

**Co-requisite:** SMTE 0092.

**BIMS 4297 Professional Practicum I****2 Semester Credit Hours (2 Lecture Hours)**

PROFESSIONAL PRACTICUM I Supervised learning experience in selected departments of the clinical laboratories. Clinical Laboratory Science students only. Requires permission of instructor and application.

**BIMS 4299 Directed Independent Research****1-2 Semester Credit Hours (1-2 Lab Hours)**

Independent laboratory- or field-based research project on topic of current interest. Project developed and funded in conjunction with a faculty advisor. Written report required. May be repeated for a maximum of 4 semester credit hours. Offered any semester upon request by a student and consent of the instructor.

**Prerequisite:** BIOL 1407 and CHEM 1412.

**Co-requisite:** SMTE 0092.

**BIMS 4311 Biology of Cancer****3 Semester Credit Hours (3 Lecture Hours)**

This course is a study of the profile of a cancer cell, and the various causes of human cancer. Contribution of heredity, environmental factors, and infectious agents to oncogenesis will be studied. Cancer screening, diagnosis, and treatment will be discussed. Various types of cancer will be presented. Offered fall semester of even-numbered years.

**Prerequisite:** BIOL 2416.

**BIMS 4323 Neurobiology****3 Semester Credit Hours (3 Lecture Hours)**

Studies the anatomy and physiology of the nervous system. Includes an examination of evolutionary trends in nervous system development, neural function, nerve impulse transmission, sensory and motor systems, behavior, emotional states, learning and memory. Particular emphasis is placed on human functioning. Offered spring semester every year.

**Prerequisite:** BIOL 2416.

**BIMS 4327 Introduction to Toxicology****3 Semester Credit Hours (3 Lecture Hours)**

Principles of toxicology including absorption and excretion, biotransformation, chemical carcinogenesis, developmental toxicology and toxic agents.

**Prerequisite:** BIOL 1407 and CHEM 1412.

**BIMS 4330 Biological Basis of Aging****3 Semester Credit Hours (3 Lecture Hours)**

Molecular aspects of aging and disease, including biological mechanisms and theories involving cells, tissues, and organ systems.

**Prerequisite:** BIOL 1407 and CHEM 3411.

**BIMS 4333 Medical Entomology****3 Semester Credit Hours (3 Lecture Hours)**

An introduction to arthropods of medical and veterinary importance with particular emphasis on the critical roles that they play in their host group's health and well-being.

**Prerequisite:** BIOL 1407.

**BIMS 4334 Human Genetics****3 Semester Credit Hours (3 Lecture Hours)**

Introduction to the genetic aspects of health and disease. Classic Mendelian and chromosomal disorders are examined as well as the relationship of genetic predisposition to the healthy state and to diseases/conditions.

**Prerequisite:** BIOL 2416 and CHEM 3412.

**BIMS 4335 Endocrinology****3 Semester Credit Hours (3 Lecture Hours)**

Basic biochemical and molecular aspects of hormone physiology, basic endocrine function and hormone action, immune-endocrine interactions, and clinical examples of the outcomes of abnormal function in human disease.

**Prerequisite:** BIMS 2200, BIOL 2416 and CHEM 3412 and (UNIV 1101 and 1102) or BIOL 2300.

**BIMS 4340 Forensic Science in Criminal Law****3 Semester Credit Hours (3 Lecture Hours)**

Students will learn legal procedures, rules of evidence, and applications of forensic science in the area of criminal law. Students will also develop skills in report writing and testifying in court.

**Prerequisite:** BIMS 3320.

**BIMS 4341 Health Disparities and Social Justice in the US****3 Semester Credit Hours (3 Lecture Hours)**

This course will examine the social/societal, physical/environmental, biological, and genetic/epigenetic factors that are fundamental in creating disparities in health in America. This course will also focus on the formulation and implementation of public policy objectives to reduce and ultimately eliminate health disparities. Students may not take both this course and either SOCI 4325 Medical Sociology or BIMS 4350 Global Health Disparities for credit. Offered fall semester every year.

**Prerequisite:** BIOL 1407.

**BIMS 4350 Global Health Disparities****3 Semester Credit Hours (3 Lecture Hours)**

Provides students with an historical perspective on global health issues and leads to an understanding of current and future concerns. Emphasis is on the global burden of disease and determinants of health as well as health disparities. Provides students with an introduction to the study of health disparities in the United States, examining how health disparities are defined and measured and exploring issues such as how the structure of American society affects who gets sick and who gets care. Case studies expose students to a variety of real-life scenarios and explore a range of issues. This is an intensive writing course. This course is cross-listed with HCAD 4350. Students cannot take this course and BIMS 4341 Health Disparities in the US for credit.

**BIMS 4374 Medical Microbiology****3 Semester Credit Hours (3 Lecture Hours)**

Study of common human pathogenic organisms. Includes bacterial, parasitic, viral and fungal infections with emphasis on pathogenesis and treatment.

**Prerequisite:** BIOL 2421.

**BIMS 4375 Mechanisms of Microbial Pathogenesis****3 Semester Credit Hours (3 Lecture Hours)**

Studies of how microorganisms invade the host and produce pathological symptoms associated with diseases. Emphasis is on the interaction between various host cells and pathogens, especially molecular mechanisms of pathogenesis and host immune responses.

**Prerequisite:** BIOL 2421.

**BIMS 4395 Forensic Science Internship****3 Semester Credit Hours (3 Lecture Hours, 5 Lab Hours)**

This course is designed to bridge the gap between academic instructions and the forensic science industry by providing real world experience in forensic investigations. Students attend lectures on campus, plus spend five hours/week at a crime laboratory. Students will accompany crime scene investigators to actual crime scenes and participate in several hands on forensic exercises involving mock as well as real investigations. Some activities may result in students spending more than five hours of laboratory or practicum time.

**Prerequisite:** BIMS 3320.

**Co-requisite:** SMTE 0092.

**BIMS 4396 Directed Independent Study****1-3 Semester Credit Hours (1-3 Lecture Hours)**

Research in areas of current interest. Written report required.

**Prerequisite:** BIOL 1407 and CHEM 1412.

**Co-requisite:** SMTE 0092.

**BIMS 4406 Immunology****4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

An overview of immunology with emphasis on current knowledge of the immune system. Detailed examination of the specific cells, cytokines, antibodies, and molecules that comprise the immune system. Laboratory exercises demonstrate the basic principles and techniques used in immunologic studies. Offered every Spring semester. Cross listed with BIOL 4406.

**Prerequisite:** BIOL 2421.

**Co-requisite:** SMTE 0092.

**BIMS 4410 Histology****4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

The study of cells and tissues, especially the manner in which they are organized to form organs and systems. Laboratories involve intensive use of the microscope to identify cells, tissues and organs.

**Prerequisite:** BIOL 2402 or 3425.

**Co-requisite:** SMTE 0092.

**BIMS 4428 Medicolegal Death Investigations****4 Semester Credit Hours (3 Lecture Hours, 1 Lab Hour)**

This course is designed to provide an introduction to the essential procedures of forensic death investigation. Students are instructed in the process of investigating all aspects of a death case falling under the jurisdiction of medical examiners in Texas. The importance of scene management and documentation, case file management, review of physical and psychological evidence, autopsy procedures, and consultation with other forensic science experts leading to the correct classification of cause and manner of death are emphasized. Course may be repeated only once with permission of instructor.

**Co-requisite:** SMTE 0092.

**BIMS 4439 Case Work Methods in Forensic Anthropology****4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

This course combines the study of human bones (osteology) and skeletal anatomy with established and validated forensic anthropological methods to solve theoretical and actual forensic cases involving human remains. Cross listed with BIMS 5439, BIOL 4439, and BIOL 5439.

**Prerequisite:** BIOL 2401 or 3425.

**Co-requisite:** SMTE 0092.

**BIMS 4590 Selected Topics****5 Semester Credit Hours (1-5 Lecture Hours)**

Variable content. May be repeated for credit.