Biomedical Sciences

Department Information

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<tr>
<th>Biomedical Sciences Administrative Staff</th>
<th>(251) 445-9265</th>
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<tbody>
<tr>
<td>Interim Chair</td>
<td>Julio F. Turrens</td>
</tr>
<tr>
<td>Professors</td>
<td>Spector, Turrens</td>
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<tr>
<td>Professor Emeritus</td>
<td>Covey, Davis</td>
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<tr>
<td>Associate Professors</td>
<td>Henderson, Stanfield, Mockett, Ravine</td>
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<tr>
<td>Assistant Professors</td>
<td>Thulasiraman, Shokolenko, Swiger, Gorelik</td>
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Department of Biomedical Sciences web site
http://www.southalabama.edu/colleges/alliedhealth/biomedical

The Department of Biomedical Sciences is dedicated to providing excellent undergraduate preparation for those students interested in pursuing careers in medicine, dentistry, basic medical research, biomedical education or other health professions. The curriculum is designed to provide students a strong general education in the humanities, arts, social sciences, mathematics, and sciences, followed by in-depth study in the basic medical sciences. The program offers an optional Honors Research Thesis (BMD 499) to qualified students consisting of a first-hand research laboratory apprenticeship in biomedical research under the mentorship of a faculty scientist. Students interested in the Honors Research Thesis option should contact Dr. Michael Spector for information. The Biomedical Sciences curriculum as a whole is aimed at establishing a conceptual framework from which the student can pursue post baccalaureate educational experiences in the biomedical sciences, particularly medicine, dentistry, pharmacy, optometry, or Ph.D. study in Basic Medical Sciences, as well as in a variety of health and science related fields. In addition, the Department of Biomedical Sciences offers basic medical science course work that serves as a background for students wishing to pursue professional component programs in the Pat Capps Covey College of Allied Health Professions.

Pre-professional Advising Program

Students planning to major in Biomedical Sciences who also have plans to attend medical, dental, optometry, physician assistant, veterinary or pharmacy school are advised by a Pat Capps Covey College of Allied Health Professions advisor and by a Health Preprofessional advisor.

Cindy Stanfield, Ph.D.
Health Preprofessional Advisor
HAHN 4004
(251) 445-9280

Academic Advisor
Karen LaSarge
Pat Capps Covey College of Allied Health Professions
HAHN 3028
(251) 445-9260

Areas Of Study

Biomedical Sciences (BS)
Minor in Biomedical Sciences
Courses

Allied Health Professions (AHP)

AHP 101  Freshman Sem in Allied Health  2 cr
A course for first-time students that assists with maximizing the student's potential to achieve academic success and to adjust responsibly to the individual and interpersonal challenges presented by college life. Taught in small groups, the course provides an introduction to the nature of higher education with special emphasis on health-related disciplines. Appropriate reading and writing assignments will be required.

AHP 510  IPE Autism Spectrum Disorders  1 cr
This foundational course is designed to prepare graduate students in OT, PT, SLP, MD and ED to provide high-quality services to individuals with autism spectrum disorder and other developmental disabilities. The emphasis will be on interprofessional education using team-based instruction to support effective interprofessional practice in both educational and health care settings. ADDITIONAL RESTRICTION: Students can only be enrolled following successful application and admission. Contact the course instructor for information on application.

Biomedical Sciences (BMD)

BMD 114  Anatomy and Physiology I  4 cr
This is the first of a two-course sequence that covers an introduction to basic human anatomy and physiology, including the study of the structure and function of various body systems. Included is a study of basic principles of organism homeostasis, biochemical makeup, a study of cells and tissues, cellular metabolism, joints, the integumentary and skeletal systems, muscular and nervous systems, and the senses. Laboratory experiences are provided through demonstration and interactive (virtual) laboratories.
Pre-requisite: BLY 101 Minimum Grade of D or BLY 121 Minimum Grade of D or CH 101 Minimum Grade of D or CH 131 Minimum Grade of D

BMD 115  Anatomy and Physiology II  4 cr
A continuation of BMD 114. Topics include nervous, cardiovascular, lymphatic, immune, respiratory, digestive, and urinary systems. Additional topics may include blood, metabolism, immunology and reproduction. Laboratory experience is provided through demonstration and interactive (virtual) laboratories.
Pre-requisite: BMD 114 Minimum Grade of D

BMD 201  Seminars in Biomedical Science  1 cr
This course introduces students to contemporary biomedical research and career possibilities in the biomedical sciences. Students will use the resources of the Biomedical Library to perform a literature search.

BMD 210  Infectious Disease Hlth Cr Env  3 cr
This course introduces the fundamental concepts of host-microbial relationships resulting in infectious diseases. Included topics are microorganism virulence factors, host defenses, mechanisms, epidemiology, antimicrobial chemotherapy, and microbial resistance. Principles of microbial physiology, taxonomy, and genetics are provided as background. Specific infectious diseases of various anatomical systems are emphasized.
Pre-requisite: BLY 101 Minimum Grade of D or BLY 121 Minimum Grade of D or BMD 114 Minimum Grade of D

BMD 290  Sp Top - H -  1 TO 6 cr
Topics of current health interest.

BMD 311  Human Anatomy  3 cr
A course in human gross and microscopic anatomy in a systematic approach, with an emphasis on structure-function relationships at the cell, tissue and organ level. The topics include anatomy of integumentary, musculoskeletal, nervous, cardio-vascular, lymphatic, respiratory, digestive, urinary and reproductive systems. This course is lecture-based with no lab component.
Pre-requisite: BLY 122 Minimum Grade of D

BMD 321  Biochemistry I-Molecular Biol  3 cr
The course covers different aspects of molecular biology including protein structure and function, carbohydrate, lipids, DNA replication, transcription and translation and applications to medical problems (i.e., forensic medicine, diagnosis of genetic diseases, etc).
Pre-requisite: CH 201 Minimum Grade of D

BMD 322  Biochemistry II-Metabolism  3 cr
The course discusses the chemical basis of metabolism including the conversion of nutrients from digestion to either molecules of biological relevance or to energy. Genetic diseases affecting these pathways are described and discussed.
Co-requisite: BMD 323
Pre-requisite: BMD 321 Minimum Grade of D and CH 202 Minimum Grade of D

BMD 323  Biochemistry Laboratory  1 cr
This laboratory is designed to provide hands-on experience on several biochemical techniques including cell fractionation, chromatography, DNA isolation, electrophoresis, determination of enzyme activity, etc.
Co-requisite: BMD 322
Pre-requisite: BMD 321 Minimum Grade of D
### BMD 334 Human Physiology I 3 cr
The objectives of this course are to study human physiology with emphasis on cellular physiology (cell structure, metabolism, and transport) and the endocrine and nervous systems and skeletal muscle. This course is the first of a 2 course sequence.
Pre-requisite: BLY 121 Minimum Grade of D and BLY 122 Minimum Grade of D or CH 131 Minimum Grade of D or CH 132 Minimum Grade of D

### BMD 335 Human Physiology II 3 cr
Study of human physiology with emphasis on the basic principles of organ system physiology. The course emphasizes muscle, cardiovascular, renal, respiratory, digestive, and reproductive physiology and an introduction to immunology. This is the second course in a 2 course sequence.
Pre-requisite: BMD 334 Minimum Grade of D

### BMD 336 Physiology Lab - W 1 cr
This laboratory is designed to provide students with hands-on laboratory experience in physiology, with emphasis on the musculoskeletal, cardiovascular, respiratory, and nervous systems. Limited to BMD majors unless by special permission. Special fee.
Co-requisite: BMD 335
Pre-requisite: BMD 334 Minimum Grade of D and EH 102 Minimum Grade of C or EH 105 Minimum Grade of C

### BMD 350 Molecular Basis of Genomics 3 cr
The course is designed to introduce students to the fundamental concepts of molecular genetics and genomics. The concepts that will be covered in this course include nucleic acid structure and function, mechanisms of replication, transcription, translation, gene expression and regulation. In addition, the course aims to familiarize students with modes of analysis used in comparative genomic research.
Pre-requisite: BMD 321 or BLY 301 or BLY 440

### BMD 390 Sp Top - 1 TO 8 cr
Topics of current health interest.

### BMD 401 Immunology 3 cr
This course presents the basic concepts of immunochemistry, immunobiology, and host immune responses to disease. Antigens, antibodies, cells and structures of the immune system will be discussed as well as their roles in the processes of immunity, allergies, transplantation, and diseases.
Pre-requisite: BMD 321 Minimum Grade of D or CH 201 Minimum Grade of D or BMD 114 Minimum Grade of D and (BMD 210 Minimum Grade of D or BLY 213 Minimum Grade of D)

### BMD 402 Medical Microbiology 5 cr
This course presents the concepts of pathogenicity and virulence as they relate to disease causing bacteria, viruses, and fungi. Mechanisms of pathogenicity, interrelationships and interactions that occur between the host, the parasite and their environments will be emphasized in molecular terms. General concepts of microbial physiology, genetics and antimicrobial therapy are also presented. The laboratory portion of the course will provide hands-on experience in the handling and identification of bacteria. Special fee.
Pre-requisite: BMD 401 Minimum Grade of D

### BMD 410 Pathophysiology 3 cr
A systematic study of disease processes involving relationships between pathophysiological changes and clinical manifestations.
Pre-requisite: BMD 321 Minimum Grade of D and BMD 322 Minimum Grade of D and BMD 334 Minimum Grade of D and BMD 335 Minimum Grade of D

### BMD 420 Pharmacology 3 cr
An introduction to pharmacological concepts and effects and uses of major drug classes. Drug design, pharmacodynamics (receptors, mechanisms, dose-response) and pharmacokinetics (time action) are discussed in general (principles), and in particular, for selected classes of drugs.
Pre-requisite: BMD 321 Minimum Grade of D and BMD 322 Minimum Grade of D and BMD 334 Minimum Grade of D and BMD 335 Minimum Grade of D

### BMD 430 Neurosciences 4 cr
A study of neuroscience which integrates neurochemistry, neuroanatomy, and neurophysiology, emphasizing cellular neurobiology, neural systems, and the neurobiology of behavior. Course includes laboratory experience.
Pre-requisite: BMD 311 Minimum Grade of D and BMD 334 Minimum Grade of D or BMD 335 Minimum Grade of D

### BMD 450 Introduction to Research 2 cr
Fundamental principles of research will be presented and applied. Students will examine and evaluate a selection of contemporary research and learn many of the responsibilities of professional researchers, particularly in academic settings. Oral classroom presentations are required.
Pre-requisite: BMD 311 Minimum Grade of D and BMD 321 Minimum Grade of D and BMD 322 Minimum Grade of D and BMD 335 Minimum Grade of D and BMD 334 Minimum Grade of D and BMD 336 Minimum Grade of D

### BMD 490 Sp Top - 1 TO 8 cr
Topics of current health interest.

### BMD 493 Issues in Biomed Sciences - W 3 cr
This course will provide an open forum for discussion of current controversial issues in biomedical sciences. The topics will include research integrity, discussions on the impact of medical advances in society as well as issues of historical relevance.
Pre-requisite: BMD 321 Minimum Grade of D
BMD 494  Directed Research Studies  3 cr
The student will perform a biomedical research project under the direction of a faculty mentor. This will include literature searches and presenting the project in a written format. Permission of Instructor and Department Chair required.
Pre-requisite: BMD 321 Minimum Grade of D

BMD 499  Honors Research Thesis - W -  2 OR 3 cr
Literature survey and laboratory research experience under the direction of the faculty.
Pre-requisite: BMD 311 Minimum Grade of D and BMD 321 Minimum Grade of D and BMD 322 Minimum Grade of D and BMD 323 Minimum Grade of D or BMD 335 Minimum Grade of D or BMD 336 Minimum Grade of D

BMD 501  Immunology  3 cr
This course presents the basic concepts of immunochemistry, immunobiology, and host immune responses to disease, antigens, antibodies, cells and structures of the immune system will be discussed as well as their roles in the process of immunity, allergies, transplantation and diseases. A term paper is required.

BMD 502  Medical Microbiology  5 cr
The course presents the concept of pathogenicity and virulence as they relate to disease causing bacteria, viruses, and fungi. Mechanisms of pathogenicity, interrelationships, and interactions that occur between the host, the parasite and their environments will be emphasized in molecular terms. General concepts of microbial physiology, genetics, and antimicrobial therapy are also presented. The laboratory portion of the course will provide hands-on experience in the handling and identification of bacteria. A term paper is required.

Faculty

GORELIK, GABRIELA
Assistant Professor
PHD, Univ of Buenos Aires

HENDERSON, JAMES D.
Associate Professor
BS, Spring Hill College
PHD, Emory University
BS, Auburn University

MOCKETT, ROBIN J.
Associate Professor
BS, Queens University
PHD, Southern Methodist University

RAVINE, TERRENCE J.
Associate Professor
BSMT, University of Akron
MS, University of Akron
PHD, Virginia Commonwealth U

SHOKOLENKO, INNA N.
Assistant Professor
MS, Kiev State Linguistic Univ
PHD, Univ of South Alabama - COM

SPECTOR, MICHAEL P.
Professor
BS, Philadelphia College
PHD, Marshall University

STANFIELD, CINDY L.
Associate Professor
BS, University of California-Davis
PHD, University of California-Davis

SWIGER, BRAD M.
Assistant Professor
BS, University of South Alabama
PHD, University of South Alabama

THULASIRAMAN, PADMAMALINI
Assistant Professor
BS, McGill University Quebec
MS, University of Oklahoma-Norman
PHD, University of Illinois-Urbana