BIOMEDICAL SCIENCES (BMED)

500 Level Courses

BMED 550: Special Topics in Biomedicine. 2 credits.
This course presents various topics in biomedicine in a lecture/seminar format. Students build on the ABS Certificate curriculum to enhance their understanding of biomedical issues and better prepare for careers in the health professions. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Successful completion of first semester of the ABS Certificate curriculum (Biochemistry, Biostatistics, Histology).

Recommended Corequisite: Spring ABS Certificate courses (Human Anatomy, Human Physiology).

Registration Restrictions:
Enrollment limited to students in the CERG Adv Biomedical Sciences program.

Schedule Type: Lecture

600 Level Courses

BMED 601: Cell and Molecular Physiology. 4 credits.
Principles of biochemistry and cell signaling and current concepts regarding physiological processes at the cellular and molecular levels. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 602: Biomedical Statistics. 3 credits.
Basic principles of biostatistics and epidemiology in theoretical and practical context including: exploring and displaying data appropriately, exploring relationships between two variables, issues of gathering sample data, and understanding randomness and probability. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 603: Cell Biology and Microscopic Anatomy. 3 credits.
Examines basic histological techniques, ultrastructure of the cell, basic tissue types and histology of specific organ systems. Structure-functional and clinical correlations are described. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 604: Fundamentals of Human Physiology. 5 credits.
Essential concepts of physiology and mechanisms of body function are presented at various levels of organization, ranging from cellular and molecular to tissue and organ system levels. Emphasis is placed on understanding the integrated regulation of various body processes among the major systems. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 605: Introduction to Human Anatomy. 3 credits.
Principles of anatomy as well as the pertinent anatomy associated with the thorax, abdomen, and pelvic cavities. Offered by College of Science. May not be repeated for credit.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 610: Principles of Systems Biology. 2 credits.
Students will build on their knowledge of cellular and molecular biology, genetics, and physiology to understand how these components combine
to give rise to complex systems function found in biology. Offered by College of Science. May not be repeated for credit.

**Recommended Prerequisite:** Admission to Biomedical Sciences master's degree.

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Lecture

**BMED 611:** Molecular Genetics. 2 credits.
Students will build on their knowledge of molecular biology and genetics to understand how these components' functions are altered during the inception and course of human disease. Offered by College of Science. May not be repeated for credit.

**Recommended Prerequisite:** Admission to Biomedical Sciences master’s degree.

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Lecture

**BMED 612:** Principles of Gross Anatomy. 1 credit.
Principles of anatomy as well as the pertinent anatomy associated with the thorax, abdomen, and pelvic cavities. Offered by College of Science. May not be repeated for credit.

**Recommended Prerequisite:** Admission to Biomedical Science’s master’s program

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Lecture

**BMED 613:** Pathophysiology. 3 credits.
Students build on knowledge of physiologic principles and apply the information to pathologic conditions. A higher understanding of the molecular and genetic basis of pathology will be developed as the mechanisms of disease are studied. Offered by College of Science. May not be repeated for credit.

**Recommended Prerequisite:** Admission to Biomedical Sciences master’s program

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Lecture

**BMED 614:** Introduction to Neuroscience. 3 credits.
Achieve specific knowledge of the developmental and evolutionary aspects of the nervous system, to introduce systems neurobiology through study of the visual system and motor system pathways. Offered by College of Science. May not be repeated for credit.

**Recommended Prerequisite:** Admission to Biomedical Science’s master’s program

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Lecture

**BMED 651:** Physician and Society. 1 credit.
Seminar series explores the cultural, social, economic and ethical factors that affect the practice of medicine in the 21st century. Offered by College of Science. May be repeated within the degree for a maximum 2 credits.

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

**Schedule Type:** Seminar

**BMED 652:** Biomedical Career Pathways. 1 credit.
Series of workshops, presentations and field trips. Students will learn study and interview skills to become better prepared to complete AMCAS and secondary applications to medical schools. Offered by College of Science. May not be repeated for credit.

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to students with a major in Advanced Biomedical Sciences or Biomedical Sciences.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.
Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Seminar

BMED 653: Forum and Research. 3 credits.
Bi-weekly seminar-style presentations and reading assignments, followed by short student reports, followed by a small group discussions on topics of current interest. Students will prepare a detailed research paper on a topic related to one of the forum topics. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master’s degree.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 660: Molecular and Cellular Physiology. 3 credits.
Biochemistry and physiology of the typical cell. The biochemical focus will be on the fundamentals of the forces affecting molecular interactions, the structure-function relationships of proteins and carbohydrates, kinetics and catalysis, and high-throughput analysis of proteins in clinical samples. The physiological focus will be on the structure and function of subcellular organelles, and the foundations of some specialized cells blood and lymphoid cells, muscle cells, and nerve cells. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master’s program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 661: Metabolism, Nutrition and Endocrinology. 4 credits.
Students will learn the pathways involved in energy metabolism, biosynthesis, and catabolism of waste products in preparation for excretion. Major emphasis will be on the coordination of metabolic pathways in the major organs and tissues through hormonal regulation. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master’s program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 662: Cardiopulmonary Biology. 1-5 credits.
Anatomy, hemodynamic function, and electrophysiology of the cardiovascular and respiratory system. Offered by College of Science. May be repeated within the degree for a maximum 5 credits.

Recommended Prerequisite: Admission to the Biomedical Sciences master’s program.

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 663: Gastrointestinal Biology. 2 credits.
Embryologic development, gross and micro-anatomy, and physiologic function of the GI tract. Emphasis will be placed on understanding the integrated regulation of GI processes. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master’s program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 664: Renal Biology. 2 credits.
Structural, functional and integrative aspects of the kidney and urinary system; identify the basic physiologic mechanisms that underpin renal function; and explain the role the kidney plays in fluid and electrolyte homeostasis, including acid-base balance. Offered by College of Science. May not be repeated for credit.

Recommended Prerequisite: Admission to Biomedical Sciences master’s program

Registration Restrictions:
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may not enroll.

Schedule Type: Lecture

BMED 665: Sexual Development and Reproduction. 3 credits.
Cellular and anatomical components of reproduction and early development. These components include the development of the
reproductive track, development of gametes, fertilization, and formation of the germ layers and endocrinology of the system. Offered by College of Science. May not be repeated for credit.

**Recommended Prerequisite:** Admission to the Biomedical Sciences master's program

**Registration Restrictions:**
Enrollment limited to students with a class of Advanced to Candidacy, Graduate, Non Degree or Senior Plus.

Enrollment is limited to Graduate, Non-Degree or Undergraduate level students.

Students in a Non-Degree Undergraduate degree may **not** enroll.

**Schedule Type:** Lecture