**GENETICS, CELL BIOLOGY & ANATOMY (GCBA)**

**GCBA 813 NEUROANATOMY LECTURE 2 Credit Hours**
Prerequisite: GCBA 908 and GCBA 909.
Typically Offered: SUMMER

**GCBA 814 NEUROANATOMY LAB 1 Credit Hour**
NEUROANATOMY LAB
Typically Offered: SPRING

**GCBA 815 TOOLS AND ALGORITHMS IN BIOINFORMATICS 3 Credit Hours**
This course covers most of the commonly used tools for bioinformatics data analysis. The main objectives of this course are to briefly explain the underlying algorithms (methods) of various data analysis tools and to provide hands-on practice opportunities to students using a real datasets. Typically, each bioinformatic tool will be covered in a 3 hours session that includes a lecture and a lab session. This course will introduce the field of bioinformatics and cover the major bioinformatic tools that are used for analyzing a broad spectrum of bioinformatic datasets.
Typically Offered: FALL

**GCBA 823 FUNDAMENTALS IN GENETICS AND GENOMICS 2 Credit Hours**
This course will introduce basic concepts in classical and modern molecular genetics as well as state of the art genomic analysis. Crosslisted: MGCB 823
Typically Offered: SPRING

**GCBA 825 HUMAN HISTOLOGY 5 Credit Hours**
A study of cells, fundamental tissues, organ systems at both the light and ultramicroscopic level. Include section on tissue cell fixational and processing for light and advanced microscopy.
Typically Offered: SPRING

**GCBA 830 FUND OF ELECTRON MICRO 2 Credit Hours**
The general theory and techniques of electron microscopy, including special methods involved in the fixation, embedding, sectioning, and staining of specimens.
Prerequisite: CBA 826 and permission of instructor.
Typically Offered: SPRING

**GCBA 845 CLINICALLY ORIENTATED HUMAN ANATOMY I 3 Credit Hours**
This is the first semester of a 2 semester clinically-oriented human anatomy course. The content of the two courses includes human anatomy presented in a systems approach utilizes a wide variety of imaging modalities and clinical correlations to understand gross anatomy with cell biology, histology, embryology and neuroanatomy followed by a review applying the information to anatomic regions of the human body. The sequence of the units correlates with CAHP 445.
Typically Offered: FALL

**GCBA 846 CLINICALLY ORIENTATED HUMAN ANATOMY II 2 Credit Hours**
This is the second semester of a 2 semester clinically-oriented human anatomy course. The content of the two courses includes human anatomy presented in a systems approach utilizes a wide variety of imaging modalities and clinical correlations to understand gross anatomy with cell biology, histology, embryology and neuroanatomy followed by a review applying the information to anatomic regions of the human body. The sequence of the units correlates with the CAHP 446.
Typically Offered: FALL

**GCBA 853 HUMAN EMBRYOLOGY 1 Credit Hour**
Cross List: GCBA 513
Typically Offered: SUMMER

**GCBA 894 CLINICAL AND RESEARCH EXPERIENCES 2 Credit Hours**
In this course students are required to spend a minimum of 48 hours of 1) shadowing a series of physicians or other healthcare professionals from participating units and/or 2) conducting research rotations in participating laboratories. Through the course of the experiences, students will have the opportunity to see first-hand how knowledge of human anatomy is utilized on a day to day basis in clinical practice, to explore various healthcare professions as potential career paths, and to explore research as a potential career path.
Typically Offered: FALL

**GCBA 896 RSCH OTHER THAN THESIS 1-9 Credit Hours**
Student research that is clearly distinct from ongoing or planned thesis/ dissertation work, or research/lab rotations preformed prior to selecting a permanent advisor or supervisor.
Typically Offered: FALL/SP/SU

**GCBA 899 MASTERS THESIS 1-9 Credit Hours**
Independent student research related to the masters thesis.
Typically Offered: FALL/SP/SU

**GCBA 902 SPECIAL TOPICS 1-3 Credit Hours**
Current problems, techniques, and literature pertaining to the major subdivisions of the field of anatomy. The student may participate in selected research topics, under the supervision of a selected instructor.
Prerequisite: Permission of instructor.
Typically Offered: FALL/SP/SU

**GCBA 903 JOURNAL CLUB 1 Credit Hour**
Typically Offered: FALL/SPR

**GCBA 904 ANATOMICAL SCIENCES JOURNAL CLUB 1 Credit Hour**
Typically Offered: FALL

**GCBA 906 TEACHING THEORY & APPLICATION 2 Credit Hours**
This course is targeted to graduate/professional students or anyone in interested in expanding their knowledge of teaching theory. This course blends research on learning principles, effective classroom teaching and the skill of application to improve their foundation of teaching.
Typically Offered: SUM/FALL

**GCBA 907 TEACHING AND RESEARCH PRESENTATION SKILLS 2 Credit Hours**
This is a required course for PhD seeking students. This course focuses on the development of the fundamental skills required for making effective presentations in both a classroom and research context.
Prerequisite: Permission of instructor.
Typically Offered: SPRING

**GCBA 908 GROSS ANATOMY LECTURE 3 Credit Hours**
This course allows hands-on application of anatomical concepts and relationships through whole body dissection in small groups.
Prerequisite: GCBA 908 (or concurrent enrollment).
Typically Offered: FALL

**GCBA 909 GROSS ANATOMY LABORATORY 5 Credit Hours**
This course allows hands-on application of anatomical concepts and relationships through whole body dissection in small groups.
Prerequisite: GCBA 908 (or concurrent enrollment).
Typically Offered: FALL
GCBA 912 MODERN APPROACHES IN CELL BIOLOGY & MOLECULAR GENETICS 3 Credit Hours
This advanced-level course will focus on current techniques and concepts in cell biology and genetics. This course includes a didactic component as well as discussion section where the students will be asked to present their interpretations and ideas on cutting edge research. Hands on workshops and demonstrations are also conducted weekly. Prerequisite: Permission of instructor. Typically Offered: SPRING

GCBA 913 ADVANCED GROSS ANATOMY & DISSECTION 4 Credit Hours
This course provides foundational knowledge about structures and processes in the nervous system. Consequences of use, disuse, age, pathology, and injury will be addressed as they relate to sensorimotor impairment, disability, and/or handicap. Prerequisite: GCBA 908 and GCBA 909 Typically Offered: SUMMER

GCBA 940 TEACHING PRACTICUM: HUMAN GROSS ANATOMY 2 Credit Hours
A series of courses designed to provide an opportunity for students to develop and apply the skills requisite for effective teaching in the anatomical sciences. Prerequisite: Appropriate GCBA course(s) or equivalent, GCBA 806, GCBA 910, GCBA 920 and permission of instructor. Typically Offered: SUM/FALL

GCBA 942 TEACHING PRACTICUM: HUMAN NEUROANATOMY 1 Credit Hour
A series of courses designed to provide an opportunity for students to develop and apply the skills requisite for effective teaching in the anatomical sciences. Prerequisite: Appropriate GCBA course(s) or equivalent, GCBA 806, GCBA 910, GCBA 920 and permission of instructor. Typically Offered: SPRING

GCBA 945 STEM CELL AND DEVELOPMENTAL BIOLOGY 2 Credit Hours
An in depth study of the basic science of stem cell biology and the application of tissue engineering principles to generate stem cell-based solutions to significant clinical problems. Special emphasis is placed on embryonic stem cells, adult stem cells, and stem cell plasticity and the interaction between stem cells and the microenvironment. Prerequisite: IPBS 801-803 Typically Offered: SUMMER

GCBA 949 TEACHING PRACTICUM: HUMAN HISTOLOGY 2 Credit Hours
A series of courses designed to provide an opportunity for students to develop and apply the skills requisite for effective teaching in the anatomical sciences. Prerequisite: Appropriate GCBA course(s) or equivalent, GCBA 806, GCBA 910, GCBA 920 and permission of instructor. Typically Offered: FALL/SPR

GCBA 970 SEMINAR 1 Credit Hour
Attendance at weekly seminars offered by the department/program, or other activities specific to the degree program (contact the program director for more information). Typically Offered: FALL/SPR

GCBA 971 PROFESSIONAL OPPORTUNITIES SEMINAR 1 Credit Hour
In this course students will shadow a series of physicians of healthcare professionals from participating units. Through the course of these shadowing experiences, student will have the opportunity to see first hand how knowledge of human anatomy is utilized on a day to day basis in clinical practice. Typically Offered: FALL

GCBA 999 DOCTORAL DISSERTATION 1-15 Credit Hours
Independent student research related to the PhD dissertation. This course may be utilized before or after successful completion of the comprehensive exam. Typically Offered: FALL/SP/SU