Anatomy and Cell Biology

Chair
• John F. Engelhardt

Professional degree: M.C.A.
Faculty: https://medicine.uiowa.edu/acb/profile
Website: https://medicine.uiowa.edu/acb/

Courses

Anatomy and Cell Biology Courses

ACB:3110 Principles of Human Anatomy 3 s.h.
Gross and microscopic human anatomy; systemic
approach to regional anatomy with emphasis on clinical
relevance; optional tutorial sessions. Offered fall semesters.
Requirements: pharmacy, pre-nursing, or associated medical
sciences major.

ACB:3122 Independent Study in Anatomy and Cell
Biology
Projects arranged with department faculty members.

ACB:4156 Scanning Electron Microscopy and X-Ray
Microanalysis
Microscopy methods for research; all aspects of research,
from sample preparation to imaging to data analysis; when to
use a particular microscopy procedure; theory, operation, and
application of scanning electron microscopy, scanning probe
microscopy, laser scanning microscopy, X-ray microanalysis.
Requirements: a physical science course. Same as CBE:4156,
EES:4156.

ACB:5108 Human Anatomy 5 s.h.
Regional dissection, lectures, demonstrations; areas important
to physical therapists, particularly the upper and lower
extremities. Offered fall semesters. Requirements: physical
therapy and rehabilitation science enrollment.

ACB:5203 Gross Human Anatomy for Graduate
Students 5 s.h.
Regional dissection, lectures, demonstrations, tutorials,
discussions, seminars; clinically relevant areas of anatomical
radiology, surface anatomy with clinical correlations.
Requirements: enrollment in Master of Clinical Anatomy
program.

ACB:5206 Graduate Research in Cell and
Developmental Biology arr.
Individual laboratory research training in anatomical sciences.

ACB:5210 General Histology Online 3 s.h.
Histology of all tissues of human body starting with basic
tissues and working through systems of the body; linked in
sequence to ACB:5203 so that students learn about related
content at the same time in anatomy and histology; recorded
lectures, online modules, and extensive use of Virtual
Microscope. Requirements: enrollment in Master of Clinical
Anatomy program.

ACB:5218 Microscopy for Biomedical Research arr.
Basic microscopy methods for research including optics,
preparation, and analysis of biomedical specimens; light,
fluorescence, confocal, transmitting electron, scanning
electron, atomic force microscopes, elemental analysis;
immunohistochemistry and stereology techniques; individualized
laboratory instruction. Prerequisites: BIOL:2723. Same as
BIOL:5218, MICR:5218.

ACB:5224 Graduate Seminar in Cell and Developmental
Biology
Current research, literature. Requirements: cell and
developmental biology graduate standing.

ACB:6000 Human Anatomy for Advanced Practice 3 s.h.
Integrated study of interrelationships between anatomic
structure and physiological function in health and disease
at various points in the lifespan; mechanisms governing and
supporting cellular, organ, and system function; internal
milieu; relationship of study to clinical assessment of
functional integrity of individual organ systems utilizing
pertinent objective and subjective data; implications of
pathophysiology for anesthesia and implications of anesthesia
for pathophysiology; foundation for clinical practices and
courses in nurse anesthesia. Requirements: completion of
an undergraduate human anatomy and physiology course
and admission to anesthesia nursing program. Same as
NURS:6000.

ACB:6200 Special Topics in Genetics 1 s.h.
Current research in a selected field of genetics; different topic
each year. Companion to a genetics seminar series. Same as
GENE:6200.

ACB:6220 Mechanisms of Cellular Organization 3 s.h.
Current understanding of basic cell biological processes;
key experiments that led to guiding insights; mechanisms
that cause cells to use for compartmentalization and how those
mechanisms are regulated; biogenesis of major organelles
(e.g., mitochondria, peroxisomes, nucleus, secretory/
endocytic membrane system); functions of cytoskeleton in
cell motility, organelle motility, and cell division. Prerequisites:
BIOL:3130. Same as MMED:6220, MPB:6220.

ACB:6225 Growth Factor Receptor Signaling 1 s.h.
Mechanisms of signaling by growth factors; cytokines
and related molecules that regulate cell proliferation,
development, differentiation, and survival; emphasis on
molecular mechanisms of signaling, relevance of these
signaling processes to various human diseases. Same as
MMED:6225, MPB:6225, PCOL:6225.

ACB:6226 Cell Cycle Control 1 s.h.
Cell cycle regulation, DNA damage-dependent cell cycle
regulation, redox-dependent cell cycle regulation, cellular
senescence. Same as MMED:6226, MPB:6226.

ACB:6227 Cell Fate Decisions 1 s.h.
Cellular fate decisions including signal integration, terminal
differentiation in development, mechanisms of embryonic
stem cell gene regulation/cellular reprogramming, cell death
paradigms, and cell death in development and cancer. Same
as MMED:6227, MPB:6227.

ACB:6237 Critical Thinking in Biochemistry and
Molecular Biology 1 s.h.
How nucleic acids, proteins, lipids, and carbohydrates interact
to influence the function of cells and tissues; how molecules
drive signaling pathways and cellular processes essential for
biological functions; based on research publications.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ACB:6238</td>
<td>Critical Thinking in Genetics</td>
<td>1 s.h.</td>
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<tr>
<td>ACB:6239</td>
<td>Critical Thinking in Cell Biology</td>
<td>1 s.h.</td>
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<tr>
<td>ACB:6248</td>
<td>Critical Thinking in Development</td>
<td>1 s.h.</td>
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<td>ACB:6249</td>
<td>Critical Thinking in Cellular Physiology</td>
<td>1 s.h.</td>
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<tr>
<td>ACB:6250</td>
<td>Critical Thinking in Scientific Writing and</td>
<td>1 s.h.</td>
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<td>Presentations</td>
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<td>ACB:6252</td>
<td>Functional Neuroanatomy</td>
<td>arr.</td>
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<tr>
<td>ACB:6265</td>
<td>Neuroscience Seminar</td>
<td>0-1 s.h.</td>
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<tr>
<td>ACB:7001</td>
<td>Teaching and Learning in the Anatomical Sciences</td>
<td>2 s.h.</td>
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<td>ACB:7002</td>
<td>Seminar in Anatomical Sciences</td>
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<tr>
<td>ACB:7010</td>
<td>Anatomy Through Imaging</td>
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<td>ACB:7020</td>
<td>Human Embryology Online</td>
<td>2 s.h.</td>
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<td>ACB:7227</td>
<td>Anatomic Study for Teaching</td>
<td>2-3 s.h.</td>
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<td>ACB:7400</td>
<td>Practicum in College Teaching for Master of</td>
<td>1-4 s.h.</td>
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<td>Clinical Anatomy</td>
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<td>ACB:8101</td>
<td>Medical Gross Human Anatomy</td>
<td>5 s.h.</td>
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<td>ACB:8120</td>
<td>Human Gross Anatomy for Dental Students</td>
<td>6 s.h.</td>
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<td>ACB:8121</td>
<td>General Histology for Dental Students</td>
<td>4 s.h.</td>
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<tr>
<td>ACB:8401</td>
<td>Advanced Human Anatomy</td>
<td>arr.</td>
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<tr>
<td>ACB:8402</td>
<td>Teaching Elective in Regional Anatomy</td>
<td>2.4 s.h.</td>
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<td>ACB:8405</td>
<td>Advanced Clinical Neuroanatomy</td>
<td>2 s.h.</td>
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ACB:8498 Special Study On Campus  arr.
Anatomy research on campus; individually arranged.
Requirements: M.D. enrollment.