BIOH - Biology-Human

BIOH 104IN  Basic Human Biology w/lab: 4 Credits (3 Lec, 1 Lab)
This one-semester course focuses on learning scientific principles and a
general understanding of human functional anatomy and physiological
processes. Course material will cover several body systems including the
skeletal, muscular, nervous, cardiovascular, respiratory, digestive, and
urinary systems and how they contribute to homeostasis of the body.

BIOH 112  Human Form & Function I: 3 Credits (3 Lec)
Human anatomy, physiology, and pathology; including etiology, prognosis,
medical treatment, signs and symptoms of diseases of respiratory, endocrine,
excretory, and reproductive systems. Proper diet and nutrition guidelines are
also addressed. This course will focus on the key elements of anatomy and
physiology necessary for students in allied health professions, specifically
those who will work the areas of community health, health enhancement
education, health promotion, and kinesiology. The aim of this course is
for students to demonstrate working knowledge of the muscular, skeletal,
nervous, cardiovascular, and respiratory systems, and to demonstrate an
understanding of the endocrine and digestive systems and body metabolism.

BIOH 113  Human Form and Function II: 3 Credits (3 Lec)
Human anatomy, physiology, and pathology; including etiology, prognosis,
medical treatment, signs and symptoms of diseases of muscular, skeletal,
nervous, cardiovascular, and lymphatic systems.

BIOH 185  Integrated Physiology I: 4 Credits (3 Lec, 1 Lab)
COREQUISITE: CHMY 141 or CHMY 151. How the human body
works. For students planning to be health professionals. Includes basic
cellular mechanisms, physiological control and communications. Major
topics include muscle, nerve, respiratory, renal and cardiovascular systems.
Laboratory will cover related human anatomy

BIOH 201  Human Anatomy and Physiology I: 5 Credits (3 Lec, 2 Lab)
PREREQUISITE: CHMY 121IN, CHMY 141, or CHMY 151, with
a grade of "C-" or better; priority given to majors requiring this course.
General principles of cell and tissue biology that apply to all living systems.
Structure and function of skeletal, muscular, nervous, and endocrine
systems. Homeostasis, control, and integration of the human body will
be emphasized. Laboratory will cover related systems. This course is not
repeatable without prior consent of instructor

BIOH 211  Human Anatomy and Physiology II: 4 Credits (3 Lec, 1 Lab)
PREREQUISITE: BIOH 201 with grades of "C-"; priority given to majors
requiring this course. Structure and function of digestive, cardiovascular,
respiratory, reproductive, and urinary systems of humans. Principles of
integration, metabolism, energy flow, and homeostasis will be emphasized.
This course is not repeatable without prior consent of instructor

BIOH 287  Intermediate Human Phys I: 3 Credits (3 Lec)
PREREQUISITE: CHMY 121IN or CHMY 141 or CHMY 151 with
grades of "C-" or better in either course. General principles of cell and
tissue biology; function of skeletal, muscular, nervous, and endocrine
systems. Homeostasis, control, and integration of the human body will be
emphasized

BIOH 288  Intermediate Human Phys II: 3 Credits (3 Lec)
PREREQUISITE: BIOH 201 with grades of "C-" or better. Function of
the human digestive, cardiovascular, respiratory, reproductive, and urinary
systems. Principles of integration, metabolism, energy flow and homeostasis
will be emphasized
**BIOH 420** Molecular Genetics: 3 Credits (3 Lec)
PREREQUISITE: BIOH 320. This course will focus on the use of current molecular genetic methods in biomedical research for editing and functionally analyzing eukaryotic genomes.

**BIOH 422** Genes and Cancer: 3 Credits (3 Lec)
PREREQUISITE: BIOH 320. This course will focus on the molecular and cellular mechanism of human cancer. The role of oncogenes and tumor suppressor genes in normal and cancerous cells will be examined, with an emphasis on how mutations in certain genes result in altered cell-cell signaling and cell proliferation. The role of genetic mutation in breast, colorectal and lymphoma cancers will be discussed, along with new technologies to detect and treat these cancers.

**BIOH 425** Sensory Neurophysiology: 3 Credits (3 Lec)
PREREQUISITE: BIOH 313. Neurophysiology of sensory cells and systems. Topics range from the mechanisms underlying sensory reception to the processing of sensory information at higher stages. The major focus will be on human sensory systems. Pathologies that effect sensory perception will be considered.

**BIOH 429** Student Assistant Training for Integrated Physiology (BIOH 185): 2 Credits (1 Lec, 1 Lab)
PREREQUISITE: BIOH 185 with a grade of C+ or higher, and consent of instructor. This course provides deeper contact with BIOH 185 curriculum for those considering an academic profession. Course experience in BIOH 185 teaching laboratory under detailed academic supervision in recognition that teaching enhances learning. Includes the preparation, organization, presentation of materials, and student evaluation.

**BIOH 430** Neuroethology: 3 Credits (3 Lec)
PREREQUISITE: BIOH 313 Introduction to the study of neuroethology based on a review of historically significant and modern primary research materials. In this class we will explore a number of ‘model systems’ that have been used extensively to develop our current understanding of the neural bases of animal and human behavior. This includes sound localization in owls, echolocation in bats, electrolocation in various fish and number of varied sensory systems used for species-specific communication in both vertebrates and invertebrates.

**BIOH 431** Student Assistant Training for Advanced Human Torso Anatomy (BIOH 409): 3 Credits (1 Lec, 2 Lab)
PREREQUISITE: BIOH 409 with a grade of C+ or higher, and consent of instructor. This course provides deeper contact with BIOH 409 curriculum for those considering an academic profession. Course experience in BIOH 409 teaching laboratory under detailed academic supervision in recognition that teaching enhances learning. Includes the preparation (including dissection), organization, presentation of materials, and student evaluation.

**BIOH 432** Student Assistant Training for Advanced Human Anatomy (BIOH 411): 3 Credits (1 Lec, 2 Lab)
PREREQUISITE: BIOH 411 with a grade of C+ or higher, and consent of instructor. This course provides deeper contact with BIOH 411 curriculum for those considering an academic profession. Course experience in BIOH 411 teaching laboratory under detailed academic supervision in recognition that teaching enhances learning. Includes the preparation (including dissection), organization, presentation of materials, and student evaluation.

**BIOH 433** Student Assistant Training for Neuroanatomy (NEUR 309): 3 Credits (1 Lec, 2 Lab)
PREREQUISITE: NEUR 309 with a grade of C+ or higher, and consent of instructor. This course provides deeper contact with NEUR 309 curriculum for those considering an academic profession. Course experience in NEUR 309 teaching laboratory under detailed academic supervision in recognition that teaching enhances learning. Includes the preparation (including dissection), organization, presentation of materials, and student evaluation.

**BIOH 435** Cognitive Neuroscience: 3 Credits (3 Lec)
PREREQUISITE: BIOH 313. This course will survey our present knowledge of the neural basis of normal and abnormal cognitive function in humans and non-human primates. Topics will range from perception and action to attention, consciousness and mental illness.

**BIOH 440** Neuroscience of Mental Illness: 3 Credits (3 Lec)
PREREQUISITE: BIOH 313. Survey of the major categories of human mental illness and their underlying neural mechanisms and treatments.

**BIOH 444** Modeling Brain Disorders: 3 Credits (3 Lec)
PREREQUISITE: BIOH 313. In this course, students will delve into the primary research literature in the field of behavioral neuroscience. We will study a variety of model systems and paradigms used to study neurological and psychiatric disorders. In addition, students will learn to effectively communicate about science orally and in writing.

**BIOH 445** Introduction to Pharmacology: 3 Credits (3 Lec)
PREREQUISITE: BIOH 185 or BIOH 201 or ANSC 265 and BIOB 160 or BIOB 260. An introduction to the pharmacodynamics of drug action. Major classes of pharmaceutical drugs will be studied to understand their mechanism of action at the cellular and organ levels.

**BIOH 454** Microanatomy (Histology): 3 Credits (2 Lec, 1 Lab)
PREREQUISITE: BIOB 160 or BIOB 260 or BIOH 211 or instructor permission. This course covers an introductory microscopic study of cells, tissues and selected mammalian organs. Emphasizing normal structure and function relating to disease processes in specific organ systems. Class discussion will relate the normal microanatomy to human pathophysiology.

**BIOH 455** Molecular Medicine: 3 Credits (3 Lec)
PREREQUISITE: BIOH 313 and BIOH 320 and BCH 380. Lecture and seminar courses based on recent, original papers. Moves from human disease to molecular explanations. Intended for upper level students with a strong background in biology.

**BIOH 458** Human Pathophysiology: 3 Credits (3 Lec)
PREREQUISITE: BIOB 260 or BIOM 363, and BCH 380 or BCH 441. Students will research up to three diseases of their own choosing and give a class presentation of their findings. Students will participate in discussions on disease mechanism and pathophysiology based on the primary research articles presented in class. Prior or concurrent enrollment in BIOB 410 strongly encouraged.

**BIOH 461** Tutoring Human Anatomy and Physiology I: 3 Credits (1 Lec, 2 Lab)
PREREQUISITE: BIOH 201 with a grade of C+ or higher, and consent of instructor. This course provides deeper contact with BIOH 201 curriculum for those considering an academic profession. Course experience in BIOH 201 teaching laboratory under detailed academic supervision in recognition that teaching enhances learning. Includes the preparation, organization, presentation of materials, and student evaluation.

**BIOH 463** Tutoring Human Anatomy and Physiology II: 2-3 Credits (1 Lec, 1-2 Lab)
PREREQUISITE: BIOH 211 with a grade of C+ or higher, and consent of instructor. This course provides deeper contact with BIOH 211 curriculum for those considering an academic profession. Course experience in BIOH 211 teaching laboratory under detailed academic supervision in recognition that teaching enhances learning. Includes the preparation, organization, presentation of materials, and student evaluation.

**BIOH 464** Clinical Hematology and Body Fluids: 2 Credits (1 Lec, 1 Lab)
PREREQUISITE: Acceptance in professional training program. Topics include a review of normal hemopoiesis; red blood cell, white blood cell, and platelet disorders; body fluid overview; and an introduction to hematology instrumentation.
transfusion practices and patient care will be covered. Basic problem solving procedures in the blood bank will be emphasized. Program.

Maintenance of blood components and performing routine and

PREREQUISITE: Students must be accepted to the MMLS training

Peroxidase

emphasized along with an introduction to specialized testing

Peroxidase

analytes in blood and body fluids and the associated disease conditions will

be emphasized. Students will assess, interpret and correlate data as it relates to

hemostasis, molecular diagnostics and urinalysis

PREREQUISITE: Students must be accepted to the MMLS training

BIOH 478 Clinical Immunohematology I: 3 Credits (2 Lec, 1 Lab)

PREREQUISITE: Acceptance in professional training program. Topics include a review of medical microbiology, virology, mycology, parasitology, and clinical laboratory testing procedures

PREREQUISITE: Acceptance in professional training program. Topics include an introduction to theories and principles with emphasis on all body systems, and the role of instrumentation in the clinical chemistry laboratory

PREREQUISITE: Acceptance in professional training program. Provides an orientation to the program, safety information, phlebotomy training, and an overview of management practices. Also includes instruction in hemostasis, molecular diagnostics and urinalysis

PREREQUISITE: Students must be accepted to the MMLS training program. Essential skills for performing phlebotomy, laboratory specimen collection, handling and preparing samples for laboratory analysis and interpersonal communication skills will be emphasized

PREREQUISITE: Students must be accepted to the MMLS training program. Blood cell identification, manual and automated procedures for the assessment of hematologic disease will be emphasized. Students will begin to learn to assess, interpret and correlate hematologic data with disease

PREREQUISITE: Students must be accepted to the MMLS training program. Laboratory skills using manual and automated procedures will be emphasized. Students will assess, interpret and correlate data as it relates to normal and abnormal hemostasis and anticoagulant therapy

PREREQUISITE: Students must be accepted to the MMLS training program. The ability to differentiate pathogens from commensals and perform identification procedures and antimicrobial susceptibility testing are emphasized along with an introduction to specialized and automated testing

PREREQUISITE: Students must be accepted to the MMLS training program. Manual and automated procedures for determining chemical analytes in blood and body fluids and the associated disease conditions will be emphasized along with an introduction to specialized testing

PREREQUISITE: Students must be accepted to the MMLS training program. Maintenance of blood components and performing routine and basic problem solving procedures in the blood bank will be emphasized. Correlation of immunohematology theory and disease with testing and transfusion practices and patient care will be covered

PREREQUISITE: Students must be accepted to the MMLS training program. Assessment, interpretation and clinical significance of immunology principles and techniques and their correlation to laboratory data and patient disease will be emphasized

PREREQUISITE: Students must be accepted to the MMLS training program. A two week rotation in a small hospital laboratory provides an opportunity to experience a different work environment and practice laboratory skills

PREREQUISITE: Completion of one of the following SA I courses: BIOH 429, 431, 432, 433, 461 or 463 and instructor permission.

BIOH 484 is the second semester of Student Assistant training with the added responsibility of being a lead SA assigned to a lab according to their prerequisite course work. This course provides deeper contact with curriculum and a higher level of course responsibility working directly with the assigned TA and coordinating other SAs assigned to the lab section. Includes the preparation, organization, presentation of materials, and student evaluation

PREREQUISITE: Students must be accepted to the MMLS training program. Competence in performing testing and the ability to assess, interpret, and correlate hematologic data with other patient information to recommended additional testing, diagnosis, and probable treatment option for the patient will be emphasized

PREREQUISITE: Students must be accepted to the MMLS training program. Competency in molecular diagnostic techniques available

PREREQUISITE: Students must be accepted to the MMLS training program. Competently identify and provide susceptibility data for microorganisms isolated from human specimens including clinically significant yeasts, molds, parasites, viruses and mycobacterium. Perform molecular diagnostic techniques available

PREREQUISITE: Students must be accepted to the MMLS training program. Competence in performing testing and the ability to assess, interpret, and correlate hematologic data with other patient information to recommended additional testing, diagnosis, and probable treatment option for the patient will be emphasized

PREREQUISITE: Students must be accepted to the MMLS training program. Achieve entry level knowledge of disease processes, and exhibit professional competencies in clinical chemistry laboratory procedures and the operation of laboratory instrumentation

PREREQUISITE: Students must be accepted to the MMLS training program. Attain competency and the ability to correlate testing data to theory and initiate advanced techniques where appropriate. Students will demonstrate entry level competency by managing the daily aspects of blood bank operation

PREREQUISITE: Students must be accepted to the MMLS training program. General management policies, principles, and procedures necessary for efficient operation of a clinical laboratory will be emphasized along with federal and state regulations which govern the clinical laboratory

PREREQUISITE: Consent of instructor. Directed undergraduate research/creative activity which may culminate in a research paper, journal article, or undergraduate thesis. Course will address responsible conduct of research. May be repeated

Repeatable up to 12 credits.

BIOH 491 Special Topics: 1-4 Credits (1-4 Lec)

PREREQUISITE: BIOH 260. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand

Repeatable up to 12 credits.
BIOH 492 Independent Study: 1-3 Credits (1-3 Other)
PREREQUISITE: Junior standing, consent of instructor and approval of department head. Directed research and study on an individual basis. Repeatable up to 6 credits.

BIOH 509 Advanced Human Torso Anatomy: 4 Credits (2 Lec, 2 Lab)
PREREQUISITE: Degree-seeking graduate student, undergraduate A & P coursework Covers thoracic, abdominal and pelvic anatomy, emphasizing anatomical landmarks and relationships. Instruction will be based on student dissections of human cadavers, and lectures covering structure, function, and common pathology. Co-Convened with BIOL 409

BIOH 510 Topics in Neurobiology: 3 Credits (2 Lec, 1 Lab)
PREREQUISITE: Graduate standing and at least one upper division or graduate course in neurobiology. Recent advances in topics in neurobiology with emphasis in different years on either neurocircuitry, neuroendocrinology/neuroimmunology, or developmental neurobiology

BIOH 511 Advanced Human Anatomy: 4 Credits (4 Lec)
PREREQUISITE: Degree-seeking graduate student, undergraduate anatomy and physiology work. Covers the musculoskeletal system of the back and upper and lower extremity and arthrology, emphasizing anatomical landmarks and relationships. Integrating of vascular and nervous supply along with the understanding of kinesiology will also be a major focus. Instruction will be based on student dissections of human cadavers, and lectures covering structure, function, and common pathology. Cross-Listed with BIOH 411

BIOH 520 Molecular Genetics: 3 Credits (3 Lec)
PREREQUISITE: BIOH 320. This course will focus on the use of current molecular genetic methods in biomedical research for editing and functionally analyzing eukaryotic genomes. Repeatable up to 3 credits.

BIOH 528 Molecular Basis of Neurological Diseases: 3 Credits (1 Lec, 2 Other)
PREREQUISITE: BIOH 313 and BIOB 525 or consent of instructor. This course will give an in-depth view of the molecular aspects to neuroscience. Student projects will then use that knowledge to do their own research into the current molecular understanding of a chosen neurological disease and writing up an NIH research proposal

BIOH 535 Principles of Neurosciences: 3 Credits (1 Lec, 2 Other)
This course will provide a broad introduction to the critical components of the field of neuroscience. The semester will be divided into 2-3 week modules. Each professor will cover a major subdivision of neuroscience including information on the questions, methods, and seminal discoveries that form the foundation of the field (lecture #1). Subsequent lectures (#2-4) will entail a student-led, seminar-style group discussion based around assigned primary literature materials.

BIOH 542 Survey of Current Cell Signaling: 2 Credits (2 Lec)
This course will be in a journal club style where peer reviewed articles will be presented and discussed in a critical fashion. The goals are to learn how to synthesize information, develop critical thinking, keep up with the literature, learn about new topics and foster interdisciplinary interactions. Topics will be student driven with the restriction that they fall under the broad umbrella of cell signaling. Repeatable up to 12 credits.

BIOH 545 Current Neuroscience: 3 Credits (3 Other)
PREREQUISITE: BIOH 535
This course is designed to familiarize students with the most current findings and methods in the field of neuroscience. Course focuses on critical analysis of primary literature in core areas of neuroscience.

BIOH 565 Gene Expression Lab: From Genes to Proteins to Cells: 3 Credits (3 Lab)
PREREQUISITE: BIOH 425 and BCH 380. This course is intended to develop a specific research question and to learn the appropriate techniques necessary to address the chosen research question. The primary focus will be experience with a wide breadth of laboratory techniques including tissue culture, heterologous expression, microscopy, RNA extraction, RT-PCR, gene expression analysis, protein extraction, protein expression analysis, and data quantification

BIOH 586 A Big Ideas Approach for AP Biology Teachers: 3 Credits (2 Lec, 1 Lab)
This course is designed to introduce teachers of Advanced Placement (AP) Biology to a Big Ideas approach: evolution, energy, information and system. A Big Idea approach focuses on key concepts and related content that define the AP Biology course and exam. Big ideas encompass the core scientific principles, theories and processes governing living organisms and biological systems. Students in the course will finish by developing a lesson plan using this pedagogy that could be used for a high school AP Biology course. Offered Fall.

BIOH 590 Master’s Thesis: 1-10 Credits (1-10 Other)
PREREQUISITE: Master’s standing Repeatable up to 99 credits.

BIOH 591 Special Topics: 3 Credits (3 Other)

BIOH 592 Independent Study: 1-3 Credits (1-3 Other)
PREREQUISITE: Graduate standing, consent of instructor, approval of department head and Dean of Graduate Studies. Directed research and study on an individual basis Repeatable up to 6 credits.

BIOH 594 Seminar: 1 Credits (1 Other)
PREREQUISITE: Graduate standing or seniors by petition and course prerequisites as determined for each offering. Topics offered at the graduate level which are not covered in regular courses. Students participate in preparing and presenting discussion material Repeatable up to 4 credits.

BIOH 595 Anatomy & Physiology for Tchrs: 3 Credits (1 Lec, 1 Lab, 1 Other)
This course is designed for high-school and post-secondary instructors who are either currently teaching an anatomy and physiology course or are interested in developing one. The goal of the course is to help instructors develop an AP curriculum that integrates Next Generation Science Standards. Participants from all AP instructional backgrounds are welcome and should expect to work in a collaborative environment. Offered Fall.

BIOH 690 Doctoral Thesis: 1-10 Credits (1-10 Other)
PREREQUISITE: Doctoral standing Repeatable up to 99 credits.