

# Human Biology (HUM BIOL)

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## Courses

### **HUM BIOL 102. Introduction to Human Biology. 3 Credits.**

Basic concepts, principles, and processes in human biology; the origin of life, evolution, cells, biochemical processes, physiological systems, genetics and metabolism.

Fall and Spring.

### **HUM BIOL 116. First Aid and Emergency Care Procedures. 3 Credits.**

Students will gain knowledge and skills to recognize and respond to emergencies needing CPR and first aid. Basic Life Support (BLS) certification for the healthcare provider can be earned at the successful completion of the course. A course fee is required.

Fall and Spring.

### **HUM BIOL 198. First Year Seminar. 3 Credits.**

topics vary

Reserved for New Incoming Freshman.

### **HUM BIOL 200. Professions in Human Biology. 1 Credit.**

The overarching goal of the course is to empower students to achieve career goals. Students will learn how to pursue careers effectively in human biology from student mentors, professional advisors, faculty and alumni.

P: Declared Human Biology Major with freshman or sophomore status

Fall Only.

### **HUM BIOL 202. Ethnic Minorities in Science. 3 Credits.**

The history and culture of science in the US will be examined, in order to understand what has led to the current under-representation of ethnic minorities in science. The often overlooked contributions of scientists who are members of ethnic minorities will be recognized.

Spring.

### **HUM BIOL 205. Biotechnology and Human Values. 3 Credits.**

Examination of technological developments in biology and medicine, including genetic, behavioral, and organism modification and the moral and ethical concerns raised by such technologies.

P: Hum Biol 102 or Biology 201/202.

### **HUM BIOL 206. Fertility, Reproduction, and Family Planning. 3 Credits.**

Factors that influence reproduction and fertility, i.e., physiological, psychological, social, cultural, and ethical; the methods available for limiting or increasing reproduction; the nature of family planning programs.

P: HUM BIOL 102 or BIOLOGY 201 & BIOLOGY 202

Fall and Spring.

### **HUM BIOL 210. Prevention and Treatment of Athletic Injuries. 3 Credits.**

This is an introductory course focusing on the basic principles of athletic training (sports medicine). Emphasis will be placed on the role of the athletic trainer in regards to injury prevention, health/injury assessment, and management/rehabilitation of sports related injuries. Content includes history of athletic training, athletic training room procedures, physiology of healing, acute emergency management, and medical referral process. Students learn techniques related to taping, wrapping, splinting, ambulatory aides, and modalities applied to the healing process.

P: Hum Biol 102 with a grade of C or better OR Biology 201/202 with a grade of C or better.

Fall and Spring.

### **HUM BIOL 215. Personal Health and Wellness. 3 Credits.**

Theoretical and practical knowledge about health and wellness, with experiential exercises to heighten awareness of one's own values, attitudes, and abilities toward healthy living.

Fall and Spring.

### **HUM BIOL 217. Human Disease and Society. 3 Credits.**

Impact of diseases in humans. Emphasizes the major diseases, their causes, individual effects, historical significance, and methods of control.

Fall and Spring.

### **HUM BIOL 221. Anatomy and Physiology I. 4 Credits.**

An examination of the structure and function of the human body at the molecular, cellular, tissue, organ, and system levels of organization. The integration of these levels of organization within the human organism is emphasized. This is the first semester of a two-semester sequence.

P: BIOLOGY 201/202 with at least a C grade; CHEM 207 or concurrent enrollment

Fall and Spring.

### **HUM BIOL 222. Anatomy and Physiology II. 4 Credits.**

An examination of the structure and function of the human body at the molecular, cellular, tissue, organ, and system levels of organization. The integration of these levels of organization within the human organism is emphasized. This is the second semester of a two-semester sequence.

P: Hum Biol 221.

**HUM BIOL 240. Anatomy and Physiology. 4 Credits.**

This course examines the fundamental structure and function of tissues, organs, and systems of the human body.

P: BIOLOGY 201/202 with at least a C grade AND HUM BIOL 241 or concurrent enrollment

FSS.

**HUM BIOL 241. Anatomy and Physiology Lab. 1 Credit.**

Laboratory Course that accompanies HUM BIOL 240.

P: HUM BIOL 240 or concurrent enrollment AND CHEM 207 or concurrent enrollment

FSS.

**HUM BIOL 250. Fitness for Life. 3 Credits.**

An introductory course pertaining to health related fitness, including its impact on society and the individual. Students will develop and implement a personal fitness program based on current research in the area. The role and value of fitness will be discussed in terms of physical and emotional health, heart disease, longevity, and quality of life.

**HUM BIOL 297. Internship. 1-3 Credits.**

Supervised practical experience in an organization or activity appropriate to a student's career and educational interests. Internships are supervised by faculty members and require periodic student/faculty meetings. Course is repeatable for credit; may be taken 3 times for a total of 3 credits.

**HUM BIOL 299. Travel Course. 1-6 Credits.**

Travel courses are conducted to various parts of the world and are led by one or more faculty members. May be repeated to different locations.

P: cons of instr & prior trip arr & financial deposit.

**HUM BIOL 310. Human Genetics. 3 Credits.**

The goal of this course is to provide students with an understanding of the basic principles of transmission, molecular, and evolutionary genetics as it relates to humans, and to examine their relevance to our society and human genetic diseases. Topics covered include the molecular basis of heredity, gene regulation, genetic technologies including cloning, genetic testing and gene therapy, and the genetics of cancer.

P: BIOLOGY 201/202 with at least a C grade ; CHEM 108 or 212 with at least a C grade.

Fall and Spring.

**HUM BIOL 315. Foundations of Neuroscience. 3 Credits.**

Foundational survey of neuroscience. The course will span topics such as structure and function of the nervous system, behavior (e.g. stress, motivation), sensory and motor systems, physiology, neurotransmission, and research techniques.

P: BIOLOGY 201 or PSYCH 203

Fall Only.

**HUM BIOL 318. Reproductive Biology. 3 Credits.**

Course explains basic reproductive processes with emphasis on the factors, both hormonal and environmental, that affect reproductive functions in mammals; how these processes can be modified to control reproduction.

P: HUM BIOL 240 or BIOLOGY 307 with a grade of C or better

Fall Only.

**HUM BIOL 322. Epidemiology. 3 Credits.**

Foundational knowledge of epidemiology, the study of disease in/among populations, and relevant introductory bio-statistical methods and practical applications to public health and biomedical sciences.

REC: BIOLOGY 201 with a grade of C or higher AND BIOLOGY 202 with a grade of C or higher; OR HUM BIOL 202 with a grade of C or higher

Spring.

**HUM BIOL 323. Medical Microbiology. 3 Credits.**

This course will explore the clinical impact of microbes on human health to prepare students for programs and careers as healthcare professionals (e.g., Physicians, Nurses, Pharmacists, Physical therapists, Dentists, Veterinarians, Athletic Trainers) and programs in biomedical science. Evaluating the biological mechanisms by which microbe-human interaction leads to disease will be a focus, along with an understanding of vaccine platforms and therapeutics. Scientific literacy will be emphasized as it relates to vaccines and therapeutics, along with an understanding of their mode of action and application in clinical settings.

P: BIOLOGY 201 with at least a C grade

Spring.

**HUM BIOL 324. The Biology of Women. 3 Credits.**

This course will examine the physiology of the adult female body and will address health issues that are unique to or different in women. Emphasis will be placed on the effects of female sex hormones on multiple processes (reproductive, nervous, endocrine, and cardiovascular) in the body.

P: HUM BIOL 102 with at least a C grade or BIOLOGY 201/202 with at least a C grade

Spring.

**HUM BIOL 326. Medical Microbiology Lab. 1 Credit.**

Medical Microbiology laboratory provides students interested in healthcare professions and biomedical science with opportunities to learn and apply laboratory concepts and techniques to identify microbes of clinical concern according to American Society of Microbiology safety guidelines. Bacteria, fungi and parasites of clinical concern will be emphasized.

Spring.

**HUM BIOL 331. Science and Religion: Spirit of Inquiry. 3 Credits.**

This course examines the differing world views of science and religion; origins of science in the Judeo-Christian West; sources of conflicts; domains of validity; and of limitations of science and religion.

P: Hum Biol 102 with at least a C grade or Biology 201/202 with at least a C grade; and sophomore status  
Spring.

**HUM BIOL 333. Principles of Sports Physiology. 3 Credits.**

This course emphasizes the applied aspects of (exercise) physiology. Major topics include: use of energy during exercise, principles of training, aerobic training, interval training, strength training, gender and exercise, ergogenic aids, e.g., blood doping, and the impact of environmental conditions, e.g., altitude, on exercise.

P: Hum Biol 240 & Hum Biol 241 or Hum Biol 221 & Hum Bio 222 with at least a C grade  
Spring.

**HUM BIOL 341. Human Anatomy Laboratory. 1 Credit.**

This course involves learning human anatomy and human anatomy dissection techniques using cadavers through the process of dissecting and analyzing human cadaver specimens. Students will learn detailed human anatomy for a specific area of interest by dissecting and identifying anatomical components of that area. In addition, students will learn major significant human anatomy for the entire human body to include muscles, nerves, blood vessels, glands, GI tract and reproductive systems.

P: HUM BIOL 240 & HUM BIOL 241 or HUM BIOL 221 & HUM BIOL 222 AND approval by instructor. REC: HUM BIOL 351, BIOLOGY 340  
Fall Only.

**HUM BIOL 343. Exercise Training and Prescription. 3 Credits.**

This course is designed to enable students to learn, design, and apply principles of physiology to training and conditioning, i.e., exercise prescription. Some of the basic principles of exercise physiology will necessarily be covered, but the emphasis of this class will be on principles of training and conditioning. The course presents principles for training for various components of exercise, including strength, flexibility, speed, and endurance. The course includes considerations for training various populations, e.g., cardiac rehab patients, and various environmental conditions, e.g., altitude. It will also provide principle for the use of ergogenic or ergolytic aids when training. This class will be beneficial to (strength and conditioning) coaches, athletic trainers, fitness enthusiasts, athletes, coaches and others with an interest in the physiologic principles and practices involved in developing specific programs for training/conditioning.

P: HUM BIOL 240 and 241 or HUM BIOL 221 and 222 with at least a C grade  
Spring.

**HUM BIOL 344. Motor Learning and Performance. 3 Credits.**

This course introduces processes and relevant theories that underlie acquisition and performance of motor skills. Students gain an understanding of psychomotor and neuromuscular function in the control of human movement. Tactile, proprioceptive, and visual sensory systems are also examined in terms of their anatomical and physiological basis, how they influence the control of movement, and the limits they place on human motor skill performance.

P: HUM BIOL 240 & HUM BIOL 241 with a grade of C or higher  
Fall Only.

**HUM BIOL 351. Kinesiology. 4 Credits.**

This course provides an in depth study of the human musculoskeletal system as it pertains to movement of the body and/or its parts. There are three major components to this course - anatomy (detailed musculoskeletal anatomy), functional anatomy (understanding bodily movement in light of anatomical structure), and biomechanics (mathematical quantification of bodily movement, forces, etc.)

P: HUM BIOL 240 & HUM BIOL 241 or HUM BIOL 221 & HUM BIOL 222 with a grade of C or higher AND CHEM 207 or concurrent enrollment  
Fall Only.

**HUM BIOL 360. Exercise Physiology. 3 Credits.**

In this course, students learn the ventilatory, cardiovascular, muscular, hormonal, and metabolic response to (acute) exercise and exercise training.

P: HUM BIOL 240 or HUM BIOL 221 & HUM BIOL 222 with a grade of C or higher AND MATH 260 AND concurrent enrollment in HUM BIOL 361  
Fall Only.

**HUM BIOL 361. Human Physiology Lab - Exercise and Metabolism. 1 Credit.**

The laboratory involves measurement, analysis, and interpretation of a variety of physiological parameters that are associated with physical exercise. Students will do experiments designed to assess exercise related changes in heart rate, blood pressure, ventilation, and oxygen consumption. Additionally, students will do assessments on EKG, pulmonary function, body composition and maximal exercise capacity.

P: Concurrent enrollment in Hum Biol 360.  
Fall Only.

**HUM BIOL 401. Art and Science. 1 Credit.**

Examination of art and science as ways of knowing, including discussion of various points of view regarding the differences and similarities between the two.

P: Hum Biol 102 or Biology 201/202 or Biology 203/204  
Spring.

**HUM BIOL 402. Human Physiology. 3 Credits.**

This course involves detailed study of the mechanisms of human physiology. General principles of physics, chemistry, biology, and regulation and feedback within physiological processes are used to understand human physiology from the cellular to the organismal level. Processes and mechanisms underlying the function of the nervous, muscular, endocrine, cardiovascular, digestive, respiratory, renal, reproductive, and immune systems are studied. Examples of normal and disease-state physiology are used to practice application of material, develop a thorough understanding of each process, and improve critical-thinking skills.

P: HUM BIOL 240 or HUM BIOL 222 with at least a C grade, AND BIOLOGY 307 or CHEM 330, or NUT SCI 327

Fall and Spring.

**HUM BIOL 403. Human Physiology Laboratory. 1 Credit.**

This course examines a number of physiological principles in a laboratory setting. Students will develop skills in laboratory techniques, experimental design, science writing and presentation, and critical analysis of scientific literature. Students will also develop skills in data literacy including skills for statistical testing, and analysis, interpretation, graphical representation, and presentation of data. This course includes writing emphasis (WE) and capstone designations.

P: HUM BIOL 402 with at least a C grade or conc enr or BIOLOGY 346 with at least a C grade or conc enr; AND MATH 260

Spring.

**HUM BIOL 405. Biotechnology and Ethics. 3 Credits.**

Examination of the science and ethics of biotechnology including genomics, eugenics, recombinant DNA technology, reproductive technology, stem cells, drugs, modified organisms, and treatment of diseases.

P: none; REC: Hum Biol 102 or Biology 201/202.

Fall and Spring.

**HUM BIOL 413. Neurobiology. 3 Credits.**

This course will cover the physiological and molecular mechanisms of nervous system function. Topics include neuroanatomy; development and differentiation of neuronal cells; chemical and electrical functions; synaptic pharmacology; sensory receptors; learning and memory; and various disease states and medical treatments.

P: PSYCH 308 or consent of instructor

Spring.

**HUM BIOL 422. Immunology. 3 Credits.**

This course examines the mechanisms of vertebrate, particularly human defense against microbial invasion and cancer.

P: BIOLOGY 323 with at least a C grade or BIOLOGY 307 with at least a C grade; CHEM 212 with at least a C grade; and MATH 260 with at least a C grade

Spring.

**HUM BIOL 423. Immunology Lab. 1 Credit.**

This laboratory course examines the mechanisms of innate and acquired immunity.

P: HUM BIOL 422 or conc enr and CHEM 207 or conc enr

Spring Odd.

**HUM BIOL 426. Cancer Biology. 3 Credits.**

This course examines the genetic changes and molecular events that lead to abnormal cell growth and cancer. Topics covered include oncogenes, tumor suppressor genes, angiogenesis, invasion and metastasis, cancer stem cells, therapeutic approaches for cancer treatment, and cancer prevention.

P: Biology 307 or Hum Biol 310 or Biology 410 with at least a C grade

Spring.

**HUM BIOL 427. Cancer Biology Laboratory. 1 Credit.**

In this inquiry-based laboratory course, students will use molecular and cellular techniques to conduct research projects that examine the hallmark characteristics of cancer cells.

P: Hum Biol 426 or concurrent enrollment

Spring Even.

**HUM BIOL 444. Endocrinology. 3 Credits.**

This course examines the major endocrine organs of the body and the processes that are controlled / integrated by hormones. Clinical examples of endocrine disease (e.g. diabetes, Graves disease) will be considered from the viewpoint of the insight they give to the understanding of endocrine physiology.

P: HUM BIOL 240 or HUM BIOL 221 & HUM BIOL 222 with a grade of C or better AND (either) HUM BIOL 402 or BIOLOGY 307

Spring.

**HUM BIOL 451. Biomechanics. 3 Credits.**

This course introduces students to musculoskeletal biomechanics and the quantitative analysis of human movement. Topics covered will include rigid-body kinematics, dynamics, motion capture, external force measurement, electromyography, and mechanical properties of muscles, tendons, and bones.

P: HUM BIOL 351

Spring.

**HUM BIOL 478. Honors in the Major. 3 Credits.**

Honors in the Major is designed to recognize student excellence within interdisciplinary and disciplinary academic programs.

P: min 3.50 all cses req for major and min gpa 3.75 all UL cses req for major.

Fall and Spring.

**HUM BIOL 495. Teaching Assistantship. 1-6 Credits.**

The student and supervising teacher must prepare a statement that identifies the course with which the assistantship will happen, objectives for the assistantship, and expectations in order to fulfill the course objectives. Students are not eligible to receive credit in both the course they assist the instructor with and the teaching assistantship in the same semester. Typically student has previously taken the course prior to enrollment in the assistantship. Course is repeatable for credit.

Fall and Spring.

**HUM BIOL 496. Project/Research Assistantship. 1-6 Credits.**

The student must prepare a research proposal, and both parties should identify the research arrangement and how the student will complete the work to fulfill the course objectives within the assigned term.

P: Chem 207 and approval by faculty mentor.

**HUM BIOL 497. Internship. 1-16 Credits.**

Supervised practical experience in an organization or activity appropriate to a student's career and educational interests. Internships are supervised by faculty members and require periodic student/faculty meetings. Course is repeatable for credit.

P: jr st.

Fall and Spring.

**HUM BIOL 498. Independent Study. 1-4 Credits.**

Independent study is offered on an individual basis at the student's request and consists of a program of learning activities planned in consultation with a faculty member. A student wishing to study or conduct research in an area not represented in available scheduled courses should develop a preliminary proposal and seek the sponsorship of a faculty member. The student's advisor can direct him or her to instructors with appropriate interests. A written report or equivalent is required for evaluation, and a short title describing the program must be sent early in the semester to the registrar for entry on the student's transcript.

P: fr or so st with cum gpa > or = 2.50; or jr or sr st with cum gpa > or = 2.00.

Fall and Spring.

**HUM BIOL 499. Travel Course. 1-6 Credits.**

Travel courses are conducted to various parts of the world and are led by one or more faculty members. May be repeated to different locations.

P: cons of instr & prior trip arr & financial deposit.