

## **MASTER COURSE ROSTER and CATALOG Descriptions (revised 6-2015)**

### **California Northstate University – College of Health Sciences**

**COLL100** *Student Success Seminar (2 credits)*

The purpose of this course is to guide first-year students in a successful transition from high school to college. Topics include review of academic policies, university services, copyright laws and plagiarism, university etiquette, strategies for studying and test-taking, career advising, help resources, and balancing social life with academics.

Prerequisites: none

**COLL110** *Medical Terminology (1 credit)*

A basic review of medical terms and technical jargon commonly encountered in medical school and in the health science workplace.

Prerequisite: none

**COLL210** *Independent Community Service Project I (2 credits)*

Students are organized into small groups and guided in design and execution of a health-related project that benefits the local community.

Prerequisites: none

**COLL220** *Independent Community Service Project II (1 or more credits commensurate with service)*

Spring semester continuation of COLL210. Three hours of work must be completed per week for the semester to earn the equivalent of 1 credit unit.

Prerequisites: COLL210

**COLL310** *Scholarly Project I / Research Methods (3 credits)*

This class introduces students to methodology used in scholarly research. Topics include the scientific method of hypothesis formulation and experimental design, information literacy, database sources and library skills, experimental design, data collection and analysis, reading and writing professional journal articles, and scholarly presentations in poster and seminar format.

Prerequisites: junior year standing

**COLL410** *Scholarly Project II (3 credits)*

Research methods introduced in COLL310 are used to design and execute an independent research project.

Prerequisites: COLL310

**COLL420** *Leadership (3 credits)*

This course asks the question: What are the characteristics and attributes of an excellent leader? Principles and examples of leadership taken from diverse fields of human endeavor are discussed in combination with assigned readings.

Prerequisites: senior year standing

**COLL490** *Undergraduate Teaching Assistant (1 or more credits)* *Elective*

Students may elect to receive official credit on their transcripts for work as teaching assistants in laboratory courses or for tutoring other students who need additional support. Students electing this course must be approved by a faculty member who will supervise the teaching activity. Three hours of work must be completed per week for the semester to earn the equivalent of 1 credit unit. Prerequisites: approval of the sponsoring faculty member

## Department of Sciences and Mathematics

**BIOL110** *Biology I – Inheritance, Evolution, & Diversity of Life (3 credits)*

This course is an introduction to principles of biology that underlie all of the life sciences. Topics include the scientific method, genetic basis of inheritance, theory of evolution, tree of life, phylogenetic classification, comparative physiology, population biology and ecology. Prerequisites: none

**BIOL110L** *Biology I – Inheritance, Evolution, & Diversity of Life Laboratory (1 credit)*

Companion laboratory course to be taken concomitantly with BIOL110 lecture course. Prerequisites: BIOL110 if not taken together

**BIOL120** *Biology II – Cells & Biomolecules (3 credits)*

A continuation of BIOL110 that focuses on cell and molecular biology. Topics include cell organelles, cell physiology, membrane biology, bioenergetics, DNA, RNA, replication, gene transcription and regulation, protein synthesis, and protein structure and function.

Prerequisites: BIOL110 or permission of the instructor

**BIOL120L** *Biology II – Cells & Biomolecules and Laboratory (1 credit)*

Companion laboratory course to be taken concurrently with BIOL120 lecture course.

Prerequisites: BIOL120 if not taken together

**BIOL210** *Human Anatomy (4 credits)*

This course and its integrated laboratory section provides a comprehensive overview of the gross anatomy of the human body. The architecture of the body and its structural relationships are presented with the use of three-dimensional models and software. No dissection is required.

Prerequisites: BIOL120 or permission of the instructor

**BIOL220** *Human Physiology (3 credits)*

The science of human physiology is presented in broad survey. Questions addressed by the course include: How does the body function at a mechanistic level? What are

the quantitative principles of homeostasis compatible with life? A systems-based approach is used to examine the detailed function of the major organs and compartments of the body. Prerequisites: BIOL210 or permission of the instructor

**BIOL220L Human Physiology Laboratory (1 credit)**

Companion physiology laboratory course offered concurrently with BIOL220 lecture course. Prerequisites: BIOL210 and BIOL220 if not taken together

**BIOL230 Genetics – From Genes to Genomes (3 credits)**

Genetics deals with the structure and role of genes as determinants of inheritance (genotype) and biological function (phenotype) of all living organisms. The course explores the intricacies of gene function as elucidated from the structure of DNA to the organization and evolution of the genome – the entire complement of genes for a given organism.

Prerequisites: BIOL120 or permission of the instructor

**BIOL310 General Microbiology (3 credits)**

This course is a general introduction to the study of microscopic forms of life including viruses, bacteria, protozoa, fungi, and algae.

Prerequisites: BIOL120 and BIOL230 or permission of the instructor

**BIOL310L General Microbiology Laboratory (1 credit)**

Companion laboratory course to be taken concurrently with BIOL310 lecture course.

Prerequisites: BIOL310 if not taken together

**BIOL320 Medical Microbiology & Epidemiology (3 credits)**

A continuation of microbiology discussed in BIOL320 with a specific focus on microorganisms associated with infectious diseases of biomedical concern such as influenza, measles, methicillin-resistant staphylococcus, and HIV-AIDS. Epidemiology is the study of how microbial infections originate and spread within a population, and how they are contained.

Prerequisites: BIOL310 or permission of the instructor

**BIOL330 Human Nutrition (3 cr)**

This course describes the nutrient requirements of the human body and the principles that define the relationship between diet and good health.

Prerequisites: CHEM310 or permission of the instructor

**BIOL340 Immunology (3 credits)**

Immunology is the study of the innate and adaptive capacities of the immune system as a complex cellular network that functions in the body's response to exposure to foreign substances (antigens) and organisms. The immune system exhibits a wide variety of cell-mediated defensive functions and antibody-mediated protective functions. It is also involved in various pathological conditions such as septic shock and autoimmune disorders covered in this course.

Prerequisites: BIOL220 or permission of the instructor

**BIOL350** *Current Topics in Biology and Medicine (3 credits)* *Elective*

This course surveys important developments in biology and medicine with regard to their present and future implications. Discussions may include such topics as discovery of DNA and founding of molecular biology, eugenics, biotechnology, human genome sequencing, genetic fingerprinting, and gene therapy. Special attention will be given to ethical issues concerning the practice of medicine and the creation and application of biotechnology.

Prerequisites: sophomore year standing or permission of the instructor

**BIOL410** *Neuroscience (3 credits)*

Neuroscience is the study of the cellular and molecular basis of nervous system function. Neurons and associated glial cells form an electrical and chemical signaling network that underlies sensory perception, muscle contraction, and central information processing in the brain. This course provides an in-depth overview of neurobiology relevant to the physiological function of peripheral nerves and central nervous system (brain and spinal cord).

Prerequisites: BIOL220 or permission of the instructor

**BIOL420** *Advanced Cell and Molecular Biology (3 credits)*

This course covers a variety of advanced topics in cell biology such as mechanisms of signal transduction, bioenergetics, cell cycle regulation, cancer, apoptosis (programmed cell death), and senescence (cellular aging). It also describes the technical basis of modern techniques of molecular biology such as recombinant DNA technology, genome sequencing, bioinformatics, gene therapy, transgenic animals, and cellular imaging.

Prerequisites: BIOL120 and CHEM220 or permission of the instructor

**BIOL430** *Pharmacology (3 credits)*

This course surveys major classes of drugs in clinical use and also introduces the science of modern drug discovery. A drug is broadly defined as any chemical that affects physiological function. Drugs that have been clinically tested and approved for human use are also powerful chemical tools used to manage symptoms and treat disease. The science of pharmacology is concerned with mechanisms of drug action at various levels from the whole organism to the cellular level to molecular interactions.

Prerequisites: BIOL220 and CHEM220 or permission of the instructor

**BIOL440** *Pathophysiology (3 credits)*

Pathology refers to the general study of disease. The science of pathophysiology seeks to understand the physiological bases of the origin and progression of disease. This course also covers advanced methods used to detect and diagnose diseases such as histological examination of tissue samples and biochemical analysis of biomarkers.

Prerequisites: BIOL220 or permission of the instructor

**CHEM110** *General Chemistry I (3 credits)*

This course covers the electronic structure of atoms, periodic table, quantum theory, atomic bonding, molecular orbitals, principles of molecular structure, and chemical

reactions. Students are introduced to the diversity of inorganic and organic chemical interactions that underlie the physical substance of matter.

Prerequisites: none

**CHEM110L** *General Chemistry I Laboratory (1 credit)*

Companion laboratory course to be taken concurrently with CHEM110 lecture course. Prerequisites: CHEM110 if not taken together

**CHEM120** *General Chemistry II (3 credits)*

A continuation of CHEM110 that focuses on states and physical properties of matter, thermodynamics, chemical reaction mechanisms, acids and bases, pH, chemical equilibria, and chemical kinetics. Prerequisites: CHEM110

**CHEM120L** *General Chemistry II Laboratory (1 credit)*

Companion laboratory course to be taken concurrently with CHEM120 lecture course. Prerequisites: CHEM120 if not taken together

**CHEM210** *Organic Chemistry I (3 credits)*

This course covers the chemistry of major classes of organic molecules and functional groups such as halogens, amines, ethers, esters, and amides. Organic compounds are broadly defined as molecules that contain carbon, an extremely versatile element in terms of its chemistry.

Prerequisites: CHEM120 and CHEM120L

**CHEM220** *Organic Chemistry II (3 credits)*

A continuation of CHEM210 that expands upon organic reactions, organic synthesis, and biomolecules relevant to biology and medicine.

Prerequisites: CHEM210

**CHEM220L** *Organic Chemistry II Laboratory (2 credits)*

Companion laboratory course to be taken concurrently with CHEM220 lecture course.

Prerequisites: CHEM220 if not taken together

**CHEM310** *Biochemistry (3 credits)*

The science of biochemistry is focused on chemistry specific to living organisms. Beginning with a detailed description of the structure of biomolecules and macromolecules such as DNA, amino acids, proteins, carbohydrates, and lipids, major topics of the course include enzyme mechanism and kinetics, metabolic pathways of biosynthesis and catabolism, and physical methods of analysis used in biochemical research.

Prerequisites: CHEM220 and CHEM220L

**MATH110** *Introduction to College Mathematics (3 credits)*

This course reviews and elaborates upon elementary mathematics essential for the study of calculus. Specific topics include polynomials, trigonometric functions,

exponential and logarithmic functions, infinite series, and complex numbers. This course is required to be taken by students who need a thorough review of this material as determined by performance on a mandatory math placement exam given to all first-year students before the start of the Fall semester. Students who do well on the placement exam may skip this course and enroll directly in MATH120 Applied Statistics offered in the Fall and MATH130 Differential and Integral Calculus offered in the Spring.

Prerequisites: none

**MATH120** *Applied Statistics (3 credits)*

Applied statistics is the use of statistical theory and methods in quantitative analysis of numerical data. Starting from elementary laws of probability, the course explains why certain kinds of data conform to specific probability distributions and how statistical tests allow levels of significance to be determined in objective studies and hypothesis testing.

Prerequisites: none

**MATH130** *Differential and Integral Calculus (3 credits)*

Calculus is a powerful mathematical approach used to solve many complex problems that concern rate of change and multi-dimensional objects. It has numerous applications in diverse fields such as physics, chemistry, biology, economics, and business. Many professional schools in health sciences and business require at least one semester of calculus.

Prerequisites: MATH110 or instructor approval based on math placement test

**PHYS210** *Physics I (3 credits)*

Physics describes universal laws of nature that underlie the workings of the universe. The first part of the two-semester course describes the theory and quantitative relationships of motion, force, energy, gravity, light, optics, and sound.

Prerequisites: MATH130 or instructor approval

**PHYS210L** *Physics 1 Laboratory (1 cr)*

Companion laboratory course to be taken concurrently with PHYS210 lecture course.

Prerequisites: PHYS210 if not taken consecutively

**PHYS220** *Physics II (3 credits)*

A continuation of PHYS210 that covers electromagnetism, electronics, solid-state physics, quantum theory, nuclear physics, particle physics, and relativity.

Prerequisites: PHYS210

**PHYS220L** *Physics II Laboratory (1 credit)*

Companion laboratory course to be taken concurrently with PHYS220 lecture course. Prerequisites: PHYS220 if not taken together

## Department of Humanities, Social Sciences, and Administration

### **ADMN310** *Human Resource Management (3 credits)*

This course is designed to familiarize students with current best practices used by human resource departments of diverse business entities ranging from small companies to large multinational organizations with a special focus on healthcare organizations.

Prerequisites: junior year standing or permission of the instructor

### **ADMN320** *Healthcare Financing (3 credits)*

The financial underpinnings of healthcare delivery in the US are examined in detail. The current system of public and private health insurance and cost reimbursement is explained and assessed from an economic perspective. New ideas and ongoing efforts to revise and reform the system are also discussed.

Prerequisites: junior year standing or permission of the instructor

### **ADMN410** *Healthcare Regulations and Accreditation (3 credits)*

Students are introduced to important laws and regulations that govern health care delivery in the U.S. Such regulations include licensing, privacy rights, informed consent, genetic information nondiscrimination act, and end-of-life decisions.

Prerequisites: senior year standing or permission of the instructor

### **ADMN420** *Healthcare Delivery Systems (3 credits)*

Venues of health care delivery include clinics, medical testing laboratories, hospitals, emergency rooms, schools, and health maintenance organizations. This course provides an in-depth look at the operations and practical considerations for delivery of healthcare in such diverse settings.

Prerequisites: senior year standing or permission of the instructor

### **ADMN430** *Technologies in Healthcare Administration (3 credits)*

Healthcare delivery and administration has become increasingly reliant on collection of data in electronic format to manage decision-making, regulatory compliance, and cost reimbursement. This course introduces students to the technology and software used to facilitate such administrative functions. Prerequisites: senior year standing or permission of the instructor

### **ANTH210** *Cultural Anthropology (3 credits)*

Cultural anthropology is the systematic study of human culture in different parts of the world. This course surveys the intellectual history of this branch of anthropology and considers the impact of environment, traditions, religion, history, and many other factors to cultural diversity.

Prerequisites: junior year standing or permission of the instructor

### **ARMU110** *Art Appreciation (3 credits)*

Artists document and interpret the human experience through creative expression recorded in drawings, painting, sculpture and other media. The

history of art is also a catalog of human development from primitive origins to modern civilization. This course will enhance students' appreciation of art by exploring its many forms, interpretations, and creators.

Prerequisites: none

**ARMU120 *Music Appreciation (3 credits)***

Listening to music is said to be therapeutic and an effective way to reduce stress. Students in this course are invited to expand their appreciation of world music by exploring the work of key composers and performing artists of diverse genres: classical music, folk music, jazz, blues, and rock and roll. Prerequisites: none

**BUSN210 *Financial Accounting (3 credits)***

Accounting is the formal documentation of financial information of business entities. Financial accounting focuses on the preparation and analysis of balance sheets and financial reports necessary for efficient operation of any organization and healthcare enterprise.

Prerequisites: none

**BUSN220 *Managerial Accounting (3 credits)***

Management accounting involves the use and assessment of financial information in making prudent management decisions critical to any well-run organization.

Prerequisites: none

**BUSN230 *Introduction to Organizational Behavior Management (3 credits)***

Organizational Behavior Management is concerned with research into business practices that improve personnel performance and customer satisfaction.

Prerequisites: none

**BUSN310 *Operations Management (3 credits)***

Operations management deals with methods of controlling organizational resources to maximize productivity and output in the business arena including healthcare.

Prerequisites: ECON310 and ECON320 or permission of the instructor

**BUSN410 *Strategic Management (3 credits)***

Strategic management may be described as use of tactical planning in optimizing ongoing business activities and future growth of an organization.

Prerequisites: ECON310 and ECON 320 or permission of the instructor

**BUSN420 *Entrepreneurship (3 credits)***

Entrepreneurship is the art of starting a new business and promoting business opportunities. This course teaches students how to analyze market demand for a given product or service, construct a viable business plan, incorporate and launch a new business, commercialize, and strategically market a business product.

Prerequisites: senior year standing or permission of the instructor

**COMM110** *Oral Communication (3 credits)*

This course allows student to learn and practice the art of oral communication in a variety of formats commonly encountered in professional settings: small group discussion and conferences, teaching, presentations accompanied by visual information, and formal speeches. Practice exercises with feedback from the instructor and student peers will help each student to improve delivery and confidence in speaking before groups.

Prerequisites: none

**ECON210** *Macroeconomics (3 credits)*

Macroeconomics is concerned with the behavior of the whole economy at a national or global level. The significance of broad measures of economic activity and the influence of governmental policies such as monetary policy, fiscal policy, spending, and taxation are a few of the topics covered in this course.

Prerequisites: none

**ECON220** *Microeconomics (3 credits)*

Microeconomics deals with the economic relationships of supply and demand for goods and services within a limited market. Sound understanding of the impact of microeconomic factors such as pricing and competition is important to the normal operation of any business as well as the healthcare marketplace.

Prerequisites: none

**ENGL110** *English Composition I (3 credits)*

This purpose of this course is to ensure that all students develop the ability to write lucid and logically structured prose that meets accepted standards of business correspondence and professional publications and are able to effectively use word processing software and online writing tools. Diagnostic writing exercises will be used to assess students' basic skills of English grammar and vocabulary in order to customize instruction to level of skill. Increasingly complex assignments on topics relevant to health science will be used to establish and refine writing competency.

Prerequisites: none

**ENGL120** *English Composition II (3 credits)*

A continuation of ENGL110 that emphasizes originality, definition of and avoidance of plagiarism, proper methods of source citation, and further development of clarity, presentation, and writing style. Prerequisites: none

**GOVT110** *US Government (3 credits)*

This course reviews the organization and principles of U.S. government at the federal, state, and local levels. It also takes an in-depth look at governmental agencies responsible for oversight and administration of matters related to health science and healthcare.

Prerequisites: none

**HIST310** *History of Medicine (3 credits)* *Elective*

Beginning with crude concepts of how the body works as developed by Hippocrates, this course will follow the story of how medicine evolved from myth and superstition into a modern science.

Prerequisites: sophomore year standing or permission of the instructor

**PHLT310** *Global Health (3 credits)*

This course examines the status of human health and systems of health care delivery across the world. Reasons for disparity in availability health services and outcomes are critically analyzed. The role of international organizations dedicated to improvement of global health is also covered.

Prerequisites: junior year standing or permission of the instructor

**PHLT320** *Healthcare Policy (3 credits)*

Current healthcare policy is examined in light of recent research and debate and the following question is asked: What policies and procedures work best to keep the human population healthy?

Prerequisites: junior year standing or permission of the instructor

**PHLT410** *Mental Health Services (3 credits)*

The tragedy and realities of mental illness require special health services. This course covers issues specific to this field of health care including psychiatric treatment, depression, suicide, drug addiction, alcoholism, and neurodegenerative diseases such as Alzheimers' Disease.

Prerequisites: senior year standing or permission of the instructor

**PHIL210** *Philosophy and Ethics (3 credits)*

Philosophy attempts to elucidate abstract topics at a fundament level. It uses logic and reason to address big questions such as issues of existence, morality, and ethics that are essentially unanswerable in exact form. The classical work of major historical figures in philosophy is presented and discussed to help students sharpen their intellectual skills and form their own philosophy.

Prerequisites: ENGL120 or permission of the instructor

**PSYC110** *General Psychology (3 credits)*

The science of human psychology is presented in broad survey. The focus is on perception, cognition, personality and social psychology, and biological aspects of behavior. This introductory course provides a comprehensive introduction and overview of the field which facilitates study of more specialized topics.

Prerequisites: none

**PSYC220** *Social Psychology (3 credits)*

Social psychology is concerned with the influence of society or other people on the thoughts, feelings, and behavior of any given person. Topics of social behavior include interpersonal attraction and relationship development, social perception, social

cognition, personal attitudes, persuasion, social identity, gender identity, as well as prejudice and discrimination.

Prerequisites: PSYC210

**PSYC310 *Developmental Psychology (3 credits)***

Developmental psychology is concerned with the description and understanding of distinct human behavior at various stages of life such as infancy, adolescence, and adulthood. Specific topics include emotional development, moral development, stereotype development, and personality development. Prerequisites: PSYC 210

**PSYC320 *Cognitive Psychology (3 credits)***

Cognitive psychology is concerned with information processing by the brain. This field of research studies how humans make decisions and behave according to the influence of sensory input, experience, memory, and belief. It also addresses complex cognitive phenomena such as imagery, attention, memory, learning, language, problem solving and creativity.

Prerequisites: PSYC210

**PSYC330 *Health Psychology (3 credits)***

Health psychology is the study of how health influences mental function and behavior and vice versa. The effect of illness, stress, and exercise are examples of external influences and controllable behaviors that can influence a person's psychological profile. The course will also explore factors affecting health maintenance and illness recovery.

Prerequisites: PSYC210

**PSYC410 *Abnormal Psychology (3 credits)***

Abnormal psychology is concerned with the basis of altered behavior associated with mental illness. Relevant topics include psychiatric conditions such as mania, depression, psychosis, obsessive-compulsive behavior, and autism. Theories of causation and strategies of various therapies will also be presented.

Prerequisites: PSYC210

**SOCL210 *Sociology (3 credits)***

Sociology uses scientific methods to investigate the logical basis of human social behavior. The effect of gender, family upbringing, and education on a person's social behavior are typical examples of sociological inquiry. The conceptual framework of sociology is very useful in addressing issues of health disparity and effectiveness of health care delivery.

Prerequisites: junior year standing or permission of the instructor