Health Care

The Bachelor of Science in Health Care provides an academic foundation for students pursuing managerial, clinical, or research careers in health care. The program includes a base of core courses that examine scientific, social, political, economic, ethical, and organizational issues in health care, and that also address implications for individual practice and public policy. This required core, drawn largely from Arts & Sciences, underscores the complex, interdisciplinary nature of health care today, and the mandate for critical thinking, contextual understanding, and ethical behavior across all related fields and careers.

Grounded in these common questions and skill sets, students then pursue more specialized professional interests by selecting a concentration in either health care management or health sciences. The program equips students with an academic foundation for graduate or professional school, or for work in a variety of health care professions including, but not limited to, hospital administration, community health, public health, biomedical research, medicine, nursing, dentistry, and physical and occupational therapy.

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Degree Requirements

Bachelor of Science in Health Care

All University College undergraduate students must satisfy the same general-education requirements (http://bulletin.wustl.edu/prior/2016-17/undergrad/ucollege/bachelors/#degerequirements). Requirements specific to this major include:

**Required Core Courses:** 18 units

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<td>Anthro 3283</td>
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<td>Bio 342</td>
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<td>Econ 352</td>
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<td>3</td>
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<td>Psych 358</td>
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Total units 18

Health Care Management Concentration

• 18 units, including at least 9 units of advanced (300- or 400-level) course work

Required Health Care Management concentration courses (15 units) are noted below. Additionally, students select one elective course, authorized by University College, chosen from Arts & Sciences, Business, Health Care, Clinical Research Management, Human Resources Management, or Nonprofit Management.

**Required Courses in Health Care Management Concentration**

- HCare 312 Legal Issues in Health Care Management 3
- HCare 314 Health Care Finance 3
- HCare 349 Health Care Communications and Marketing Strategy 3
- HCare 355 Health Care Reform and Policy 3
- HCare 360 Strategic Planning and Management in Health Care 3

Health Sciences Concentration

• 18 units, including at least 9 units of advanced (300- or 400-level) course work

Health Sciences concentration courses, all elective, are chosen in consultation with an adviser and authorized by University College. Courses are chosen from Biology, Chemistry, Physics, Psychology, and other areas with University College authorization. Students pursuing graduate and professional study in medicine and other clinical fields are required to take more than 18 units of prerequisite course work for admission to graduate or professional school.

Courses


**U86 HCare 1001 Concepts in Chemistry**

A one semester survey of the major topics covered in general chemistry, organic chemistry, and biochemistry. The course is intended for students pursuing a degree or certificate in clinical research management and others seeking broad coverage of chemical concepts. Does not replace general chemistry, organic chemistry, or biochemistry requirements for premedical students or others majoring in the sciences. Three hours of lecture and two hours of lab each week. Same as U05 Chem 1001

Credit 4 units.

**U86 HCare 101 General Biology I**

First part of a two-semester rigorous introduction to basic biological principles and concepts. The first semester covers the molecular and cellular basis of life, bioenergetics, signal transduction, DNA and protein synthesis, and the function of
whole organisms (physiology). Laboratory one evening per week. Laboratories include traditional wet labs as well as inquiry-based online labs. Prerequisite or Corequisite: U05 Chem 105 (with laboratory), or the equivalent. Restricted to University College students, post-baccalaureate pre-medical students, others with instructor permission.
Same as U29 Bio 101
Credit 4 units.

U86 HCARE 102 General Biology II
Same as U29 Bio 102
Credit 4 units.

U86 HCARE 105 General Chemistry I
Systematic treatment of fundamental chemical principles and their applications. Emphasis on atomic and molecular theories, laws of chemical combinations, periodic classification of the elements, and properties of gases, liquids, solids, and solutions. Prerequisite: U20 Math 141, 142, or equivalent, one year of high school chemistry, or consent of department.
Same as U05 Chem 105
Credit 3 units.

U86 HCARE 106 General Chemistry II
Continuation of General Chemistry I with consideration of oxidation-reduction, chemical equilibria, electro-chemical cells, and the chemistry of representative elements. Prerequisite: U05-105. Students desiring to satisfy lab science requirements or major in chemistry must also enroll in U05-109.
Same as U05 Chem 106
Credit 3 units.

U86 HCARE 110 Medical Imaging of the Human Body
The human body will be explored in both health and diseased conditions via “state of the art” imaging modalities, including CT, MR, ultrasound and PET scans. There will be a rudimentary examination of the different imaging techniques available in order to understand the derivation of the images obtained and why given techniques are employed in certain clinical situations. Indications for general screening as well as more directed diagnostic examinations will be discussed, often with the aid of case studies and common clinical examples. The objective of this course is to give the student a practical “take home” understanding of the human body and some of the current diagnostic imaging approaches being utilized in modern health care.
Prerequisite: year of high school or entry-level college biology.
Same as U29 Bio 110
Credit 3 units.

U86 HCARE 120 Introduction to Anatomy and Physiology
Same as U29 Bio 120
Credit 4 units.

U86 HCARE 121 Introduction to Anatomy and Physiology II
Same as U29 Bio 121
Credit 4 units.

U86 HCARE 130 Introduction to Microbiology
Same as U29 Bio 130
Credit 4 units.

U86 HCARE 134 Introduction to Magnetic Resonance Imaging
An introduction to magnetic resonance imaging (MRI) and its applications in medicine. We will focus on the very basic principles of MRI and the various MR contrast mechanisms, which are needed to correctly read MRI images acquired with specific acquisition schemes. Course will cover basic image acquisition techniques, parameters optimization to improve image quality, popular pulse sequence designs, and special applications such as MR angiography (MRA), cancer imaging, and functional MRI (fMRI, if time allows).
Same as U23 Phys 134
Credit 3 units.

U86 HCARE 151 General Chemistry Laboratory I
This course provides an introduction into basic laboratory techniques, the experimental method, as well as direct experience with chemical principles and the properties and reactions of substances. The topics and experiments in this course complement the material covered in U05-105. Students attend one three-hour laboratory session and one one-hour laboratory lecture every week. Prerequisites: concurrent enrollment in U05-105 or permission of the instructor.
Same as U05 Chem 151
Credit 2 units.

U86 HCARE 152 General Chemistry Lab II
This course provides an introduction to basic laboratory techniques, the experimental method, and the presentation of scientific data as well as direct experience with chemical principles and the properties and reactions of substances. The topics and experiments in this course complement the material covered in the Chem 112A lecture course. Students attend one four-hour laboratory session and one one-hour laboratory lecture every week. Course will be presented in the second half of the semester. Prerequisites: concurrent enrollment in Chem 112A or permission of the instructor. Students registering for Chem 112A should register for both Chem 151 and Chem 152.
Same as U05 Chem 152
Credit 2 units.

U86 HCARE 204 Nutrition
This course examines nutrition as an interdisciplinary science including the chemistry, function and metabolism of nutrients; regulations of food intake; food habits; digestion and absorption of nutrients; methods of determining nutrient content of foods and nutrient requirements for humans and animals; comparative nutrition; problems of human malnutrition; relation of nutrition to disease; toxic materials in foodstuffs; economic, nutritional and social problems involved in feeding the world population and future possibilities for meeting nutritional needs of the world’s population. This is a basic course in nutrition, not designed for prospective health care professionals. Enrollment preference is given to University College students.
Same as U29 Bio 204
Credit 3 units.

U86 HCARE 205 Organic Chemistry I
Same as U05 Chem 205
Credit 3 units.

U86 HCARE 206 Organic Chemistry II
Same as U05 Chem 206
In addition to mastery of statistical concepts, considerable students use a statistics package to analyze research data. Professional journals. There will be a computer lab in which medical issues, and there are supplementary readings from performance, and survival analysis. In-class examples cover and ANOVA, correlation and regression, chi-square, diagnostic exploratory data analysis, hypothesis testing, probability, t-tests additional techniques from medical research. Topics include statistics classes from a health science perspective, with some. This course covers material commonly presented in introductory Sciences U86 HCARE 235 Introductory Statistics for the Health University College students. Millet, Gilligan, and Kohlberg. Prerequisite: U09-100. Open only major developmental theorists including Freud, Erickson, Piaget, childhood, adolescence, adulthood, later life). We will study and typical behaviors of each developmental era (infancy, physical, and social development through the life span. We will study major developmental theorists including Freud, Erickson, Piaget, Millet, Gilligan, and Kohlberg. Prerequisite: U09-100. Open only to University College students. Same as U09 Psych 230. Credit 3 units.

**U86 HCARE 235 Introductory Statistics for the Health Sciences**
This course covers material commonly presented in introductory statistics classes from a health science perspective, with some additional techniques from medical research. Topics include exploratory data analysis, hypothesis testing, probability, t-tests and ANOVA, correlation and regression, chi-square, diagnostic performance, and survival analysis. In-class examples cover medical issues, and there are supplementary readings from professional journals. There will be a computer lab in which students use a statistics package to analyze research data. In addition to mastery of statistical concepts, considerable emphasis will be placed on understanding how to interpret information in journal articles and how to carry out research. Credit 3 units.

**U86 HCARE 250 Fundamentals of Clinical Research Management I**
This introductory course provides the basic foundation for clinical research. We examine the historical evolution of research, linking it to the current regulations and guidelines for good clinical practice. Course material includes research roles and responsibilities, institutional review boards, phases of drug development, the informed consent process, human subject protections, and an overview of study conduct. Same as U80 CRM 250. Credit 3 units.

**U86 HCARE 251 Fundamentals of Clinical Research Management II**
This course focuses on the application of principles and theories covered in Fundamentals of Clinical Research Management I. Students will develop and complete documents for a specific assigned protocol. This will include completing institutional review board paperwork, writing an informed consent, developing source documents, and critiquing research articles. Prerequisite: Fundamentals of Clinical Research Management I or instructor permission. Same as U80 CRM 251. Credit 3 units.

**U86 HCARE 255 Organic Chemistry Lab**
Same as U05 Chem 255. Credit 2 units.

**U86 HCARE 261 Organic Chemistry with Lab**
The first part of a two-semester survey of organic chemistry. The course will include an introduction to organic structures, reactions, and reaction mechanisms. The laboratory portion of the course will have seven experiments and include an introduction to laboratory methods in organic chemistry, including separation and methods of purification of organic compounds. Prerequisites: Chem 112A, Chem 152. Same as U05 Chem 261. Credit 4 units.

**U86 HCARE 276 Microbiology and Society**
Same as U29 Bio 276. Credit 3 units.

**U86 HCARE 309 Health and Society**
This course examines how personal health and well-being are affected by institutional and societal forces. We use an historical perspective in studying, for example, how sleep, leisure, and other aspects of personal health have been changed by industrial, economic, political, and cultural developments such as urban planning, food processing, animal husbandry, and the role of the family doctor. We also take a close look at environmental factors (e.g., global warming) and related political and economic forces that produce and exacerbate chronic diseases. Finally, we critique how personal health and the health care industry have been influenced by major institutional forces such as the insurance and pharmaceutical industries, professional licensure, government-sponsored research, and the media. We read case
studies and medical journals to understand and discuss related ethical and policy questions.  

U86 HCARE 310 Fundamentals of Clinical Research Management I  
Fundamentals of Clinical Research Management I is an introductory course which provides the basic foundation for clinical research. The historical evolution of research is explored, linking it to the current regulations and guidelines for good clinical practice. Course material includes research roles and responsibilities, institutional review boards, phases of drug development, the informed consent process, human subject protections and an overview of study conduct.  
Credit 3 units.

U86 HCARE 3101 Preparing Biomedical Transcripts  
A first course in preparing manuscripts for publication in a biomedical journal. Restricted to members of the Washington University School of Medicine community, others on a space-available basis. To register call 314-935-6749.  
Same as U29 Bio 310  
Credit 3 units.

U86 HCARE 311 Fundamentals of Clinical Research Management II  
Credit 3 units.

U86 HCARE 312 Legal Issues in Health Care Management  
This course offers an overview of the most important legal issues currently facing hospitals, physicians, and other health care organizations. We will study the Affordable Care Act, liability for data breaches under HIPAA /HITECH (the health privacy laws), False Claims Act and whistleblower suits (for Medicaid and Medicare fraud), laws governing physician-hospital relationships (the Stark Law and Anti-Kickback laws), labor and employment issues, mergers and antitrust law, medical malpractice and tort reform, and scope of practice laws.  
Credit 3 units.

U86 HCARE 313 Introduction to Public Health  
This introduction to the field of public health examines the philosophy, history, organization, functions, activities, and results of public health research and practice. Case studies include infectious and chronic diseases, mental health, maternal and reproductive health, food safety and nutrition, environmental health, and global public health. Students are encouraged to look at health issues from a systemic and population-level perspective, and to think critically about health systems and problems, especially health disparities and health care delivery to diverse populations.  
Credit 3 units.

U86 HCARE 314 Health Care Finance  
Credit 3 units.

U86 HCARE 315 Pharmacology  
Credit 3 units.

U86 HCARE 318 Statistics in Clinical Research  
This course presents the basic principles for understanding the design, conduct, analysis, and endpoints of clinical trials. We will review statistical terminology and explain trial design from a clinician's point of view, including theoretical and practical aspects of randomization, stratification, blinding, and single center versus multi-center trials. Additional topics include hypothesis formulation, commonly used research designs, statistical significance, confidence intervals, and statistical tests.  
Same as U80 CRM 318  
Credit 3 units.

U86 HCARE 319 Contemporary Health Care: Issues and Controversies  
The climate of health care today is complex and controversial, demanding no less than an informed, critical understanding of its many and diverse elements. We use contemporary case studies on topics such as informed consent and privacy, workers compensation for patients, and conflicts between corporate financial goals and employee benefits to examine medical, political, legal, economic, ethical, and organizational issues that influence health care policy and practice. We also analyze intended and unintended consequences of health care legislation.  
Credit 3 units.

U86 HCARE 320 Trends in Healthcare Policy  
Same as U80 CRM 520  
Credit 3 units.

U86 HCARE 3200 Child Health Psychology  
This course examines the field of child health psychology, which focuses on the impact of health and illness on the physical and psychological development of children and adolescents. We will explore the relations among psychological and physical health and the welfare of children within a developmental perspective, considered within the contexts of families, health care systems, schools, peers, and community. Topics such as chronic illness (e.g., Cystic Fibrosis, sickle cell disease, organ transplant, asthma), adherence to medically prescribed regimens, and neuropsychological aspects of chronic illness will be addressed. Previous course work in Developmental Psychology (e.g., U09 230, U09 322) would be helpful but not required.  
Same as U09 Psych 3200  
Credit 3 units.

U86 HCARE 322 Introduction to Anatomy and Physiology I  
This is the first of a two-semester sequence that examines all major organ systems in the human/mammalian body. The emphasis is on understanding normal function and processes at the gross, cellular, and molecular levels. The course also addresses pathology and disease. The first semester covers basic principles of cellular physiology, histology, bone, muscle, and nervous systems. The lab is an integral part of the course, and it is recommended that students take both (those wishing to take only the lecture without the lab, should enroll in U29 Bio 3221). Weekly discussion and review sections are offered during which case studies are discussed as a means of reviewing overall course material. A student may not receive credit for both L41 Bio 303A and U29 322.  
Same as U29 Bio 322  
Credit 5 units.
U86 HCARE 3231 Introduction to Anatomy and Physiology II (With Lab)
Same as U29 Bio 323
Credit 5 units.

U86 HCARE 324 Health Care Reform and Policy
This course examines the complexities of health care policy, using the Patient Protection and Affordable Care Act (PPACA) as a reference point. In analyzing this most recent (2010) health care legislation, we begin with an historical perspective on health care reform — how and why we got here — and then look at the social, political, and economic realities going forward. We will study and apply policy analysis tools for measuring cost and overall effectiveness of new proposals. Additional course topics include special interests, federal and state government roles, unintended consequences of health care policies, influence of regulatory agencies, and ethical issues.
Credit 3 units.

U86 HCARE 325 Research Ethics and Regulatory Affairs
This course will provide an understanding of the ethical guidelines, issues, and challenges of conducting research on human subjects. We will explore issues such as conflict of interest, genetic testing, limits of confidentiality, risk, and the distinction between compliance and ethics. As we learn about protecting research groups and interests and explaining rights and liabilities, we will study health care legislation and regulations, guidelines, contractual matters, and the complex regulatory framework that governs human subject research. Finally, we will learn to use an ethical problem-solving model in clinical research.
Same as U80 CRM 325
Credit 3 units.

U86 HCARE 326 The Doctor Is In: Anton Chekhov and Narrative Medicine
Same as U43 IS 326
Credit 3 units.

U86 HCARE 3283 Introduction to Global Health
This course provides a general introduction to the field of public health. It examines the philosophy, history, organization, functions, activities, and results of public health research and practice. Case studies include infectious and chronic diseases, mental health, maternal and reproductive health, food safety and nutrition, environmental health, and global public health. Students are encouraged to look at health issues from a systemic and population level perspective, and to think critically about health systems and problems, especially health disparities and health care delivery to diverse populations. No background in anthropology or public health is required.
Same as L48 Anthro 3283
Credit 3 units. A&S: SS A&S IQ: SSC Art: SSC BU: IS EN: S

U86 HCARE 330 Business of Clinical Research
Same as U80 CRM 330
Credit 3 units.

U86 HCARE 3320 Politics of Medical Science in America from Colonial Times to the Present
This course examines the complex relationship between politics and medical science in American history, using examples from Cotton Mather's stance on smallpox vaccinations to today's stem cell debate. We will analyze arguments about the nature of medical science and the relationship between science and public policy as reflected in debates about issues such as immigration, race, imperialism, gender, sexuality, reproduction, crime, land use, ethics, and religion. We also will look at the political consequences of controversial medico-scientific paradigms and practices throughout American history, such as vaccination, germ theory, midwifery, anesthesia, focal sepsis, phrenology, contagionism, quarantine, osteopathy, animal magnetism, eugenics, abortion, embryology, the Tuskegee syphilis study, and genetic mapping. This is a fully online course. Only University College students can receive credit for fully online courses. Instructor will email registered students with instructions.
Same as U16 Hist 3320
Credit 3 units.

U86 HCARE 335 Introduction to Human Neuroscience
Same as U29 Bio 335
Credit 3 units.

U86 HCARE 3405 Language, Culture and Applied Medicine: Applied Linguistics for the Medical Profession
Same as U91 Ling 3405
Credit 3 units.

U86 HCARE 342 Introduction to Human Disease and its Scientific Basis
This course will provide an overview of some of the most troubling health problems facing adult men and women today including cardiovascular heart disease and stroke, osteoporosis and bone fractures, diabetes and hypoglycemia, kidney disease, rheumatoid and osteoarthritis, cancers of select organ systems, chronic obstructive pulmonary disorder, and issues relating to obesity, fat management, and the newly defined metabolic syndrome. Through both formal lectures and class discussions of carefully selected current research literature, as well as short student presentations, we will examine the primary causes, risk factors, and biological mechanisms underlying such diseases, their impact on the lifestyle and lifespan of afflicted individuals, and what effective preventative or therapeutic treatment strategies are currently in use or emerging through exciting new research discoveries. Special topics will focus on the promise versus serious concerns or recent failure of particular noteworthy drugs (e.g., Vioxx, Baycol, Gleevec) and the lessons they can teach us about the inherent difficulties associated with pharmaceutical drug development today.
Same as U29 Bio 342
Credit 3 units.

U86 HCARE 346 Managing Healthcare Organizations: Clinical Perspectives
Credit 3 units.

U86 HCARE 348 Bioscience For Business
Same as U44 Bus 348
Credit 3 units.
U86 HCARE 349 Health Care Communications and Marketing Strategy
This course provides an integrated approach to organizational strategy, brand development and marketing communications programs within health care organizations. We will explore the fundamental steps required to shape an organization's strategic plan: environmental scan, SWOT assessment, consumer assessment, operating assessment and the development of strategic goals and objectives. Building on this foundation, we will learn to shape an organizational brand to articulate what we stand for, what we strive for, how we express our brand, and how we structure our brand.
Credit 3 units.

U86 HCARE 353 Pharmacology for Clinical Research
This course presents the basic principles of pharmacology and their application to clinical research management to help ensure safe and effective management of drug trials. We will study the foundations of pharmacology, including the principles of drug absorption, distribution, metabolism and excretion, drug binding sites and interactions, and drug development. We also will examine pharmacological problems with special populations, and the emergent area of pharmacogenetics. In the second half of the course we will review important drug classes, with an emphasis on understanding “Investigator’s Brochures,” including drug action and place in therapy, pharmacology, toxicity, chemical properties, and kinetics.
Same as U80 CRM 353
Credit 3 units.

U86 HCARE 355 Health Care Reform and Policy
This course examines important and complex developments in contemporary health care policy. We begin with an historical overview, then look at the structure of current health care delivery, and identify political and economic challenges moving forward. In particular, we will critically examine methods and principles for evaluating health care costs and measuring policy effectiveness. The course also addresses unintended consequences of health care policies, special interests and political agendas, and the influence of major institutional forces on clinical and translational research. Case studies and guest speakers will help illustrate current ethical dilemmas and other real challenges to contemporary health care and reform. Although this course meets over two weekends, students are expected to complete much of the course reading prior to the weekend sessions, and complete a paper after the weekend session.
Same as U80 CRM 555
Credit 3 units.

U86 HCARE 358 Health Psychology
This course examines the history of health psychology and its place in general health care. We will examine relevant theory as applied to specific topics including stress, coping, weight loss, chronic illness in general (diabetes in particular), adherence to medically prescribed regimens, Type A personality and cardiac risk factors.
Credit 3 units.

U86 HCARE 360 Strategic Planning and Management in Health Care
Healthcare Strategic Planning and Management provides students with a framework to assess, develop, implement, and monitor strategic plans for healthcare organizations. Goals include understanding the relationship between mission, vision, values and strategic objectives; developing a plan based on organizational and environmental constraints and opportunities; creating action plans that support achievement of the plan; and measuring, monitoring, and modifying the strategic plan.
Credit 3 units.

U86 HCARE 363 Healthcare Negotiations
Healthcare spending in the United States is the highest in the world, and the industry requires leaders who can understand and negotiate opportunities while managing conflict and change. This course covers major challenges in healthcare negotiations, including managing competing constituencies, negotiating financial conflicts, drawing together providers and patients, and leading negotiations about access and quality of care. We also study negotiation pre-planning and competitive assessment, shifting from competition to cooperation, irrational actors in negotiations, and when to end negotiations. The course provides a theoretical framework for negotiation along with simulations with local health industry executives.
Credit 3 units.

U86 HCARE 364 Healthcare Entrepreneurship
Healthcare entrepreneurs improve the overall quality of healthcare delivery. This course introduces students to the particular characteristics of healthcare entrepreneurship, focusing on the creation, funding, and management of biotechnology and health services enterprises. Students will learn the steps involved in the conceptualization, planning, capitalization, launch, compensation, and management of an entrepreneurial healthcare venture. Students will use course principles and skills to develop an entrepreneurial business plan that addresses a real clinical problem.
Credit 3 units.

U86 HCARE 369 Strategic Planning and Management in Health Care
Credit 3 units.

U86 HCARE 370 Writing and Representation of Pain
This course explores a range of discourses about pain, including theoretical and technical ones.
Same as U65 ELit 370
Credit 3 units. UColl: ENL

U86 HCARE 377 Compassion Cultivation Training
Compassion Cultivation Training (CCT) is an 8-week educational program designed to help students cultivate compassion, strengthen their resilience, feel more connected to others, and improve their overall sense of well-being. CCT is a distillation from Tibetan Mahayana Buddhist practices for developing compassion, adapted to a secular setting. Initially developed by Stanford University scholars with support from the Dalai Lama, CCT combines traditional contemplative practices with contemporary psychology and scientific research. The program involves instruction in a series of meditation practices starting with mindfulness-based meditation. The curriculum uses modern concepts of psychology and neuroscience to understand and enhance our ability to be compassionate.
Same as U69 Anthro 3777
Credit 1 unit. UColl: HUM, SSC
U86 HCARE 387 Medical Anthropology
This overview of the field of medical anthropology provides a perspective on health, medical systems, disease, and culture. We examine beliefs about illness, healing, and the body across cultures. We learn to distinguish physical "disease" from cultural understandings of "illness" and explore the ways that cultural conceptions shape the experience of illness. We look at the interaction of biology and culture as it affects health and medical systems. Throughout the course, we compare other beliefs and health systems with our own culture's management of health and illness.
Same as U69 Anthro 387
Credit 3 units. UColl: NW

U86 HCARE 390 Biomedical Politics
Same as U29 Bio 390
Credit 3 units.

U86 HCARE 406 Introduction to Biochemistry
This course aims to develop a basic understanding of the molecular structure of bio-molecules, the metabolic processes by which these molecules are synthesized, degraded, and energy produced to support cellular processes. It includes a study of enzyme kinetics and metabolic control mechanisms.
Prerequisite: Consult Course Listings.
Same as U29 Bio 406
Credit 3 units.

U86 HCARE 409 Health and Society
Credit 3 units.

U86 HCARE 4135 Tobacco: History, Anthropology, and Politics of a Global Epidemic
Same as U69 Anthro 4135
Credit 3 units.

U86 HCARE 423 Healthcare Entrepreneurship
The emergence of rapid innovation and prototyping of new products and services in health care has opened the door to an entirely new generation of entrepreneurs and entrepreneurial thinkers. No longer is the health care ecosystem completely controlled by legacy juggernauts fueled by institutional buyers. Rather, today we have health care consumerism that is rapidly focusing on individuals as the industry and government work to empower greater access to care. This course will introduce students to a historical approach to entrepreneurship, and provide a framework to analyze opportunities for new product or services development in health care. We will explore both the complexity of the industry and expose students to the necessary fact that many times novel solutions are but a component to a holistic, multidisciplinary approach to care, and enable students to understand how their novel solutions might fit into that care ecosystem. Preliminary list of topics: By the end of the course, students will be able to successfully write a business plan, develop and deliver an elevator pitch to potential investors, be proficient in SWOT analysis, market analysis, brand development, market penetration strategies, costing and revenue generation forecasting (pro forma development), industry alignment of innovative service or product, and in-depth critical thinking skills around building a successful business.
Credit 3 units.

U86 HCARE 430 The Business of Clinical Research
Same as U80 CRM 430
Credit 3 units.

U86 HCARE 438 Virology
This course is designed to provide an overview of the field of virology. The first half of the course will focus on strategies used by viruses to enter host cells, transcribe genes, replicate, assemble progeny viral particles and exit the host cell. The second half of the course will focus on recent advances and problems arising in the field of virology. We will discuss the host response to viruses, the use of viruses as vectors for vaccines and gene therapy, the role of viruses in eliciting cancer as well as the evolution of viruses and emerging viral diseases.
Same as U29 Bio 438
Credit 3 units.

U86 HCARE 4391 Modern Genetics
Modern concepts in genetics from Mendel to the latest in genetic engineering. Discussion of DNA manipulation techniques with emphasis on human genetics and practical applications. Suitable for, but not limited to, science teachers, medical technicians, and health care workers. Prerequisite: Consult Course Listings.
Same as U29 Bio 4391
Credit 3 units.

U86 HCARE 454 The Biology of Heart Disease, Diabetes and Cancer
Same as U29 Bio 454
Credit 3 units.

U86 HCARE 458 Readings and Research in Biomedical Sciences
Each day, more than 5000 new biomedical research articles are published. As future physicians and scientists, students will need to be able to identify and stay current on medical advancements. Medicine is interdisciplinary, and a successful scientific career means being able to make connections between diverse research fields. The goal of this journal club is to help students develop skills for locating, analyzing, and understanding scientific research articles. Students will learn how to locate primary journal articles using a variety of search engines such as PubMed and Ovid, and practice reading articles outside of their comfort zone without being intimidated by scientific jargon and formal writing styles. Students will be expected to discuss current research articles and develop effective scientific writing skills by analyzing the main sections of a scientific manuscript (Abstract, Background, Methods, Results, Discussion, Conclusion, Implications).
Same as U29 Bio 458
Credit 2 units.

U86 HCARE 460 Behavioral Medicine
The role of behavior in the prevention and treatment of significant medical problems will be studied. The history of the field of behavioral medicine will be reviewed, with applications to medical problems and its complementary role in preventative medicine in the context of a number of medical disorders and risky behaviors, including obesity, chronic pain, cancer, and smoking. Effective stress management practices to help ameliorate common results of stress such as tension headache and high blood pressure also will be studied. Prerequisite: Psych 100.
Same as U09 Psych 460
Credit 3 units.

**U86 HCARE 461 Hormones and Behavior**

This course will examine the role of hormones in mediating specific animal behaviors. The course will emphasize the critical evaluation of selections from the primary literature, focusing on the conceptual framework, methodology, and evidentiary base of conclusions. Topics covered will include agonistic interactions, territoriality, dominance hierarchies, reproductive strategies, parental behavior, activity patterns, and space use. Literature selections will be chosen to cover a taxonomically broad group of species. Does not count for undergraduate biology major or College of Arts & Sciences distribution requirement.
Same as U29 Bio 461
Credit 3 units.

**U86 HCARE 471 Topics in Cancer Biology**

Over two-thirds of all people know someone who has cancer. This course aims at providing students with a more extensive understanding of what cancer is and how it affects the human body. We will discuss past and current molecular research in cancer, animal models in cancer, the many different types of human cancer, and novel cancer therapies being developed by biotechnology and pharmaceutical companies. The topics will be presented in a basic scientific nature with an emphasis on gaining a broad understanding of the subjects.
Same as U29 Bio 471
Credit 3 units.