

THE UC DAVIS GRADUATE GROUP IN PUBLIC HEALTH SCIENCES
SUGGESTED ELECTIVE COURSES LIST

SUBJECT CODE	COURSE TITLE	# OF UNITS
<u>PUBLIC HEALTH SCIENCES</u>		
SPH 204	Globalization & Health	3
SPH 208	Principles & Applications of Cancer Prevention & Control	2
SPH 212	Migration & Health (PhD Core Course, MPH Elective)	3
SPH 213	Health Disparities in the US (PhD Core Course, MPH Elective)	3
SPH 223	Obesity Prevention in Community Settings	3
SPH 233	Persuasive Tech Health	4
SPH 266/PHR 266	Applied Analytic Epidemiology	3
SPH 276	Critical Assessment in Health Policy & Economics	2
SPH 280	SAS	3
SPH 295	International Health	2
SPH 298	The Environment: Epidemiology & Policy	1
SPH 298	Health Education Theater	3
SPH 298	GIS for Public Health	3
<u>COMMUNICATIONS</u>		
CMN 101Y	Communication Theories	4
CMN 141	Media Effects	4
<u>EPIDEMIOLOGY</u>		
EPI 202	Quantitative Epidemiology I: Probability	5
EPI 204	Quantitative EPI III	3
EPI 206/ MPM 206	Epidemiology Study Design	4
EPI 207	Advanced Epi Methods	4
EPI 208	Analysis & Interpretation of Epidemiologic Data	3
EPI 223	Spatial Epidemiology	3
EPI 226	Applied Longitude Data	3
EPI 230	Molecular Epidemiology	3
EPI 232	Advanced Analysis in SAS	3
EPI 272	Cancer Epidemiology	2
EPI 290	Epidemiology Seminars	0.5
EPI 291	Seminar Health Services/Clinical Epidemiology	1
<u>HEALTH INFORMATICS</u>		
MHI 209	Data Acquisition	4
MHI 290	Health Informatics Seminar	1
<u>NUTRITION</u>		
NUT 111B	Rec for Human Nutrition	2
NUT 112	Nutritional Assessment	4
NUT 113	Principles of Epidemiology in Nutrition	4
NUT 114	Developmental Nutrition	4
NUT 116A	Clinical Nutrition	3
NUT 117	Experimental Nutrition	6
NUT 118	Community Nutrition	4
NUT 219A&B	International Nutrition	3
NUT 258	International Nutrition Methods	3
NUT 290	Beginning Nutrition Seminar	2
NUT 291	Adv Nutrition Seminar	1
<u>PREVENTIVE VETERINARY MEDICINE</u>		

MPM 210	Advanced Health Leadership	2
SOCIOLOGY		
SOC 145A	Sociology of Third World Development	4
SOC 160	Environmental Sociology	4
SOC 185Y	Social Policy (Hybrid)	4
SOC 201	Social Research	4
STATISTICS		
STA 106	Analysis of Variance	4
STA 108	Regression Analysis	4
OTHER ELECTIVES		
CHI 114	Reproductive Health	4
CLH 210Y	Principles and Methods of Comparative Effectiveness Research	2
CRD 149	Community Development and Environmental Justice	4
CRD 240	Community Development Theory	4
CRD 200	Planning for Health	4
ECI 243B	Water & Waste Treatment	4
ECN 132	Health Economics	4
ESP 168A	Environmental Policy Evaluation	5
ETX 101	Principles of Environmental Toxicology	4
ETX 131	Environmental Toxicology of Air Pollutants	3
ETX 135	Toxic Risk Assessment	3
EXB 117	Ex Aging and Disease	3
FAP 195	Health Care to Underserved Populations	1
FST 128	Food Toxicology	3
HDE 100C	Adulthood And Aging	4
HIS 109	Environmental Change, Disease & Public Health	4
IAD 203N	Project Planning & Evaluation	4
NRS 201	Health Status & Care Systems	4
NRS 202	Implementation Science	4
NRS 203	Leadership in Healthcare	4
NPB 132	Genes Nutrients Health	3
NPB 168	Neurobiology of Addictive Drugs	4
MPM 212 & 207	Concepts & Methods in Infectious Disease Surveillance	4
PHR 210	Waterborne Zoonoses	1
PSC 126	Health Psychology	4
PMI 214	Vector-borne Infectious Diseases: Changing Patterns	2
SAS 121	Global Poverty	4
VME 158	Infectious disease in Ecology & Conservation	3
VME 217	Evaluation and Use of Diagnostic Tests* (*taught every other year)	2
VME 298	Infectious disease in Ecology & Conservation	1
WMS 182	Globalization, Gender, & Identity	4

The UC Davis Graduate Group in Public Health Sciences
Suggested Elective Courses Descriptions

Course	Dept. & Course Description	Units
Public Health Sciences (SPH)		
SPH 204	Globalization & Health Provides an overview of the evidence on the multiple effects of globalization policies on health.	3 units
SPH 208	Principles & Applications of Cancer Prevention & Control Principles and applications of cancer prevention and control from a public health perspective.	2 units
SPH 212	Migration & Health Principles of migration and health. Topics will include demographics, public health invention programs, health care delivery, occupational health, and effects of international migration on the health in communities of origin, transit and destination. Guest presentations by outside experts.	3 units
SPH 213	Health Disparities in the US Introduction to the principles and practice of health disparities research.	3 units
SPH 223	Obesity Prevention in Community Settings Look at causes of the obesity epidemic in the U.S.; identify and critically assess the research literature on various prevention strategies; understand and apply evidence-based public health strategies to combat obesity; and translate the science to a general audience.	3 units
SPH 233	Persuasive Tech Health Theorizing, designing and evaluating ethical technology-based health communication interventions. Uses of social media, mobile communication apps, wearable devices, computer-generated tailored messages, educational games, and computational approaches in health promotion and healthcare delivery.	3 units
SPH 280	Intro to SAS Introduction to SAS, an integrated software system for data retrieval and management, data manipulation and programming.	3 units
SPH 266/ PHR 266	Applied Analytic Epidemiology Principles and applications in analysis of epidemiologic data. Methods of analyzing stratified and matched data, logistic regression for cohort and case-control studies, Poisson regression, survival-time methods.	3 units
SPH 276	Critical Assessment in Health Policy & Economics Course aims to develop critical reading skills of the health policy and health economics literature, mainly following the microeconomic paradigm and analytical techniques. Some basic concepts of micro economic theory will be explained in the class.	2 units

SPH 295 International Health **2 units**
 Forum for learning health issues and health care systems in other countries. Topics include health care for refugees, the impact of political strife on health, the health care professional in international settings.

SPH 298 Health Education Theater **3 units**
 This course's general purpose is to enable students to address a growing demand for improving the effectiveness of a health education program that aims to change health behavior. This is because a health education program tends to suffer from an under-utilization rate among eligible individuals and a high drop-out rate among program participants, which reduce the overall effectiveness of the health education program. Based on the relevant "qualitative" literature, we made a novel hypothesis that theater-making is a potential solution to improve the overall effectiveness of a health education program in "quantitative" measures, e.g., cost-effectiveness.

SPH 298 GIS for Public Health **3 units**
 This 3 unit course introduces the concepts and components of a geographic information system (GIS). It also teaches the essential skills of operating a functional GIS through the use of ArcGIS software package. By completing this course, students will understand the operational processes of spatial data acquisition, editing and QA/QC, metadata development, geodatabase design, spatial query and display, spatial analysis and modeling, preliminary GIS application development, cartographic mapping and dynamic visualization, and GIS implementation basics

SPH 298 The Environment: Epidemiology and Policy **1 unit**
 Join a dynamic and diverse group of experts to explore current topics and critical issues related to the environment, epidemiology, and policy. In this class you will: expand your understanding of the science and politics of how research is translated and used in setting policy in this country; be inspired by fascinating, thought-provoking discussions; hone your critical thinking skills; and gain experience giving a presentation (no slides, just an oral discussion critiquing an article, in an informal setting).

Communications (CMN)

CMN 101Y Communication Theories **4 units**
 Examination of the forms, functions, development, and testing of theory in the social sciences. Survey and comparison of significant micro and macro theories and models of human communication. Application of theories to real world problems.

CMN 141 Media Effects **4 units**
 Social scientific studies of the effects of mass media messages on audience members' actions, attitudes, beliefs, and emotions. Topics include the cognitive processing of media messages, television violence, political socialization, cultivation of beliefs, agenda-setting, and the impact of new technologies.

Epidemiology (EPI)

EPI 202 Quantitative Epidemiology I: Probability **5 units**
 Foundations in probability for epidemiologists. Emphasis on properties of and relationships between distributions and application of probability concepts to epidemiology. Includes a mathematical skills laboratory to assist in solution of epidemiologic problems.

EPI 204	Quantitative Epi III Introduces statistical models, methods, and data analysis in the areas of generalized linear model and survival analysis methodology.	4 units
EPI 206	Epi Study Design Builds on concepts presented in course 205. Concepts of epidemiologic study design—clinical trials, observational cohort studies, case control studies—introduced in course 205A are covered in more depth, using a problem-based format. Discussion of published epidemiologic studies.	4 units
EPI 207	Advanced Epi Methods In-depth integration of advanced epidemiological concepts. Theory, methods, and applications for observational studies including random and systematic error, confounding, counterfactuals, causal inference, effect modification, internal and external validity, estimability, and interpretation of effect measures, and advanced study designs.	4 units
EPI 208	Analysis and Interpretation of Epidemiologic Data Application of theory and concepts of statistics and epidemiology to analysis and interpretation of data typically found in veterinary and human epidemiologic research.	3 units
EPI 224	Health & Ecol Risk Anlysis Methodological approach to risk analysis for human and animal-related health and ecological issues. Basic principles of risk analysis, including perception, communication, assessment and management. Emphasis on the assessment of risk.	4 units
EPI 226	Applied Longitude Data Mixed models for longitudinal data (LD)/repeated measurements; Mean and covariance models; General linear LD models; Random coefficients models; Linear mixed effects models for continuous outcome; Generalized linear mixed effects model for discrete outcome including binary, ordinal and count data.	3 units
EPI 232	Advanced Analysis in SAS Provide an overview of common advanced statistical methods as well as a treatment of how to use SAS to implement them. Learn the ideas of reproducible research and reporting of statistical analyses.	3 Units
EPI 272	Cancer Epidemiology We will cover the underlying concepts essential to understanding cancer epidemiology, such as trends in incidence and survival, epidemiologic methods used to assess cancer etiology, prevention and control, and an introduction to the cancer initiation and progression multi-stage model.	2 units
EPI 290	Epidemiology Seminars Students will actively participate in presentation and discussion of ongoing or published research projects in epidemiology.	0.5 unit
EPI 291	Seminar Health Services/Clinical Epidemiology Seminar – 1 hour Critical Review, evaluation, and discussion of research in health services and clinical epidemiology. Presentation of statistical, epidemiologic, and econometric methods. Students present their own research and critique the work of others. May be repeated for credit. (S/U grading only).	1 unit

MHI 209	Data Acquisition Examines the nature, acquisition, and analysis of medical data. Data ranges from signals of electrical potentials, sounds, text, images (still and motion), and data from nucleic acid and protein expression and sequencing instruments.	4 units
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MHI 290	Health Informatics Seminar Discussion of current graduate research and topics in Medical Informatics. Oral presentations of individual study.	1 unit
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Nutrition (NUT)

NUT 111B	Rec for Human Nutrition Critical analysis of the development of nutritional recommendations for humans. Topics include: history of modern recommendations, development of the Recommended Dietary Allowance (RDA) and other food guides; the Dietary Reference Intakes (DRI); administrative structure of regulatory agencies pertinent to nutrition recommendations; introduction to scientific methods used to determine the recommendations; food labeling laws; nutrition recommendations in other countries and cultures.	2 units
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NUT 112	Nutritional Assessment Methods of human nutritional assessment, including dietary, anthropometric, biochemical methods. Principles of precision, accuracy, and interpretation of results for individuals and populations.	4 units
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NUT 113	Principles of Epidemiology in Nutrition Lecture/discussion—4 hours. Prerequisite: Plant Sciences 120 or equivalent. Introduction to epidemiology as it relates to the field of nutrition, including study design, principles of epidemiologic inference, criteria for causality, and interpreting measures of disease risk.	4 units
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NUT 114	Developmental Nutrition Role of nutritional factors in embryonic and postnatal development.	4 units
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NUT 116A	Clinical Nutrition Biochemical and physiological bases for therapeutic diets. Problems in planning diets for normal and pathological conditions.	3 units
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NUT 117	Experimental Nutrition Methods of assessing nutritional status. Application of chemical, microbiological, chromatographic and enzymatic techniques to current problems in nutrition.	6 units
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NUT 118	Community Nutrition Nutrition problems in contemporary communities and of selected target groups in the United States and in developing countries. Nutrition programs and policy, principles of nutrition education.	4 units
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NUT 219A	International Nutrition Epidemiology, etiology, and consequences of undernutrition, with particular focus on the nutritional problems of children and women in low income populations.	3 units
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NUT 258	Intrnatl Nutr Meths Issues and problems related to implementation of nutrition field research in less-developed countries, including ethics; relationships with local governments, communities, and scientists; data collection techniques and quality assurance; field logistics; research budgets; and other administrative and personal issues.	3 units
NUT 290	Beginning Nutrition Seminar Discussion and critical evaluation of topics in nutrition with emphasis on literature review and evaluation in this field. Students give oral presentations on relevant topics.	2 units
NUT 291	Advanced Nutrition Seminar Seminar—1 hour. Prerequisite: second-year graduate standing. Advanced topics in nutrition research. Multiple sections may be taken concurrently for credit. May be repeated for credit. (S/U grading only.)	1 unit
Preventive Veterinary Medicine (MPM)		
MPM 210	Advanced Health Leadership Develop skills for effective scientific leadership, including: project management and collaboration, conflict resolution, communication with the public, dynamic distribution of health information, and evidence-based policy influence.	1.5 units
Sociology (SOC)		
SOC 145A	Sociology of Third World Development Introduction to theories and contemporary issues in the sociology of development. Topics such as urbanization, rural/agrarian change, class, status groups, international division of labor, sectoral shifts, international capital, informal economy, gender, and political processes are analyzed within a comparative-historical framework.	4 units
SOC 160	Environmental Sociology Production, consumption, and urban expansion. Basic social logics surrounding current problems of resource scarcity (environmental extractions) and excess wastes (environmental additions). Ways that society can change and re-organize itself to become more environmentally conscious and hence ecologically sustainable.	4 units
SOC 185Y	Social Policy Examination of social policies that affect the well-being of individuals, families and groups, including such policies as old-age pensions, health insurance, and aid to the poor.	4 units
SOC 201	Social Research (4) Lecture/discussion—3 hours; term paper. Prerequisite: graduate standing or consent of instructor. Comparative survey of sociological inquiry, taught as a practicum. Philosophy of social science; values and research; research agendas and research problem formulations; research process; explanations. interpretation; study design; concept formation, measure, sampling, data acquisition, inference; rhetoric and presentation of findings.	4 units
Statistics (STA)		
STA 106	Analysis of Variance Lecture--4 hours. Prerequisite: course 13, 32, or 102. One-way and two-way fixed effects analysis of variance models. Randomized complete and incomplete block design, Latin squares. Multiple comparisons procedures. One-way random effects model.	4 units

STA 108	Regression Analysis Lecture--3 hours; discussion--1 hour. Prerequisite: course 13, 32 or 102. Simple linear regression, variable selection techniques, stepwise regression, analysis of covariance, influence measures, computing packages.	4 units
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Other Electives

CHI 114	Reproductive Health Study contemporary issues in reproductive health and reproductive politics, both globally and in the U.S., for women of color.	4 units
CLH 210Y	CER Methods Provides an introduction to Comparative Effectiveness Research (CER) and methods for conducting CER.	4 units
CRD 149	Comm Dev and Env Just Environmental justice social movements; inequitable distribution of pollution on low-income communities of color; histories, policies, and innovations associated environmental justice movements in the United States and around the world.	4 units
CRD 240	Community Development Theory Introduction to theories of community development and different concepts of community, poverty, and development. Emphasis on building theory, linking applied development techniques to theory, evaluating development policy, and examining case studies of community development organizations and projects.	4 units
CRD 200	Planning for Health This course focuses on the intersection of planning and public health. The health of an individual is determined not only by the healthcare they receive, but also by the natural, social, physical, economic, and political environment in which they live and work. This course provides students with an overview of available public spatially explicit datasets related to human and environmental health. We will cover such topics as food access, air and water quality, waste and energy infrastructure, community engagement, and the planning process. We will learn how to conduct Health Impact Assessments (HIA) - and to use various environmental audit tools to measure the built environment. A variety of model practices in California, nationally and internationally are reviewed for inspiration on planning, policy and programming efforts.	4 units
ECI 243B	Water & Waste Treatment Characteristics of water and airborne wastes; treatment processes and process kinetics; treatment system design. Aeration, thickening, biological processes, design of biological treatment systems.	4 units
ECN 132	Health Economics The health care market, emphasizing the role and use of economics. Individual demand, provision of services by doctors and hospitals, health insurance, managed care and competition, the role of government access to health care.	4 units

ESP 168A	Environmental Policy Evaluation Lecture—3 hours; discussion—1 hour; term paper. Prerequisite: Statistics 13; Economics 100 or Agricultural and Resource Economics 100A; Mathematics 16B or 17B or 21B; course 1; upper division standing. Evaluation of alternatives for solution of complex environmental problems; impact analysis, benefit-cost analysis, distributional analysis, decision making under uncertainty, and multi-objective evaluation.	5 units
ETX 101	Principles of Environmental Toxicology Principles of toxicology with a focus on environmental, industrial, and natural chemicals. Topics include fate and effects of chemicals in organisms and the environment, air pollutants, insecticides, aquatic toxicology, endocrine disruptors, biomarkers and bioassays, and risk assessment.	4 units
ETX 131	Environmental Toxicology of Air Pollutants Field trip required. Toxicology of air pollutants in the ambient, indoor, and occupational environments. Health effects, sources, environmental fates, pulmonary responses, sampling and analyses, and air-quality criteria and standards. Field trip required.	3 units
ETX 135	Health Risk Assessment of Toxicants Current practices of health risk assessment of environmental chemicals using toxicological principles and their application to regulatory control of these chemicals.	3 units
EXB 117	Ex Aging & Disease Etiology of and standard therapy for various diseases associated with aging (e.g., cardiovascular, pulmonary, and renal diseases, diabetes, obesity, lipemias, etc.). Exercise will then be considered as a protective and/or therapeutic modality.	3 units
FAP 195	Healthcare for Underserved Populations Discusses sociocultural perspectives of underserved populations in California impacting their health; roles of family/interpersonal relationships in making health care decisions; and clinician's perspectives in treating people of cultures which are unfamiliar and/or uncomfortable with Western medicine.	1 unit
FST 128	Food Toxicology Chemistry and biochemistry of toxins occurring in foods, including plant and animal toxins, intentional and unintentional food additives. The assessment of food safety and toxic hazards.	3 units
HDE 100C	Adulthood and Aging Development during early, middle, and late adulthood; biological, cognitive, and psychosocial aspects of adult development. Emphasis on normative patterns of development which characterize "successful aging."	4 units
HIS 109	Environmental History of Disease and Public Health Analysis of environmental changes from pre-history to the present and their influence on disease distribution, virulence and public health; many of these changes have been driven by human action and transformations of pathogens have accelerated under globalization.	4 units

IAD 203N	<p>Project Planning & Evaluation Interdisciplinary setting for application of student skills and specialization to a “real world” development project. Focus on team-building and effective interdisciplinary problem-solving methods, with the objective of producing a project document and presentation within a specified deadline.</p>	4 units
NPB 168	<p>Neurobiology of Addictive Drugs Neurobiological basis for the effects and mechanisms of action of drugs with addictive potential, including opiates (morphine, heroin, methadone), amphetamines, cocaine, nicotine, marijuana (cannabinoids), alcohol, caffeine, and mind-altering drugs such as LSD and antidepressants.</p>	4 units
NRS 201	<p>Health Status & Care Systems This graduate-level core course examines human health and major current health issues in the US from a variety of perspectives. The course focuses on introducing students to the social, political, and economic determinants of health. Health care systems and health data at a variety of levels are examined and evaluated with regard to how they support health. Pedagogy will include: 1) mastering content of a graduate level text and selected supplemental readings; 2) collective consideration of text and readings based on discussions of quiz questions; 3) dyadic and small group consideration of relevant current topics as well as broader class-wide discussion; 4) exposure to content experts addressing specific issues that illustrate the issues confronting health care leaders.</p>	4 units
NRS 202	<p>Implementation Science Change processes in health care from political, historic, economic and sociologic frameworks. Historic and current examples of transformative change in the health-care system. Skills for system transformation through health policy, practice, research and education are emphasized.</p>	4 units
NRS 203	<p>Leadership in Healthcare This course is a critical examination of leadership using theoretical and philosophical perspectives. Focus is placed on specific challenges in health care and leadership in various levels (e.g., unit, organizational, and policy levels), as well as in a variety of organizational settings and environments. Small and large group discussions, individual reflection, shared experiences and case studies will be used to explore the complexity of leadership styles in both highly successful and less successful leaders. The goal of this class is for students to form a foundation for building their own leadership skills and style.</p>	4 units

MPM 212 & 207	Concepts & Methods in Infectious Disease Surveillance & Control Provide basic and advanced level of conceptual and methodological foundations in infectious disease epidemiology necessary to develop and evaluate programs for detection, prevention, and control of infectious diseases in domestic animal, wildlife and human populations. These include, but are not limited to, disease transition states, reproduction ratios and herd immunity, surveillance methods, infectious disease investigation strategies and analytical methodologies. The course also would provide key prerequisite concepts for disease modeling, risk assessment, spatial epidemiology, evaluation of diagnostic tests and molecular epidemiology.	4 units
PHR 202	Sampling Health Research A very thorough coverage of simple random sampling, stratified sampling, cluster sampling, systematic sampling and other sampling methods applied extensively in epidemiology and other health-related disciplines. Emphasis on application of the sampling methods.	3 units
PHR 210	Waterborne Zoonoses Waterborne zoonotic diseases remain a significant cause of human illness. Review key waterborne pathogens; their biology, fate and transport in aquatic systems; on-farm management practices for reducing microbial contamination of California's fresh and marine aquatic resources from livestock production systems.	1 unit
PSC 126	Health Psychology Psychological factors influencing health and illness. Topics include stress and coping, personality and health, symptom perception and reporting, heart disease, cancer, compliance, and health maintenance and promotion.	4 units
PMI 214	Vector-borne Infectious Diseases: Changing Patterns Vector-borne infectious diseases especially as they relate to changing patterns associated with climatic changes, trade and population movement.	2 units
SAS 121	Global Poverty Social science and engineering analysis of causes and effects of world poverty and of policies to reduce it via economic growth, foreign aid, and community-level interventions, e.g., in potable water, sanitation, lighting, small scale energy, irrigation, health and microfinance.	4 units
VME 158	Disease Ecology Introduction to the dynamics and control of infectious disease in wildlife, including zoonotic diseases and those threatening endangered species. Basic epidemiological models and application to field data. Scientists' role in developing disease control policies.	3 units
VME 217	Eval & Use Diag Tests* Clinical and epidemiologic properties and application of diagnostic tests for disease, with emphasis on selecting tests; validating, evaluating, and interpreting new tests individually and in aggregate; determining cutoff values; and developing testing strategies. *Offered every other year.	2 units
WMS 182	Globalization, Gender, & Identity Critical gender analysis of globalization as a process of interconnected cultural, social and economic transformations inflected by gender, nation, class and race/ethnicity. Critical self-reflection and social observation skills.	4 units

