

PUBLIC HEALTH STUDIES

Andrea Conger, Holland Hall 424
507-786-3424
conger@stolaf.edu

Overview of the Concentration

Students pursuing a concentration in Public Health Studies develop an overview of the breadth of the fields comprising public health, a sense for its interdisciplinarity, and skills for interpreting and contextualizing public health research findings. Students practice communicating the social, humanist, and biological complexities of public health across cultural, political and disciplinary boundaries. Special attention is given to understanding diverse populations and their unique circumstances domestically and globally. Completion of the public health studies concentration promotes a lifetime of informed civic engagement relevant to public health.

Frequently Asked Questions

What Can I Do with Public Health Studies?

The Public Health Studies concentration is designed to provide students a broad background in public health that can be explored across the curriculum. We are interested in giving people tools to improve health and well-being through direct care, informing the public, education which is huge, people who want to shape policy and the future of humans on this planet. We invite scientists, poets, social thinkers, writers, pre-health and the computationally inclined, entrepreneurs, organizers and activists, historians, artists, physical trainers and athletes. Anyone who is interested in social well-being, health care delivery directly – as the context of the populations served is an important context, global affairs or international service of any kind - to consider the health capabilities and constraints in other countries or respond to disasters (Pakistan's flooding, food limitations due to the war in Ukraine....etc.), and those who have a desire to prepare for a future we cannot yet even imagine. There is a place for you in public health.

How Do I Declare the Concentration?

Students from any class can declare a Public Health Concentration. Because we are currently working with two different sets of GEs this year, the process will be slightly different depending on which class you are in. If you are a first year, sophomore, or junior in 2024-25, you can go directly into SIS and declare the same as any other concentration. Seniors should contact the registrar who will help set up a degree path according to your specific class year. Or contact Dr. Conger directly with questions.

Why a Concentration?

While the pandemic has certainly brought public health into the public eye, the idea for a public health studies program at St. Olaf has been being explored since the early 2000s. Interest in a systematic way to pursue public health studies has had steadily growing interest over the years from both students and faculty. The concentration was a deliberate choice at this moment. It allows us to have a thoughtful and intentional way of looking at the world through the lens of public health without narrowing our focus to one field or discipline. This is an inherently interdisciplinary and collaborative field that has many diverse paths and applications so structuring something that would give students a set of tools they could apply in new and innovative

ways across the curriculum that could keep up with the speed of the problems it tackles was really key in our thinking.

Requirements

Requirements for the Concentration

Code	Title	Credits
Choose one course from each of the following categories.		
Fundamentals of Public Health ¹		1.00
BIO 284	Community Health in Peru (study abroad)	
NURS 150	Introduction to Public Health	
Biological Basis of Health ¹		1.00
BIO 121	Biological Science: Issues in Biology	
BIO 123	Human Biology	
BIO 124	The Biology of Women	
BIO 140	Explorations in Microbiology	
BIO 231	Microbiology	
BIO 243	Human Anatomy and Physiology: Organs and Organ Systems	
BIO 292	Topics in Biology (When topic is Virology)	
BIO 382	Immunology	
BI/ES 228	Environmental Health	
NURS 110	Nutrition and Wellness	
PSYCH 239	Drugs, the Brain and Behavior	
Social Science/Humanities Perspective of Health ¹		1.00
ECON 245	Economics of Health Care	
PHIL 250	Biomedical Ethics	
SOAN 267	Medical Anthropology	
SOAN 296	Topics in Sociology/Anthropology ²	
SOAN 299	Topics in Sociology/Anthropology ²	
Research Methods and Data Tools ¹		1.00
ECON 260	Introductory Econometrics	
ENVST 255	Remote Sensing and Geographic Information Systems	
MATH 236	Mathematics of Biology	
NURS 250	Epidemiology	
PSYCH 230	Research Methods in Psychology	
SOAN 371	Foundations of Social Science Research: Quantitative Methods	
SOAN 373	Ethnographic Research Methods	
STAT 110	Principles of Statistics	
STAT 270	Intermediate Statistics for Social Science Research	

SDS 172	Statistics 1	
SDS 272	Statistics 2	
SWRK 274	Research Methods in Social Work	
Liberal Arts Dialog in Public Health ¹		1.00
ID 325	Case Studies in Public Health	
ID 241	Health Care Challenges: An Interdisciplinary Dialogue	
Total Credits		5

1

Students can petition to have other courses count for any of the above categories.

2

Depending on topic (when SOAN 296 is taught as Drugs, Addiction, and Anthropology and when SOAN 299 is taught as Women, Sport, and Culture for example)

The following study abroad programs with a Public Health focus may meet one or more of the requirements listed above:

- Kenya: Global Health and Human Rights will meet either "Research Methods" or "Social Science & Humanities" through the Research Methods and Ethics course. Other courses may also be applied.
- Andean Field Studies in Ecuador offers a Research Methods course that will count. Depending on the student project, other credits may count as well.
- DIS-Public Health (Denmark) offers courses that cover "Fundamentals of Public Health" and the "Social Science/ Humanities" requirements (e.g., Medical Ethics, Medical Anthropology, Health Delivery and Prioritization, Health Economics & Policy in Europe).

Courses

BIO 121: Biological Science: Issues in Biology

This course explores contemporary biological issues related to health and the environment, with the goal of fostering informed citizens prepared for current biological debates. Students learn the relevant biological principles in lecture and lab followed by appropriate lab or field research. Specific topics vary from year to year and may include emerging diseases, cardiovascular health, genetics, specific groups of organisms, behavior, and environmental dynamics. Students attend lectures plus one two-hour laboratory per week. Offered periodically. Also counts toward public health studies concentration.

BIO 123: Human Biology

This course focuses on the wondrous actions of the human body. Students learn how several vital body functions occur subconsciously, such as the rhythmic beating of the heart or the digestion of nutrients after a meal. Topics include how the brain works, how muscles contract, and how kidneys produce urine, and the remarkable biology associated with reproduction. Students use this understanding to elucidate diseases such as diabetes and hypertension. Students attend lectures plus one two-hour laboratory per week. Offered annually. Also counts toward public health studies concentration.

BIO 124: The Biology of Women

Issues of women's biology including views of the evolving female and biological determinism are examined. Core material covers anatomy, development, the biological basis of gender, reproduction, sexual response, the menstrual cycle and aging, and aspects of women's health such as eating disorders, cancers, and hormonal treatments. Students participate in significant amounts of group work and oral presentation. The course is open to both men and women. Offered during January Term. Also counts toward gender and sexuality studies major and concentration and public health studies concentration.

BIO 140: Explorations in Microbiology

This course explores the science of microbiology and the impact of microorganisms (bacteria, viruses, fungi, protozoa, and prions) on human affairs and daily life. Topics include microbial diversity, cell structure and function, growth and metabolism, genetics, control of microbial growth, host-pathogen interactions, immunology, infectious disease, and applied microbiology. Each topic provides a basis for discussion of current issues where microorganisms play a role. Students attend lectures plus one two-hour laboratory per week. Offered annually during Spring semester. Also counts toward public health studies concentration.

BIO 231: Microbiology

Microbiology examines the morphology, composition, metabolism, and genetics of microorganisms with emphasis on bacteria and viruses. Students examine the dynamic impact of microbes on humans, the immune response, and the role of microbes in the environment. Students attend lectures plus one three-hour laboratory per week. Offered annually during Fall semester. Also counts toward public health studies concentration.

Prerequisites: BIO 143 or BIO 150, and one chemistry course.

BIO 243: Human Anatomy and Physiology: Organs and Organ Systems

Students journey toward greater understanding of the human body through an integrated study of the structure of the body (anatomy) and how organs such as the brain, heart, and kidney perform their remarkable functions (physiology). The course is designed primarily for students intending careers in the health sciences. Students attend lectures plus one three-hour laboratory per week. Offered each semester. Also counts toward kinesiology major and neuroscience and public health studies concentrations.

Prerequisite: BIO 143, or BIO 150 and BIO 227 or CH/BI 227.

BIO 284: Community Health in Peru (study abroad)

Students investigate community-based approaches to health in Peru during this January Term. Students spend one week on campus learning the core tenets of public health, identifying health challenges of urban and rural communities, investigating (non)communicable disease risks, and learning successful health and wellness efforts in Peru. Students spend three weeks in Peru, assessing individual and public health issues in urban and rural communities. Activities include field trips and shadowing experiences to view service organizations, hospitals, clinics, shelters, and local healthcare workers who provide health services in Peru. Preparation for class requires reading from texts and primary literature concerning community health issues specific to urban and rural populations, the underlying biological mechanisms impacting health and the transmission of disease, and reflective writing on public health/healthcare experiences during the month. Offered during January Term. Apply through Smith Center for Global Engagement. Also counts toward public health studies concentration.

Prerequisites: BIO 143 or BIO 150, and BIO 291.

BIO 292: Topics in Biology

Students study topics in biology. Topics vary from year to year at the discretion of the department. Class work depends on the topics and instructor, but is consistent with the amount and level of work in other 200-level biology courses. May be repeated if topics are different. Counts as an elective toward biology major. May count toward other majors or concentrations if approved by the chair of that major/ concentration. Offered periodically each term.

Prerequisites: vary.

BI/ES 228: Environmental Health

Human health is affected by the biological environment, a teeming world of parasites and diseases, and the physical environment -- the water, air, and landscapes that we inhabit. Human interactions with the environment have changed rapidly, as human populations grow, travel increases, and ecosystems are altered. This course touches upon traditional environmental topics such as air and water quality and integrates newer public health challenges such as emerging diseases and food-borne illnesses. Offered periodically. Also counts toward business and management studies and public health studies concentrations.

Prerequisite: an introductory science course.

ECON 245: Economics of Health Care

The health care sector in the U.S. is undergoing rapid change that affects patients, providers and payers. Managed care and managed competition are restructuring the delivery of health care services and reducing costs, while frustrating physicians and patients. The course examines the economic factors leading to the changes, current issues and controversies, and federal health policies. Students interested in nursing, medicine, and the sciences are encouraged to enroll. Offered annually. Also counts toward public health studies concentration.

Prerequisites: one of ECON 110-121 or permission of instructor.

ECON 260: Introductory Econometrics

This course emphasizes skills necessary to understand and analyze economic data. Topics include descriptive statistics, probability and random variables, sampling theory, estimation and hypothesis testing, and practical and theoretical understanding of simple and multiple regression analysis. Applications to economic and business problems use real data, realistic applications, and econometric/statistical software. Offered each semester. ECON 260 is required for economics majors who do not take both SDS 272 and either ECON 384 or ECON 385. Credit toward the economics major will not be given for ECON 260 following completion of SDS 272. Also counts toward environmental studies major (social science emphasis) and public health studies concentration.

Prerequisite: MATH 119 or MATH 120 and one of ECON 110 - ECON 121, or permission of instructor.

ENVST 255: Remote Sensing and Geographic Information Systems

Remote sensing and GIS are increasingly used to address basic and applied questions in the environmental sciences and a host of other disciplines. Students survey available remote sensing image types and learn to process (ground-truthing, GPS, scanning, digitizing) and interpret remotely sensed images. They also learn theory and practice of geographic information systems (basic cartography and spatial statistics). Students attend lectures plus one three-hour laboratory per week. Offered annually. Also counts toward public health studies concentration.

Prerequisites: ENVST 137 or a level I course in biology, chemistry, or physics.

ID 241: Health Care Challenges: An Interdisciplinary Dialogue

This course shows students how anthropologists and economists approach the broad category of health care. Students explore how the two social sciences define health, conceptualize institutions, build accountability into systems, and treat the maladies of complex human beings. While the course highlights differences between the two disciplines, it also considers where they overlap. Offered periodically.

ID 325: Case Studies in Public Health

Students explore public health challenges from multiple lenses through literature and case studies designed to integrate and enhance individual skills and vocational interests. Working in interdisciplinary teams, students articulate questions and develop research and response proposals based on literature, data at hand and the skills acquired from prior courses including the OLE Core. Integrating viewpoints, assessment modalities and communication within the team and with external audiences are emphasized. Local and global issues are included. Counts toward public health studies concentration.

Prerequisites: Junior or senior classification, declared public health studies concentration, or permission of instructor.

MATH 236: Mathematics of Biology

This course introduces students to the essential modeling techniques of formulation, implementation, validation, and analysis. Students engage in these areas by combining experiment, mathematical theory, statistics, and computation to better understand a wide variety of biological systems. Offered annually in the spring semester. Also counts toward neuroscience, public health studies, and mathematical biology concentrations.

Prerequisite: MATH 126 or MATH 128, and familiarity with R programming (BIO 150 or SDS 172 or CSCI 125 or equivalent programming experience).

NURS 110: Nutrition and Wellness

This course explores the sources, chemical composition, and metabolic behavior of nutrients. Nutritional requirements for a balanced diet are examined as well as the consequences of excesses and deficiencies. Students use nutrition tools and guidelines to make sound food choices, learn how to read food labels, and consider factors affecting food consumption. Class activities increase students' awareness of a healthy diet, help students evaluate nutrition behaviors, and facilitate a nutritionally sound lifestyle. Offered annually. Does not count toward major, but is a prerequisite for the nursing major. Counts toward public health studies concentration.

NURS 150: Introduction to Public Health

This introductory course provides students a broad overview of public health focusing on concepts relating to health promotion, disease prevention and epidemiology. Additionally, students learn about the core public health values, functions, population health assessment and intervention and the socio-economic, behavioral, biological and environmental determinants of health. Students engage in oral and written communication to critically think and analyze public health issues. Offered alternate years during the spring semester. Counts toward public health studies concentration.

NURS 250: Epidemiology

Epidemiology is the science of applying information about populations with the goal of improving health. This course will focus on multiple epidemiological research strategies in scientific, social and ethical context. By examining the range of health problems and diseases affecting diverse cultures, races, and ethnic groups, students gain understanding of epidemiology as the science of public health. Offered periodically to all St Olaf students in the fall semester. Does not count toward the nursing major. Counts toward public health studies concentration.

Prerequisites: NURS 150 preferred.

NURS 260: Comparative Health and Wellness - Germany & Switzerland (study abroad)

In the United States "health" constitutes seeing doctors, taking medicines, and getting in 5000 daily steps. In Germany, wellness is fundamental to lifestyle. While traveling in Germany and Switzerland, students compare health practices to examine the factors that contribute to health promotion. How do place, time, money, power, luck and compassion contribute to health in Germany and the U.S.? What personal health practices can we sustain to promote our own wellbeing? Does not count toward the nursing major.

NURS 294: Academic Internship

Does not count toward the Nursing major. Students may choose a 1.00, 0.50, or 0.25 credit option.

NURS 298: Independent Study

Does not count toward the Nursing major.

NURS 394: Academic Internship

Does not count toward the Nursing major. Students may choose a 1.00, 0.50, or 0.25 credit option.

NURS 398: Independent Research

Does not count toward the Nursing major.

PHIL 250: Biomedical Ethics

This course clarifies central concepts and distinctions developed in the literature of moral philosophy and applications of those concepts and distinctions to concrete moral problems that arise in the practice of medicine. Issues may include euthanasia, abortion, medical paternalism, allocation of scarce medical resources, culturally sensitive medical care, pandemics, and conflicts of loyalty in managed care. Readings are drawn from both philosophical and medical discussions. Offered annually. Also counts toward neuroscience and public health studies concentrations.

PSYCH 230: Research Methods in Psychology

This course prepares students with tools for understanding how research studies in psychology are conceptualized, designed, and ethically conducted, and how data is analyzed, interpreted, and disseminated. Students apply this understanding in independent and small group research projects. In the process, students develop critical reading, thinking, and scientific writing skills. Students attend lectures plus one two-hour laboratory per week. Offered each semester. Also counts toward environmental studies major and statistics and data science and public health studies concentrations.

Prerequisites: PSYCH 125, and STAT 110 or SDS 172 or ECON 260.

PSYCH 239: Drugs, the Brain and Behavior

From legalized marijuana, to the widespread use of antidepressants and anti-anxiety medications, to the ubiquitous presence of coffee shops, the "drug culture" affects nearly everyone in our society. This course introduces the world of psychopharmacology, with an emphasis on the basic neural mechanisms underlying the effects of drugs, including their portrayal in popular movies and music. By learning how drugs can affect the way neurons communicate, students become more thoughtful consumers. Offered periodically during January Term. Also counts toward neuroscience and public health studies concentrations.

Prerequisites: PSYCH 125 or PSYCH 238 or any Level I biology, chemistry, or chemistry/biology course.

SDS 172: Statistics 1

A first course in statistical methods, this course addresses study design and its implications as well as exploratory and inferential techniques for analyzing and modeling data. Topics include exploratory graphics, descriptive techniques, randomization tests, statistical designs, hypothesis testing, confidence intervals, and simple/multiple regression. Offered each semester. Enrollment limited for seniors. STAT 110, SDS 172, and ECON 260 all provide an introduction to statistics and students should not take more than one; they all can serve as a prerequisite for further courses. Also counts toward environmental studies major (natural science and social science emphases), kinesiology major, and business and management studies, mathematical biology, and public health studies concentrations.

SDS 272: Statistics 2

This course takes a case-study approach to the fitting and assessment of statistical models with application to real data. Specific topics include multiple regression, model diagnostics, logistic regression, experimental design and ANOVA. The approach focuses on problem-solving tools, interpretation, model assumptions underlying analysis methods, and written statistical reports. Offered each semester. Also counts toward environmental studies major (natural science and social science emphases) and business and management studies, mathematical biology, neuroscience, and public health studies concentrations.

Prerequisite: SDS 172, ECON 260 or equivalent preparation (STAT 110 and SDS 164) or (AP Stat and SDS 164), or permission of instructor.

SOAN 267: Medical Anthropology

How do people understand illness and healing? How does social inequality shape health? These are among the questions explored by medical anthropology. In this course students examine the ways people in different societies experience their bodies, by looking at AIDS in Haiti, old age in India, and childbirth in the United States. Students investigate diverse understandings of health, different means of promoting healing, and the role of power in providing medical care. Offered annually. Also counts toward public health studies concentration.

SOAN 296: Topics in Sociology/Anthropology

The department periodically offers special topics courses. The specific title of the course is listed in the class and lab schedule when it is offered.

SOAN 299: Topics in Sociology/Anthropology

The department periodically offers special topics courses. The specific title of the course is listed in the class and lab schedule when it is offered.

SOAN 371: Foundations of Social Science Research: Quantitative Methods

Students gain the skills necessary to conduct and critically evaluate quantitative research. Students learn the underlying theoretical assumptions and orientations of quantitative research, including research design, sampling techniques, strategies for data collection, and approaches to analysis. Students gain practice in data analysis by conducting a search project and using the Statistical Package for the Social Sciences (SPSS), a standard in sociology. Offered annually in the fall semester. Also counts toward environmental studies major (social science emphasis) and business and management studies and public health studies concentrations.

Prerequisite: STAT 110 or SDS 172; open to junior or senior sociology/anthropology majors only.

SOAN 373: Ethnographic Research Methods

Students learn to design and conduct qualitative research in the tradition of sociological and anthropological ethnography. Students discuss theoretical approaches to ethnography and learn data collection methods through case studies and fieldwork assignments. Students use their own research to gain experience in interpreting field notes, doing analysis, and writing an ethnographic interpretation of their research findings. Offered annually in the spring semester. Also counts toward business and management studies and public health studies concentrations.

Prerequisite: SOAN 291 or SOAN 292; open to junior or senior sociology/anthropology majors only.

STAT 110: Principles of Statistics

This is an introductory course for the liberal arts. Students learn study design principles and develop statistical literacy and reasoning. They learn to describe distributions, assess if known distributions fit their data, estimate population values with confidence intervals, and assess statistical significance with hypothesis tests (e.g., chi-square, z-, and t-tests, ANOVA, correlation, and regression). Not recommended for students who have completed a term of calculus. STAT 110, SDS 172, and ECON 260 all provide an introduction to statistics, and students should not take more than one; they all can serve as a prerequisite for further courses. Offered each semester. Also counts toward environment studies major (social science emphasis) and kinesiology major.

STAT 270: Intermediate Statistics for Social Science Research

This course focuses on the use of statistics in a social science context. Students investigate three essential questions: How can one reliably measure something? How does one design valid research? How does one analyze research results? Topics include ANOVA designs (for example, one-way and two-way with interaction), data reduction methods, and principles of measurement. Interdisciplinary groups work together on case studies throughout the term. Offered alternate years. Also counts toward public health studies concentration.

Prerequisites: STAT 110 or SDS 172 or ECON 260 or equivalent preparation, or permission of the instructor.

SWRK 274: Research Methods in Social Work

Social work majors study scientific philosophies and approaches to ethical knowledge building for social work practice. The course includes an overview of the research process using both quantitative and qualitative methods, with special attention to how research knowledge informs generalist social work practice. Open to non-majors by permission of instructor. Offered annually in the spring semester. Also counts toward business and management studies and public health studies concentrations.

Prerequisite: social work major.

NOTE: SOAN 296 and SOAN 299 apply to the concentration depending on the topic (when SOAN 296 is taught as Drugs, Addiction, and Anthropology and when SOAN 299 is taught as Women, Sport, and Culture for example)