Twin Cities Campus

Aging Studies Postbaccalaureate Certificate
School of Public Health - Adm
School of Public Health

Link to a [list of faculty](#) for this program.

Contact Information:
School of Public Health, MMC 819, D-305 Mayo Memorial Building, 420 Delaware Street SE, Minneapolis, MN 55455 9612-626-3500, f: 612-624-4498)
Email: sph-SSC@umn.edu
Website: [http://www.sph.umn.edu](http://www.sph.umn.edu)

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2011
- Length of program in credits: 18
- This program does not require summer semesters for timely completion.
- Degree: Aging Studies PostBaccalaureate Certificate

Along with the program-specific requirements listed below, please read the [General Information](#) section of the catalog website for requirements that apply to all major fields.

The Certificate on Aging is an 18 credit graduate level program; with some courses offerings available online as well as in a face-to-face format. The certificate is designed to increase knowledge and understanding in the multi-faceted field of human aging. This interdisciplinary program provides students with the background and confidence necessary to meet the challenges of serving the aging population. The courses are offered through the Center on Aging within the Division of Health Policy and Management.

Aging Studies at the University of Minnesota involves an interdisciplinary approach to gerontology for those individuals who hold at least a bachelor's degree. The interdisciplinary nature of the program embraces different backgrounds and interests, and is suitable for graduates from any major.

The primary purpose of Aging Studies is to prepare professionals for work in programs, businesses, organizations, and agencies that address the needs of an aging population. Examples include hospitals; long-term care facilities; education; clinics; home health care agencies; hospice and end-of-life care organizations; insurance groups, counseling and social services; physician groups; financial planning; architecture and design; public policy makers; and nursing.

Accreditation
This program is accredited by CEPH

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)
- completely online (all program coursework can be completed online)
- primarily online (at least 80% of the instruction for the program is online with short, intensive periods of face-to-face coursework)
- partially online (between 50% to 80% of instruction is online)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Special Application Requirements:
Students who have completed 16-semester credits/24-quarter credits (within the past 24 months) in an academic program in a recognized institution of higher learning in the U.S. do not need to submit the TOEFL as part of the application process.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
Key to test abbreviations (TOEFL, IELTS).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.0 is required for students to remain in good standing.

*Courses taken as required courses cannot also be used as electives.

Required Courses
Core Courses
Take 5 - 6 credits(s) from the following:
• GERO 5105 - Multidisciplinary Perspectives on Aging (3.0 cr)
• GERO 5110 - Biology of Aging (3.0 cr)
• GERO 5111 - Studying Aging and Chronic Illness (2.0 cr)
• GERO 5115 - Introduction to Geriatrics (2.0 cr)
• PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)

Elective Courses
Courses taken as required courses cannot also be used as electives.
Take 12 - 13 credits(s) from the following:
• FSOS 8105 - Family Gerontology (3.0 cr)
• GERO 5100 - Topics in Gerontology (0.5 - 4.0 cr)
• GERO 5110 - Biology of Aging (3.0 cr)
• GERO 5111 - Studying Aging and Chronic Illness (2.0 cr)
• GERO 5115 - Introduction to Geriatrics (2.0 cr)
• GERO 5125 - Gerontology Service Learning (3.0 cr)
• GERO 8020 - Seminar in Gerontology (2.0 cr)
• PSY 5138 - Psychology of Aging (3.0 cr)
• SW 5313 - Social Work with Older Adults (2.0 cr)
• SW 5810 - Seminar: Special Topics (1.0 - 4.0 cr)
• SOC 8590 - Topics in Life Course Sociology (3.0 cr)
• PUBH 6904 - Nutrition and Aging (2.0 cr)
• PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)
• PA 5412 - Aging and Disability Policy (3.0 cr)
Twin Cities Campus
Biostatistics M.P.H.
School of Public Health - Adm
School of Public Health

Link to a [list of faculty](#) for this program.

**Contact Information:**
School of Public Health, MMC 819, D305 Mayo Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612-624-4498)
Email: sph-ssc@umn.edu
Website: [http://www.sph.umn.edu](http://www.sph.umn.edu)

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 42
- This program requires summer semesters for timely completion.
- Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the [General Information](#) section of the catalog website for requirements that apply to all major fields.

The Biostatistics M.P.H. Program requires that students meet the Association of Schools of Public Health (ASPH) Core Competencies in five core public health areas, including administration, behavioral science, biostatistics, environmental health, and epidemiology, plus an additional requirement in ethics.

The master of public health (M.P.H.) program has different course requirements than the master of science (M.S.). In place of the four elective courses (one in health science and three in biostatistics), which are required for the M.S., the M.P.H. requires five public health courses. The M.P.H. program also requires students to complete a field experience in addition to a written master's project like the M.S. Plan B written project. Unlike the M.S., the M.P.H. does not have a comprehensive written exam requirement. More detailed information is available in the Program Requirements section below.

**Accreditation**
This program is accredited by CEPH (Council on Education for Public Health).

**Program Delivery**
This program is available:
- via classroom (the majority of instruction is face-to-face)
- partially online (between 50% to 80% of instruction is online)

**Prerequisites for Admission**
The preferred undergraduate GPA for admittance to the program is 3.00.

The admissions committee reviews applicants according to their personal statements, background and experience, record of academic achievement, demonstrated academic potential, letters of recommendation, compatibility of interests with program faculty, and other factors.

Test scores and GPAs provide competitive points of reference for admission but are not alone decisive in the admissions review.

Prospective applicants should have taken at least:
- Three semesters of calculus (including multivariable calculus)
- One semester of linear algebra

Experience with a programming language (eg. Java, C, Python) is helpful, but not required.

Preferred GRE performance expectations (test taken post-August 2011): 150 Verbal; 146 Quantitative

**Special Application Requirements:**
International applicants who have attended post-secondary institutions outside of the U.S. are also required to submit the following supporting documentation to SOPHAS.
World Education Services (WES) evaluation of foreign academic credentials. The University of Minnesota School of Public Health requires all applicants with foreign academic credentials to provide a WES course-by-course evaluation of those credentials. Note: Applicants with transcripts from Canadian schools are exempt from this requirement. Instead, applicants should have copies of their Canadian transcripts sent directly to SOPHAS.

Through special arrangements with SOPHAS, WES will deliver its credential evaluation report directly to SOPHAS by secure electronic transmission. This expedites the delivery of the evaluation report as well as images of the applicant's verified transcripts to SOPHAS and allows SOPHAS to process the report most efficiently. Go to http://www.wes.org/sophas for more information.

Note: Once WES receives the required documentation, it can complete an evaluation in seven business days or less, depending on the type of service requested. However, if additional research, correspondence, or verification is required, the evaluation will take longer. Students are recommended to start the process at least six weeks prior to the program deadline to ensure that their WES evaluation reports are complete by the deadline.

Proof of English Proficiency
Applicants whose native language is not English, or whose academic study was done exclusively at non-English speaking institutions, must prove English proficiency by providing either official Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) scores. Official report of the scores should be sent directly to SOPHAS using designation code 5688 for the TOEFL or designation code SOPHAS for the IELTS.

Applicants must submit their test score(s) from the following:
• GRE
  - General Test - Verbal Reasoning: 450
  - General Test - Quantitative Reasoning: 550

International applicants must submit score(s) from one of the following tests:
• TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
• IELTS
  - Total Score: 7
• MELAB
  - Final score: 80

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Plan B: Plan B requires 34 major credits and 8 credits outside the major. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

The Plan B project demonstrates the student's familiarity with the tools of research or scholarship in the major, the capacity to work independently, and the ability to present the results of the investigation effectively. The master's project should involve a combined total of 120 hours of work.

MPH Program Curriculum
PUBH 7405 - Biostatistics: Regression (4.0 cr)
PUBH 7406 - Advanced Regression and Design (4.0 cr)
PUBH 7407 - Analysis of Categorical Data (3.0 cr)
PUBH 7450 - Survival Analysis (3.0 cr)
PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
STAT 5101 - Theory of Statistics I (4.0 cr)  
or STAT 8101 - Theory of Statistics 1 (4.0 cr)  
STAT 5102 - Theory of Statistics II (4.0 cr)  
or STAT 8102 - Theory of Statistics 2 (4.0 cr)  
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)  
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)  
PUBH 6101 - Environmental Health (2.0 cr)  
or PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)  
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)  
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)  
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)  
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)  
PUBH 7494 - Master's Project: Biostatistics (1.0 - 3.0 cr)  
or PUBH 7496 - Biostatistics: Field Experience (1.0 - 6.0 cr)

Program Sub-plans
A sub-plan is not required for this program. Students may not complete the program with more than one sub-plan.

Complementary and Alternative Medicine Interdisciplinary Concentration Area
The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an M.P.H. degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Global Health Interdisciplinary Concentration Area
The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause, and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.

Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad. SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Health Disparities Interdisciplinary Concentration Area
The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to health care. Achieving optimum health for all segments of society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite Minnesota's ranking as one of the nation's healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators.

For example, according to the Minnesota Department of Health:
- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer, and HIV/AIDS are higher for many minority communities compared to the state as a whole.
SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Public Health Policy Interdisciplinary Concentration Area

The School of Public Health's Public Health Policy Interdisciplinary Concentration (PHPIC) focuses on promoting the health of populations and groups through public and organizational policy. PHPIC is open to students pursuing an M.P.H., includes coursework that explores the way in which federal, state, local, and institutional entities affect the financing, structure, and delivery of public health and medical care.

PHPIC coursework provides a better understanding of the health care system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can choose courses that emphasize:
- Understanding community dynamics
- Developing advocacy skills for public health
- Analyzing legal and policy structures
- Evaluating and implementing policies and programs
- Influencing community health
- Motivating and educating stakeholders and decision-makers
- Using policy as prevention strategy
- Eliminating health disparities through policy

SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus

Biostatistics M.S.

School of Public Health - Adm

School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-ssc@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 40 to 44
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Biostatistics combines statistics, biomedical science, and computing to advance health research. Biostatisticians design, direct, and analyze clinical trials; develop new statistical methods; and analyze data from observational studies, laboratory experiments, and health surveys. This is an ideal field for students who have strong mathematical backgrounds and who enjoy working with computers, collaborating with investigators, and participating in health research. Students take courses in biostatistical methods, theory of statistics, clinical trials, statistical computing, categorical data, survival analysis, and health sciences.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.10.

For the M.S., prospective applicants should have taken at least three semesters of calculus (including multivariable calculus) and one semester of linear algebra. Experience with a programming language (e.g., Java, C) is helpful, but not required.

Preferred GRE performance expectations (test taken post-August 2011): 150 Verbal; 146 Quantitative

Special Application Requirements:
Students should apply for admission during fall semester only. New students are not admitted in spring semester.

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 450
  - General Test - Quantitative Reasoning: 550

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.
Program Requirements

Plan A: Plan A requires 14 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 29 major credits and 11 credits outside the major. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

A comprehensive written exam to be taken after finals of spring semester in year 1.

The Plan B project demonstrates the student's familiarity with the tools of research or scholarship in the major, the capacity to work independently, and the ability to present the results of the investigation effectively. The master's project should involve a combined total of 120 hours of work.

Biostatistics M.S. Coursework

PUBH 7405 - Biostatistics: Regression (4.0 cr)
PUBH 7406 - Advanced Regression and Design (4.0 cr)
PUBH 7407 - Analysis of Categorical Data (3.0 cr)
PUBH 7450 - Survival Analysis (3.0 cr)
PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
PUBH 7494 - Master's Project: Biostatistics (1.0 - 3.0 cr)
STAT 5101 - Theory of Statistics I (4.0 cr)
or STAT 8101 - Theory of Statistics 1 (4.0 cr)
STAT 5102 - Theory of Statistics II (4.0 cr)
or STAT 8102 - Theory of Statistics 2 (4.0 cr)
3 Biostatistics elective courses (at least 8 credits)
GEOG 5561 - Principles of Geographic Information Science (4.0 cr)
or GIS 5571 - ArcGIS I (3.0 cr)
or MATH 5615H - Honors: Introduction to Analysis I (4.0 cr)
or MATH 5616H - Honors: Introduction to Analysis II (4.0 cr)
or PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
or PUBH 7435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
or PUBH 7440 - Introduction to Bayesian Analysis (3.0 cr)
or PUBH 7445 - Statistics for Human Genetics and Molecular Biology (3.0 cr)
or PUBH 7460 - Advanced Statistical Computing (3.0 cr)
or PUBH 7465 - Biostatistics Consulting (3.0 cr)
or PUBH 7470 - Statistics for Translational and Clinical Research (3.0 cr)
or PUBH 7475 - Statistical Learning and Data Mining (3.0 cr)
or PUBH 8422 - Modern Nonparametrics (3.0 cr)
or PUBH 8435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
or PUBH 8472 - Spatial Biostatistics (3.0 cr)
or PUBH 8475 - Statistical Learning and Data Mining (3.0 cr)
or STAT 5401 - Applied Multivariate Methods (3.0 cr)
or STAT 5601 - Nonparametric Methods (3.0 cr)
or WRIT 5051 - Graduate Research Writing Practice for Non-native Speakers of English (3.0 cr)
or WRIT 5052 - Graduate Research Presentations and Conference Writing for Non-Native Speakers of English (3.0 cr)
Students must complete at least 3 credits of a health science elective.
CSCI 5481 - Computational Techniques for Genomics (3.0 cr)
or PBIO 5301 - Plant Genomics (3.0 cr)
or PSY 5137 - Introduction to Behavioral Genetics (3.0 cr)
or PUBH 8020 - Fundamentals of Social and Behavioral Science (3.0 cr)
or PUBH 8101 - Environmental Health (2.0 cr)
or PUBH 8102 - Issues in Environmental and Occupational Health (2.0 cr)
or PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
or PUBH 6381 - Genetics in Public Health (2.0 cr)
or PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
Program Sub-plans
A sub-plan is not required for this program. Students may not complete the program with more than one sub-plan.

Rochester
This sub-plan is a way for the existing University of Minnesota Twin Cities (UMTC) M.S. program in biostatistics to be offered to students on the Rochester campus of the University of Minnesota (UMR). The objective of the sub-plan is to enable student employees at the Mayo Clinic as well as other students in Rochester to complete requirements for an M.S. degree in biostatistics while minimizing the necessity to travel back and forth from Rochester to the Twin Cities, or to establish residence in the Twin Cities. Courses are offered through interactive teleconnections to the Rochester campus, and some electives are offered through existing web-based courses, while other approved electives are offered in ITV classrooms by adjunct faculty with graduate faculty appointments at the UMR facilities.

Prospective students interested in the biostatistics M.S. program in Rochester apply directly to the School of Public Health through the Schools of Public Health Application Service (SOPHAS) centralized online application system at www.sophas.org. The application and admission requirements are identical for Twin Cities and Rochester applicants.

For the M.S. Plan B degree, students must complete 11 courses with a GPA of 3.00, pass a written exam, complete the Plan B project, and pass a final oral exam. Most students need two years of full-time study to finish the degree. The required credits are divided among three areas: 1) seven required courses in statistical theory and biostatistics methods; 2) one elective course in health science; 3) three elective courses in biostatistics. Details of the program are available in the Student Handbook at www.sph.umn.edu/biostatistics. The M.S. Plan A thesis degree is for those who have completed advanced work, such as a Ph.D. in a mathematical science and who want to begin dissertation research in biostatistics methodology after only one year of coursework. Students complete at least 20 credits (14 in biostatistics and 6 in related fields), pass a written exam, complete the Plan A thesis, and a final oral exam.
**Twin Cities Campus**

**Biostatistics Minor**  
*School of Public Health - Adm*

**School of Public Health**

Link to a list of faculty for this program.

**Contact Information:**  
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E. Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636 fax: 612-624-4498)  
Email: sph-ssc@umn.edu  
Website: [http://www.sph.umn.edu](http://www.sph.umn.edu)

- Program Type: Graduate minor related to major  
- Requirements for this program are current for Fall 2011  
- Length of program in credits (Masters): 6  
- Length of program in credits (Doctorate): 12 to 14  
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Biostatistics combines statistics, biomedical science, and computing to advance health research. Biostatisticians design, direct, and analyze clinical trials; develop new statistical methods; and analyze data from observational studies, laboratory experiments, and health surveys. This is an ideal field for students who have strong mathematical backgrounds and who enjoy working with computers, collaborating with investigators, and participating in health research. Students take courses in biostatistical methods, theory of statistics, clinical trials, statistical computing, categorical data, survival analysis, and health sciences.

The biostatistics minor is designed for students in non-biostatistics degree programs at the University of Minnesota. Minors are available for both M.S. and Ph.D. students.

**Program Delivery**  
This program is available:  
- via classroom (the majority of instruction is face-to-face)

**Program Requirements**  
Use of 4xxx courses towards program requirements is not permitted.

**Minor Options**

**M.S. Minor in Biostatistics**

Take 2 or more course(s) from the following:

- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
- PUBH 7435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
- PUBH 7440 - Introduction to Bayesian Analysis (3.0 cr)
- PUBH 7445 - Statistics for Human Genetics and Molecular Biology (3.0 cr)
- PUBH 7450 - Survival Analysis (3.0 cr)

*OR*

**Ph.D. Minor in Biostatistics for Non-Statistics Students**

Students should take the required set of 2 core courses (either 7401 and 7402, or 7405 and 7406) first, before choosing two additional courses from the list of elective courses below.

NOTE: One course may be taken S/N and all other courses must be taken A/F

**Biostatistics Core**

- PUBH 7405 - Biostatistics: Regression (4.0 cr)
- PUBH 7406 - Advanced Regression and Design (4.0 cr)
- or PUBH 7401 - Fundamentals of Biostatistical Inference (4.0 cr)
- PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)
- or Electives
Take 2 or more course(s) from the following:
- PUBH 7407 - Analysis of Categorical Data (3.0 cr)
- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
- PUBH 7435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
- PUBH 7445 - Statistics for Human Genetics and Molecular Biology (3.0 cr)
- PUBH 7440 - Introduction to Bayesian Analysis (3.0 cr)
- PUBH 7450 - Survival Analysis (3.0 cr)

-OR-

Ph.D. Minor for Graduate Students in Statistics
PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
PUBH 7450 - Survival Analysis (3.0 cr)
Take 2 or more course(s) from the following:
- PUBH 8422 - Modern Nonparametrics (3.0 cr)
- PUBH 8442 - Bayesian Decision Theory and Data Analysis (3.0 cr)
- PUBH 8452 - Advanced Longitudinal Data Analysis (3.0 cr)
- PUBH 8462 - Advanced Survival Analysis (3.0 cr)
- PUBH 8472 - Spatial Biostatistics (3.0 cr)
- PUBH 8482 - Sequential Analysis (3.0 cr)
Twin Cities Campus
Biostatistics Ph.D.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612-624-4498)
Email: sph-ssc@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Doctorate
- Requirements for this program are current for Fall 2011
- Length of program in credits: 55 to 63
- This program does not require summer semesters for timely completion.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Biostatistics combines statistics, biomedical science, and computing to advance health research. Biostatisticians design, direct, and analyze clinical trials; develop new statistical methods; and analyze data from observational studies, laboratory experiments, and health surveys. This is an ideal field for students who have strong mathematical backgrounds and who enjoy working with computers, collaborating with investigators, and participating in health research. Students take courses in biostatistical methods, theory of statistics, clinical trials, statistical computing, categorical data, survival analysis, and health sciences.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.70.

Prospective applicants should have taken at least three semesters of calculus (including multivariable calculus) and one semester of linear algebra. Experience with a programming language (e.g., Java, C) is helpful, but not required.

In addition to completing the SOPHAS application, students are also required to submit the following supporting documentation directly to SOPHAS:
- Statement of purpose and objectives (an essay describing past education, experience, and current professional career objectives)
- Résumé or curriculum vitae (C.V.)
- Official postsecondary transcripts from all institutions attended, including previous study at the University of Minnesota (transcripts must be sent directly from the institutions to SOPHAS)
- Three letters of recommendation from persons qualified to assess the student's academic work; clinical, public health, or professional experiences; and leadership potential

Special Application Requirements:
All admitted international Ph.D. applicants are required to provide a World Education Services (WES) document verification report prior to beginning the program.

Proof of English Proficiency
Applicants whose native language is not English, or whose academic study was done exclusively at non-English speaking institutions, must prove English proficiency by providing either official Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) scores. Official report of the scores should be sent directly to SOPHAS using designation code 5688 for the TOEFL or designation code SOPHAS for the IELTS. Scores must be less than two years old. The preferred minimum English language test scores for admission to the School of Public Health are listed below.

The English Language test requirement may be waived if an applicant can provide proof of one of the following:
- Completion of 16 semester credits/24 quarter credits (within the past 24 months) in an academic program at a recognized institution of higher learning in the U.S. or Canada.
- An Educational Commission for Foreign Medical Graduates (ECFMG) certificate. Students should have an official or attested copy
sent directly to the University of Minnesota School of Public Health at the address listed above.

Applicants must submit their test score(s) from the following:
- **GRE**
  - General Test - Verbal Reasoning: 150
  - General Test - Quantitative Reasoning: 146

International applicants must submit score(s) from one of the following tests:
- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7
- **MELAB**
  - Final score: 80

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

**Program Requirements**
19 to 25 credits are required in the major.
12 to 14 credits are required outside the major.
24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.3 is required for students to remain in good standing.

At least 3 semesters must be completed before filing a Degree Program Form.

The Ph.D. program requires seven core courses (including mathematical statistics, linear models, probability models, and Bayesian methodology) and three elective courses in biostatistical theory and methods, a preliminary written examination on the material from some of the required courses, a preliminary oral examination, a written dissertation, and dissertation defense in a final oral examination. This usually requires three years of full-time study after the M.S. degree.

**Schedule 1 and 2**
For students admitted to the University of Minnesota with an M.S. in statistics or biostatistics.

- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- PUBH 7450 - Survival Analysis (3.0 cr)
- PUBH 8401 - Linear Models (4.0 cr)
- PUBH 8432 - Probability Models for Biostatistics (3.0 cr)
- PUBH 8442 - Bayesian Decision Theory and Data Analysis (3.0 cr)
- STAT 8101 - Theory of Statistics 1 (4.0 cr)
- STAT 8102 - Theory of Statistics 2 (4.0 cr)
- STAT 8111 - Mathematical Statistics I (3.0 cr)
- STAT 8112 - Mathematical Statistics II (3.0 cr)

Take 3 or more course(s) from the following:
- PUBH 8435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
- PUBH 8442 - Bayesian Decision Theory and Data Analysis (3.0 cr)
- PUBH 8446 - Advanced Statistical Genetics and Genomics (3.0 cr)
- PUBH 8452 - Advanced Longitudinal Data Analysis (3.0 cr)
- PUBH 8462 - Advanced Survival Analysis (3.0 cr)
- PUBH 8472 - Spatial Biostatistics (3.0 cr)
- PUBH 8475 - Statistical Learning and Data Mining (3.0 cr)
- PUBH 8482 - Sequential Analysis (3.0 cr)
- PUBH 8492 - Theories of Hierarchical and Other Richly Parametrized Linear Models (3.0 cr)

**Schedule 3**
For students entering the Ph.D. program with an undergraduate degree in mathematics, statistics, or biostatistics.

- **MATH 5616H** - Honors: Introduction to Analysis II (4.0 cr)
- **PUBH 7405** - Biostatistics: Regression (4.0 cr)
- **PUBH 7406** - Advanced Regression and Design (4.0 cr)
- **PUBH 7407** - Analysis of Categorical Data (3.0 cr)
- **PUBH 7420** - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- **PUBH 7450** - Survival Analysis (3.0 cr)
- **PUBH 8401** - Linear Models (4.0 cr)
- **PUBH 8432** - Probability Models for Biostatistics (3.0 cr)
- **PUBH 8442** - Bayesian Decision Theory and Data Analysis (3.0 cr)
- **STAT 8101** - Theory of Statistics 1 (4.0 cr)
- **STAT 8102** - Theory of Statistics 2 (4.0 cr)
- **STAT 8111** - Mathematical Statistics I (3.0 cr)
- **STAT 8112** - Mathematical Statistics II (3.0 cr)

Take 3 or more course(s) from the following:

- **PUBH 8422** - Modern Nonparametrics (3.0 cr)
- **PUBH 8435** - Latent Variable Measurement Models and Path Analysis (3.0 cr)
- **PUBH 8445** - Statistics for Human Genetics and Molecular Biology (3.0 cr)
- **PUBH 8446** - Advanced Statistical Genetics and Genomics (3.0 cr)
- **PUBH 8452** - Advanced Longitudinal Data Analysis (3.0 cr)
- **PUBH 8462** - Advanced Survival Analysis (3.0 cr)
- **PUBH 8472** - Spatial Biostatistics (3.0 cr)
- **PUBH 8475** - Statistical Learning and Data Mining (3.0 cr)
- **PUBH 8482** - Sequential Analysis (3.0 cr)
- **PUBH 8492** - Theories of Hierarchical and Other Richly Parametrized Linear Models (3.0 cr)
**Twin Cities Campus**

**Clinical Research M.S.**

*School of Public Health - Adm*

**School of Public Health**

Link to a list of faculty for this program.

**Contact Information:**
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; f: 612-624-4498)
Email: sph-SSC@umn.edu
Website: [http://www.sph.umn.edu](http://www.sph.umn.edu)

- Program Type: Master’s
- Requirements for this program are current for Fall 2011
- Length of program in credits: 44
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

This interdisciplinary program trains health professionals to design, implement, and manage research in human populations. Because the field is fast becoming more complex, sophisticated, and regulated, there is an emerging recognition of, and demand for, formalized training. This program focuses primarily on patient-oriented health research, including mechanisms of human disease, therapeutic interventions, clinical trials, and development of new techniques. It focuses less on epidemiologic and behavioral studies, or on outcomes research and health services research; students interested in these areas may be better served by seeking a master of public health (M.P.H.) degree.

**Program Delivery**

This program is available:
- via classroom (the majority of instruction is face-to-face)

**Prerequisites for Admission**

The preferred undergraduate GPA for admittance to the program is 3.00.

An advanced health professional degree, e.g. M.D., D.D.S., D.O., D.N.P., D.C., D.V.M., Pharm.D., Ph.D.; an advanced doctoral degree in a clinical biomedical field; or an advanced nursing degree.

Students must have completed or must be at an advanced stage of their clinical practice training and be affiliated with someone at the University of Minnesota who can provide advising and access to a clinical project. The admissions committee considers exceptions on an individual basis.

**Special Application Requirements:**

The M.S. has specific application requirements including an advanced health professional degree, and training sufficient to be eligible for a license to practice as supported in the form of an official transcript. One of the three required recommendation letters and a completed School of Public Health Recommendation form should be from the clinical director of training supporting the applicant's potential as a clinical researcher.

International applicants must submit score(s) from one of the following tests:

- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7
- **MELAB**
  - Final score: 80

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (TOEFL, IELTS, MELAB).
For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan A: Plan A requires 28 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 1 semesters must be completed before filing a Degree Program Form.

Required Coursework

Also required: both sessions of the University of Minnesota Responsible Conduct of Research course, validated by ORTTA; and the NIH online training, Protection of Human Research Subjects, validated by the electronic certificate given at end of course.

- PUBH 6301 - Fundamentals of Clinical Research (3.0 cr)
- PUBH 6303 - Clinical Research Project Seminar (2.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6348 - Writing Research Grants (2.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

Elective Courses (3 credits)
Twin Cities Campus
Clinical Research Postbaccalaureate Certificate
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2011
- Length of program in credits: 15
- This program does not require summer semesters for timely completion.
- Degree: Clinical Research PBacc Certificate

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

There is a growing need for health professionals who advance science discoveries to clinical applications through research on human beings; i.e., clinical research. This includes observational studies and clinical trials on individuals and in communities. It is increasingly recognized that many individuals seek formal training in clinical research, both in the U.S. and abroad, but cannot spend the time or do not have the resources to attend an on-campus program or do an original research project for a thesis. This certificate in clinical research includes the alternative of distance learning for health professionals in Minnesota, outside the state, and in other countries.

Of the 15 required credits, 13 are are offered entirely online. The 2-credit PUBH 6303 Seminar will be offered as a hybrid with much of the didactic portions online and student presentations done either during an 8-week, on-campus period or via live video technology. Additional elective courses may be either online or in-person.

Program Delivery
This program is available:
- primarily online (at least 80% of the instruction for the program is online with short, intensive periods of face-to-face coursework)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Applicants are required to have a baccalaureate degree and at least five years of relevant clinical research experience or GRE scores.

Special Application Requirements:
All applications are reviewed holistically. Submit to the University of Minnesota School of Public Health:
- Completed application and application fee. The application can be found at http://www.sph.umn.edu/prospective/admissions/documents/RegentsCertificateApplicationforAdmissionForm.pdf
- Statement of purpose and objectives describing the reason for applying, career goals, and how the certificate will help achieve them
- One letter of recommendation
- Official transcripts of record from each college/university attended
- Resume or C.V.

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Analytical Writing: 3.5

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
- Final score: 80

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

**Required Coursework**
- PUBH 6301 - Fundamentals of Clinical Research (3.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 6303 - Clinical Research Project Seminar (2.0 cr)
- PUBH 7400 - Topics: Biostatistics (0.5 - 4.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
  - or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
  - or PUBH 6450 - Biostatistics I (4.0 cr)
Community Health Promotion M.P.H.

School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 48
- This program requires summer semesters for timely completion.
- Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Through coursework and fieldwork taken at the School of Public Health, students in community health promotion develop basic competencies in theory, health behavior and policy interventions, assessment methods, cultural competency, and management.

Each graduate should have the ability to:
- Use theories of behavior and social change to inform the planning and evaluation of health interventions
- Identify individual, community, and policy-level interventions that are effective in promoting healthy behaviors and social conditions
- Design and implement effective individual, community, and policy-level interventions targeting a variety of health behaviors
- Assess the health status of populations and communities
- Utilize appropriate data collection strategies and qualitative and quantitative methods to evaluate health interventions
- Identify the role of cultural, social, and behavioral factors in influencing health behaviors and status
- Develop and adapt approaches to solving health problems, taking into account cultural differences
- Communicate health information effectively both in writing and orally
- Advocate for public health programs and resources
- Collaborate with public health agencies and other constituency groups
- Coordinate and manage health programs/services
- Relate ethical considerations and values to one's professional practice

The M.P.H. in community health promotion is a good path for students planning for careers as public health practitioners or planning to pursue a Ph.D. degree in social and behavioral epidemiology, which is available in the School of Public Health.

Accreditation
This program is accredited by Council on Education for Public Health (CEPH).

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

In addition to completing the SOPHAS application, students are required to submit the following supporting documentation directly to SOPHAS (http://www.sophas.org):
- Statement of purpose and objectives - An essay describing past education, experience, and current professional career objectives. Students are encouraged to comment on any or all of the following: plans to use their education and training; the needs and/or challenges they perceive as important in the field of study; and any personal qualities, characteristics, and skills they believe will enable them to be successful in the chosen field of study.
- Résumé or curriculum vitae (C.V.)
- Official post-secondary transcripts from all U.S. institutions attended (must be sent directly from the institutions to SOPHAS). This includes previous study at the University of Minnesota.
- Three letters of recommendation from persons qualified to assess the applicant's academic work; clinical, public health, or professional experience

**Special Application Requirements:**
Applicants are admitted from a wide variety of academic backgrounds, including social and behavioral sciences (e.g., psychology, sociology, anthropology), the humanities, basic sciences (e.g., biology, nursing), and mathematics. There is no single appropriate undergraduate major; however, applicants should meet prerequisites by the time of admission.

Who should apply? Individuals who want skills to:
- influence policy and public opinion on health issues;
- develop and evaluate innovative community-based programs to prevent disease and injury;
- work with communities, health departments, and non-profit organizations and policymakers to create healthy living and working environments;
- work on issues related to specific population, including youth and disadvantaged populations.

And individuals who:
- have a variety of backgrounds, including those trained in basic sciences, social and behavioral sciences, and the humanities;
- want an M.P.H. degree;
- plan to pursue a Ph.D. degree in social and behavioral epidemiology at the University of Minnesota;
- have met the prerequisites listed below before admission.

**Prerequisites for Admission**
- Baccalaureate degree or higher from an accredited college or university
- College-level courses in the following areas:
  - Social and behavioral sciences (at least 3 courses)
  - Introductory statistics (1 course)
  - One year of paid or volunteer experience in a public health, social service, or community setting

**Preferences for Admission**
- Strong personal statement indicating why applicant is interested in pursuing a community health education degree
- Compatibility of interests with program faculty
- GPA of 3.0
- Combined GRE (verbal, quantitative) score of 1,000 and analytical writing score of 3.5
- TOEFL score of 600/250/100 for international applicants
- Strong reference letters

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 500
  - General Test - Quantitative Reasoning: 500

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7

Key to test abbreviations (GRE, TOEFL, IELTS).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

**Program Requirements**
**Plan B:** Plan B requires 28 to 48 major credits and 10 to 30 credits outside the major. The final exam is oral. A capstone project is required.

**Capstone Project:** Students must complete either a needs assessment, program evaluation, program development, or a research project.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.
A minimum GPA of 3.00 is required for students to remain in good standing.

**Required Courses**
- PUBH 6050 - Community Health Theory and Practice I (3.0 cr)
- PUBH 6051 - Community Health Theory and Practice II (3.0 cr)
- **Health Behavior and Policy Interventions (minimum of 8 credits)**
  - PUBH 6010 - Public Health Approaches to HIV/AIDS (3.0 cr)
  - PUBH 6025 - e-Public Health: Online Intervention Design (3.0 cr)
  - PUBH 6045 - Skills for Policy Development (1.0 cr)
  - PUBH 6049 - Legislative Advocacy Skills for Public Health (3.0 cr)
  - PUBH 6055 - Social Inequalities in Health (2.0 cr)
  - PUBH 6066 - Building Communities, Increasing Health: Preparing for Community Health Work (2.0 cr)
  - PUBH 6074 - Mass Communication and Public Health (3.0 cr)
  - PUBH 6078 - Public Health Policy as a Prevention Strategy (2.0 cr)
  - PUBH 6085 - Combating the Global Pandemic: Tobacco and Alcohol (2.0 cr)
  - PUBH 6133 - Violence Prevention and Control: Theory, Research, and Application (2.0 cr)
  - PUBH 6605 - Reproductive and Perinatal Health (2.0 cr)
  - PUBH 6606 - Children's Health: Issues, Programs, and Policies (2.0 cr)
  - PUBH 6607 - Adolescent Health: Issues, Programs, and Policies (2.0 cr)
  - PUBH 6627 - Sexuality Education: Criteria, Curricula, and Controversy (1.0 cr)
  - PUBH 6634 - Advocacy and Children's Rights (2.0 cr)
  - PUBH 6902 - Maternal, Infant, and Preschool Nutrition (2.0 cr)
  - PUBH 6903 - Child and Adolescent Nutrition (2.0 cr)
  - PUBH 6914 - Community Nutrition Intervention (3.0 cr)
  - SW 8505 - Advanced Community Organization and Advocacy (3.0 cr)

**Assessment Methods (9-10 credits)**
- PUBH 6034 - Program Evaluation for Public Health Practice (3.0 cr)
- PUBH 6035 - Applied Research Methods (3.0 cr)
- PUBH 6415 - Biostatistical Methods II (3.0 cr)
  or PUBH 6451

**Public Health Core Courses (11-12 credits)**
Students can take 6102 instead of 6101; 6341 instead of 6320; 6450 instead of 6414; and 6742 instead of 6741.
- PUBH 6101 - Environmental Health (2.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

**Master's Project and Field Experience (2-4 credits)**
- PUBH 7094 - Culminating Experience: Community Health Promotion (1.0 - 6.0 cr)
- PUBH 7096 - Field Experience: Community Health Promotion (1.0 - 6.0 cr)

**Electives to total 48 credits**
Electives are to be determined with the adviser. They must be graduate-level courses but are not restricted to School of Public Health courses. Elective courses may be relevant to target groups or health behaviors, or advanced courses in epidemiology or biostatistics; relevant to the master's project; or expand professional skills by providing practical experience in a variety of public health-related proficiency areas.

**Program Sub-plans**
A sub-plan is not required for this program.

Students may not complete the program with more than one sub-plan.

**Complementary and Alternative Medicine Interdisciplinary Concentration Area**
The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an M.P.H. degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

**Global Health Interdisciplinary Concentration Area**
The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause, and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.

Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad.

SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

**Health Disparities Interdisciplinary Concentration Area**

The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to health care. Achieving optimum health for all segments of our society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite Minnesota's ranking as one of the nation's healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators. For example, according to the Minnesota Department of Health:

- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer, and HIV/AIDS are higher for many minority communities compared to the state as a whole.

SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

**Public Health Policy Interdisciplinary Concentration Area**

The School of Public Health's Public Health Policy Interdisciplinary Concentration (PHPIC) focuses on promoting the health of populations and groups through public and organizational policy. PHPIC is open to students pursuing an M.P.H., includes coursework that explores the way in which federal, state, local, and institutional entities affect the financing, structure, and delivery of public health and medical care.

PHPIC coursework provides a better understanding of the health care system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can choose courses that emphasize:

- Understanding community dynamics
- Developing advocacy skills for public health
- Analyzing legal and policy structures
- Evaluating and implementing policies and programs
- Influencing community health
- Motivating and educating stakeholders and decision-makers
- Using policy as prevention strategy
- Eliminating health disparities through policy

SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus

Environmental Health M.P.H.

School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Bldg, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612/624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 42 to 51
- This program does not require summer semesters for timely completion.
- Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Environmental health is the study of how exposures to external hazards, including chemical, physical, and biological agents, affect human health. Environmental health researchers and professionals seek to understand how to evaluate exposures that create risk to human health, how those exposures elicit biological responses that lead to disease and injury, and how policy is developed and used to prevent adverse health effects. This program offers academic programs at the master's and doctoral levels, conducts research in diverse areas of environmental health, offers continuing education, and conducts outreach. The academic programs prepare students to be leaders in environmental health in academia, industry, consulting groups, and government agencies. The program's training and research emphasizes the importance of translating basic scientific knowledge into solutions for current societal problems and concerns.

Applicants must indicate an interest in one of the following specialties within the major: the general environmental health, environmental health policy, environmental infectious diseases, environmental and occupational epidemiology, regulatory toxicology, occupational and environmental health nursing, occupational environmental medicine, occupational injury epidemiology and control, or industrial hygiene. The industrial hygiene program is accredited by the Applied Science Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 (410-347-7700).

Accreditation
This program is accredited by Council on Education for Public Health and the Accreditation Board for Engineering and Technology.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)
- completely online (all program coursework can be completed online)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Minimum qualifications include a baccalaureate degree with coursework in the basic sciences. Occupational health nursing applicants must have a bachelor's degree from an accredited school of nursing.

Program Course Prerequisites
All specialties require basic sciences. Industrial hygiene also requires demonstrable strengths in physics, chemistry (including organic chemistry), biology and math (including calculus). A microbiology background is preferred for the environmental infectious diseases specialty.

In addition to completing the SOPHAS application, students are required to submit the following supporting documentation directly to SOPHAS (http://www.sophas.org):
- Statement of purpose and objectives - An essay describing past education, experience, and current professional career objectives. Students are encouraged to comment on any or all of the following: plans for using education and training; the needs and/or challenges the student perceives as important in the field of study; and any personal qualities, characteristics, and skills the student believes will enable success in the chosen field of study.
- Résumé or curriculum vitae (C.V.)
- Official post-secondary transcripts from all U.S. institutions attended, including previous study at the University of Minnesota (must be sent directly from the institutions to SOPHAS)
- Three letters of recommendation from persons qualified to assess the applicant's academic work; clinical, public health, or professional experiences

Applicants must submit their test score(s) from the following:
- GRE
- GMAT
- MCAT
- LSAT

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80

Key to test abbreviations (GRE, GMAT, MCAT, LSAT, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Plan B: Plan B requires 20 to 30 major credits and 10 to 12 credits outside the major. The final exam is written and oral. A capstone project is required.

Capstone Project: The purpose of the master's project is to enable students to demonstrate: familiarity with the tools of research and scholarship in the field of public health; the ability to work independently; the ability to plan and carry out a systematic investigation related to a public health issue; and the ability to effectively present, in written and oral form, the results of their investigation. The master's project for students in the environmental M.P.H. program may take one of four forms: 1) a written report, often in the form of a manuscript suitable for publication in a peer-reviewed journal, that demonstrates the student's ability to do quantitative analyses, utilizing data collected by the student or obtained from another source; 2) a literature review, of publishable quality, which demonstrates the student's ability to critically review the literature and synthesize published findings on a medical or public; 3) an NIH Grant Proposal; or 4) a portfolio.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.0 is required for students to remain in good standing.

May be part of a joint/dual degree program.

Specialty Areas
Environmental and Occupational Epidemiology
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
This specialty strives to understand the causal impact of environment and occupation on human health, because public health interventions are most likely to be effective when disease and injury etiology is understood. Epidemiologists develop studies to identify factors that cause diseases and injuries.

The study of environmental and occupational epidemiology requires knowledge of both subject matter and methods. The curriculum emphasizes both, comprising epidemiology

General Core Requirements
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

**Division Core**

- PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
- PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

**Specialty Program Course Requirements**

- PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)

**Proposed Electives**

Select electives in consultation with adviser. Take 0 or more credits from the following:

- PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
- PUBH 6160 - Metabolomics (3.0 cr)
- PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
- PUBH 6171 - Exposure Assessment for Air Contaminants (3.0 cr)
- PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
- PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
- PUBH 6192 - Measurement and Properties of Air Contaminants (2.0 cr)
- PUBH 6193 - Advanced Topics in Human Exposure Science (2.0 cr)
- PUBH 6343 - Epidemiologic Methods III (4.0 cr)
- PUBH 6355 - Pathophysiology of Human Disease (4.0 cr)
- PUBH 6381 - Genetics in Public Health (2.0 cr)
- PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
- PUBH 6396 - Public Health Aspects of Cardiovascular Disease (2.0 cr)
- PUBH 6387 - Cancer Epidemiology (2.0 cr)
- PUBH 7401 - Fundamentals of Biostatistical Inference (4.0 cr)
- PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)
- PUBH 7407 - Analysis of Categorical Data (3.0 cr)
- PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
- PUBH 8142 - Epidemiologic Uncertainty Analysis (2.0 cr)
- VMED 8090 - Epidemiology of Zoonoses and Diseases Common to Animals and Humans (3.0 cr)
- PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)
- PUBH 7210 - Topics: Global Food Systems (0.5 cr)

-OR-

**Environmental Health Policy**

Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105

This specialty provides broad, multidisciplinary training in environmental health issues, including occupational health, risk assessment, risk management, decision making, and policy analysis. The multidisciplinary curriculum includes coursework in core public health and environmental health sciences, research methods, statistics, exposure and risk assessment, environmental and occupational health policy, and policy economics. Internship experiences are arranged with leading occup

**General Requirements**

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

**Division Core Courses**

- PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
- PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

**Specialty Program Course Requirements**

- PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
- PUBH 6115 - Worker Protection Law (1.0 cr)
- PUBH 6116 - Environmental Law (1.0 cr)

**Proposed Electives**

Select electives in consultation with adviser.
Take 2 or more credits(s) from the following:

- PUBH 6049 - Legislative Advocacy Skills for Public Health (3.0 cr)
- PUBH 6078 - Public Health Policy as a Prevention Strategy (2.0 cr)
- PUBH 6634 - Advocacy and Children's Rights (2.0 cr)
- PUBH 6711 - Public Health Law (2.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6726 - Medical Device Industry: Business and Public Policy (3.0 cr)
- PUBH 6780 - Topics: Public Health Administration and Policy (1.0 - 2.0 cr)
- PUBH 6835 - Principles of Health Policy (2.0 cr)
- PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
- PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
- PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)
- PUBH 8802 - Health Services Policy Analysis: Applications (2.0 cr)
- PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)
- ANTH 5041 - Ecological Anthropology (3.0 cr)
- ANTH 8203 - Research Methods in Social and Cultural Anthropology (3.0 cr)
- PA 5001 - Intellectual Foundations of Public Action (3.0 cr)
- PA 5002 - Introduction to Policy Analysis (1.5 cr)
- PA 5021 - Economics For Policy Analysis and Planning I (3.0 cr)
- PA 5022 - Economics For Policy Analysis and Planning II (1.5 - 3.0 cr)
- PA 5031 - Empirical Analysis I (4.0 cr)
- PA 5032 - Intermediate Regression Analysis (2.0 cr)
- PA 5033 - Multivariate Techniques (2.0 cr)
- PA 5035 - Survey Research and Data Collection (1.5 cr)
- PA 5711 - Science and Technology Policy (3.0 cr)
- PA 5722 - Environmental and Resource Economics Policy (3.0 cr)
- PUBH 6634 - Understanding Health Care Quality (2.0 cr)
- PA 8790 - Advanced Topics in Science, Technology, and Environmental Policy (1.0 - 3.0 cr)
- PA 5311 - Program Evaluation (3.0 cr)

-OR-

Environmental Infectious Diseases (EID)

Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105

This specialty is concerned with the emergence of food-borne and infectious diseases in the United States and around the world. The environment and changing conditions can have a great impact on the distribution and occurrence of infectious diseases. Global climate change is a growing concern regarding the potential expansion of tropical vector borne diseases. In evaluating the chain of infection, environment may play a key role in reserve.

General Requirements
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- PUBH 6230 - Fundamentals of Epidemiology (3.0 cr)
  - or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
  - or PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
  - or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Division Core Courses
- PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
- PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
- PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
- PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
- PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)
- PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)

Recommended Electives
Select electives in consultation with adviser.

Take 0 or more credits(s) from the following:
- PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
- PUBH 6711 - Public Health Law (2.0 cr)
• PUBH 7210 - Topics: Global Food Systems (0.5 cr)
• PUBH 7214 - Principles of Risk Communication (1.0 cr)
• VMED 8090 - Epidemiology of Zoonoses and Diseases Common to Animals and Humans (3.0 cr)
• VMED 5420 - Molecular Epidemiology of Infectious Disease (3.0 cr)
• FSCN 4121 - Food Microbiology (3.0 cr)
• MICB 4121 - Microbial Ecology and Applied Microbiology (3.0 cr)
• MICB 4131 - Immunology (3.0 cr)
• MICB 4151 - Molecular and Genetic Bases for Microbial Diseases (3.0 cr)
• MICB 4171 - Biology, Genetics, and Pathogenesis of Viruses (3.0 cr)

-OR-

General Program
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105

General Requirements
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)

Electives
13 credits, selected in consultation with adviser.

-OR-

Global Environmental Health
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105

The global environmental health track provides key information for individuals looking to work in the field of global environmental health either overseas or in the U.S. Issues of water and air quality, food safety, and the effects of industrialization are examined, as well as major ecological problems such as deforestation and sustainable agriculture. Interactions between the physical environment and biological health risks are considered also, as the effects of globalization of trade and the

General Requirements
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
PUBH 6131 - Working in Global Health (2.0 cr)
PUBH 6132 - Air, Water, and Health (2.0 cr)
PUBH 6133 - Global Health Seminar (1.0 cr)
PubH 72xx Topics: Globalization and Health (1 cr)
PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)

Electives
7-9 credits, selected in consultation with adviser.

-OR-

Occupational and Environmental Health Nursing (OEHN)
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Occupational and environmental health nursing (OEHN) provides intensive training for nurses interested in the development, management, and evaluation of health services, programs, and policies designed to promote health and prevent work-related injuries and disease.

General Requirements
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Occupational and Environmental Health Nursing Course Requirements
PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)

School of Nursing Courses
NURS 8170 - Research in Nursing (3.0 cr)
NURS 8600 - Advanced Public Health Nursing (2.0 cr)

Recommended Electives
Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
• PUBH 6034 - Program Evaluation for Public Health Practice (3.0 cr)
• PUBH 6055 - Social Inequalities in Health (2.0 cr)
• PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
• PUBH 6122 - Seminar: Safety in the Workplace (1.0 cr)
• PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
• PUBH 6765 - Continuous Quality Improvement: Methods and Techniques (3.0 cr)
• NURS 8171 - Qualitative Research Design and Methods (3.0 - 4.0 cr)

-OR-

Occupational and Environmental Medicine
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Occupational and environmental epidemiology strives to understand the causal impact of environment and occupation on human health, because public health interventions are most likely to be effective when disease and injury etiology is understood. Epidemiologists develop studies to identify factors that cause diseases and injuries. The study of environmental and occupational epidemiology requires knowledge of both subject matter and methods. The curriculum emphasizes both, comprising epidemiolog

General Core Requirements
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Division Core
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
PUBH 6173 - Exposure to Physical Agents (2.0 cr)
PUBH 6387 - Cancer Epidemiology (2.0 cr)
PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
PUBH 8120 - Occupational Health and Safety Research Seminar (1.0 cr)
Select electives in consultation with adviser.

-OR-

**Regulatory Toxicology and Risk Assessment**
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Regulatory toxicology and risk assessment teaches students to think analytically about the biochemical mechanisms of toxicity, and how toxicity is used to protect human health through laboratory research, and the development of sound environmental policy and regulations. Strong background in the biological sciences, interest in laboratory research or environmental regulation and policy. Emphasis: biological sciences, physiology, biochemistry, cellular and molecular biology, toxicology.

**General Requirements**
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)

**Ethics Courses**
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

**Division Core Courses**
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

**Specialty Program Course Requirements**
PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
PUBH 6160 - Metabolomics (3.0 cr)
PUBH 6161 - Regulatory Toxicology (2.0 cr)
PUBH 8160 - Advanced Toxicology (2.0 cr)
PUBH 8161 - Current Literature in Toxicology (1.0 cr)

**Electives**
At least 7 credits, selected in consultation with adviser.

**Program Sub-plans**
Students are required to complete one of the following sub-plans.
Students may complete the program with more than one sub-plan.

**Industrial Hygiene**
The Industrial hygiene (IH) program is concerned with the health and safety of people at work, and the community at large. Specific concerns are with the recognition, evaluation and control of potential workplace hazards, including chemical, physical, and biological agents; and the potential health threats to the community and the environment.

**Required Coursework**
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Hazardous Substances Academic Training (HSAT) is a sub-specialty within the IH track that trains master's level professionals with an emphasis in hazardous wastes and haza

**School of Public Health Core Requirements**
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
Choose one of the following courses.
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)

**Division of Environmental Health Sciences Core Requirements**
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

**Occupational Health and Safety Core Requirements**
PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)

**Industrial Hygiene Program Requirements**

- PUBH 6172 - Industrial Hygiene Applications (2.0 cr)
- PUBH 6173 - Exposure to Physical Agents (2.0 cr)
- PUBH 6174 - Control of Workplace Exposure (3.0 cr)
- PUBH 6175 - Environmental Measurements Laboratory (2.0 cr)
- PUBH 6192 - Measurement and Properties of Air Contaminants (2.0 cr)
- PUBH 6193 - Advanced Topics in Human Exposure Science (2.0 cr)

**HSAT Program Requirements**

Optional certification

Take 0 or more credits(s) from the following:

- PUBH 6176 - Hazardous Materials and Waste Management (2.0 cr)

- Take one of the following:
  - PUBH 6190 - Environmental Chemistry (3.0 cr)
  - CE 4561 - Solid Hazardous Wastes (3.0 cr)
  - 40-hour Continuing Education Class (for example, one of the following from CPHEO):
    - (i) Safety and Health Training for Hazardous Waste Site Personnel 40 hours;
    - (ii) Hazardous Materials Emergency Response 40 hours

**Industrial Hygiene Electives**

Select electives in consultation with adviser.

Take 0 or more credits(s) from the following:

- PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
- PUBH 6115 - Worker Protection Law (1.0 cr)
- PUBH 6116 - Environmental Law (1.0 cr)
- PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
- PUBH 6131 - Working in Global Health (2.0 cr)
- PUBH 6132 - Air, Water, and Health (2.0 cr)
- PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
- PUBH 6161 - Regulatory Toxicology (2.0 cr)

- PUBH 6176 - Hazardous Materials and Waste Management (2.0 cr)
- PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
- PUBH 6190 - Environmental Chemistry (3.0 cr)
- PUBH 6415 - Biostatistical Methods II (3.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 7220 - Personal Protective Equipment and Respiratory Protection (1.0 cr)
- PUBH 7260 - Ergonomics and the Prevention of Workplace Injuries (1.0 cr)
- CE 4561 - Solid Hazardous Wastes (3.0 cr)
- CE 5551 - Environmental Microbiology (3.0 cr)
- IE 5511 - Human Factors and Work Analysis (4.0 cr)
- IE 5513 - Engineering Safety (4.0 cr)
- KIN 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
- ME 5113 - Aerosol/Particle Engineering (4.0 cr)
- ME 5133 - Aerosol Measurement Laboratory (4.0 cr)
- PA 5721 - Energy and Environmental Policy (3.0 cr)

**Complementary and Alternative Medicine Interdisciplinary Concentration Area**

This sub-plan is optional and does not fulfill the sub-plan requirement for this program.

The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an M.P.H. degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

**Global Health Interdisciplinary Concentration Area**

This sub-plan is optional and does not fulfill the sub-plan requirement for this program.

The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause, and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.
Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad.

SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Health Disparities Interdisciplinary Concentration Area

This sub-plan is optional and does not fulfill the sub-plan requirement for this program.

The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to health care. Achieving optimum health for all segments of our society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite Minnesota's ranking as one of the nation's healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators. For example, according to the Minnesota Department of Health:

- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer, and HIV/AIDS are higher for many minority communities compared to the state as a whole.

SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Public Health Policy Interdisciplinary Concentration Area

This sub-plan is optional and does not fulfill the sub-plan requirement for this program.

The School of Public Health's Public Health Policy Interdisciplinary Concentration (PHPIC) focuses on promoting the health of populations and groups through public and organizational policy. PHPIC is open to students pursuing an M.P.H., and includes coursework that explores the way in which federal, state, local, and institutional entities affect the financing, structure, and delivery of public health and medical care.

PHPIC coursework provides a better understanding of the health care system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can choose courses that emphasize:

- Understanding community dynamics
- Developing advocacy skills for public health
- Analyzing legal and policy structures
- Evaluating and implementing policies and programs
- Influencing community health
- Motivating and educating stakeholders and decision-makers
- Using policy as prevention strategy
- Eliminating health disparities through policy

SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus
Environmental Health M.S.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Bldg, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 33 to 51
- This program does not require summer semesters for timely completion.
- n/a
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Environmental health is the study of how exposures to external hazards, including chemical, physical, and biological agents, affect human health. Environmental health researchers and professionals seek to understand how to evaluate exposures that create risk to human health, how those exposures elicit biological responses that lead to disease and injury, and how policy is developed and used to prevent adverse health effects. This program offers academic programs at the master's and doctoral levels, conducts research in diverse areas of environmental health, offers continuing education, and conducts outreach. The academic programs prepare students to be leaders in environmental health in academia, industry, consulting groups, and government agencies. The program's training and research emphasizes the importance of translating basic scientific knowledge into solutions for current societal problems and concerns.

Applicants must indicate an interest in one of the following specialties within the major: the general environmental health, environmental health policy, environmental infectious diseases, environmental and occupational epidemiology, regulatory toxicology, occupational and environmental health nursing, occupational environmental medicine, occupational injury epidemiology and control, or industrial hygiene.

The industrial hygiene program is accredited by the Applied Science Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 (410-347-7700).

Accreditation
This program is accredited by Accreditation Board for Engineering and Technology (ABET) for Industrial Hygiene.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Minimum requirements include a baccalaureate degree with coursework in the basic sciences. Each specialty requires slightly different preparation: http://www.sph.umn.edu/programs/ehs/tracks/index.asp.

Industrial Hygiene Science
In addition to program requirements - industrial hygiene requires demonstrable strengths in physics, chemistry (including organic chemistry), biology, and math (including calculus). One or two missing requirements may be completed upon enrollment.

Complete online SOPHAS application at http://www.sophas.org. Applicants should submit all supporting documentation directly to SOPHAS, including: test scores (GRE, GMAT, MCAT, DAT, LSAT); statement of purpose and objectives; résumé or curriculum vitae (C.V.); and official postsecondary transcripts from all U.S. institutions attended (including previous study at the University of Minnesota), sent directly from the institutions to SOPHAS.

Other requirements include three letters of recommendation from persons qualified to assess the applicant's academic work; clinical, public health, or professional experiences, all to be submitted online. For more information on admissions see
Applicants must submit their test score(s) from the following:

- **GRE**
  - General Test - Verbal Reasoning: 500
  - General Test - Quantitative Reasoning: 500
  - General Test - Analytical Writing: 3.5
- **GMAT**
- **MCAT**
  - Verbal Reasoning score: 10
  - Physical Science score: 10
  - Biological Reasoning score: 10
- **LSAT**
- **DAT**
  - Score: 18

International applicants must submit score(s) from one of the following tests:

- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7
- **MELAB**
  - Final score: 80

Key to test abbreviations (GRE, GMAT, MCAT, LSAT, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the [General Information](http://www.sph.umn.edu/prospective/admissions/index.asp) section of the catalog website.

### Program Requirements

**Plan A:** Plan A requires 14 to 20 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is written and oral.

**Plan B:** Plan B requires 17 to 25 major credits and 6 credits outside the major. The final exam is written and oral. A capstone project is required.

**Capstone Project:** The Plan B project is a master's project.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

The M.S. program prepares students for specialized careers in environmental and occupational health. M.S. students receive a solid technical background in their disciplines and by graduation are proficient in applied or basic research.

The minimum credits required for graduation depend on the chosen specialty area. Most specialty areas require a two-year program. M.S. students have the option of completing a Plan A with a thesis or a Plan B project.

**Specialty Areas**

Students may pursue a general program in environmental and occupational health, focus in a specialty area, or pursue the industrial hygiene sub-plan.

**Environmental Chemistry**

- Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
- Environmental chemistry examines the interactions of pollutants with air, water, soil, and their exposures to humans and wildlife. The curriculum emphasizes the processes that control chemical behavior, transport, and fate as a function of environmental factors and chemical properties.

  **General Requirements**
Thesis/dissertation will be taken for 10 credits

**PUBH 6320** - Fundamentals of Epidemiology (3.0 cr)
**STAT 5021** - Statistical Analysis (4.0 cr)
**PUBH 6742** - Ethics in Public Health: Research and Policy (1.0 cr)
**PUBH 8777** - Thesis Credits: Master's (1.0 - 18.0 cr)

**Division Core Courses**

**PUBH 6103** - Exposure to Environmental Hazards (2.0 cr)
**PUBH 6104** - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
**PUBH 6105** - Environmental and Occupational Health Policy (2.0 cr)

**Specialty Program Course Requirements**

**CE 5541** - Environmental Water Chemistry (3.0 cr)
**EED 5601** - Limnology (3.0 cr)
**PUBH 6190** - Environmental Chemistry (3.0 cr)

**Proposed Electives**

Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
- **CBIO 8004** - Economic and Social Aspects of Conservation Biology (3.0 cr)
- **CE 4561** - Solid Hazardous Wastes (3.0 cr)
- **CE 8503** - Environmental Mass Transport (4.0 cr)
- **CE 8542** - Chemistry of Organic Pollutants in Environmental Systems (3.0 cr)
- **CE 8561** - Analysis and Modeling of Aquatic Environments I (3.0 cr)
- **EED 4611** - Biogeochemical Processes (3.0 cr)
- **PUBH 7196** - Field Experience: Environmental Health (1.0 - 5.0 cr)
- **WRS 8050** - Special Topics in Water Resources Science (1.0 - 3.0 cr)
- **EED 5609** - Ecosystem Ecology (3.0 cr)

-OR-

**Environmental and Occupational Epidemiology**

Environmental Health Sciences Core: **PUBH 6103**, **PUBH 6104**, **PUBH 6105**

Environmental and occupational epidemiology strives to understand the causal impact of environment and occupation on human health, because public health interventions are most likely to be effective when disease and injury etiology is understood.

Epidemiologists develop studies to identify factors that cause diseases and injuries.

**General Core Requirements**

**PUBH 6341** - Epidemiologic Methods I (3.0 cr)
**PUBH 6450** - Biostatistics I (4.0 cr)
**PUBH 6742** - Ethics in Public Health: Research and Policy (1.0 cr)

**Division Core**

**PUBH 6103** - Exposure to Environmental Hazards (2.0 cr)
**PUBH 6104** - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
**PUBH 6105** - Environmental and Occupational Health Policy (2.0 cr)
**PUBH 8777** - Thesis Credits: Master's (1.0 - 18.0 cr)

-or **PUBH 7194** - Master's Project: Environmental Health (1.0 - 5.0 cr)

**Specialty Program Course Requirements**

**PUBH 6140** - Occupational and Environmental Epidemiology (2.0 cr)
**PUBH 6342** - Epidemiologic Methods II (3.0 cr)
**PUBH 6451** - Biostatistics II (4.0 cr)

**Proposed Electives**

Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
- **PUBH 6120** - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
- **PUBH 6121** - Topics: Injury Prevention in the Workplace, Community, and Home (1.0 - 2.0 cr)
- **PUBH 6122** - Seminar: Safety in the Workplace (1.0 cr)
- **PUBH 6130** - Occupational Medicine: Principles and Practice (2.0 cr)
- **PUBH 6150** - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
- **PUBH 6170** - Introduction to Occupational Health and Safety (3.0 cr)
- **PUBH 6173** - Exposure to Physical Agents (2.0 cr)
- **PUBH 6181** - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
- **PUBH 6343** - Epidemiologic Methods III (4.0 cr)
- **PUBH 6355** - Pathophysiology of Human Disease (4.0 cr)
- **PUBH 6356** - Epidemiology and Control of Infectious Diseases (2.0 cr)
- **PUBH 6387** - Cancer Epidemiology (2.0 cr)
- **PUBH 8120** - Occupational Health and Safety Research Seminar (1.0 cr)
- **PUBH 8140** - Validity Concepts in Epidemiologic Research (2.0 cr)
- **PUBH 8142** - Epidemiologic Uncertainty Analysis (2.0 cr)
Environmental Health Policy
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Environmental health policy provides broad, multidisciplinary training in environmental health issues, including occupational health, risk assessment, risk management, decision making, and policy analysis.

General Requirements
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
or PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
or PUBH 6414 - Biostatistical Methods I (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
PUBH 6115 - Worker Protection Law (1.0 cr)
PUBH 6116 - Environmental Law (1.0 cr)

Proposed Electives
Select electives in consultation with adviser.
- Take 0 or more credits(s) from the following:
  - PUBH 6049 - Legislative Advocacy Skills for Public Health (3.0 cr)
  - PUBH 6078 - Public Health Policy as a Prevention Strategy (2.0 cr)
  - PUBH 6080 - Seminar: Policy, Politics, and Ethics of Public Health Decision Making (2.0 cr)
  - PUBH 6420 - Introduction to SAS Programming (1.0 cr)
  - PUBH 6634 - Advocacy and Children's Rights (2.0 cr)
  - PUBH 6711 - Public Health Law (2.0 cr)
  - PUBH 6724 - The Health Care System and Public Health (3.0 cr)
  - PUBH 6726 - Medical Device Industry: Business and Public Policy (3.0 cr)
  - PUBH 6780 - Topics: Public Health Administration and Policy (1.0 - 2.0 cr)
  - PUBH 6835 - Principles of Health Policy (2.0 cr)
  - PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
  - PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
  - PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)
  - PUBH 8802 - Health Services Policy Analysis: Applications (2.0 cr)
  - PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)
  - ANTH 5041 - Ecological Anthropology (3.0 cr)
  - ANTH 8203 - Research Methods in Social and Cultural Anthropology (3.0 cr)
  - PA 5001 - Intellectual Foundations of Public Action (3.0 cr)
  - PA 5002 - Introduction to Policy Analysis (1.5 cr)
  - PA 5021 - Economics For Policy Analysis and Planning I (3.0 cr)
  - PA 5022 - Economics For Policy Analysis and Planning II (1.5 - 3.0 cr)
  - PA 5031 - Empirical Analysis I (4.0 cr)
  - PA 5032 - Intermediate Regression Analysis (2.0 cr)
  - PA 5033 - Multivariate Techniques (2.0 cr)
  - PA 5035 - Survey Research and Data Collection (1.5 cr)
  - PA 5711 - Science and Technology Policy (3.0 cr)
  - PA 5722 - Environmental and Resource Economics Policy (3.0 cr)
  - PHL 5441 /Inactive/ (3.0 cr)
  - PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Environmental Infectious Diseases
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
The Environmental Infectious Diseases (EID) specialty is concerned with the emergence of food-borne and infectious diseases in the United States and around the world. The environment, and changing conditions in the environment can have a great impact on the distribution and occurrence of infectious diseases. In evaluating the chain of infection, environment may play a key role in reservoir maintenance, as well as a route of transmission through food, water, and air.

General Requirements
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)

**Division Core Courses**
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)
or PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)

**Specialty Program Course Requirements**
PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)
PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)

**Recommended Electives**
Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
- PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
- PUBH 7210 - Topics: Global Food Systems (0.5 cr)
- PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
- VMED 8090 - Epidemiology of Zoonoses and Diseases Common to Animals and Humans (3.0 cr)
- VMED 5420 - Molecular Epidemiology of Infectious Disease (3.0 cr)
- FSCN 4121 - Food Microbiology (3.0 cr)
- FSCN 4122 - Food Fermentations and Biotechnology (2.0 cr)
- MICB 4121 - Microbial Ecology and Applied Microbiology (3.0 cr)
- MICB 4131 - Immunology (3.0 cr)
- MICB 4151 - Molecular and Genetic Bases for Microbial Diseases (3.0 cr)
- MICB 4171 - Biology, Genetics, and Pathogenesis of Viruses (3.0 cr)
- OR -

**Exposure Science**
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Students in the Exposure Science program study methods for the identification, measurement and simulation of human exposure and dose from single and multimedia environmental exposures. Students will receive training on various aspects of exposure analysis such as measurements and modeling; chemical, biological, and physical principles required to analyze exposure; mechanisms of exposure; development of molecular biomarkers; and genomic, proteomic, and metabolomic metrics for assessing exposure.

**General Requirements**
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
or STAT 5021 - Statistical Analysis (4.0 cr)

**Division Core Courses**
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

**Specialty Program Course Requirements**
PUBH 6192 - Measurement and Properties of Air Contaminants (2.0 cr)
PUBH 6193 - Advanced Topics in Human Exposure Science (2.0 cr)
PUBH 6175 - Environmental Measurements Laboratory (2.0 cr)
PUBH 6100 - Topics: Environmental Health (0.5 - 4.0 cr)
PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
PUBH 6190 - Environmental Chemistry (3.0 cr)
PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)

**Electives**
Select electives in consultation with adviser.

- OR -

**General Program in Environmental Health**
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Students are admitted to the General Program in Environmental Health when they are looking for a program of study that does not fit precisely with the specialty tracks defined in the environmental health sciences major. Emphasis is on the development of a broad, solid foundation in environmental health, with a larger than usual number of elective credits to allow the student an opportunity to pursue their particular interests.

**General Requirements**
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
  or PUBH 6450 - Biostatistics I (4.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)
  or PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
Choose at least two courses from each of the following EOH focus areas.

Exposure
   Take 2 or more course(s) from the following:
   • PUBH 6171 - Exposure Assessment for Air Contaminants (3.0 cr)
   • PUBH 6190 - Environmental Chemistry (3.0 cr)
   • PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)

Policy
   Check with adviser for other policy class options.
   Take 2 or more course(s) from the following:
   • PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)

Health Effects
   Take 2 or more course(s) from the following:
   • PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
   • PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
   • PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
   • PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)

Electives
   Select electives in consultation with adviser.

-OR-

Global Environmental Health

Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
The global environmental health track provides key information for individuals looking to work in the field of global environmental health either overseas or in the U.S. Issues of water and air quality, food safety, and the effects of industrialization are examined, as well as major ecological problems such as deforestation and sustainable agriculture.

General Requirements
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
  or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
  or PUBH 6450 - Biostatistics I (4.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)
  or PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
PUBH 6131 - Working in Global Health (2.0 cr)
PUBH 6132 - Air, Water, and Health (2.0 cr)
PUBH 6133 - Global Health Seminar (1.0 cr)
PubH 72xx Topics: Globalization and Health (1 cr)
PUBH 6390 - Topics: Epidemiology (0.5 - 4.0 cr)
PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)

Electives
   7-9 credits, selected in consultation with adviser.

-OR-

Occupational and Environmental Health Nursing (OEHN)

Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Occupational and Environmental Health Nursing (OEHN) provides intensive training for nurses interested in the development, management and evaluation of health services, programs, and policies designed to promote health and prevent work-related injuries and disease.
General Requirements
PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master’s Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)
PUBH 8777 - Thesis Credits: Master’s (1.0 - 18.0 cr)

Specialty Program Course Requirements
PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
PUBH 6451 - Biostatistics II (4.0 cr)
NURS 8600 - Advanced Public Health Nursing (2.0 cr)
NURS 8170 - Research in Nursing (3.0 cr)

Recommended Electives
Select electives in consultation with adviser.
Take 3 or more credits(s) from the following:
- PUBH 6034 - Program Evaluation for Public Health Practice (3.0 cr)
- PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
- PUBH 6325 - Data Processing with PC-SAS (1.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6348 - Writing Research Grants (2.0 cr)
- NURS 8100 - The Discipline of Nursing (3.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans.
Students may complete the program with more than one sub-plan.

Industrial Hygiene
Industrial hygiene (IH) is concerned with the health and safety of people at work, and the community at large. Specific concerns are with the recognition, evaluation and control of potential workplace hazards, including chemical, physical, and biological agents; and the potential health threats to the community and the environment.

Hazardous Substances Academic Training (HSAT) is a sub-specialty within the IH track that trains master's-level professionals with an emphasis in hazardous wastes and hazardous materials health and safety management. Students in this area take all the IH required courses and in addition complete practicum and research project work in the field of hazardous materials or hazardous waste management.

Required Coursework
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105

School of Public Health Core Requirements
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
Choose one of the following courses.
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
  or PUBH 6450 - Biostatistics I (4.0 cr)

Division of Environmental Health Sciences Core Requirements
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Master’s Project: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Occupational Health and Safety Core Requirements
PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)

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Information current as of October 02, 2012
Industrial Hygiene Program Requirements

PUBH 6172 - Industrial Hygiene Applications (2.0 cr)
PUBH 6173 - Exposure to Physical Agents (2.0 cr)
PUBH 6174 - Control of Workplace Exposure (3.0 cr)
PUBH 6175 - Environmental Measurements Laboratory (2.0 cr)
PUBH 6192 - Measurement and Properties of Air Contaminants (2.0 cr)
PUBH 6193 - Advanced Topics in Human Exposure Science (2.0 cr)

HSAT Program Requirements

Optional certification
Take 0 or more credits(s) from the following:
• PUBH 6176 - Hazardous Materials and Waste Management (2.0 cr)
• One of the following:
  • PUBH 6190 - Environmental Chemistry (3.0 cr)
  • CE 4561 - Solid Hazardous Wastes (3.0 cr)
  or 40-hour Continuing Education Class (for example, one of the following from CPHEO):
    (i) Safety and Health Training for Hazardous Waste Site Personnel, 40 hours;
    (ii) Hazardous Materials Emergency Response, 40 hours

Industrial Hygiene Electives

Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
• PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
• PUBH 6115 - Worker Protection Law (1.0 cr)
• PUBH 6116 - Environmental Law (1.0 cr)
• PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
• PUBH 6131 - Working in Global Health (2.0 cr)
• PUBH 6132 - Air, Water, and Health (2.0 cr)
• PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
• PUBH 6161 - Regulatory Toxicology (2.0 cr)
• PUBH 6176 - Hazardous Materials and Waste Management (2.0 cr)
• PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
• PUBH 6190 - Environmental Chemistry (3.0 cr)
• PUBH 6415 - Biostatistical Methods II (3.0 cr)
• PUBH 6451 - Biostatistics II (4.0 cr)
• PUBH 7220 - Personal Protective Equipment and Respiratory Protection (1.0 cr)
• PUBH 7260 - Ergonomics and the Prevention of Workplace Injuries (1.0 cr)
• CE 4561 - Solid Hazardous Wastes (3.0 cr)
• CE 5551 - Environmental Microbiology (3.0 cr)
• IE 5511 - Human Factors and Work Analysis (4.0 cr)
• IE 5513 - Engineering Safety (4.0 cr)
• KIN 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
• ME 5113 - Aerosol/Particle Engineering (4.0 cr)
• ME 5133 - Aerosol Measurement Laboratory (4.0 cr)
• PA 5721 - Energy and Environmental Policy (3.0 cr)
Twin Cities Campus

Environmental Health Minor

School of Public Health - Adm

School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, D305 Mayo Building, MMC 819, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612/624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2011
- Length of program in credits (Masters): 6
- Length of program in credits (Doctorate): 14
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The master's minor requires a minimum of 8 graduate credits; the doctoral minor requires a minimum of 14 graduate credits. Courses for the minor must be selected from those offered by the School of Public Health. In order to meet the minor requirements, students must successfully complete graduate coursework in each of the following disciplines: biostatistics, epidemiology, and environmental health.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)
- completely online (all program coursework can be completed online)

Program Requirements
Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

Suggested courses include PUBH 6101 - Environmental Health or PUBH 6102 - Issues in Environmental Health; PUBH 6320 - Fundamentals of Epidemiology or PUBH 6341 - Epidemiologic Methods I; and PUBH 6414 - Biostatistical Methods I or PUBH 6450 - Biostatistics I.

Students completing a master's minor in environmental health must complete 8 credits in environmental health, including PUBH 6103, 6104, and 6105.

Students completing a doctoral minor are required to take a minimum of 14 credits in environmental health, including PUBH 6103, 6104, and 6105.

Students who have already taken comparable graduate-level courses in these disciplines may use other public health courses to complete the minor requirement with the approval of the public health adviser and the director of graduate studies. Since public health courses may have prerequisites or enrollment limitations, early planning with an adviser is suggested.
Twin Cities Campus
Environmental Health Ph.D.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Doctorate
- Requirements for this program are current for Fall 2011
- Length of program in credits: 36 to 60
- This program does not require summer semesters for timely completion.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Environmental health is the study of how exposures to external hazards, including chemical, physical, and biological agents, affect human health. Environmental health researchers and professionals seek to understand how to evaluate exposures that create risk to human health, how those exposures elicit biological responses that lead to disease and injury, and how policy is developed and used to prevent adverse health effects. This program offers academic programs at the master's and doctoral levels, conducts research in diverse areas of environmental health, offers continuing education, and conducts outreach. The academic programs prepare students to be leaders in environmental health in academia, industry, consulting groups, and government agencies. The program's training and research emphasizes the importance of translating basic scientific knowledge into solutions for current societal problems and concerns.

The Ph.D. brings students to a high level of academic competence through a combination of advanced coursework and research, and prepares students to assume leadership roles in the field.

The division offers Ph.D. degrees in the following specialty areas:
- Environmental chemistry
- Environmental and occupational epidemiology
- Environmental health policy
- Environmental infectious diseases
- Environmental physiology
- Industrial hygiene
- Occupational and environmental health nursing

Applicants must indicate an interest in one of the following specialties within the major: the general environmental health, environmental health policy, environmental infectious diseases, environmental and occupational epidemiology, regulatory toxicology, occupational and environmental health nursing, occupational environmental medicine, occupational injury epidemiology and control, or industrial hygiene. The industrial hygiene program is accredited by the Applied Science Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 (410-347-7700).

Accreditation
This program is accredited by Accreditation Board for Engineering and Technology (ABET) for Industrial Hygiene.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

A baccalaureate degree with coursework in the basic sciences. Each specialty requires slightly different preparation. Industrial Hygiene requires physics, biology, chemistry, organic, and calculus.
Applicants must submit their test score(s) from the following:
- **GRE**
  - General Test - Verbal Reasoning: 550
  - General Test - Quantitative Reasoning: 550
  - General Test - Analytical Writing: 4
- **GMAT**
- **MCAT**
- **LSAT**

International applicants must submit score(s) from one of the following tests:
- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7
- **MELAB**
  - Final score: 80

Key to test abbreviations (GRE, GMAT, MCAT, LSAT, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the [General Information](#) section of the catalog website.

### Program Requirements

20 credits are required in the major.
12 credits are required outside the major.
24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 4 semesters must be completed before filing a Degree Program Form.

### Specialty Areas

**Environmental Chemistry**

Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105

Environmental chemistry examines the interactions of pollutants with air, water, soil, and their exposures to humans and wildlife. The curriculum emphasizes the processes that control chemical behavior, transport, and fate as a function of environmental factors and chemical properties.

**General Requirements**

The thesis/dissertation will be taken for 24 credits

- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- STAT 5021 - Statistical Analysis (4.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

**Division Core Courses**

- PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
- PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

**Specialty Program Course Requirements**

- CE 5541 - Environmental Water Chemistry (3.0 cr)
- CE 8542 - Chemistry of Organic Pollutants in Environmental Systems (3.0 cr)
- EEB 5601 - Limnology (3.0 cr)
- PUBH 6190 - Environmental Chemistry (3.0 cr)

**Proposed Electives**

Select electives in consultation with adviser.

Take 0 or more credits(s) from the following:

- CBIO 8004 - Economic and Social Aspects of Conservation Biology (3.0 cr)
• CE 4561 - Solid Hazardous Wastes (3.0 cr)
• CE 8503 - Environmental Mass Transport (4.0 cr)
• CE 8561 - Analysis and Modeling of Aquatic Environments I (3.0 cr)
• EEB 4611 - Biogeochemical Processes (3.0 cr)
• PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)
• WRS 8050 - Special Topics in Water Resources Science (1.0 - 3.0 cr)
• EEB 5609 - Ecosystem Ecology (3.0 cr)

-OR-

Environmental and Occupational Epidemiology
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Environmental and occupational epidemiology strives to understand the causal impact of environment and occupation on human health, because public health interventions are most likely to be effective when disease and injury etiology is understood.

General Core Requirements
PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Division Core
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

Specialty Program Course Requirements
Thesis/dissertation will be taken for 24 credits.
PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
PUBH 6342 - Epidemiologic Methods II (3.0 cr)
PUBH 6451 - Biostatistics II (4.0 cr)
PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
PUBH 8141 - Doctoral Seminar in Observational Inference (2.0 cr)
PUBH 8142 - Epidemiologic Uncertainty Analysis (2.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Proposed Electives
Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:

• PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
• PUBH 6121 - Topics: Injury Prevention in the Workplace, Community, and Home (1.0 - 2.0 cr)
• PUBH 6122 - Seminar: Safety in the Workplace (1.0 cr)
• PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
• PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
• PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
• PUBH 6173 - Exposure to Physical Agents (2.0 cr)
• PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
• PUBH 6343 - Epidemiologic Methods III (4.0 cr)
• PUBH 6355 - Pathophysiology of Human Disease (4.0 cr)
• PUBH 6381 - Genetics in Public Health (2.0 cr)
• PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
• PUBH 6387 - Cancer Epidemiology (2.0 cr)
• PUBH 6806 - Principles of Public Health Research (2.0 cr)
• PUBH 7400 - Topics: Biostatistics (0.5 - 4.0 cr)
• PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
• PUBH 7435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
• PUBH 7460 - Advanced Statistical Computing (3.0 cr)
• PUBH 8120 - Occupational Health and Safety Research Seminar (1.0 cr)
• PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)

-OR-

Environmental Health Policy
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Environmental health policy provides broad, multidisciplinary training in environmental health issues, including occupational health, risk assessment, risk management, decision making, and policy analysis.

General Requirements
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

**Specialty Program Course Requirements**
Thesis/dissertation will be taken for 24 credits.
PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
PUBH 6115 - Worker Protection Law (1.0 cr)
PUBH 6116 - Environmental Law (1.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

**Proposed Electives**
Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
- PUBH 6049 - Legislative Advocacy Skills for Public Health (3.0 cr)
- PUBH 6078 - Public Health Policy as a Prevention Strategy (2.0 cr)
- PUBH 6080 - Seminar: Policy, Politics, and Ethics of Public Health Decision Making (2.0 cr)
- PUBH 6420 - Introduction to SAS Programming (1.0 cr)
- PUBH 6634 - Advocacy and Children's Rights (2.0 cr)
- PUBH 6711 - Public Health Law (2.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6726 - Medical Device Industry: Business and Public Policy (3.0 cr)
- PUBH 6780 - Topics: Public Health Administration and Policy (1.0 - 2.0 cr)
- PUBH 6835 - Principles of Health Policy (2.0 cr)
- PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
- PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)
- PUBH 8821 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
- PUBH 8822 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
- PUBH 8835 - Principles of Health Policy (2.0 cr)
- ANTH 5041 - Ecological Anthropology (3.0 cr)
- ANTH 8203 - Research Methods in Social and Cultural Anthropology (3.0 cr)
- PA 5001 - Intellectual Foundations of Public Action (3.0 cr)
- PA 5002 - Introduction to Policy Analysis (1.5 cr)
- PA 5021 - Economics For Policy Analysis and Planning I (3.0 cr)
- PA 5022 - Economics For Policy Analysis and Planning II (1.5 - 3.0 cr)
- PA 5031 - Empirical Analysis I (4.0 cr)
- PA 5032 - Intermediate Regression Analysis (2.0 cr)
- PA 5033 - Multivariate Techniques (2.0 cr)
- PA 5035 - Survey Research and Data Collection (1.5 cr)
- PA 5311 - Program Evaluation (3.0 cr)
- PA 5711 - Science and Technology Policy (3.0 cr)
- PA 5722 - Environmental and Resource Economics Policy (3.0 cr)
- PA 5441 - Education Policy and the State Legislature (3.0 cr)

**Environmental Infectious Diseases**
The Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105

The Environmental Infectious Diseases (EID) specialty is concerned with the emergence of food-borne and infectious diseases in the United States and around the world. The environment, and changing conditions in the environment can have a great impact on the distribution and occurrence of infectious diseases. In evaluating the chain of infection, environment may play a key role in reservoir maintenance, as well as a route of transmission through food, water, and air.

**General Requirements**
PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

**Division Core Courses**
Thesis/dissertation will be taken for 24 credits.
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

**Specialty Program Course Requirements**
PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
PUBH 6342 - Epidemiologic Methods II (3.0 cr)
Recommended Electives
Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
• PUBH 6381 - Genetics in Public Health (2.0 cr)
• PUBH 6355 - Pathophysiology of Human Disease (4.0 cr)
• PUBH 7210 - Topics: Global Food Systems (0.5 cr)
• PUBH 7214 - Principles of Risk Communication (1.0 cr)
• VMED 5420 - Molecular Epidemiology of Infectious Disease (3.0 cr)
• FSCN 4121 - Food Microbiology (3.0 cr)
• FSCN 4122 - Food Fermentations and Biotechnology (2.0 cr)
• MICA 8002 - Structure, Function, and Genetics of Bacteria and Viruses (4.0 cr)
• MICA 8003 - Immunity and Immunopathology (4.0 cr)
• MICA 8010 - Microbial Pathogenesis (3.0 cr)

-OR-

Occupational and Environmental Health Nursing
Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
Occupational and Environmental Health Nursing (OEHN) provides intensive training for nurses interested in the development, management and evaluation of health services, programs, and policies designed to promote health and prevent work-related injuries and disease.

General Requirements
PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
Thesis/dissertation will be taken for 24 credits.
PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
PUBH 6451 - Biostatistics II (4.0 cr)
PUBH 8120 - Occupational Health and Safety Research Seminar (1.0 cr)
PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
NURS 8170 - Research in Nursing (3.0 cr)
NURS 8171 - Qualitative Research Design and Methods (3.0 - 4.0 cr)
NURS 8600 - Advanced Public Health Nursing (2.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Recommended Electives
Select electives in consultation with adviser.
Take 0 or more credits(s) from the following:
• PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
• PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
• PUBH 6325 - Data Processing with PC-SAS (1.0 cr)
• PUBH 6342 - Epidemiologic Methods II (3.0 cr)
• PUBH 8813 - Measurement of Health-Related Social Factors (3.0 cr)
• PUBH 8142 - Epidemiologic Uncertainty Analysis (2.0 cr)

-OR-

Environmental Physiology
This is a trans-disciplinary program emphasizing new perspectives on the study of how humans, as complex heterogeneous biological systems, respond and adapt to their environment. Such study is required to understand the role of the environment in injury and disease, and to shape future technologies and policy for monitoring and protecting human health.

General Requirements
Thesis/dissertation will be taken for 24 credits.
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Specialty Program Course Requirements
- PUBH 8163 - Toxicology (5.0 cr)
- PUBH 8165 - Current Topics in Toxicology (1.0 cr)
- PUBH 8166 - Experiences in Toxicology Research (3.0 cr)
- PHSL 5101 - Human Physiology (5.0 cr)
- BIOL 4004 - Cell Biology (3.0 cr)
- BIOC 4331 - Biochemistry I: Structure, Catalysis, and Metabolism in Biological Systems (4.0 cr)
- or BIOC 8001 - Biochemistry: Structure, Catalysis, and Metabolism (3.0 cr)
- BIOC 8002 - Molecular Biology and Regulation of Biological Processes (3.0 cr)

Recommended Electives
- Select electives in consultation with adviser.
- Take 0 or more credits(s) from the following:
  - ANSC 8344 - Mechanisms of Hormone Action (2.0 cr)
  - PHCL 5111 - Pharmacogenomics (3.0 cr)
- BIOC 8216 - Signal Transduction and Gene Expression (3.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
- PUBH 6160 - Metabolomics (3.0 cr)
- PUBH 6161 - Regulatory Toxicology (2.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans.
Students may not complete the program with more than one sub-plan.

Industrial Hygiene
Industrial hygiene is concerned with the health and safety of people at work, and the community at large. Specific concerns are with the recognition, evaluation and control of potential workplace hazards, including chemical, physical, and biological agents; and the potential health threats to the community and the environment.

Hazardous Substances Academic Training (HSAT) is a sub-specialty within the IH track that trains master's level professionals with an emphasis in hazardous wastes and hazardous materials health and safety management. Students in this area take all the IH required courses and in addition complete practicum and research project work in the field of hazardous materials or hazardous waste management.

Required Coursework
- Environmental Health Sciences Core: PUBH 6103, PUBH 6104, PUBH 6105
- School of Public Health Core Requirements
  - PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
  - PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
  - PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
  - PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
  - PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- Choose one of the following courses.
  - PUBH 6414 - Biostatistical Methods I (3.0 cr)
  - or PUBH 6450 - Biostatistics I (4.0 cr)
- Division of Environmental Health Sciences Core Requirements
  - PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
  - PUBH 6104 - Environmental Health Effects: Introduction to Toxicology (2.0 cr)
  - PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
  - PUBH 7194 - Master's Project: Environmental Health (1.0 - 5.0 cr)
  - PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)
- Occupational Health and Safety Core Requirements
  - PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
  - PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
  - PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
- Industrial Hygiene Program Requirements
  - PUBH 6172 - Industrial Hygiene Applications (2.0 cr)
  - PUBH 6173 - Exposure to Physical Agents (2.0 cr)
  - PUBH 6174 - Control of Workplace Exposure (3.0 cr)
  - PUBH 6175 - Environmental Measurements Laboratory (2.0 cr)
  - PUBH 6192 - Measurement and Properties of Air Contaminants (2.0 cr)
PUBH 6193 - Advanced Topics in Human Exposure Science (2.0 cr)

HSAT Program Requirements

Optional certification

Take 0 or more credits(s) from the following:

• PUBH 6176 - Hazardous Materials and Waste Management (2.0 cr)
• One of the following:
  • PUBH 6190 - Environmental Chemistry (3.0 cr)
  • or CE 4561 - Solid Hazardous Wastes (3.0 cr)
  • or 40-hour Continuing Education Class (for example, one of the following from CPHEO):
    • (i) Safety and Health Training for Hazardous Waste Site Personnel, 40 hours;
    • (ii) Hazardous Materials Emergency Response, 40 hours

Industrial Hygiene Electives

Select electives in consultation with adviser.

Take 0 or more credits(s) from the following:

• PUBH 6112 - Risk Analysis: Application to Risk-Based Decision Making (3.0 cr)
• PUBH 6115 - Worker Protection Law (1.0 cr)
• PUBH 6116 - Environmental Law (1.0 cr)
• PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
• PUBH 6131 - Working in Global Health (2.0 cr)
• PUBH 6132 - Air, Water, and Health (2.0 cr)
• PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
• PUBH 6161 - Regulatory Toxicology (2.0 cr)
• PUBH 6176 - Hazardous Materials and Waste Management (2.0 cr)
• PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
• PUBH 6190 - Environmental Chemistry (3.0 cr)
• PUBH 6415 - Biostatistical Methods II (3.0 cr)
• PUBH 6451 - Biostatistics II (4.0 cr)
• PUBH 7220 - Personal Protective Equipment and Respiratory Protection (1.0 cr)
• PUBH 7260 - Ergonomics and the Prevention of Workplace Injuries (1.0 cr)
• CE 4561 - Solid Hazardous Wastes (3.0 cr)
• CE 5551 - Environmental Microbiology (3.0 cr)
• IE 5511 - Human Factors and Work Analysis (4.0 cr)
• IE 5513 - Engineering Safety (4.0 cr)
• KIN 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
• ME 5113 - Aerosol/Particle Engineering (4.0 cr)
• ME 5133 - Aerosol Measurement Laboratory (4.0 cr)
• PA 5721 - Energy and Environmental Policy (3.0 cr)
Twin Cities Campus
Epidemiology M.P.H.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 42 to 48
- This program does not require summer semesters for timely completion.
- Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Epidemiology is the science that describes quantitative trends in health and disease for populations, with application in the biological, environmental, behavioral, and social sciences. Epidemiologists generally collaborate with multidisciplinary teams of health professionals, such as physicians, laboratory scientists, exercise physiologists, nutritionists, statisticians, veterinarians, and behavioral scientists.

Epidemiologists analyze public health trends, design and implement studies, and interpret study results for policy and program development. Beyond investigation into the causes of disease, epidemiologists also develop intervention strategies to prevent disease and promote health. Epidemiologists work at both the individual and community levels to translate medical and laboratory data into population trends.

Accreditation
This program is accredited by Council on Education for Public Health (CEPH).

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)
- completely online (all program coursework can be completed online)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Preferred GRE performance expectation (test taken post August 2011): A combination of 300 on the quantitative and verbal sections of the test and a score of 3.5 on the analytical writing assessment. Some programs may have higher preferred minimum scores. Check specific programs for details.

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 500
  - General Test - Quantitative Reasoning: 500
  - General Test - Analytical Writing: 3.5

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
Key to test abbreviations (GRE, TOEFL, IELTS).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

## Program Requirements

**Plan B:** Plan B requires 22 major credits and 26 credits outside the major. The final exam is oral. A capstone project is required.

**Capstone Project:** The purpose of the master's project is to enable students to demonstrate:
- familiarity with the tools of research and scholarship in the field of public health;
- the ability to work independently;
- the ability to plan and carry out a systematic investigation related to a public health issue; and
- the ability to effectively present, in written and oral form, the results of their investigation.

The master's project for students in the epidemiology M.P.H. program may take one of three forms:
- A written report, often in the form of a manuscript suitable for publication in a peer-reviewed journal, that demonstrates the student's ability to do quantitative analyses, utilizing data collected by the student or obtained from another source
- A literature review, of publishable quality, which demonstrates the student's ability to critically review the literature and synthesize published findings on a medical or public
- An NIH Grant Proposal

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

### Required Courses

#### Epidemiology Core Courses (18 credits)

- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6343 - Epidemiologic Methods III (4.0 cr)
- PUBH 6390 - Topics: Epidemiology (0.5 - 4.0 cr)
- PUBH 7394 - Culminating Experience: Epidemiology (1.0 - 6.0 cr)
- PUBH 7396 - Field Experience: Epidemiology (1.0 - 5.0 cr)
- PUBH 6325 - Data Processing with PC-SAS (1.0 cr)  
  or PUBH 6617 - Practical Methods for Secondary Data Analysis (3.0 cr)  

  **"Epi of" Courses**

- PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)  
  or PUBH 6386 - Public Health Aspects of Cardiovascular Disease (2.0 cr)  
  or PUBH 6387 - Cancer Epidemiology (2.0 cr)

#### Biostatistics Courses (8 credits)

- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)

#### Public Health Core (8 credits)

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)  
  or PUBH 6101 - Environmental Health (2.0 cr)  
- PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)  
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)  
  or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)  
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

#### Basic Science Course (4 credits)

Not required for students with a prior-earned doctorate in a health-related discipline. Nurses or other health professionals may be exempt.

- PUBH 6355 - Pathophysiology of Human Disease (4.0 cr)

#### Electives (8-10 credits)

10 credits required for the standard program.

8 credits required for the accelerated program.

### Program Sub-plans
A sub-plan is not required for this program. Students may complete the program with more than one sub-plan.

Complementary and Alternative Medicine Interdisciplinary Concentration Area
The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an M.P.H. degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Global Health Interdisciplinary Concentration Area
The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause, and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.

Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad.

SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Health Disparities Interdisciplinary Concentration Area
The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to health care. Achieving optimum health for all segments of our society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite Minnesota’s ranking as one of the nation’s healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators. For example, according to the Minnesota Department of Health:
- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer, and HIV/AIDS are higher for many minority communities compared to the state as a whole.

SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Course Group 0

Public Health Policy Interdisciplinary Concentration Area
PHPIC coursework provides a better understanding of the health care system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can choose courses that emphasize:
- Understanding community dynamics
- Developing advocacy skills for public health
- Analyzing legal and policy structures
- Evaluating and implementing policies and programs
- Influencing community health
- Motivating and educating stakeholders and decision-makers
- Using policy as prevention strategy
- Eliminating health disparities through policy

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Information current as of October 02, 2012
SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus

Epidemiology M.S.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 30
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Note: Students are not admitted directly into the master of science program; it is available only by special arrangement with the program. Students interested in a master's degree in epidemiology should apply for the master of public health (M.P.H.) degree through the School of Public Health (SPH). For more information on the M.P.H. program, visit the SPH website at www.sph.umn.edu.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Special Application Requirements:
Students are not admitted directly into the master of science program; it is available only by special arrangement with the program. Students interested in a master's degree in epidemiology should apply for the master of public health (M.P.H.) program through the School of Public Health (SPH). For more information on the M.P.H. degree, visit the SPH website at www.sph.umn.edu.

International applicants must submit score(s) from one of the following tests:
• TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
• IELTS
  - Total Score: 7
• MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Plan B: Plan B requires 22 major credits and 8 credits outside the major. The final exam is oral. A capstone project is required.
Capstone Project: A master's project is required, equivalent to approximately 4 semester credits.

This program may be completed with a minor.
Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 1 semester must be completed before filing a Degree Program Form.

These requirements apply only to students admitted by special arrangement with the program; students are not admitted directly into the master's program. Students interested in a master's degree in epidemiology should apply for the master of public health (M.P.H.) program through the School of Public Health (SPH). For more information on the M.P.H. degree, visit the SPH website.
Twin Cities Campus

Epidemiology Minor
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E. Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2011
- Length of program in credits (Masters): 8
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Note: The minor in epidemiology is open only to students enrolled in master's and doctoral programs outside of the School of Public Health. Students enrolled in master's and doctoral programs in the School of Public Health are not eligible for this minor because the requirements in the epidemiology minor are part of their major field of study.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

The master's minor requires at least 8 credits.

The doctor's minor requires 12 credits: 10 credits in epidemiology and biostatistics, and 2 credits in epidemiology or methods courses. The director of graduate studies must approve the student's selection of elective credits.

The doctoral minor offers two 12-credit options. Option 1, for students with prior epidemiology training, consists of PUBH 8341 (3 credits), PUBH 8342 (3 credits), PUBH 7401 (4 credits), and two credits of electives in an epidemiology- or biostatistics-related area, to be approved by the epidemiology DGS.

Option 2, for students without extensive epidemiology/biostatistics training, consists of PUBH 6341 (3 credits), PUBH 6342 (3 credits), PUBH 6450 (4 credits), and two credits of electives in an epidemiology- or biostatistics-related area, to be approved by the epidemiology DGS. For more detailed information, please contact Andrea Kish at kish@umn.edu.
Twin Cities Campus

Epidemiology Ph.D.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Doctorate
- Requirements for this program are current for Fall 2011
- Length of program in credits: 63
- This program requires summer semesters for timely completion.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The epidemiology Ph.D. program is designed for students interested in research and teaching careers in the health sciences. Students select one of two formal tracks: clinical/biological epidemiology (CBE) or social/behavioral epidemiology (SBE). The two tracks, each with a minimum of 63 credits, emphasize advanced epidemiologic design, methodology, and analytic skills.

The social/behavioral epidemiology track focuses on origins and development of human behavior patterns and how they are influenced and formed by personality, family, culture, and environment. The clinical/biological epidemiology track focuses on the etiology of diseases, particularly cardiovascular, cancer, genetics, and infectious diseases. A detailed description of the details related to each track may be obtained online or by contacting the major coordinator at epichstu@umn.edu.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

For the doctoral program, applicants must have completed or be about to complete a master's degree in a related field.

Special Application Requirements:
Because of the program's strong emphasis on methodology, quantitative aptitude is very important. This can be demonstrated by scoring at or above the 70th percentile on the quantitative section of the GRE, along with satisfactory grades in college-level quantitative courses. At least three recommendations (form and separate letter) from faculty and/or work supervisors with knowledge of the applicant's scholastic and professional capabilities and potential, and a statement of goals and objectives (letter of intent) for seeking a career in epidemiology are also required.

In addition to the above materials, applicants for the Ph.D. program must submit a separate essay (statement of research interests) beyond what is required for the SOPHAS application process that provides evidence of their potential to conduct original research in a specific epidemiologic area and, if possible, that indicates an interest in particular methodologies or study designs. Serious doctoral applicants are encouraged to contact the major coordinator at epichstu@umn.edu before applying. Students begin their studies in the fall semester. Applications must be completed by December 1 of the year prior to beginning the doctoral program for scholarship consideration; the final deadline is February 15.

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Analytical Writing: 3.5

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
27 credits are required in the major.
12 credits are required outside the major.
24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.25 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Students may select one of two formal tracks; both have an applied perspective that emphasizes study design, measurement, quantitative analysis, and data interpretation. Social/behavioral epidemiology focuses on origins and development of human behavior patterns and how they are influenced and formed by personality, family, culture, and environment. Clinical/biological epidemiology focuses on the biological causes of diseases, especially determinants of cardiovascular disease, cancer, infectious diseases, and genetic epidemiology.

The Ph.D. program includes a minimum curriculum of 63 credits. Students must pass written and oral preliminary exams, serve as a TA for 1 semester, write and defend a dissertation, and prepare a first-authored manuscript for publication.

Coursework includes 16 credits in epidemiology, biostatistics, ethics, writing grants, and teaching core courses common to both tracks; 6 credits in advanced methodology/statistics that focus on track-specific courses; 4 credits of content-area courses; and 13 credits of supporting program or minor coursework. In addition, the Graduate School requires 24 thesis credits as part of the doctoral requirements that can be taken once the preliminary qualifying exams are completed.

Required Coursework
17 credits plus 24 thesis credits

PUBH 7401 - Fundamentals of Biostatistical Inference (4.0 cr)
PUBH 6348 - Writing Research Grants (2.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)
GRAD 8101 - Teaching in Higher Education (3.0 cr)
PUBH 8341 - Advanced Epidemiologic Methods: Concepts (3.0 cr)
PUBH 8342 - Advanced Epidemiologic Methods: Applications (3.0 cr)

Program Sub-plans
Students are required to complete one of the following sub-plans. Students may not complete the program with more than one sub-plan.

Clinical/Biological Epidemiology
Clinical/biological epidemiology focuses on the biological causes of diseases, especially determinants of cardiovascular disease, cancer, infectious diseases, and genetic epidemiology.

Clinical/Biological Track
Clinical/Biological Track (22 credits minimum)
PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
Biological Methods/Statistics (6 credits minimum).
Choose additional credits from the following courses:

- PUBH 6363 - Design and Analysis of Group-Randomized Trials in Epidemiology (3.0 cr)
- PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)
- PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
- PUBH 7435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
- PUBH 7407 - Analysis of Categorical Data (3.0 cr)
- EPSY 8268 - Hierarchical Linear Modeling in Educational Research (3.0 cr)
- EPSY 8282 - Statistical Analysis of Longitudinal Data (3.0 cr)
- PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
- PUBH 6915 - Nutrition Assessment (2.0 cr)
- PUBH 7445 - Statistics for Human Genetics and Molecular Biology (3.0 cr)
- PUBH 8141 - Doctoral Seminar in Observational Inference (2.0 cr)
- PUBH 6355 - Pathophysiology of Human Disease (4.0 cr)

Content area courses (4 credits minimum)

- PUBH 6386 - Public Health Aspects of Cardiovascular Disease (2.0 cr)
- PUBH 6387 - Cancer Epidemiology (2.0 cr)
- PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
- PUBH 6381 - Genetics in Public Health (2.0 cr)
- PUBH 6389 - Nutritional Epidemiology (2.0 cr)
- PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)

Supporting Program/Minor Credits

13 credits minimum. Chosen in consultation with adviser. Potential supporting program courses include courses from the additional biological methods/statistics courses listed above not used to satisfy the biological methods/statistics requirement, or other appropriate courses. Other courses can be considered with adviser's approval.

Social/Behavioral Epidemiology

This sub-plan is optional and does not fulfill the sub-plan requirement for this program.

Social/behavioral epidemiology focuses on origins and development of human behavior patterns and how they are influenced and formed by personality, family, culture, and environment.

Social/Behavioral Track

Social/Behavioral Track (22 credits minimum)

Behavioral Methods/Statistics (6 credits minimum)

- PUBH 6363 - Design and Analysis of Group-Randomized Trials in Epidemiology (3.0 cr)

Take 1 or more course(s) totaling 0 or more credits(s) from the following:

- PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)
- PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
- PUBH 7435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
- PUBH 7407 - Analysis of Categorical Data (3.0 cr)
- PUBH 7407 - Analysis of Categorical Data (3.0 cr)
- EPSY 8268 - Hierarchical Linear Modeling in Educational Research (3.0 cr)
- EPSY 8282 - Statistical Analysis of Longitudinal Data (3.0 cr)
- PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
- PUBH 6915 - Nutrition Assessment (2.0 cr)
- EPSY 8264 - Advanced Multiple Regression Analysis (3.0 cr)
- EPSY 8267 - Applied Multivariate Analysis (3.0 cr)
- EPSY 8221 - Psychological Scaling (3.0 cr)

Content area courses (4 credits minimum)

- PUBH 6333 - Principles of Human Behavior I (2.0 cr)
- PUBH 6334 - Human Behavior II (2.0 cr)

Supporting Program/Minor Credits

13 credits minimum. Chosen in consultation with adviser. Potential supporting program courses include courses from the additional biological methods/statistics courses listed above not used to satisfy the biological methods/statistics requirement, or other appropriate courses. Other courses can be considered with adviser's approval.
**Twin Cities Campus**

**Gerontology Minor**

*School of Public Health - Adm*

**School of Public Health**

Link to a list of faculty for this program.

**Contact Information:**
Graduate Minor Program in Gerontology, Center on Aging/MAGEC, School of Public Health, MMC 197, Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-624-1185)
Email: coa@umn.edu
Website: [http://www.coa.umn.edu/education/GerontologyMinor/index.htm](http://www.coa.umn.edu/education/GerontologyMinor/index.htm)

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2011
- Length of program in credits (Masters): 8
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The gerontology minor is available to master's (M.A. and M.S.) and doctoral students. The minor provides a multidisciplinary foundation in gerontology for the master's minors and a more intensive preparation in aging for Ph.D. minors. Past students who have minored in gerontology have majored in many departments, including but not limited to: curriculum and instruction (adult education); communication disorders; dentistry; design, housing, and apparel; family medicine and community health; family social science; journalism and mass communication; kinesiology; nursing; psychology; social work; and sociology. The program of courses is tailored in advance, with consultation between the student and the director of graduate studies of the gerontology minor.

**Program Delivery**

This program is available:
- via classroom (the majority of instruction is face-to-face)
- completely online (all program coursework can be completed online)
- primarily online (at least 80% of the instruction for the program is online with short, intensive periods of face-to-face coursework)
- partially online (between 50% to 80% of instruction is online)

**Program Requirements**

Use of 4xxx courses towards program requirements is not permitted.

The master's and doctoral minors are developed in consultation with, and should be approved in advance by, the director of graduate studies for gerontology. The master's minor requires at least 8 credits, including GERO 5105 - Multidisciplinary Perspectives on Aging (3 cr), or an alternative course approved by the director of graduate studies. The doctoral minor requires at least 12 credits.

Courses are ordinarily taken from a designated course list provided by the Center on Aging and annually updated by the minor program. Students are welcome to identify and propose to the director of graduate studies additional courses on aging that might fulfill the minor requirements.

**Graduate Program Requirements**

**Master's Minor**

Take 8 or more credits(s) from the following:
- **FSOS 8105** - Family Gerontology (3.0 cr)
- **GERO 5105** - Multidisciplinary Perspectives on Aging (3.0 cr)
- **GERO 5100** - Topics in Gerontology (0.5 - 4.0 cr)
- **GERO 5110** - Biology of Aging (3.0 cr)
- **GERO 5111** - Studying Aging and Chronic Illness (2.0 cr)
- **GERO 5115** - Introduction to Geriatrics (2.0 cr)
- **GERO 5125** - Gerontology Service Learning (3.0 cr)
- **GERO 8020** - Seminar in Gerontology (2.0 cr)
- **PA 5412** - Aging and Disability Policy (3.0 cr)
• PSY 5138 - Psychology of Aging (3.0 cr)
• PUBH 6904 - Nutrition and Aging (2.0 cr)
• PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)
• SW 5313 - Social Work with Older Adults (2.0 cr)
• SW 5810 - Seminar: Special Topics (1.0 - 4.0 cr)

-OR-

Doctoral Minor
Take 12 or more credits(s) from the following:
• FSOS 8105 - Family Gerontology (3.0 cr)
• GERO 5105 - Multidisciplinary Perspectives on Aging (3.0 cr)
• GERO 5100 - Topics in Gerontology (0.5 - 4.0 cr)
• GERO 5110 - Biology of Aging (3.0 cr)
• GERO 5111 - Studying Aging and Chronic Illness (2.0 cr)
• GERO 5115 - Introduction to Geriatrics (2.0 cr)
• GERO 5125 - Gerontology Service Learning (3.0 cr)
• GERO 8020 - Seminar in Gerontology (2.0 cr)
• PA 5412 - Aging and Disability Policy (3.0 cr)
• PSY 5138 - Psychology of Aging (3.0 cr)
• PUBH 6904 - Nutrition and Aging (2.0 cr)
• PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)
• SW 5313 - Social Work with Older Adults (2.0 cr)
• SW 5810 - Seminar: Special Topics (1.0 - 4.0 cr)
Twin Cities Campus
Health Care Administration M.H.A.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 42 to 60
- This program requires summer semesters for timely completion.
- Degree: Master of Healthcare Administration

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The full-time master of healthcare administration (M.H.A.) program is appropriate for applicants with limited or no healthcare work experience or individuals who wish to make a career change from industries other than health care. Now ranked second in the nation by U.S. News & World Report, the program is accredited by the CAHME.

The program's consistently high rankings are a reflection of many factors—an outstanding faculty of researchers and practitioners, location in one of the nation's centers of healthcare innovation, an extraordinary alumni association, and a track record of educating outstanding leaders for the healthcare industries.

Accreditation
This program is accredited by Commission on Accreditation of Healthcare Management Education

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Full-time program applicants should have a strong commitment to managing people and resources to create and sustain outstanding healthcare services and organizations. Strong quantitative and communication skills are essential; prior experience in health care is not required.

Other requirements:
- Bachelor's degree from an accredited college or university
- Post August 2011 GRE test with a combination of 300 on the quantitative and verbal sections of the test and a score of 3.5 on the analytical writing assessment
- Letter of intent
- Resume
- Official transcripts
- Three letters of recommendation
- On-site panel interview (telephone interview for international applications)

Special Application Requirements:
For the executive program: At least three years of management or clinical leadership experience in a healthcare organization is required. The program reserves the right to require the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT) as a part of the admissions process.

For the full-time program: To prepare for the program's rigorous curriculum, the faculty highly recommends the following coursework prior to matriculation:
Statistics
Accounting
Microeconomics
Finance

Applicants must submit their test score(s) from the following:

- **GRE**
  - General Test - Verbal Reasoning: 500
  - General Test - Quantitative Reasoning: 500
  - General Test - Analytical Writing: 3.5
- **GMAT**
  - Total score: 500

International applicants must submit score(s) from one of the following tests:

- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7
- **MELAB**
  - Final score: 80

Key to test abbreviations (GRE, GMAT, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the [General Information](#) section of the catalog website.

**Program Requirements**

**Plan C:** Plan C requires 42 to 60 major credits and null credits outside the major. The final exam is written and oral. A capstone project is required.

**Capstone Project:** Please see website for information: [www.sph.umn.edu](http://www.sph.umn.edu)

This program may not be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 4 semesters must be completed before filing a Degree Program Form.

**Required Courses**

- **PUBH 6560** - Operations Research and Quality in Health Care (2.0 cr)
- **PUBH 6556** - Health and Health Systems (2.0 - 3.0 cr)
- **PUBH 6541** - Statistics for Health Management Decision Making (3.0 cr)
- **PUBH 6562** - Information Technology in Health Care (2.0 cr)
- **PUBH 6535** - Managerial Accounting for Health Services (3.0 cr)
- **PUBH 6547** - Health Care Human Resources Management (2.0 cr)
- **PUBH 6557** - Health Finance I (3.0 cr)
- **PUBH 6555** - Topics in Health Economics (2.0 cr)
- **PUBH 6556** - Health Finance II (3.0 cr)
- **PUBH 6565** - Innovation of Healthcare Services (2.0 cr)
- **PUBH 6564** - Private Purchasers of Health Care: Roles of Employers and Health Plans in U.S. Health Care System (2.0 cr)
- **PUBH 6553** - Health Care Management Ethics (1.0 cr)
- **PUBH 6596** - Legal Considerations in Health Services Organizations (2.0 cr)

In addition to the required courses above, students must choose one of the following options:

**Executive MHA**

The Executive MHA is specifically designed for practicing executives, physicians, and other healthcare professionals seeking to advance their management and leadership capabilities. This is a 42-credit, 25-month program.

- **PUBH 6569** - Healthcare Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6553 - Health Care Management Ethics (1.0 cr)
PUBH 6596 - Legal Considerations in Health Services Organizations (2.0 cr)
PUBH 6570 - Topics: Organizational Integration in Healthcare Delivery (2cr)
PUBH 6570 - Topics: Healthcare Strategies in Competitive Markets (2cr)
PUBH 6570 - Topics: Healthcare Marketing (1cr)
PUBH 6570 - Topics: Managing the Embedded Medical Practice (2cr)
PUBH 6566 - Topics: Core Concepts in Managing Healthcare Options (1cr)
PUBH 6567 - Topics: Core Concepts in Managing Healthcare Options (1cr)

-OR-

Full-time MHA
This program is appropriate for applicants with limited or no healthcare work experience or individuals who wish to make a career change. This is a 60-credit, two-year program.

Year 1: An Introduction to Healthcare Administration
PUBH 6544 - Principles of Problem Solving in Health Services Organizations (3.0 cr)
PUBH 7596 - Clerkship in Health Care Administration (2.0 cr)
Electives (2-4 cr) - can take up to 4 elective credits during Year I

Year II: Advanced Courses and Specialization in Healthcare Administration
PUBH 6832 - Economics of the Health Care System (3.0 cr)
PUBH 6568 - Interprofessional Teamwork in Health Care (2.0 cr)
ENTR 6041 - New Product Design and Business Development (2.0 - 4.0 cr)
PUBH 6554 - Healthcare Strategy and Marketing (2.0 cr)
PUBH 6727 - Health Leadership and Effecting Change (2.0 cr)
Electives (2-4 cr) - can take up to 4 elective credits during Year II
ENTR 6041 - New Product Design and Business Development (2.0 - 4.0 cr)
or PUBH 6577 (2 cr) Advanced Problem Solving.

Program Sub-plans
A sub-plan is not required for this program.
Students may not complete the program with more than one sub-plan.

Online

Saudi Arabia
Twin Cities Campus
Health Services Research, Policy, and Administration M.S.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 46 to 52
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The master of science in health services research, policy, and administration (M.S.-HSRP&A) is an excellent program for those who wish to develop their analytical capabilities to contribute to healthcare management, health services research, or health policy work.

The M.S.-HSRP&A focuses on the organization, delivery, and quality of health services. It deals with policy issues related to costs, access, and quality of health services and equitable distribution of health resources. The core curriculum is a multidisciplinary examination of the social, political, and economic forces that affect the organization, financing, and delivery of healthcare services. Students develop analytical capabilities that may be applied to healthcare management, health services research, or health policy work. Strong quantitative skills are essential.

The program's core quantitative emphasis is enhanced by interest areas in program evaluation, analytic healthcare management, and health services research applications.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Preferred GRE scores from exams taken before August 1, 2011, are: Verbal: 500, Quantitative 500, Analytical Writing: 3.5.

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 153
  - General Test - Quantitative Reasoning: 144
  - General Test - Analytical Writing: 3.5

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).
For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan A: Plan A requires 33 to 36 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 37 major credits and 9 credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: A written research project that demonstrates knowledge of a topic within the field of health services research.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

Focus Requirements

Plan A: Outcomes Research (49-52 credits)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6343 - Epidemiologic Methods III (4.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 6863 - Understanding Health Care Quality (2.0 cr)
- PUBH 8813 - Measurement of Health-Related Social Factors (3.0 cr)
- PUBH 8810 - Research Studies in Health Care (3.0 cr)
- PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6864 - Conducting Health Outcomes Research (3.0 cr)
- PUBH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)
- Electives (6 credits)

-OR-

Plan B: Research and Policy (46 credits)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- PUBH 6832 - Economics of the Health Care System (3.0 cr)
- PUBH 6806 - Principles of Public Health Research (2.0 cr)
- PUBH 6802 - Managing Electronic Health Information (3.0 cr)
- PUBH 6835 - Principles of Health Policy (2.0 cr)
- PUBH 6855 - Medical Sociology (3.0 cr)
- PUBH 6470 - SAS Procedures and Data Analysis (3.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 7784 - Master's Project Seminar: PHAP and HSRP&A (1.0 cr)
- PUBH 7894 - MS in Health Services Research, Policy, and Administration Plan B Project (1.0 - 2.0 cr)
- Electives (9 credits) chosen from a structured interest area

Joint- or Dual-degree Coursework: Joint Degree Program with Law and M.S. in Health Services Research, Policy, and Administration (J.D./M.S.). Student may take a total of 9 credits in common among the academic programs.
Twin Cities Campus

Health Services Research, Policy, and Administration Minor

School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2011
- Length of program in credits (Masters): 6
- Length of program in credits (Doctorate): 12
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The minor in health services research, policy, and administration (HSRP&A) is available as a minor to other M.S. and Ph.D. students across the University. HSRP&A emphasizes a population health orientation research and policy perspective and analytic methods related to health policy and healthcare systems.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

Ph.D. and M.S. Minor Required Coursework
The HSRP&A minor coursework must be chosen from within that major from the following course number sequences: PUBH 65xx, PUBH 67xx, PUBH 68xx, or PUBH 88xx.

The master's minor requires 6 credits and is individually tailored with the advice and approval of the HSRP&A program director. The Ph.D. minor requires 12 credits, of which 2 courses are prescribed below. The remaining credits can be selected from other HSRP&A courses.

PUBH 6556 - Health and Health Systems (2.0 - 3.0 cr)
or PUBH 6724 - The Health Care System and Public Health (3.0 cr)
PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)
or PUBH 8802 - Health Services Policy Analysis: Applications (2.0 cr)
Twin Cities Campus
Health Services Research, Policy, and Administration Ph.D.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

• Program Type: Doctorate
• Requirements for this program are current for Fall 2011
• Length of program in credits: 75 to 81
• This program does not require summer semesters for timely completion.
• Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Health services research is a multidisciplinary field of study. Health services researchers examine how social factors, government policies, financing systems, organizational structures, and personal behaviors affect access to needed care, the quality of care provided, and the cost of care delivery. The focus of research is broad and includes individuals, families, providers, healthcare organizations, communities, and populations. The field of health services research is ultimately interested in both "health," understood as health status and well-being; as well as "health care," understood as the effective delivery of healthcare services.

The doctoral program in health services research, policy, and administration is primarily for students interested in academic careers or senior research positions in government or the private sector. The core curriculum is a multidisciplinary examination of the social, political, and economic forces that affect the organization, financing, and delivery of health care services. The emphasis is on theory, modeling, and quantitative methods. Coursework is complemented by the student's involvement with faculty on health services research projects; through weekly academic research seminars; doctoral colloquia, and conference presentations.

Students come from a variety of educational backgrounds, including decision sciences, economics, political science, sociology, business, engineering, and public affairs. Strong quantitative skills are essential.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Preferred GRE scores from exams taken before August 1, 2012 are: Verbal: 600, Quantitative: 600, Analytical Writing: 5.0

The Ph.D. program requires prerequisites in calculus and statistics. Applicants who have not completed the prerequisites, but are otherwise qualified for admission, are required to take relevant courses at the University or another accredited institution before beginning the program.

Special Application Requirements:
All applicants must submit the following: official grade transcripts from all previous academic institutions; a statement indicating reasons for seeking the Ph.D. in health services research, policy, and administration, and elaborating on the applicant's research interests; three letters of reference attesting to the applicant's academic ability and potential for a career in health services research or academia, and a résumé, or C.V. Students are admitted fall semester only. The programs are full time, on campus.

Applicants must submit their test score(s) from the following:
• GRE
  - General Test - Verbal Reasoning: 153
  - General Test - Quantitative Reasoning: 144
  - General Test - Analytical Writing: 5
International applicants must submit score(s) from one of the following tests:

- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7
- **MELAB**
  - Final score: 80

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

**Program Requirements**

30 to 31 credits are required in the major.

21 to 26 credits are required outside the major.

24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

All doctoral students complete coursework in the required core area, specialized area of emphasis courses, and a supporting program within their area of emphasis.

The options for area of emphasis are: multidisciplinary social sciences, sociology of health and illness, health decision science, health organization and management science, clinical outcomes research, health policy, and health economics.

**Required Courses**

All doctoral students complete the Ph.D. core.

- PUBH 7401 - Fundamentals of Biostatistical Inference (4.0 cr)
- PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)
- PUBH 8810 - Research Studies in Health Care (3.0 cr)
- PUBH 8811 - Research Methods in Health Care (3.0 cr)
- PUBH 8830 - Writing for Research (2.0 cr)
- PUBH 8831 - Writing for Research (2.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6832 - Economics of the Health Care System (3.0 cr)
- PUBH 6855 - Medical Sociology (3.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 6835 - Principles of Health Policy (2.0 cr)
  - or PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)

**Area of Emphasis Options**

**Multidisciplinary Social Science**

All doctoral students complete the Ph.D. core courses.

- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)
- PUBH 8805 - Sociological Theory in Health Services Research (3.0 cr)
- APEC 5151 - Applied Microeconomics: Firm and Household (3.0 cr)

Choose one additional theory course to be decided with your adviser.

- PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
- or PUBH 8821 - Health Economics II (3.0 cr)
- or APEC 8203 - Applied Welfare Economics and Public Policy (3.0 cr)
- or SOC 8701 - Sociological Theory (4.0 cr)
- or SOC 8721 - Theories of Social Psychology (3.0 cr)
Health Organizations and Management Science
All doctoral students complete the Ph.D. core.
PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)
or PUBH 6835 - Principles of Health Policy (2.0 cr)
Take 6 - 8 credits(s) from the following:
• IDSC 8711 - Cognitive Science (4.0 cr)
• MGMT 8301 - Seminar in Organizational Behavior (4.0 cr)
• MGMT 8302 - Seminar in Organizations Theory (4.0 cr)
• SCO 8721 - Management of Technological Operations (3.0 cr)
• SCO 8745 - Research on Quality Management (3.0 cr)
• PUBH 8894 - Directed Research: Health Services Research, Policy, and Administration (1.0 - 8.0 cr)
• SOC 8412 - Social Network Analysis: Theory and Methods (3.0 cr)
SOC 8412 - Social Network Analysis: Theory and Methods (3.0 cr)
or NURS 8171 - Qualitative Research Design and Methods (3.0 - 4.0 cr)
Supporting Program
Students are required to select a minimum of 12 credits for a supporting program with advice from adviser and area of emphasis faculty.

Health Decision Science
All doctoral students complete the Ph.D. core.
PUBH 6835 - Principles of Health Policy (2.0 cr)
PUBH 6717 - Decision Analysis for Health Care (2.0 cr)
PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
PUBH 6809 - Advanced Methods in Health Decision Science (3.0 cr)
Choose a minimum of 2 credits from the following:
• IDSC 8721 - Behavioral Decision Theory (2.0 cr)
• IDSC 8711 - Cognitive Science (4.0 cr)
• IDSC 8511 - Conceptual Topics and Research Methods in Information and Decision Sciences (4.0 cr)
Supporting program must total a minimum of 12 credits, and must be approved by the area of emphasis faculty.
Take 12 or more credits(s) from the following:
• IE 5112 - Introduction to Operations Research (3.0 cr)
• PUBH 7450 - Survival Analysis (3.0 cr)
• PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
• PUBH 7440 - Introduction to Bayesian Analysis (3.0 cr)

Sociology of Health and Illness
All doctoral students complete the Ph.D. core.
Core Policy Course
PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)
or PUBH 6835 - Principles of Health Policy (2.0 cr)
Area of Emphasis Required Courses (theoretical foundations)
Take 6 or more credits(s) from the following:
• PUBH 8805 - Sociological Theory in Health Services Research (3.0 cr)
• SOC 8701 - Sociological Theory (4.0 cr)
• Sociology of Knowledge (3 cr)
or Seminar in Organizations Theory (4cr)
or Race Relations Theory (3cr)
Take 12 or more credits(s) including 2 or more sub-requirements(s) from the following:
• Area of Specialization (disparities, demography, social networks, family, etc.)
  • Take 8 or more credits(s) from the following:
    • SOC 8735 - Sociology of Culture (3.0 cr)
    • SOC 8590 - Topics in Life Course Sociology (3.0 cr)
    • SOC 8390 - Topics in Political Sociology (3.0 cr)
    • SOC 8101 - Sociology of Law (3.0 cr)
    • SOC 8290 - Topics in Social Stratification (3.0 cr)
    • SOC 8501 - Sociology of the Family (3.0 cr)
    • SOC 8221 - Sociology of Gender (3.0 cr)
• Advanced Methodology
  • Take 4 or more credits(s) from the following:
    • PSY 8881 - Seminar: Quantitative and Psychometric Methods (3.0 cr)
• PUBH 8813 - Measurement of Health-Related Social Factors (3.0 cr)
• PUBH 6811 - Health Disparities Research: Measures, Methods, and Data (2.0 cr)
• POL 8126 - Qualitative Methods (3.0 cr)
• PUBH 6845 - Using Demographic Data for Policy Analysis (3.0 cr)

-OR-

Clinical Outcomes Research
All doctoral students complete the Ph.D. core.

Core Policy Course
PUBH 6835 - Principles of Health Policy (2.0 cr)
or PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)

Area of Emphasis Required Courses
PUBH 6342 - Epidemiologic Methods II (3.0 cr)
PUBH 6343 - Epidemiologic Methods III (4.0 cr)
PUBH 6864 - Conducting Health Outcomes Research (3.0 cr)
PUBH 6863 - Understanding Health Care Quality (2.0 cr)
PUBH 7450 - Survival Analysis (3.0 cr)

Supporting Program
Take 12 or more credits from the following:
• PUBH 6717 - Decision Analysis for Health Care (2.0 cr)
• PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
• PUBH 8813 - Measurement of Health-Related Social Factors (3.0 cr)
• PUBH 6803 - Conducting a Systematic Literature Review (3.0 cr)
• PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
• PUBH 6810 - Survey Research Methods (3.0 cr)

-OR-

Health Policy
All doctoral students complete the Ph.D. core.

Prerequisites
By the end of the first year, take, substitute, or test out of one of the following courses:
PUBH 6724 - The Health Care System and Public Health (3.0 cr)
or PUBH 6556 - Health and Health Systems (2.0 - 3.0 cr)

Core Policy Course
PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)

Area of Emphasis Required Coursework
PUBH 6845 - Using Demographic Data for Policy Analysis (3.0 cr)
PUBH 8802 - Health Services Policy Analysis: Applications (2.0 cr)

Supporting Program (minimum 12 credits)
Take 12 or more credits from the following:
• PUBH 6717 - Decision Analysis for Health Care (2.0 cr)
• PUBH 6810 - Survey Research Methods (3.0 cr)
• PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
• PUBH 8813 - Measurement of Health-Related Social Factors (3.0 cr)
• PUBH 6811 - Health Disparities Research: Measures, Methods, and Data (2.0 cr)

-or Must be approved prior to taking courses (e.g. LTC, economics, health disparities, ethics, and other courses with approval of policy faculty.

-OR-

Health Economics
All doctoral students complete the Ph.D. core.

Prerequisites
Calculus, statistics and micro-economics

Core Policy Course
PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)

Area of Emphasis Required Core
PUBH 8821 - Health Economics II (3.0 cr)
APEC 8001 - Applied Microeconomic Analysis of Consumer Choice and Consumer Demand (2.0 cr)
APEC 8002 - Applied Microeconomic Analysis of Production and Choice Under Uncertainty (2.0 cr)
APEC 8003 - Applied Microeconomic Analysis of Game Theory and Information (2.0 cr)
APEC 8004 - Applied Microeconomic Analysis of Social Choice and Welfare (2.0 cr)

-or Microeconomic Analysis
ECON 8001 - Microeconomic Analysis (2.0 cr)
ECON 8002 - Microeconomic Analysis (2.0 cr)
ECON 8003 - Microeconomic Analysis (2.0 cr)
ECON 8004 - Microeconomic Analysis (2.0 cr)

or **Microeconomic Theory**
- ECON 8101 - Microeconomic Theory (2.0 cr)
- ECON 8102 - Microeconomic Theory (2.0 cr)
- ECON 8103 - Microeconomic Theory (2.0 cr)
- ECON 8104 - Microeconomic Theory (2.0 cr)

Take 12 or more credits(s) including 1 or more sub-requirements(s) from the following:

- Students who choose to take APEC 8211, must also take 8212. Students who choose to take ECON 8205, must take either 8206, 8207, or 8208.
- Students who choose to take ECON 8117, must also take 8118.
- Take 2 or more course(s) from the following:
  - APEC 8211 - Econometric Analysis I (4.0 cr)
  - APEC 8212 - Econometric Analysis II (4.0 cr)
  - ECON 8205 - Applied Econometrics (2.0 cr)
  - ECON 8206 - Applied Econometrics (2.0 cr)
  - ECON 8207 - Applied Econometrics (2.0 cr)
  - ECON 8208 - Applied Econometrics (2.0 cr)
  - HRIR 8811 - Advanced Quantitative Research Methods in Human Resources and Industrial Relations (2.0 - 4.0 cr)
  - HRIR 8812 - Core Seminar: Human Resources and Industrial Relations Research Methods (4.0 cr)
  - ECON 8117 - Noncooperative Game Theory (2.0 cr)
  - ECON 8118 - Noncooperative Game Theory (2.0 cr)
  - APEC 8202 - Mathematical Optimization in Applied Economics (3.0 cr)
  - APEC 8205 - Applied Game Theory (3.0 cr)
  - APEC 8206 - Dynamic Optimization: Applications in Economics and Management (3.0 cr)
- Students may use these courses to reach the overall 12-credit requirement.
- Take 0 or more course(s) from the following:
  - ECON 8xxx
  - APEC 8xxx
  - PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
Twin Cities Campus
Management Fundamentals Postbaccalaureate Certificate
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
Student Services Center School of Public Health, D305 Mayo Memorial Building, MMC 819, 420 Delaware Street S.E., Minneapolis, MN 55455(612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2011
- Length of program in credits: 13
- This program does not require summer semesters for timely completion.
- Degree: Management Fundamentals PBacc Certificate

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The management fundamentals certificate is specifically designed for employed executives, physicians, and other healthcare professionals seeking to advance their management and leadership capabilities. Specific features of this design include a curriculum that parallels the first portion of the executive M.H.A. curriculum. Students in the certificate who decide to pursue the executive M.H.A. can apply to the program and, if admitted, complete the degree by finishing the executive M.H.A. curriculum.

The curriculum includes a focus on the management of complex, integrated health systems, including the expanded role of physicians as providers, managers, and leaders in those systems. Program faculty are actively involved in applied research with health systems with a focus on integrated health system performance. The on-campus session invites alumni and expert speakers to participate with students in symposia and other learning events.

Students complete the certificate in eight months. The program is designed to minimize interference with work and family: most of the coursework is online and asynchronous; students spend only eight days on campus at the outset of the program. The program builds on the practical application of learning to the participant's organization. The program is based on a learning cohort model in which all students start the program together and progress through the same curriculum providing myriad opportunities for students to learn and work together.

Accreditation
This program is accredited by Commission on Accreditation of Healthcare Management.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Special Application Requirements:
Admission to the certificate is decided by the M.H.A. faculty with the advice and counsel of an admissions committee. Admission to the certificate requires the following:
- a bachelor's degree from an accredited college or university
- at least two years experience in a healthcare organization
- current employment in a healthcare organization which affords the opportunity to apply the assignments in the coursework, or an agreement with such an organization in which the applicant is not employed
- a letter of intent describing career interests and the relevance of the certificate to the applicant's personal development

In addition, as noted in the SPH Catalog, applicants whose native language is not English or whose education was completed exclusively at an institution(s) whose language of instruction was not in English must prove English proficiency.

Because the coursework in Certificate 1 is the same as that of the executive M.H.A., some enrollees in the certificate may decide to
pursue the executive M.H.A. after completing the first or second semester of the certificate. Students interested in that option will be required to meet the requirements for admission to the executive M.H.A.

Note: All students in the management fundamentals certificate will be expected to bring a personal computer to the on-campus sessions.

Other than the admission requirements, there are no prerequisites.

International applicants must submit score(s) from one of the following tests:

- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

**Plan C:** Plan C requires 50 major credits and 10 credits outside the major. The final exam is written and oral. A capstone project is required.

**Capstone Project:** The capstone project for the M.H.A. program builds upon the coursework throughout the program. Students integrate and synthesize the knowledge, attitudes and skills acquired in the curriculum and apply them to the resolution of a significant management problem in a healthcare organization. The capstone project also provides one of the last opportunities in the M.H.A. program for students to further develop and demonstrate their leadership and team competencies, and receive constructive feedback on these competencies, prior to graduation.

M.H.A. students have three options to choose from as they complete their capstone requirement: (1) the Advanced Problem Solving Course; (2) the Carlson Consulting Enterprise Experiential Learning Program; and (3) the New Product Development Course.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 4 semesters must be completed before filing a Degree Program Form.

**Required Coursework**

- PUBH 6562 - Information Technology in Health Care (2.0 cr)
- PUBH 6556 - Health and Health Systems (2.0 - 3.0 cr)
- PUBH 6535 - Managerial Accounting for Health Services (3.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- PUBH 6557 - Health Finance I (3.0 cr)
- PUBH 6568 - Interprofessional Teamwork in Health Care (2.0 cr)
**Twin Cities Campus**

Maternal and Child Health M.P.H.

School of Public Health - Adm

School of Public Health

Link to a list of faculty for this program.

**Contact Information:**

School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)

Email: sph-SSC@umn.edu

Website: [http://www.sph.umn.edu](http://www.sph.umn.edu)

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 42 to 48
- This program requires summer semesters for timely completion.
- Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the [General Information](#) section of the catalog website for requirements that apply to all major fields.

While the name of the program, Maternal and Child Health (MCH), may suggest that a focus only on mothers and children, the M.P.H. in maternal and child health program is dedicated to improving the health of youth and families too. The program is especially interested in socially vulnerable populations and the environments, behaviors, and policies that affect their long-term health and well-being.

Students come from a variety of backgrounds, but share a common interest in social justice and public health principles. Graduates quickly assume leadership roles in non-profit organizations, research settings, state and local public health agencies, and healthcare organizations.

The program has a standard, on-campus curriculum (with the option of an epidemiology emphasis) and an online curriculum.

**Accreditation**

This program is accredited by Council on Education for Public Health (CEPH).

**Program Delivery**

This program is available:

- via classroom (the majority of instruction is face-to-face)
- primarily online (at least 80% of the instruction for the program is online with short, intensive periods of face-to-face coursework)

**Prerequisites for Admission**

The preferred undergraduate GPA for admittance to the program is 3.00.

At least one year's work or volunteer experience in a clinical, community-based, public health or managed-care agency/program that focuses on women, children, adolescents, and/or families.

Basic understanding of physiological and/or psychological human development as demonstrated by coursework, experience, and/or referenced readings.

Applicants to the online track must hold either an advanced degree (M.S., M.D., M.A., M.S.W., etc.) or have 3-5 years of experience directly related to maternal and child health.

Applicants must submit their test score(s) from the following:

- GRE
  - General Test - Verbal Reasoning: 500
  - General Test - Quantitative Reasoning: 500
  - General Test - Analytical Writing: 3.5

International applicants must submit score(s) from one of the following tests:

- TOEFL
Program Requirements

Plan B: Plan B requires 36 to 42 major credits and 10 to 22 credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: Students may choose from four options for the M.P.H. project. The choice of options should be decided in consultation with their adviser. The options are:
1. Research project
2. Technical report
3. Critical literature review project
4. Research proposal

Students with an M.C.H. epidemiology emphasis are encouraged to select the research report or the research proposal.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

Standard or Epidemiology Emphasis

Standard Curriculum

The standard curriculum is for students without advanced degrees or who have limited professional experience. Students complete a minimum of 48 credits in two years.

Scientific Basis courses (8 credits)

- PUBH 6600 - Topics: Maternal and Child Health (0.5 - 4.0 cr)
- PUBH 6605 - Reproductive and Perinatal Health (2.0 cr)
- PUBH 6606 - Children's Health: Issues, Programs, and Policies (2.0 cr)
- PUBH 6607 - Adolescent Health: Issues, Programs, and Policies (2.0 cr)
- PUBH 6613 - Children and Youth With Special Health Care Needs (2.0 cr)
- PUBH 6675 - Women's Health (2.0 cr)
- PUBH 6902 - Maternal, Infant, and Preschool Nutrition (2.0 cr)
- PUBH 6903 - Child and Adolescent Nutrition (2.0 cr)
- PUBH 6906 - Global Nutrition (2.0 cr)

Methodological and Analytical Skills (7-14 credits)

- PUBH 6034 - Program Evaluation for Public Health Practice (3.0 cr)

Select 3 courses from the following list:

- PUBH 6325 - Data Processing with PC-SAS (1.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6343 - Epidemiologic Methods III (4.0 cr)
- PUBH 6344 - Research Methods: Application for MPH Project (2.0 cr)
- PUBH 6415 - Biostatistical Methods II (3.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 6617 - Practical Methods for Secondary Data Analysis (3.0 cr)
- PUBH 6705 - Community Health Assessment (3.0 cr)
- PUBH 6806 - Principles of Public Health Research (2.0 cr)
- PUBH 6910 - Critical Review of Research in Public Health Nutrition (1.0 cr)

Management and Communication Skills (1 credit)

- PUBH 6673 - Grant Writing for Public Health (1.0 cr)

Policy & Advocacy Skills (2 credits)

- PUBH 6630 - Foundations of Maternal and Child Health Leadership (3.0 cr)
Select one course from the following list:

- PUBH 6066 - Building Communities, Increasing Health: Preparing for Community Health Work (2.0 cr)
- PUBH 6074 - Mass Communication and Public Health (3.0 cr)
- PUBH 6078 - Public Health Policy as a Prevention Strategy (2.0 cr)
- PUBH 6634 - Advocacy and Children's Rights (2.0 cr)
- PUBH 6272 - Management and Organization in Hospital and Health Care Systems (4.0 cr)
- PUBH 6760 Healthcare Finance (2.0 cr)

Public Health Core Courses (14-16 credits).

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
  - or PUBH 6101 - Environmental Health (2.0 cr)
  - or PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)
  - or PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
  - or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
  - or PUBH 6414 - Biostatistical Methods I (3.0 cr)
  - or PUBH 6450 - Biostatistics I (4.0 cr)
  - or PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
  - or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
  - PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Master's Project and Field Experience (4 credits).

- PUBH 7694 - Culminating Experience: Maternal and Child Health (2.0 - 4.0 cr)
- PUBH 7696 - Field Experience: Maternal and Child Health (1.0 - 4.0 cr)

-OR-

Epidemiology Emphasis Curriculum

Students admitted into the two-year program also have the option of completing their M.P.H. in maternal and child health with an epidemiology emphasis. This emphasis was created to meet the increasing local, state, and national demands for MCH epidemiologists. It allows students to develop quantitative expertise in MCH content areas.

The MCH program is in our Division of Epidemiology and Community Health, consistently ranked as one of the top epidemiology departments in the United States.

Scientific Basis of MCH Epi Courses (6 credits)

Select one course from the following list:

- PUBH 6605 - Reproductive and Perinatal Health (2.0 cr)
  - or PUBH 6675 - Women's Health (2.0 cr)
  - or PUBH 6600 - Topics: Maternal and Child Health (0.5 - 4.0 cr)

Select one course from the following list:

- PUBH 6381 - Reproductive and Perinatal Health (2.0 cr)
  - or PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
  - or PUBH 6386 - Public Health Aspects of Cardiovascular Disease (2.0 cr)
  - or PUBH 6387 - Cancer Epidemiology (2.0 cr)
  - or PUBH 6389 - Nutritional Epidemiology (2.0 cr)

Select one course from the following list:

- PUBH 6606 - Children's Health: Issues, Programs, and Policies (2.0 cr)
  - or PUBH 6607 - Adolescent Health: Issues, Programs, and Policies (2.0 cr)
  - or PUBH 6613 - Children and Youth With Special Health Care Needs (2.0 cr)
  - or PUBH 6902 - Maternal, Infant, and Preschool Nutrition (2.0 cr)
  - or PUBH 6903 - Child and Adolescent Nutrition (2.0 cr)
  - or PUBH 6906 - Global Nutrition (2.0 cr)

Methodological and Analytical Skills (13 credits)

- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6343 - Epidemiologic Methods III (4.0 cr)
- PUBH 6390 - Topics: Epidemiology (0.5 - 4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)

Management and Communication Skills (1 credit)

- PUBH 6673 - Grant Writing for Public Health (1.0 cr)

Policy and Advocacy Skills (5-6 credits)

- PUBH 6630 - Foundations of Maternal and Child Health Leadership (3.0 cr)

Select one course from the following list:

- PUBH 6605 - Reproductive and Perinatal Health (2.0 cr)
  - or PUBH 6675 - Women's Health (2.0 cr)
  - or PUBH 6600 - Topics: Maternal and Child Health (0.5 - 4.0 cr)

Public Health Core Courses (15 credits)

Students may take 6102 instead of 6101 or 6741 instead of 6742.

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6101 - Environmental Health (2.0 cr)
PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Master's Project and Field Experience (4 credits)
PUBH 7694 - Culminating Experience: Maternal and Child Health (2.0 - 4.0 cr)
PUBH 7696 - Field Experience: Maternal and Child Health (1.0 - 4.0 cr)

Electives
Electives to total 48 credits.

Program Sub-plans
A sub-plan is not required for this program.
Students may not complete the program with more than one sub-plan.

Online
Required Coursework
Scientific Basis of MCH (5 credits)
Scientific Basis of MCH (5 credits).
PUBH 6600 - Topics: Maternal and Child Health (0.5 - 4.0 cr)
PUBH 6606 - Children's Health: Issues, Programs, and Policies (2.0 cr)
PUBH 6613 - Children and Youth With Special Health Care Needs (2.0 cr)
PUBH 6902 - Maternal, Infant, and Preschool Nutrition (2.0 cr)
PUBH 6903 - Child and Adolescent Nutrition (2.0 cr)

Methodological and Analytical Skills (5 credits)
Methodological and Analytical Skills (5 credits). Select a minimum of three additional credits. These credits should be chosen with consultation of an advisor.
PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)

Management and Communication Skills (6 credits)
Management and Communication Skills (6 credits). These credits should be chosen with consultation of an advisor.
NURS 5925 - Grant Writing and Critique (1.0 cr)
PUBH 6655 - Principles and Programs in Maternal and Child Health (2.0 cr)

Public Health Core Courses
Public Health Core Courses (14 credits).
PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
OR PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Master's Project and Field Experience
Master's Project and Field Experience (4 credits).
PUBH 7696 - Field Experience: Maternal and Child Health (1.0 - 4.0 cr)
PUBH 7694 - Culminating Experience: Maternal and Child Health (2.0 - 4.0 cr)

Electives
Electives to total 42 credits.

Complementary and Alternative Medicine Interdisciplinary Concentration Area
The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an MPH degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, Interdisciplinary Concentrations Coordinator, at franc004@umn.edu or 612-624-6952.

Global Health Interdisciplinary Concentration Area
The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.
Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad.

SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, Interdisciplinary Concentrations Coordinator, at franc004@umn.edu or 612-624-6952.

Health Disparities Interdisciplinary Concentration Area

The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to healthcare. Achieving optimum health for all segments of our society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite Minnesota's ranking as one of the nation's healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators. For example, according to the Minnesota Department of Health:

- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer and HIV/AIDS are higher for many minority communities compared to the state as a whole.

SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, Interdisciplinary Concentrations Coordinator, at franc004@umn.edu or 612-624-6952.

Public Health Policy Interdisciplinary Concentration Area

PHPIC coursework provides a better understanding of the health care system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can choose courses that emphasize:

- Understanding community dynamics
- Developing advocacy skills for public health
- Analyzing legal and policy structures
- Evaluating and implementing policies and programs
- Influencing community health
- Motivating and educating stakeholders and decision-makers
- Using policy as prevention strategy
- Eliminating health disparities through policy

SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, Interdisciplinary Concentrations Coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus
Public Health Administration and Policy M.P.H.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 44
- This program requires summer semesters for timely completion.
- Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The Public Health Administration and Policy (PHAP) program offers a core curriculum centering on managing organizations to improve the health of certain populations. Throughout the program there is a strong emphasis on developing effective communication skills and the ability to work well with various cultures and communities.

To receive this degree, students will need to complete the curriculum, a field experience, and a master's project. Graduates pursue public health careers in a variety of settings including non-profit organizations, state and local public health agencies, and healthcare companies.

Accreditation
This program is accredited by Council on Education for Public Health (CEPH).

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Applicants must submit their test score(s) from the following:
• GRE
  - General Test - Verbal Reasoning: 500
  - General Test - Quantitative Reasoning: 500
  - General Test - Analytical Writing: 3.5
• GMAT
• MCAT
• LSAT
  - Law School Admission Test (LSAT) score: 150

International applicants must submit score(s) from one of the following tests:
• TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
• IELTS
  - Total Score: 7
• MELAB
  - Final score: 80
Key to test abbreviations (GRE, GMAT, MCAT, LSAT, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan B: Plan B requires 44 major credits and 1 to 4 credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: Students complete a master's project.

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

Required Courses

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- PUBH 6101 - Environmental Health (2.0 cr)
  or PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
  or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
  or PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
  or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 6700 - Foundations of Public Health (3.0 cr)
- PUBH 6705 - Community Health Assessment (3.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6727 - Health Leadership and Effecting Change (2.0 cr)
- PUBH 6755 - Planning and Budgeting for Public Health (2.0 cr)
- PUBH 6806 - Principles of Public Health Research (2.0 cr)
- PUBH 7796 - Field Experience: Public Health Administration and Policy (1.0 - 4.0 cr)
- PUBH 7784 - Master's Project Seminar: PHAP and HSRP&A (1.0 cr)
- PUBH 7794 - Master's Project: Public Health Administration and Policy (2.0 - 3.0 cr)

Specialty Area (8 credits minimum)

- PUBH 6547 - Health Care Human Resources Management (2.0 cr)
- PUBH 6711 - Public Health Law (2.0 cr)
- PUBH 6721 - Leading Collaborations (1.0 cr)
- PUBH 6723 - Lean Management in Health Care (1.0 cr)
- PUBH 6835 - Principles of Health Policy (2.0 cr)
- PUBH 6656 - Innovation of Healthcare Services (2.0 cr)
- PUBH 6560 - Operations Research and Quality in Health Care (2.0 cr)
  or PUBH 6765 - Continuous Quality Improvement: Methods and Techniques (3.0 cr)
  or PUBH 6780 - Topics: Public Health Administration and Policy (1.0 - 2.0 cr)

Analysis (choose 2 of the following):

- PUBH 6845 - Using Demographic Data for Policy Analysis (3.0 cr)
  or PUBH 6717 - Decision Analysis for Health Care (2.0 cr)
- PUBH 6811 - Health Disparities Research: Measures, Methods, and Data (2.0 cr)

Select remaining credits from the following:

- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
  or PUBH 6343 - Epidemiologic Methods III (4.0 cr)
- PUBH 6344 - Research Methods: Application for MPH Project (2.0 cr)
- PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
  or PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)

Program Sub-plans

A sub-plan is not required for this program.

Students may not complete the program with more than one sub-plan.
Complementary and Alternative Medicine Interdisciplinary Concentration Area
The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an M.P.H. degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Global Health Interdisciplinary Concentration Area
The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause, and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.

Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad.

SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Health Disparities Interdisciplinary Concentration Area
The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to health care. Achieving optimum health for all segments of our society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite Minnesota’s ranking as one of the nation’s healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators. For example, according to the Minnesota Department of Health:

- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer, and HIV/AIDS are higher for many minority communities compared to the state as a whole.

SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Public Health Policy Interdisciplinary Concentration Area
PHPIC coursework provides a better understanding of the health care system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can choose courses that emphasize:

- understanding community dynamics
- developing advocacy skills for public health
- analyzing legal and policy structures
- evaluating and implementing policies and programs
- influencing community health
- motivating and educating stakeholders and decision-makers
- using policy as prevention strategy
- eliminating health disparities through policy

SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus

Public Health Core Concepts Postbaccalaureate Certificate

School of Public Health - Adm

School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, D305 Mayo Memorial, MMC 819, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612/624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2011
- Length of program in credits: 14
- This program does not require summer semesters for timely completion.
- Degree: Public Health Core Concepts PBacc Certificate

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The certificate program offers an opportunity to gain the knowledge and skills to understand, assess, and manage population health in public health, health care, and human services settings. Many students will use their public health knowledge and skills to enhance effectiveness and opportunities in their current work or career path. Population science is an increasingly valued area of expertise in many health and human service organizations. It will help prepare public health workers and others to respond to emerging public health issues.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)
- completely online (all program coursework can be completed online)
- partially online (between 50% to 80% of instruction is online)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Admission preferences and prerequisites:
- Applicants must hold a baccalaureate degree.
- Applicant should demonstrate strong written skills.
- The admissions committee looks closely at the applicant's work experience and grades in math and science.

Special Application Requirements:
Applicants must submit to SOPHAS, the centralized online application service:
- Completed SOPHAS application and application fee, designating the University of Minnesota School of Public Health
- Personal essay describing the applicant's reason for applying, career goals, and how the certificate will help them achieve their goals
- Three letters of recommendation
- Official transcripts of record from each college/university attended
- Resume or C.V.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).
For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

Required Coursework
The public health core concepts certificate curriculum is the same as the core content taught in the School of Public Health's M.P.H. degree programs. All six courses are available in online and in-person formats. Students will be able to register, receive materials, interact with faculty and fellow students, and complete this program without traveling to the campus. If completing coursework online, internet access is required.

PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)
    or PUBH 6101 - Environmental Health (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
    or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
    or PUBH 6415 - Biostatistical Methods II (3.0 cr)
    or PUBH 6450 - Biostatistics I (4.0 cr)
    or PUBH 6451 - Biostatistics II (4.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
    or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Program Sub-plans
A sub-plan is not required for this program.
Students may not complete the program with more than one sub-plan.

Rochester
Twin Cities Campus
Public Health Food Protection Postbaccalaureate Certificate
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, D305 Mayo Memorial, MMC 819, 420 Delaware Street SE, Minneapolis, MN 55455 (612-626-3500; f: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2011
- Length of program in credits: 14
- This program requires summer semesters for timely completion.
- Degree: Public Health Food Protection PBacc Certificate

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The public health certificate in food protection is part of the public health practice major. It provides formal training in public health. This training will help prepare public health workers and others to respond to incidences of bio-terrorism, infectious disease outbreaks, and other emerging public health issues. Students typically complete the curriculum by attending at least two Public Health Institutes (PHI), held in May/June of each year.

Many students will use their public health knowledge and skills to enhance effectiveness and opportunities in their current work or career paths. Population science is an increasingly valued area of expertise in many health and human service organizations.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Special Application Requirements:
All applications are reviewed holistically. Submit the following to the University of Minnesota School of Public Health:
- Completed application and application fee (Application can be found at http://www.sph.umn.edu/prospective/admissions/documents/RegentsCertificateApplicationforAdmissionForm.pdf)
- Statement of purpose and objectives, describing the applicant’s reason for applying, career goals, and how the certificate will help achieve them
- One letter of recommendation
- Official transcripts of record from each college/university attended
- Resume or C.V.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

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Information current as of October 02, 2012
Program Requirements

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

Required Coursework

- PUBH 7210 - Topics: Global Food Systems (0.5 cr)
- PUBH 7213 - Applications of Microbiology to Food Systems Monitoring (1.0 cr)
- PUBH 7214 - Principles of Risk Communication (1.0 cr)
- PUBH 7215 - Food Safety: Risk Assessment and Risk Management (1.0 cr)
- PUBH 7233 - Food System Defense: Vulnerabilities in the Food System (1.5 cr)
- PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
  or PUBH 7231 - Surveillance of Foodborne Diseases in Humans (1.0 cr)
- PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
- PUBH 6711 - Public Health Law (2.0 cr)
  or PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)

Elective Courses

Students select from the list of electives below to complete the required number of credits. (This list of elective courses will change from year to year.):

- PUBH 7230 - Topics in Infectious Disease: Vector Field Ecology (0.5 cr)
  or PUBH 7230 - Topics in Infectious Disease: Emerging and Re-emerging Diseases (1 cr)
  or PUBH 7230 - Topics in Infectious Disease: Salmonella as a Foodborne Pathogen (1 cr)
  or PUBH 7200 - System Approaches to Food Security, Livestock and Human Health (1 cr)
  or PUBH 7200 - Dairy Food Systems: Science, Policy and Regulation (1 cr)
  or PUBH 7200 - Global One Health Leadership Workshop and Practicum (2.5 cr)
  or PUBH 7200 - Pathogen Hotspots in Manufacturing (0.5 cr)
  or PUBH 7200 - Food Safety Modernization Act: Crossroads of Science, Regulation, and Policy (1 cr)

Program Sub-plans

A sub-plan is not required for this program.

Students may not complete the program with more than one sub-plan.

Rochester
Twin Cities Campus

Public Health Minor

School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2011
- Length of program in credits (Masters): 8
- Length of program in credits (Doctorate): 14
- This program does not require summer semesters for timely completion.

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Note: The minor in public health is available only to students enrolled in master's and doctoral programs outside of the School of Public Health. Students enrolled in master's and doctoral programs within the School of Public Health are not eligible for this minor because the requirements of the public health minor are part of their major field of study.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)
- completely online (all program coursework can be completed online)

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

The minor program is designed to suit the particular needs and interests of the students with the provision that a graduate-level course in environmental health, epidemiology, and biostatistics be included in that requirement. These courses must at least meet the content level of the school's basic courses in those three subjects.

The master's minor requires a minimum of 8 graduate credits; the doctoral minor requires a minimum of 14 graduate credits. Courses for the minor must be selected from those offered by the School of Public Health. In order to meet the minor requirements, students must successfully complete graduate coursework in each of the following disciplines: biostatistics, epidemiology, and environmental health.

Suggested courses include PUBH 6101 - Environmental Health or PUBH 6102 - Issues in Environmental Health; PUBH 6320 - Fundamentals of Epidemiology or PUBH 6341 - Epidemiologic Methods I; and PUBH 6414 - Biostatistical Methods I or PUBH 6450 - Biostatistics I.

If students have already taken comparable graduate-level courses in these disciplines, other public health courses can be used to complete the minor requirement with the approval of the public health adviser and the director of graduate studies. Since public health courses may have prerequisites or enrollment limitations, early planning with an adviser is suggested.
Twin Cities Campus
Public Health Nutrition M.P.H.

School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612-624-4498)
Email: sph.scc@umn.edu
Website: http://www.sph.umn.edu

• Program Type: Master's
• Requirements for this program are current for Fall 2011
• Length of program in credits: 44 to 63
• This program requires summer semesters for timely completion.
• Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The Public Health Nutrition (PHN) program is designed to meet the needs of students who want graduate training in health promotion, disease prevention, program development, and nutrition interventions.

The program's faculty are internationally recognized for research in obesity prevention, child and adolescent nutrition, eating disorder prevention, nutrition epidemiology, and nutrition intervention.

Coordinated Master's Program (CMP):
In addition to the traditional public health nutrition degree, the program offers the opportunity to gain expertise in a concentrated area of study such as epidemiology, global health, alternative medicine, health policy, and disability policy. It also offers a coordinated master's program. Please note that the coordinated master's program requires that students have their own transportation during the academic year and summer session, since many sites are not located on public transportation routes.

Full- and Part-time Program:
Students may pursue the M.P.H. on a full-time or part-time basis, but should note that the majority of the courses are offered only during the day. (Note: The Coordinated Master's Program must be taken on a full-time basis.)

Accreditation
This program is accredited by Council on Education for Public Health (CEPH) & Commission on Accreditation for Dietetics Education.

Program Delivery
This program is available:
• via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

The following courses are required for admission: one general biology course with lab; two general chemistry classes with labs; one organic chemistry; one biochemistry; and one social science course. In addition, CMP applicants must also complete one physiology course; one microbiology course with lab; one intro to nutrition course; one intro to food science course; one food systems/service management course. All courses MUST be complete before starting the program. If students are currently completing the prerequisites while they are applying, they must indicate on their application materials how their prerequisites will be completed before they start the program.

Preferred GRE performance expectations (test taken post August 2011): A combination of 300 on the quantitative and verbal sections of the test and a score of 3.5 on the analytical writing assessment. Some programs may have higher preferred minimum scores. Check specific programs for details.

Special Application Requirements:
Students applying for the Coordinated Master's Program track go through a two-step process for admission. The first is to be admitted
to the M.P.H. degree program. After all CMP applications submitted prior to the Dec. 1 CMP application deadline have been reviewed and admission decisions made, the applicant will receive an email questionnaire and will undergo a phone interview. The top eight candidates will be selected to fill the eight available CMP spots. Students not selected for the CMP may not start the standard track and later transfer to the CMP.

Applicants must submit their test score(s) from the following:
- **GRE**
  - General Test - Verbal Reasoning: 500
  - General Test - Quantitative Reasoning: 500
  - General Test - Analytical Writing: 3.5
- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7

International applicants must submit score(s) from one of the following tests:
- **TOEFL**
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- **IELTS**
  - Total Score: 7

Key to test abbreviations (GRE, TOEFL, IELTS).

For an online application or for more information about graduate education admissions, see the [General Information](#) section of the catalog website.

**Program Requirements**

**Plan B:** Plan B requires 18 to 39 major credits and 22 to 26 credits outside the major. The final exam is oral. A capstone project is required.

**Capstone Project:** The purpose of the master's project is to enable students to demonstrate:
- familiarity with the tools of research and scholarship in the field of public health;
- the ability to work independently;
- the ability to plan and carry out a systematic investigation related to a public health issue; and
- the ability to effectively present, in written form, the results of their investigation.

The program views well-developed investigation and communication skills as essential if public health nutrition professionals are to be effective in advancing the health and well-being of populations and at-risk groups.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.0 is required for students to remain in good standing.

At least 3 semesters must be completed before filing a Degree Program Form.

**Public Health Nutrition Core**

- PUBH 6901 - Foundations of Public Health Nutrition Leadership (2.0 cr)
- PUBH 6914 - Community Nutrition Intervention (3.0 cr)
- PUBH 6915 - Nutrition Assessment (2.0 cr)
- PUBH 6933 - Nutrition and Chronic Diseases (2.0 cr)
- PUBH 7994 - Culminating Experience: Public Health Nutrition (1.0 - 6.0 cr)
- PUBH 7996 - Field Experience: Public Health Nutrition (1.0 - 6.0 cr)

**Tracks**

**Standard Track**

**Lifecycle Courses**

Take 2 or more course(s) from the following:
- **PUBH 6902** - Maternal, Infant, and Preschool Nutrition (2.0 cr)
- **PUBH 6903** - Child and Adolescent Nutrition (2.0 cr)
- **PUBH 6904** - Nutrition and Aging (2.0 cr)
- **PUBH 6906** - Global Nutrition (2.0 cr)

**Research Methods**
PUBH 6910 - Critical Review of Research in Public Health Nutrition (1.0 cr)

Research Methods Options
Take 3 or more credits(s) from the following:
• PUBH 6034 - Program Evaluation for Public Health Practice (3.0 cr)
• PUBH 6035 - Applied Research Methods (3.0 cr)
• PUBH 6325 - Data Processing with PC-SAS (1.0 cr)
• PUBH 6342 - Epidemiologic Methods II (3.0 cr)
• PUBH 6415 - Biostatistical Methods II (3.0 cr)
• PUBH 6420 - Introduction to SAS Programming (1.0 cr)
• PUBH 6451 - Biostatistics II (4.0 cr)
• PUBH 6617 - Practical Methods for Secondary Data Analysis (3.0 cr)
• PUBH 6705 - Community Health Assessment (3.0 cr)
• PUBH 6803 - Conducting a Systematic Literature Review (3.0 cr)
• PUBH 6806 - Principles of Public Health Research (2.0 cr)
• PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
• PUBH 6891 - Nutritional Epidemiology (2.0 cr)
• PUBH 7250 - Designing and Conducting Focus Group Interviews (1.0 cr)
• PUBH 6389 - Nutritional Epidemiology (2.0 cr)
• PUBH 6617 - Practical Methods for Secondary Data Analysis (3.0 cr)
• PUBH 6705 - Community Health Assessment (3.0 cr)
• PUBH 6803 - Conducting a Systematic Literature Review (3.0 cr)
• PUBH 6806 - Principles of Public Health Research (2.0 cr)
• PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
• PUBH 6891 - Nutritional Epidemiology (2.0 cr)
• PUBH 7250 - Designing and Conducting Focus Group Interviews (1.0 cr)
• PUBH 6389 - Nutritional Epidemiology (2.0 cr)
• PUBH 7250 - Designing and Conducting Focus Group Interviews (1.0 cr)
• PUBH 6389 - Nutritional Epidemiology (2.0 cr)

Public Health Core
PUBH 6101 - Environmental Health (2.0 cr)
or PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6414 - Biostatistical Methods I (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Electives
Students must take enough graduate-level electives to fulfill minimum credit requirements in order to graduate. Students without a nutrition/dietetics background must take PUBH 6355 - Pathophysiology, PUBH 6905 - Nutrition for Public Health Promotion and Disease Prevention, and FSCN 4621 - Nutrition and Metabolism.

-OR-

Coordinated Master's Program

Lifecycle Courses
Students who already have a nutrition/dietetics undergraduate degree need to select two of the following four courses. Students who do NOT have a nutrition/dietetics undergraduate degree must choose PUBH 6902, PUBH 6903, and PUBH 6904.
Take 2 - 3 course(s) from the following:
• PUBH 6902 - Maternal, Infant, and Preschool Nutrition (2.0 cr)
• PUBH 6903 - Child and Adolescent Nutrition (2.0 cr)
• PUBH 6904 - Nutrition and Aging (2.0 cr)
• PUBH 6906 - Global Nutrition (2.0 cr)

Research Methods
PUBH 6910 - Critical Review of Research in Public Health Nutrition (1.0 cr)

Research Methods Options
Take 3 or more credits(s) from the following:
• PUBH 6034 - Program Evaluation for Public Health Practice (3.0 cr)
• PUBH 6035 - Applied Research Methods (3.0 cr)
• PUBH 6325 - Data Processing with PC-SAS (1.0 cr)
• PUBH 6420 - Introduction to SAS Programming (1.0 cr)
• PUBH 6342 - Epidemiologic Methods II (3.0 cr)
• PUBH 6415 - Biostatistical Methods II (3.0 cr)
• PUBH 6451 - Biostatistics II (4.0 cr)
• PUBH 6617 - Practical Methods for Secondary Data Analysis (3.0 cr)
• PUBH 6705 - Community Health Assessment (3.0 cr)
• PUBH 6803 - Conducting a Systematic Literature Review (3.0 cr)
• PUBH 6806 - Principles of Public Health Research (2.0 cr)
• PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
• PUBH 6891 - Nutritional Epidemiology (2.0 cr)
• PUBH 7250 - Designing and Conducting Focus Group Interviews (1.0 cr)
• PUBH 6389 - Nutritional Epidemiology (2.0 cr)
• PUBH 7250 - Designing and Conducting Focus Group Interviews (1.0 cr)
• PUBH 6389 - Nutritional Epidemiology (2.0 cr)
• PUBH 8171 - Qualitative Research Design and Methods (3.0 - 4.0 cr)

Field Experience/Nutrition Practicum
CMP students take four credits of PUBH 7996 in addition to the following:
PUBH 6995 - Community Nutrition Practicum (8.0 cr)
PUBH 6996 - Clinical Nutrition Practicum (9.0 cr)

Public Health Core

Environmental Health
PUBH 6101 - Environmental Health (2.0 cr)
or PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)

Epidemiology
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)

Biostatistics
PUBH 6414 - Biostatistical Methods I (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)

Ethics
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Administration/Management
Take 2 or more credits from the following:
• PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Electives
CMP students who do not have a nutrition/dietetics undergraduate degree must take FSCN 4621 - Nutrition and Metabolism or FSCN 4612 - Advanced Nutrition AND FSCN 4665 - Medical Nutrition Therapy I, AND FSCN 4666 - Medical Nutrition Therapy II and enough graduate-level elective credits to fulfill the minimum required to graduate. Students with a nutrition/dietetics undergraduate degree must take 8-12 graduate-level elective credits to fulfill 60 total credits.

-Nutritional Epidemiology Track-
Lifecycle courses
PUBH 6902 - Maternal, Infant, and Preschool Nutrition (2.0 cr)
or PUBH 6903 - Child and Adolescent Nutrition (2.0 cr)
or PUBH 6904 - Nutrition and Aging (2.0 cr)
or PUBH 6906 - Global Nutrition (2.0 cr)

Nutrition Science
Only students who do not have an undergraduate degree in nutrition/dietetics need to take the following nutrition science courses.
FSCN 4621W - Nutrition and Metabolism [WI] (4.0 cr)
PUBH 6905 - Nutrition for Public Health Promotion and Disease Prevention (2.0 cr)

Epidemiology and Biostatistics Core
PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6342 - Epidemiologic Methods II (3.0 cr)
PUBH 6343 - Epidemiologic Methods III (4.0 cr)
PUBH 6390 - Topics: Epidemiology (0.5 - 4.0 cr)
PUBH 6389 - Nutritional Epidemiology (2.0 cr)
PUBH 6325 - Data Processing with PC-SAS (1.0 cr)
PUBH 6355 - Pathophysiology of Human Disease (4.0 cr)
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6451 - Biostatistics II (4.0 cr)

"Epi of" Courses
PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
or PUBH 6386 - Public Health Aspects of Cardiovascular Disease (2.0 cr)
or PUBH 6387 - Cancer Epidemiology (2.0 cr)

Public Health Core

Environmental Health
PUBH 6101 - Environmental Health (2.0 cr)
or PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)

Ethics
PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Administration/Management
Take 1 or more course(s) from the following:
• PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Program Sub-plans
A sub-plan is not required for this program.
Students may complete the program with more than one sub-plan.
Complementary and Alternative Medicine Interdisciplinary Concentration Area
The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an M.P.H. degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Coordinated Option
The Coordinated Masters Program (CMP) in public health nutrition provides both a master of public health degree in public health nutrition and the didactic coursework and supervised practice components for registration eligibility and entry into dietetics practice. The program accepts eight students each year. The CMP provides a public health nutrition concentration area that focuses on rural and disadvantaged populations. Supervised practice experiences are integrated throughout the 24-month program utilizing sites both within and outside of Minnesota. Students complete a total of 1,200 hours of supervised practice. Upon successful completion of the program (i.e. coursework, supervised practice experiences, master's project and a comprehensive oral examination) students will receive an M.P.H. degree and a verification statement of eligibility to write the national registration examination for dietitians.

See Program Requirements Page

Global Health Interdisciplinary Concentration Area
The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause, and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.

Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad.

SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Health Disparities Interdisciplinary Concentration Area
The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to health care. Achieving optimum health for all segments of our society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite Minnesota's ranking as one of the nation's healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators. For example, according to the Minnesota Department of Health:
- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer, and HIV/AIDS are higher for many minority communities compared to the state as a whole.

SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Public Health Policy Interdisciplinary Concentration Area
The School of Public Health's Public Health Policy Interdisciplinary Concentration (PHPIC) focuses on promoting the health of populations and groups through public and organizational policy. PHPIC is open to students pursuing an M.P.H., includes coursework
that explores the way in which federal, state, local, and institutional entities affect the financing, structure, and delivery of public health and medical care.

PHPIC coursework provides a better understanding of the healthcare system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can choose courses that emphasize:
- understanding community dynamics
- developing advocacy skills for public health
- analyzing legal and policy structures
- evaluating and implementing policies and programs
- influencing community health
- motivating and educating stakeholders and decision-makers
- using policy as prevention strategy
- eliminating health disparities through policy

SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus
Public Health Postbaccalaureate Certificate in Performance Improvement
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, D305 Mayo Memorial, MMC 819, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2011
- Length of program in credits: 12
- This program requires summer semesters for timely completion.
- Degree: Performance Improvement PBacc Cert

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The public health certificate in performance improvement trains students to understand and apply quality improvement methods at both the systems and organizational level. The program will provide the tools needed in order to achieve and maintain high process performance.

The certificate provides participants with hands-on knowledge about how to improve processes in their respective organizations. By so doing, best practices will be diffused, and process performance will improve public health services.

This certificate addresses concerns voiced by the National Board of Public Health Examiners, the Public Health Accreditation Board, and the Council on Education for Public Health to provide more educational opportunities in performance improvement to working public health professionals.

Program Delivery
This program is available:
- completely online (all program coursework can be completed online)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Qualifications for Admission:
- Baccalaureate degree
- Strong writing skills
- A minimum of three years of relevant professional work experience

Special Application Requirements:
All applications are reviewed holistically. Submit the following to the University of Minnesota School of Public Health:
- Completed application and application fee (Application can be found at http://www.sph.umn.edu/prospective/admissions/documents/RegentsCertificateApplicationforAdmissionForm.pdf)
- Statement of purpose and objectives describing the reason for applying, career goals and how the certificate will help achieve them.
- One letter of recommendation from the applicant's organization confirming that he or she is able to staff or lead a process or performance improvement team
- Official transcripts of record from each college/university attended.
- Resume or C.V.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
• MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

Required Coursework
- PUBH 6765 - Continuous Quality Improvement: Methods and Techniques (3.0 cr)
- PUBH 6780 - Topics: Public Health Administration and Policy (1.0 - 2.0 cr)
- PUBH 6xxx - Advanced Performance Improvement Methods in Public Health (2 cr).
- PUBH 6xxx - Public Health Process Improvement Project - Practicum (2 cr).
Students choose one of the following on-line electives:
  - PUBH 6541 - Statistics for Health Management Decision Making (3.0 cr)
  - PUBH 6727 - Health Leadership and Effecting Change (2.0 cr)
  - PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
  - NURS 6100 - Evidence-based Practice (3.0 cr)
Twin Cities Campus
Public Health Practice M.P.H.
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, D305 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455; (612-626-3500; fax: 612-624-4498)
Email: sph.ssc@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2011
- Length of program in credits: 42
- This program requires summer semesters for timely completion.
- Degree: Master of Public Health

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The program in public health practice brings together the science and the art of public health, addressing public health as a broad social enterprise that seeks to extend the benefits of current knowledge in ways that will have the maximum impact on the health status of populations.

The school offers academic programs at the master's level that prepare students to be leaders and practitioners in the application of public health principles in agencies delivering preventive health services and public health programs.

Accreditation
This program is accredited by Council on Education for Public Health (CEPH)

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)
- primarily online (at least 80% of the instruction for the program is online with short, intensive periods of face-to-face coursework)
- partially online (between 50% to 80% of instruction is online)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Please refer to Executive Program in public health, public health medicine, or veterinary public health for each program's specific admission requirements.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80
  - Speaking test score: 0

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.
Program Requirements

Plan B: Plan B requires 28 to 42 major credits and 1 to 14 credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: Master's Plan B

This program may be completed with a minor.

Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.0 is required for students to remain in good standing.

Core Courses
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6299 - Public Health Is a Team Sport: The Power of Collaboration (1.5 cr)

Epidemiology
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- or PUBH 6342 - Epidemiologic Methods II (3.0 cr)

Biostatistics
- PUBH 6414 - Biostatistical Methods I (3.0 cr)
- or PUBH 6415 - Biostatistical Methods II (3.0 cr)
- or PUBH 6450 - Biostatistics I (4.0 cr)
- or PUBH 6451 - Biostatistics II (4.0 cr)

Ethics
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
- or PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)

Environmental Health
- PUBH 6101 - Environmental Health (2.0 cr)
- or PUBH 6102 - Issues in Environmental and Occupational Health (2.0 cr)

M.P.H. Culminating Experience
- PUBH 7294 - Master's Project: Public Health Practice (0.5 - 4.0 cr)

Field Experience
- PUBH 7296 - Field Experience: Public Health Practice (0.5 - 6.0 cr)

Program Sub-plans

Students are required to complete one of the following sub-plans. Students may complete the program with more than one sub-plan.

Executive Program in Public Health Practice
This sub-plan is limited to students completing the program under Plan B.

This program builds on the student's work and educational experience. It is possible to complete all work for the M.P.H. degree in 16 months, with 42 graduate credits. On average, students complete the program in three years.

Attending the Public Health Institute during the May Session is a unique opportunity for students from multiple disciplines to connect and immerse themselves in emerging public health issues.

EPPHP is a flexible curriculum that students may tailor to their career and practice. Some established focus areas are:
- Cultural competency
- Food protection
- Preparedness, response, and recovery
- Public health leadership
- Global health*
- Health disparities*
- Public health policy*
- Complementary and alternative medicine*

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Information current as of October 02, 2012
Public Health Medicine
The Public Health Medicine (PHM) program prepares medical students to have a deeper understanding of population-based science and the cultural and environmental factors that affect patients.

The classroom requirements of the M.P.H. are completed during a 12-month sabbatical (May through May) from medical school while enrolled full time in the School of Public Health. Most students begin the M.P.H. program after year two of medical school.

Students must complete the basic curriculum, the courses below, and approved electives to meet the required 42-credit minimum.

Students must register for the master's project and field experience while enrolled in the program. They may choose to complete these during their time at the SPH or after returning to medical school. A public health medicine setting is required for field placement but may be double counted for clinical rotation with adviser approval.

Public Health Medicine
PUBH 6210 - Public Health Medicine Seminar (1.0 cr)
PUBH 6415 - Biostatistical Methods II (3.0 cr)
Take 2 or more course(s) from the following:
• PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
• PUBH 6724 - The Health Care System and Public Health (3.0 cr)
• PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
Students must take 10.5 to 11.5 elective credits that are approved by their adviser.

Veterinary Public Health
The Veterinary Public Health D.V.M./M.P.H. program is part of the public health practice program. It allows students to combine veterinary studies with a public health degree, giving them the credentials to work at the interface of human wellness and animal health, spanning agriculture and food industry concerns, emerging infectious diseases, and other public health issues.

The program in public health practice brings together the science and the art of public health. It addresses public health as a broad social enterprise that seeks to extend the benefits of current knowledge in ways that will have the maximum impact on the health status of populations.

The program offers academic study at the master's level that prepares students to be leaders and practitioners in the application of public health principles in agencies delivering preventive health services and public health programs. The major emphasizes the importance and applications of basic scientific knowledge to current societal problems and concerns.

Up to 14 credits may be transferred into the M.P.H. from a school of veterinary medicine upon approval of the adviser and major chair. Each of the elective curriculum options outlined below addresses the need for students to have coursework in the following four domains: public health policy and systems development, community intervention, assessment and basic sciences, and program management and communications.

D.V.M./M.P.H. students are also required to take one course to fulfill the veterinary public health competencies: biostatistics, surveillance, infectious disease epidemiology, zoonoses, and environmental health.

Elective Curriculum (20.5 credit minimum)
Students select one of the following three options for the elective curriculum. The courses below are examples of applicable coursework. Other courses may be selected only in consultation with the student's VPH adviser. Most courses are offered during a three-week Public Health Institute in May/June of each year on campus at the University of Minnesota.

These lists are not exclusive.

Option 1 - Food Protection
Take 21 or more credits(s) from the following:
• PUBH 7210 - Topics: Global Food Systems (0.5 cr)
• PUBH 7211 - Food System Biosecurity: Preparedness and Response (1.0 cr)
• PUBH 7212 - Food System Biosecurity: Threats (1.0 cr)
• PUBH 7213 - Applications of Microbiology to Food Systems Monitoring (1.0 cr)
• PUBH 7214 - Principles of Risk Communication (1.0 cr)
• PUBH 7215 - Food Safety: Risk Assessment and Risk Management (1.0 cr)
• PUBH 7216 - Food Safety Risk Management (1.0 cr)
• PUBH 7217 - Advances in Molecular Epidemiological Analysis (1.0 cr)
• PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
• PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
• PUBH 6711 - Public Health Law (2.0 cr)

-OR-

Option 2 - Preparedness, Response, and Recovery (PRR)
Take 21 or more credits(s) from the following:
• PUBH 7214 - Principles of Risk Communication (1.0 cr)
• PUBH 7217 - Advances in Molecular Epidemiological Analysis (1.0 cr)
• PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
• PUBH 6182 - Emerging Infectious Disease: Current Issues, Policies, and Controversies (3.0 cr)
• PUBH 6711 - Public Health Law (2.0 cr)

-OR-

Option 3 - Infectious Disease
Take 21 or more credits(s) from the following:
• PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
• PUBH 7232 - Surveillance of Foodborne Diseases in Animals and Plants (1.0 cr)
• PUBH 7231 - Surveillance of Foodborne Diseases in Humans (1.0 cr)

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This sub-plan is optional and does not fulfill the sub-plan requirement for this program.

Complementary and Alternative Medicine Interdisciplinary Concentration Area
The Complementary and Alternative Medicine Interdisciplinary Concentration (CAMIC) offered through the School of Public Health is a unique opportunity for SPH students who are pursuing an M.P.H. degree to acquire and cultivate professional skills in an emerging area of health care that is expanding and altering the field of public health.

The concentration includes coursework from the Center for Spirituality and Healing at the University of Minnesota, a nationally recognized leader in integrative medicine that brings together biomedical, complementary, cross-cultural, and spiritual care.

SPH graduate students must complete a formal program plan if they want the CAMIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Global Health Interdisciplinary Concentration Area
The Global Health Interdisciplinary Concentration (GHIC) provides graduate students who are pursuing an M.P.H. with information necessary to define the constitution, cause and consequences of health problems worldwide. The program offers a unique opportunity to explore the relationships between health, environment, politics, culture, and economic pressures in developed and developing nations.

Developing countries are currently undergoing profound demographic changes—changes that are accompanied by shifts in patterns of illness. In many of these nations, the major causes of morbidity and mortality are mutating from traditional infectious diseases to chronic, non-communicable maladies like cardiovascular diseases, cancer, and diabetes. As a result, there is increasing demand for qualified public health practitioners who can identify and help reduce the vast and varied global vectors for chronic disease.

Practical application of theory in the field is a major component of the GHIC. Students are encouraged to hone their expertise by pursuing an international field experience. The School of Public Health has established relationships with collaborative institutions abroad.

SPH graduate students must complete a formal program plan if they want the GHIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Health Disparities Interdisciplinary Concentration Area
The Health Disparities Interdisciplinary Concentration addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the U.S., as well as unequal quality of and access to health care. Achieving optimum health for all segments of our society is a central goal of Healthy People 2020, and a concern in Minnesota as well. Despite
Minnesota's ranking as one of the nation's healthiest states, Minnesota has some of the largest gaps among cultural and social groups in health indicators. For example, according to the Minnesota Department of Health:
- Infant mortality rates among the American Indians and African Americans are two to three times higher than for the state as a whole.
- Among African American youth aged 15-24, firearm injury mortality rates are 15 times greater than the rates of all ages, races, and genders combined.
- Women from minority communities are less likely to receive sufficient prenatal care compared to other women.
- Death rates for African Americans and American Indians are two to three times that of the state as a whole. Rates of diabetes, hypertension, cancer, and HIV/AIDS are higher for many minority communities compared to the state as a whole.

SPH graduate students must complete a formal program plan if they want the HDIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.

Public Health Policy Interdisciplinary Concentration Area
The School of Public Health's Public Health Policy Interdisciplinary Concentration (PHPIC) focuses on promoting the health of populations and groups through public and organizational policy. PHPIC is open to students pursuing an M.P.H., includes coursework that explores the way in which federal, state, local, and institutional entities affect the financing, structure, and delivery of public health and medical care.

PHPIC coursework provides a better understanding of the healthcare system as a whole and prevention policy. The challenging curriculum helps M.P.H. majors hone practical skills that are highly sought after in the public health and policy arenas. Students who pursue the concentration can chose courses that emphasize:
- understanding community dynamics
- developing advocacy skills for public health
- analyzing legal and policy structures
- evaluating and implementing policies and programs
- influencing community health
- motivating and educating stakeholders and decision-makers
- using policy as prevention strategy
- eliminating health disparities through policy

SPH graduate students must complete a formal program plan if they want the PHPIC to appear on their transcripts. For more information, contact Carol Francis, interdisciplinary concentrations coordinator, at franc004@umn.edu or 612-624-6952.
Twin Cities Campus
Public Health Preparedness, Response, and Recovery Postbaccalaureate Certificate
School of Public Health - Adm
School of Public Health

Link to a list of faculty for this program.

Contact Information:
School of Public Health, D305 Mayo Memorial, MMC 819, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500; fax: 612-624-4498)
Email: sph-SSC@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2011
- Length of program in credits: 12
- This program requires summer semesters for timely completion.
- Degree: Public Hlth Prepared/Response/Recovery PBacc Cert

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The Public Health Certificate in Preparedness, Response, and Recovery (PHCert-PRR) is a program in the public health practice major. This training will help prepare public health workers and others to respond to incidences of bio-terrorism, infectious disease outbreaks, and other emerging public health issues. Students typically complete the curriculum by attending at least two Public Health Institutes (PHI), held in May/June of each year.

The PHCert-PRR curriculum also offers elective courses in health informatics with scholarships available for interested students. The goal of the scholarship is to leverage health informatics technology capabilities in support of public health PRR and disseminate these models and solutions through teaching and mentoring others in their roles in the private and public sectors and in higher education environments.

Program Delivery
This program is available:
- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission
The preferred undergraduate GPA for admittance to the program is 3.00.

Special Application Requirements:
All applications are reviewed holistically. Submit the following to the University of Minnesota School of Public Health:
- Completed application and application fee (Application can be found at http://www.sph.umn.edu/prospective/admissions/documents/RegentsCertificateApplicationforAdmissionForm.pdf)
- Statement of purpose and objectives describing the reason for applying, career goals, and how the certificate will help achieve them
- One Letter of Recommendation
- Official transcripts of record from each college/university attended
- Resume or C.V.

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
  - Paper Based - Total Score: 600
- IELTS
  - Total Score: 7
- MELAB
  - Final score: 80

Key to test abbreviations (TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.
Program Requirements
Use of 4xxx courses towards program requirements is not permitted.

A minimum GPA of 3.00 is required for students to remain in good standing.

Required Coursework
- PUBH 7223 - Concepts of Disaster Behavioral Health (1.0 cr)
- PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
- PUBH 7221 - Planning for Urgent Threats (1.0 cr)
- PUBH 7214 - Principles of Risk Communication (1.0 cr)
- PUBH 7225 - Communication and Information Technology Tools for Public Health Emergency Response (1.0 cr)
- PUBH 7226 - Media Relations Practicum (1.0 cr)
- PUBH 5230 - Topics: Public Health Practice (2.0 cr)
- PUBH 7200 Disaster 101: A Preparedness Exercise (1 cr)

Students must take at least one course from each of the following groups:
- PUBH 7231 - Surveillance of Foodborne Diseases in Humans (1.0 cr)
- or PUBH 7230 - Topics in Infectious Disease (0.5 - 4.0 cr)
- or PUBH 7217 - Advances in Molecular Epidemiological Analysis (1.0 cr)
- PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
- or PUBH 6711 - Public Health Law (2.0 cr)

Students select from the courses above and the following list (not all inclusive) of electives to complete the required number of credits. This list of electives may change from year to year:
- PUBH 7233 - Food System Defense: Vulnerabilities in the Food System (1.5 cr)
- or PUBH 7210 - Topics: Global Food Systems (0.5 cr)
- or PUBH 7200 - Best Practices in Emergency Response (1 cr)
- or PUBH 7200 - Designing for Disaster (1 cr)
- or PUBH 7200 - Global Food Safety System Leadership (1 cr)
- or PUBH 7200 - Fundamentals in Hazard Analysis and Critical Control Point (HACCP) (1 cr)
- or PUBH 7200 - Introduction to GIS (1 cr)
- or PUBH 7230 - Any topic in Infectious Disease
- or PUBH 7210 - Any topic in Global Food Systems

Program Sub-plans
A sub-plan is not required for this program.
Students may not complete the program with more than one sub-plan.

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