Twin Cities Campus

Advanced Management Training for Clinician Leaders 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, A395 Mayo Memorial Building
420 Delaware Street SE
Minneapolis, MN 55455
Phone: (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 2016
- Length of program in credits: 13
- This program requires summer semesters for timely completion.
- Degree: Adv Mgmt Training for Clin Leaders 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.

NOTE: APPLICATIONS FOR THIS CERTIFICATE ARE NOT CURRENTLY BEING ACCEPTED.
The Regents Certificate in Advanced Management Training for Clinician Leaders is intended for clinicians employed by integrated health systems who will take on critical and expanded roles as executives and managers. This one-year course of study will prepare clinician leaders for successful innovation in emerging forms of healthcare organizations, bring new healthcare leaders with clinical backgrounds into network relationships with other administrators, and consider new approaches to strategy and success in healthcare that are specific to integrated systems.

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.

Other requirements to be completed before admission:
Applicants must have at least two years experience in a U.S.-based healthcare organization that either has developed or is considering integrated system relationships. International applications will be considered on a case-by-case basis with special attention paid to the nature and structure of their employing organizations.

Special Application Requirements:
NOTE: APPLICATION ARE NOT CURRENTLY BEING ACCEPTED FOR THE CERTIFICATE PROGRAM.
Applicants must submit a letter of intent describing career interests and the relevance of the certificate to the applicant's personal development. One letter of recommendation from a person qualified to assess the applicant's academic work; clinical, public health or professional experience; or leadership potential in integrated health systems is required.

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.

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

The certificate is built on a cohort model and comprises 13 credits: five 2-credit courses, one 1-credit face-to-face course and a 2-credit face-to-face practicum. Students will be required to attend on-campus sessions twice during the program. The first on-campus session will be four days in length, during which students will complete a 1-credit course, PUBH 7571. The second session will be held at the end of the program over three days, during which students will present their capstone projects.

**Requirements**

The certificate requires 13 total credits. PUBH 7571, PUBH 7572, along with four brand-new courses and a practicum/capstone project (each offered as topics courses via PUBH 6570) make up the requirements for the program. Students complete PUBH 7571 while on campus during for four days at the start of the program, and will complete five courses online during the remaining 12 months. Students will present their capstone projects completed for the practicum during their final three days on campus.

PUBH 7572 - Health Care Strategies in Competitive Markets (2.0 cr)
PUBH 6570 - Topics: Healthcare Administration (1.0 - 4.0 cr)
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-ask@umn.edu
Website: http://www.sph.umn.edu/

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- Length of program in credits: 12
- This program does not require summer semesters for timely completion.
- Degree: Aging Studies 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 on Aging is a 12-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 multifaceted 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 the following: 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)

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
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.

The Aging Studies Certificate will be designed by each admitted student in consultation with the director of graduate studies.

Suggested Coursework
Select coursework from the following list, or other courses in consultation with the director of graduate studies, to meet the 12-credit minimum.

Take 12 or more credit(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)
• 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)
• GERO 5105 - Multidisciplinary Perspectives on Aging (3.0 cr)
Twin Cities Campus

Applied Biostatistics 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, A395 Mayo Memorial Building, 420 Delaware St, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu/

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- Length of program in credits: 16
- This program requires summer semesters for timely completion.
- Degree: Applied Biostatistics 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.

Our Applied Biostatistics Certificate is designed for persons currently working as data managers or analysts, but who lack formal training in biostatistics and the science of uncertainty and would like to gain the corresponding technical, mathematical, and computational skills.

Our goal is to enhance one's understanding of key elements of database management and investigation, alert a student to key variables and trends, help a student judge their statistical significance, and improve a student's overall data evaluation and programming skills. Students will learn key aspects of study design, implementation and analysis for both observational and clinical studies.

14 of the 16 required credits are offered entirely online, throughout the calendar year. The remaining two credits are required and are offered face-to-face/in class instruction during a single week in early June as part of the Summer Public Health Institute, University of Minnesota, Twin Cities Campus.

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

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.

Other requirements to be completed before admission:
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 Express, a centralized online application service:
- Completed SOPHAS Express application and application fee, designating the University of Minnesota School of Public Health
- Personal statement describing the applicant's reason for applying, career goals, and how the certificate will help them achieve their goals
- One letter of recommendation
- Unofficial transcripts of record from each college/university where a degree was earned. (If admitted, official transcripts will need to be sent directly to the School of Public Health.)
- Resume or C.V.
For detailed application requirements and instructions visit 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

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.

Course Curriculum
PUBH 6450 - Biostatistics I (4.0 cr)
PUBH 6451 - Biostatistics II (4.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 7415 - Introduction to Clinical Trials (3.0 cr)
PUBH 6431 - Topics in Hierarchical Bayesian Analysis (1.0 cr)
PUBH 6432 - Biostatistical Methods in Translational and Clinical Research (1.0 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, A395 Mayo Memorial Building, 420 Delaware Street S.E., Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612-626-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

• Program Type: Master's
• Requirements for this program are current for Fall 2016
• 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)

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

Other requirements to be completed before admission:
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: 150
  - General Test - Quantitative Reasoning: 146
  - General Test - Analytical Writing: 4

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

**Capstone Project:** Culminating Experience

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 culminating experience 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 7450 - Survival Analysis (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.

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 (HDIC) 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.

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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- Length of program in credits: 30 to 33
- 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.

Other requirements to be completed before admission:
For the M.S., prospective applicants should have taken at least three semesters of calculus (including multivariable calculus) and one semester of linear algebra. A year (two semesters) of coursework in undergraduate-level probability and mathematical statistics is recommended. Experience with a programming language (e.g., R, Java, C, Python) and exposure to applied statistics is helpful, but not required.

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: 150
  - General Test - Quantitative Reasoning: 146
  - General Test - Analytical Writing: 4.5

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

**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 22 major credits and 9 to 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.

The Plan A project requires students to complete a thesis project. The required courses for the M.S. Degree Plan B do not prepare a student to write a thesis, that is, to do original research in biostatistics methodology. That is why nearly all students choose to do a written project (Plan B) rather than a thesis. Only students with an advanced background in mathematics or theoretical statistics should consider Plan A.

**Biostatistics M.S. Coursework (Plan B)**

- PUBH 7405 - Biostatistics: Regression (4.0 cr)
- PUBH 7406 - Advanced Regression and Design (4.0 cr)
- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- PUBH 7450 - Survival Analysis (3.0 cr)
- PUBH 7494 - Culminating Experience: Biostatistics (1.0 - 3.0 cr)
- STAT 5101 - Theory of Statistics I (4.0 cr)
  - or STAT 8101 - Theory of Statistics 1 (3.0 cr)
- STAT 5102 - Theory of Statistics II (4.0 cr)
  - or STAT 8102 - Theory of Statistics 2 (3.0 cr)

**Biostatistics Electives**

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)
- 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 7460 - Advanced Statistical Computing (3.0 cr)
- PUBH 7465 - Biostatistics Consulting (3.0 cr)
- PUBH 7470 - Statistics for Translational and Clinical Research (3.0 cr)
- PUBH 7475 - Statistical Learning and Data Mining (3.0 cr)
- PUBH 8422 - Modern Nonparametrics (3.0 cr)
- PUBH 8435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
- PUBH 8472 - Spatial Biostatistics (3.0 cr)
- PUBH 8475 - Statistical Learning and Data Mining (3.0 cr)
- STAT 5401 - Applied Multivariate Methods (3.0 cr)
  - or STAT 5601 - Nonparametric Methods (3.0 cr)
- 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)

**Health Science Elective**

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 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
or PUBH 6101 - Environmental Health (2.0 cr)
or PUBH 6102 - Issues in Environmental 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)
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2016
- 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.

Minors are available for both University of Minnesota masters and doctoral level students.

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

Prerequisites for Admission
Other requirements to be completed before admission:
Admission to the biostatistics graduate minor is contingent upon prior admission to a master's or doctoral degree-granting program.

Students should first consult with their major program adviser about the advisability of a minor in biostatistics. Students will then need to contact the director of graduate studies (bstdgs@umn.edu). A biostatistics faculty member must be on the student's doctoral preliminary oral examination committee as well as masters and doctoral final oral examination committees.

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.

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.

Masters
- Master's-level minor in Biostatistics
  NOTE: One course may be taken S/N and all other courses must be taken A/F
  Take 2 or more course(s) from the following:
  - PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
Doctoral

Doctoral Minor
14 credits are required for doctoral minor for non-statistics students. 12 credits required for doctoral minor for statistics students.

**Doctoral-level minor in Biostatistics for Non-Statistics Students**
Students should take the required set of two core courses (either 7405 and 7406, or 7401 and 7402) 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**

- **Biostat Core Option 1**
  - PUBH 7405 - Biostatistics: Regression (4.0 cr)
  - PUBH 7406 - Advanced Regression and Design (4.0 cr)

- **Biostat Core Option 2**
  - PUBH 7401 - Fundamentals of Biostatistical Inference (4.0 cr)
  - PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)

**Electives**
Take 2 or more course(s) totaling 6 or more credit(s) from the following:

- 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)
- PUBH 7470 - Statistics for Translational and Clinical Research (3.0 cr)
- PUBH 7475 - Statistical Learning and Data Mining (3.0 cr)
- PUBH 7415 - Introduction to Clinical Trials (3.0 cr)
  - or PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)

**-OR-**

**Doctoral-level minor Biostatistics for Statistics Students**
NOTE: One course may be taken S/N and all other courses must be taken A/F

- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- PUBH 7450 - Survival Analysis (3.0 cr)

Take 2 or more course(s) totaling 6 or more credit(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 and Adaptive Methods for Clinical Trials (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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-osar@umn.edu
Website: http://www.sph.umn.edu

• Program Type: Doctorate
• Requirements for this program are current for Fall 2016
• Length of program in credits: 59 to 67
• 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.

Other requirements to be completed before admission:
At least three semesters of calculus (including multivariable) and one semester of linear algebra, and two semesters of undergraduate courses in probability and mathematical statistics are strongly recommended. Real analysis or an equivalent is recommended. Experience with programming language (e.g., R, Java, C) and exposure to applied statistics is helpful, but not required.

In addition to completing the SOPHAS application, applicants must submit the following directly to SOPHAS:
Statement of purpose and objectives (an essay describing past education, experience, and current professional career objectives)
Résumé or curriculum vitae
Official postsecondary transcripts from all institutions attended, including previous study at the University of Minnesota (have transcripts sent directly from the institutions to SOPHAS)
Three letters of recommendation from persons qualified to assess academic work; clinical, public health, or professional experience; 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
35 to 43 credits are required in 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 PhD program usually requires three years of full-time study after the MS degree. Students entering the PhD program without an MS degree in mathematics or statistics will be required to take additional core coursework.

Required Coursework
Core Coursework
All students take the following 20 credits of core coursework:
- PUBH 8401 - Linear Models (4.0 cr)
- PUBH 8403 - Research Skills in Biostatistics (1.0 cr)
- PUBH 8412 - Advanced Statistical Inference (3.0 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 (3.0 cr)
- STAT 8102 - Theory of Statistics 2 (3.0 cr)

Elective Coursework
All students take at least 3 elective courses for a total of 9 or more credits from the following biostatistics and statistics course lists. Courses are selected in consultation with the advisor.

Biostatistics Elective Courses
- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
- PUBH 7465 - Biostatistics Consulting (3.0 cr)
- 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 8482 - Sequential and Adaptive Methods for Clinical Trials (3.0 cr)
**PUBH 8492** - Theories of Hierarchical and Other Richly Parametrized Linear Models (3.0 cr)

**Statistics Elective Course**
Students may select, in consultation with the advisor, an 8xxx-level course offered by the School of Statistics that is not among the core courses listed above.

**STAT 8xxx**

**Biostatistics Topics Course**
Students may select, in consultation with the advisor, any PUBH 84xx biostatistics topic course that is not among the core courses listed above.

**Health Science Elective**
Take 3 credits of PUBH health science electives offered by other divisions in the School of Public Health or other Academic Health Center programs.
- PUBH 6xxx
- PUBH 7xxx
- PUBH 8xxx

**Survival Analysis Course**
Take PUBH 7450 as early as possible during the PhD program. Students who have taken a course equivalent to PUBH 7450 should confer with their advisor regarding a substitute course.

- **PUBH 7450** - Survival Analysis (3.0 cr)

**Thesis Credits**
Take at least 24 doctoral thesis credits.
- **PUBH 8888** - Thesis Credit: Doctoral (1.0 - 24.0 cr)

**Curriculum for students without an MS in mathematics or statistics**
Students without the MS in mathematics or statistics must take two additional core courses. Students also are strongly recommended to gain more background in real analysis by taking MATH 4603, Advanced Calculus I, in the fall of their first year. Students with a prior analysis course may choose instead, but are not required, to take MATH 5615 and MATH 5616 as an elective.

**Additional Core Coursework**
In addition to the standard curriculum outlined above, take the following two courses:

- **PUBH 7405** - Biostatistics: Regression (4.0 cr)
- **PUBH 7406** - Advanced Regression and Design (4.0 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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- Length of program in credits: 38
- 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 field of clinical research is becoming increasingly complex and regulated. This has created a demand for formally trained clinical researchers. This program will prepare you to conduct patient-oriented research, including clinical trials and observational studies.

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.

Other requirements to be completed before admission:
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 25 major credits, 3 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 21 major credits and 7 to 11 credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: There are two options for capstone project: 1) A manuscript, for which the student is the first author who contributes to the design and analysis presented, and which is to be submitted to a peer-reviewed journal in the student's field. The manuscript cannot be a review article; however meta-analysis and formal systematic reviews are allowed. 2) A grant proposal, for which the student is Principal Investigator (PI) at the standard national institute grant mechanism level of R21, R03 or higher (example, R01), to be submitted to the National Institute of Health (NIH). Students’ choices regarding the topic and scope of their capstone project must be approved by the advisor and director of graduate studies.

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.

Students must complete both sessions of the University’s Responsible Conduct of Research course, validated by ORTTA. Students also must complete the NIH’s online training, Protection of Human Research Subjects, validated by electronic certificate upon successful completion.

Required Coursework

All students take the following courses:

- PUBH 6301 - Fundamentals of Clinical Research (3.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 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)

Plan Options

Plan A Requirements

The Plan A curriculum prepares the next generation of clinical researchers and principal investigators. It covers clinical trials, epidemiology, biostatistics, ethics, grant writing, and research methods. Students are trained to conduct patient-oriented, epidemiological, and behavioral research.

Plan A Coursework

Take the following courses for a total of 4 credits:

- PUBH 6303 - Clinical Research Project Seminar (2.0 cr)
- PUBH 6348 - Writing Research Grants (2.0 cr)

Outside Coursework

Take at least 3 credits in a related field to meet minimum course credit requirements.

Thesis Credits

Take at least 10 master's thesis credits.

PUBH 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

-OR-

Plan B Requirements

The Plan B curriculum prepares the next generation of translational, clinical, and outcomes researchers. The flexible curriculum, determined through consultation with mentors and the director of graduate studies, includes a core of required courses covering clinical trials, epidemiology, and biostatistics, supplemented by elective courses in translational sciences, outcomes sciences, health services research, and other areas.

Plan B Coursework

- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
  or PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
  or PUBH 7415 - Introduction to Clinical Trials (3.0 cr)

Outside Coursework

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Information current as of April 04, 2017
Take at least 7 credits in a related field to meet minimum course credit requirements.

**Capstone Project**
Take 6 to 10 credits of PUBH 8394, in consultation with the advisor and director of graduate studies.

**PUBH 8394 - Culminating Experience: Clinical Research (1.0 - 10.0 cr)**
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- Length of program in credits: 16
- This program does not require summer semesters for timely completion.
- Degree: Clinical Research 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 University of Minnesota offers a unique environment for clinical research training as a national center of academic clinical research and having a substantial portfolio of clinical research within the Academic Health Center. This certificate is designed for clinicians and other health professionals who have at least five years of relevant experience and who want to learn how to design, implement, and interpret clinical research studies.

Of the 16 required credits, 11 are are offered entirely online.

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

Program Delivery
This program is available:
- 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.

Other requirements to be completed before admission:
Applicants are required to have a baccalaureate degree and either a minimum of five years of relevant clinical research experience or GRE scores.

Special Application Requirements:
Applicants must submit to SOPHAS Express, a centralized online application service:
- Completed SOPHAS Express application and application fee, designating the University of Minnesota School of Public Health
- Personal statement describing the applicant's reason for applying, career goals, and how the certificate will help them achieve their goals
- One letter of recommendation
- Unofficial transcripts of record from each college/university where a degree was earned. (If admitted, official transcripts will need to be sent directly to the School of Public Health.)
- Resume or C.V.

For detailed application requirements and instructions visit www.sph.umn.edu.

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 towards program requirements is not permitted.

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 7415 - Introduction to Clinical Trials (3.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
Community Health Promotion M.P.H.

School of Public Health - Adm

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- 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.

Other requirements to be completed before admission:
Applicants must have one year of community, social service or public health experience. An introductory course in statistics and three to four social and behavioral science courses are also required. The average undergraduate GPA for admitted applicants is a 3.5.

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 promotion degree
- Compatibility of interests with program faculty
- GPA of 3.0
- Combined GRE score of 300 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: 150
  - General Test - Quantitative Reasoning: 150
  - General Test - Analytical Writing: 3.5
- 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 C: Plan C requires 34 to 48 major credits and 0 to 14 credits outside the major. There is no final exam. A capstone project is required.

Capstone Project: Culminating experience of either needs assessment, program development, program evaluation, or 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.

Theory
- 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
Take 8 or more credit(s) from the following:
Students must select one course from the following list:
Take 1 or more course(s) from the following:
• PUBH 6000 - Topics: Community Health Education (0.5 - 4.0 cr)
• PUBH 6010 - Public Health Approaches to HIV/AIDS (3.0 cr)
• PUBH 6055 - Social Inequalities in Health (2.0 cr)
• PUBH 6085 - Alcohol and Tobacco: Ongoing Threats to Global Health (2.0 cr)

**Intervention Approaches**
Students must select at least two courses from the following list:
Take 2 or more course(s) from the following:
• PUBH 6025 - e-Public Health (2.0 cr)
• PUBH 6045 - Skills for Policy Development (1.0 cr)
• PUBH 6049 - Legislative Advocacy Skills for Public Health (3.0 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)
• SW 8551 - Advanced Community Practice: Assessment, Organizing, and Advocacy (3.0 cr)

**Assessment Methods**
Take exactly 2 course(s) from the following:
• PUBH 6034 - Evaluation (3.0 cr)
• PUBH 6035 - Applied Research Methods (3.0 cr)

**Additional Assessment Methods**
Students must select one course from the following list:
PUBH 6600 - Topics: Maternal and Child Health (0.5 - 4.0 cr)
or PUBH 6415 - Biostatistical Methods II (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)
or PUBH 6617 - Practical Methods for Secondary Data Analysis (3.0 cr)

**SPH Core Courses**

**Environmental Health**
PUBH 6101 - Environmental Health (2.0 cr)
or PUBH 6102 - Issues in Environmental Health (2.0 cr)

**Epidemiology**
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 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)

**Management**
Take exactly 1 course(s) from the following:
• PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

**Field Experience and Culminating Experience**
PUBH 7096 - Field Experience: Community Health Promotion (1.0 - 6.0 cr)
PUBH 7094 - Culminating Experience: Community Health Promotion (1.0 - 6.0 cr)

**Electives**
Electives to total 48 credits.

**Joint- or Dual-degree Coursework:** Master of Social Work (MSW), Juris Doctorate (JD).
Student may take a total of 12 credits in common among the academic programs.

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

**Health Disparities Interdisciplinary Concentration Area**
The Health Disparities Interdisciplinary Concentration (HDIC) 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. 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 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
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

• Program Type: Master's
• Requirements for this program are current for Fall 2016
• Length of program in credits: 42 to 52
• 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.

The School of Public Health (SPH) and College of Biological Sciences (CBS) offer an early-admission opportunity for eligible University CBS students interested in completing the MPH Environmental Health degree. Interested CBS students should contact their college office or the SPH for more information.

Accreditation
This program is accredited by Council on Education for Public 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)

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/medicine applicants must have a relevant degree from an accredited school.

Required prerequisites
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.

Other requirements to be completed before admission:
For more information visit www.sph.umn.edu

Special Application Requirements:
To be considered for admission to Environmental Health's Accelerated MPH program, prospective students must be in their junior year, and in good academic standing (3.25 minimum GPA) in one of the BS degree programs offered by the University's College of Biological
Schools. In lieu of the GRE, applicants to the accelerated MPH program must complete an interview with environmental health admissions committee.

Applicants must submit their test score(s) from the following:
- **GRE**
  - General Test - Verbal Reasoning: 150
  - General Test - Quantitative Reasoning: 150
  - General Test - Analytical Writing: 3.5
- **GMAT**
- **MCAT**
  - Verbal Reasoning score: 10
  - Physical Science score: 10
  - Biological Reasoning score: 10
  - Writing Sample score: 10
- **LSAT**
  - Law School Admission Test (LSAT) score: 140
- **DAT**
  - Score: 15

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 C:** Plan C requires 42 to 52 major credits and up to null credits outside the major. There is no final exam. A capstone project is required.

**Capstone Project:** This requirement is met by registering for PUBH 7194 Culminating Experience: Environmental Health for a minimum of 3 credits. Results in a written paper and presentation and oral exam. Students choose from a broad set of project options including a Plan B style project. The project must be required to be relevant to the field of environmental health and should represent a minimum of 120 hours of work. Minimum program length is 42 credits.

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.

**Concentration Areas**

**General Program**

Students looking for a program of study that does not fit precisely with the defined concentrations in the major may be admitted to this program. Emphasis is on the development of a broad, solid foundation, with a larger than usual number of elective credits to allow the student an opportunity to pursue their particular interests. It is occasionally possible for students to transfer into a different concentration after admission to the general program.

**Public Health Core Courses**
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6414 - Biostatistical Literacy (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)

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

Concentration Courses
PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 cr)
PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)

Electives
Selected in consultation with adviser to meet the 42 credit minimum requirement.

-OR-

Environmental and Occupational Epidemiology (EOE)
Env Occ Epi strives to understand the causal impact of environment and occupation on human health. 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 - requiring knowledge of both subject matter and methods. Students may focus in one of three these areas: exposures related to cancer, exposures related to injury, or epidemiologic methods.

Public Health Core Courses
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)
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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

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

Elective Courses
Select electives in consultation with adviser to meet the 42 credits requirement
Take exactly 0 course(s) totaling exactly 0 credit(s) from the following:
• PUBH 6150 - Interdisciplinary Evaluation of Occupational Health and Safety Field Problems (3.0 cr)
• PUBH 6160 - Systems Toxicology (3.0 cr)
• PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
• PUBH 6171 - [Inactive](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 6386 - 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
This concentration provides broad, multidisciplinary training in environmental health issues, including occupational health, risk assessment, risk management, decision making, and policy analysis. Internship experiences are arranged with leading occupational and environmental health policy experts who assist students with synthesizing and applying their academic experiences to potential professional settings. Students participate in ongoing research.
Environmental Health Policy
Public Health Core Course 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)
  or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6414 - Biostatistical Literacy (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 (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Culinating Experience: Environmental Health (1.0 - 5.0 cr)
  or PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Concentration Program Course Requirements
- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 cr)
- PUBH 6115 - Worker Protection Law (1.0 cr)
- PUBH 6116 - Environmental Law (1.0 cr)

Electives
Select electives in consultation with adviser.
Take exactly 0 course(s) totaling exactly 0 credit(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 - Children and Families: Public Health Policy and Advocacy (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 - 3.0 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 5091 - Ecological Anthropology (3.0 cr)
- ANTH 8203 - Research Methods in Social and Cultural Anthropology (3.0 cr)
- PA 5001 - Intellectual Foundations of Public Action (1.5 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 - 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, Technology & Environmental Policy (3.0 cr)
- PA 5722 - Environmental and Resource Economics Policy (3.0 cr)
- PUBH 6863 - 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
This program explores the environmental factors associated with infectious diseases and the emergence of food-borne diseases in the United States and around the world. The environment and changing conditions have a great impact on the distribution and occurrence of infectious diseases. In evaluating the chain of infection, the environment may play a key role in reservoir maintenance. Coursework includes basic principles of infection control and predicting the impact of emerging infections.

Public Health Core 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 6341 - Epidemiologic Methods I (3.0 cr)
  or VMED 5180 - Ecology of Infectious Disease (3.0 cr)
- PUBH 6414 - Biostatistical Literacy (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 (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

**Concentration Courses**

- 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 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
- VMED 5180 - Ecology of Infectious Disease (3.0 cr)

**Recommended Electives**

Select electives in consultation with adviser.

- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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)
- BIOL 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*

**Global Environmental Health**

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 rapid movement of populations from one part of the world to the other are important vectors for the spread of disease globally.

**Public Health Core Courses**

- 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 Literacy (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 (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

**Concentration Courses**

- PUBH 6131 - Working in Global 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)

**Recommended Electives**

Selected in consultation with adviser to meet the 42 credit minimum requirement.

*OR*

**Occupational and Environmental Health Nursing (OEHN)**

Occupational and Environmental Health Nursing 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.

**Public Health Core Courses**

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6414 - Biostatistical Literacy (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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Occupational and Environmental Health Nursing Courses
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 (inactive) (3.0 cr)
NURS 8600 (inactive) (2.0 cr)

Recommended Electives
Select electives in consultation with adviser to meet the 42 credit minimum requirement.
Take exactly 0 course(s) totaling exactly 0 credit(s) from the following:
• PUBH 6034 - Evaluation (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)
• PUBH 6871 - Qualitative Research Design and Methods (3.0 - 4.0 cr)

-OR-

Occupational and Environmental Medicine
The Occupational and Environmental Medicine (OEM) residency program trains physicians who will improve the health and safety of workers. The program emphasizes a solid clinical basis for the practice of occupational medicine and the management of patients with work-related health problems, as well as the identification and remediation of occupational risks and hazards in the workplace.

Public Health Core Courses
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 Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Concentration Courses
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 to meet the 42 credit minimum requirement.

-OR-

Regulatory Toxicology and Risk Assessment
Regulatory toxicology and risk assessment teaches students to think analytically about the biochemical mechanisms of toxicity, and how toxicology 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. Emphases: biological sciences, physiology, biochemistry, cellular and molecular biology, toxicology.

Public Health Core Courses
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (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 (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

### Concentration Courses
- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 cr)
- PUBH 6160 - Systems Toxicology (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
- Selected in consultation with adviser to meet the 42 credit minimum requirement.

### Joint- or Dual-degree Coursework:
Master of Public Health and Juris Doctor (MPH/JDP). Student may take a total of 12 credits in common among the academic programs.

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


### 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 6450 - Biostatistics I (4.0 cr)

### Division Core Course Requirements
- PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
- PUBH 6104 - Environmental Health Effects (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Culminating Experience: 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)

### Industrial Hygiene Electives
Select electives in consultation with adviser to meet the 52 credit minimum requirement.
Take 0 or more credit(s) from the following:

- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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 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)
- CEGE 4561 - Solid Hazardous Wastes (3.0 cr)
- CEGE 5551 - Environmental Microbiology (3.0 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)

Accelerated M.P.H. Program
This sub-plan is limited to students completing the program under Plan C.

The School of Public Health and the College of Biological Sciences offer an early-admission opportunity for eligible University of Minnesota Bachelor of Science students also interested in completing the Master's of Public Health (MPH) Environmental Health degree. The Accelerated MPH Environmental Health sub-plan enables majors from CBS undergraduate programs to take 12 MPH credits during their senior (fourth) year, and to complete the MPH after a fifth year of full-time graduate student plus one summer. Interested CBS undergraduates should contact their CBS college advisor for more information. The MPH accelerated program sub-plan application deadline is during the spring of the student's junior year, and admission to the MPH accelerated program sub-plan is contingent on a formal admissions process. Check sph.umn.edu for specific application deadline and instructions. Students admitted to the accelerated program sub-plan must maintain timely degree progress to ensure the bachelor of science is awarded by the end of their fourth year. The MPH accelerated program sub-plan is open to students in the CBS Bachelor of Science programs.

Accelerated M.P.H. Program
Public Health Core Courses
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6414 - Biostatistical Literacy (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)

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

Accelerated MPH Concentration Courses
- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 cr)
- PUBH 6181 - Surveillance of Foodborne Diseases and Food Safety Hazards (2.0 cr)
- PUBH 6700 - Foundations of Public Health (3.0 cr)
- PUBH 6100 Careers in Environmental Health

Electives
Selected in Consultation with adviser to meet the 42 credit minimum requirement

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 (HDIC) 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. 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., 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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- Length of program in credits: 33 to 56
- 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.

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.

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 concentration requires different preparation: http://www.sph.umn.edu/programs/ehs/tracks/index.asp

Required prerequisites
Industrial Hygiene
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.

Other requirements to be completed before admission:
Please visit www.sph.umn.edu for admission requirements.

Applicants must submit their test score(s) from the following:
• GRE
  - General Test - Verbal Reasoning: 150
  - General Test - Quantitative Reasoning: 150
  - 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 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 27 to 45 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 3 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 concentration 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 or Plan C.

**Concentration Areas**

Students may pursue a general program in environmental and occupational health, or focus in a concentration area with basic required courses, 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 (2.0 cr)
- **PUBH 6105** - Environmental and Occupational Health Policy (2.0 cr)

**Specialty Program Course Requirements**

- **CEGE 5541** - Environmental Water Chemistry (3.0 cr)
Proposed Electives
Select electives in consultation with adviser.
Take 0 or more credit(s) from the following:
• CEGE 4561 - Solid Hazardous Wastes (3.0 cr)
• CEGE 8503 - Environmental Mass Transport (4.0 cr)
• CEGE 8542 - Chemistry of Organic Pollutants in Environmental Systems (3.0 cr)
• CEGE 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. 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 (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 - Culminating 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 credit(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 6385 - 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)

-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 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)
PUBH 6414 - Biostatistical Literacy (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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)
PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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 credit(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 - Introduction to SAS Programming (1.0 cr)
- PUBH 6634 - Children and Families: Public Health Policy and Advocacy (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 - 3.0 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 (1.5 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 - 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, Technology & Environmental Policy (3.0 cr)
- PA 5722 - Environmental and Resource Economics Policy (3.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)
-OR-

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)

Division Core Courses
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects (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 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)

Specialty Program Course Requirements
PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (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 credit(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)
• BIOL 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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Culminating Experience: 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 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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 Literacy (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 (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 - Culminating Experience: Environmental Health (1.0 - 5.0 cr)

Concentration Program Course Requirements
Choose at least two courses from each of the following Environmental Health focus areas.

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

• PUBH 6190 - Environmental Chemistry (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)
• VMED 5180 - Ecology of Infectious Disease (3.0 cr)

**Policy**
Check with adviser for other policy class options.

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

• PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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 Literacy (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 (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 - Culminating 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 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 (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Culminating Experience: 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 (Inactive) (2.0 cr)
- NURS 8170 (Inactive) (3.0 cr)

Recommended Electives

Select electives in consultation with adviser.
Take 3 or more credit(s) from the following:

- PUBH 6034 - Evaluation (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 (Inactive) (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.

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.


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 Literacy (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 (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7194 - Culminating Experience: 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)

Industrial Hygiene Electives

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

- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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)
• CEGE 4561 - Solid Hazardous Wastes (3.0 cr)
• CEGE 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, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2016
- 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 master's minor requires a minimum of 6 graduate credits; the doctoral minor requires a minimum of 12 graduate credits. Courses for the minor must be selected from those offered by the School of Public 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)

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

Admission to a University graduate program in a related discipline is required.

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.

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.

Master's
Required Courses
Take the following three courses to meet the 6-credit minimum:
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

Doctoral
Required EnvHlth Courses
Take the following three courses for 6 credits:
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

**Required Epi Courses**
Take one of the two following courses for at least 3 credits:
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)

**Required Biostats Courses**
Take one of the two following courses for at least 3 credits:
PUBH 6414 - Biostatistical Literacy (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)
Environmental Health Ph.D.

School of Public Health - Adm

Twin Cities Campus

Link to a list of faculty for this program.

Contact Information:
School of Public Health, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Doctorate
- Requirements for this program are current for Fall 2016
- Length of program in credits: 48 to 74
- 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.

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.

Other requirements to be completed before admission:
For more information visit www.sph.umn.edu

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 150
  - General Test - Quantitative Reasoning: 150
  - General Test - Analytical Writing: 4
- GMAT
- MCAT
  - Verbal Reasoning score: 10
  - Physical Science score: 10
  - Biological Reasoning score: 10
- LSAT

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
Program Requirements
24 to 50 credits are required in 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.

Concentration Areas

Environmental Chemistry
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. This concentration requires a minimum of 54 total course credits.

Environmental Chemistry
Public Health Core Courses
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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

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

Electives
Select electives in consultation with adviser to meet the 54 total credit minimum.
Take 1 or more course(s) from the following:
- CONS 8004 - Economic and Social Aspects of Conservation Biology (3.0 cr)
- CEGE 4561 - Solid Hazardous Wastes (3.0 cr)
- CEGE 8503 - Environmental Mass Transport (4.0 cr)
- CEGE 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 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. This concentration requires a minimum of 53 total course credits.

Public Health Core Courses

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Information current as of April 04, 2017
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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

**Concentration Program Courses**
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 - Epidemilogic Uncertainty Analysis (2.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

**Electives**
Select electives in consultation with adviser to meet the required minimum of 54 course credits.
Take 1 or more course(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 policy provides broad, multidisciplinary training in environmental health issues, including occupational health, risk assessment, risk management, decision making, and policy analysis. This concentration requires a minimum of 61 total course credits.

**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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

**Program Course Requirements**
PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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)

**Electives**
Select electives in consultation with adviser to meet the minimum of 61 total course credits.
Take 1 or more course(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 [inactive] (2.0 cr)
- PUBH 6420 - Introduction to SAS Programming (1.0 cr)
- PUBH 6634 - Children and Families: Public Health Policy and Advocacy (2.0 cr)
Environmental Infectious Diseases

The study of Environmental Infectious Diseases is concerned with the emergence of foodborne 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. Minimum 63 total course credits.

Public Health Core Courses
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 (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Concentration Program Courses
PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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)
PUBH 6380 - Ecology of Infectious Diseases (3.0 cr)
PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
PUBH 6451 - Biostatistics II (4.0 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)

Recommended Electives
Select electives in consultation with adviser to meet the minimum required 63 total course credits.
Take 1 or more course(s) from the following:
• PUBH 6381 - Genetics in Public Health (2.0 cr)
• PUBH 6355 - Pathophysiology of Human Disease (4.0 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 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)
Occupational and Environmental Health Nursing

Occupational and Environmental Health Nursing 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. This concentration requires a minimum of 68 total course credits.

Public Health Core Courses

- 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 (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 7196 - Field Experience: Environmental Health (1.0 - 5.0 cr)

Concentration Program Courses

- 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)

Recommended Electives

Select electives in consultation with adviser to meet the required minimum of 68 total course credits. Take 1 or more course(s) from the following:

- PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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)

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. Requires a minimum of 52 total course credits.

Public Health Core Courses

- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
- PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Concentration Program Courses

- 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)
- BIOC 4332 - Biochemistry II: Molecular Mechanisms of Signal Transduction and Gene Expression (4.0 cr)
  or BIOC 8801 - 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 to fulfill the requirement of 52 total course credits. Take 1 or more course(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 Literacy (3.0 cr)
- PUBH 6160 - Systems Toxicology (3.0 cr)
-OR-

Occupational Injury Prevention Research Training

Occupational Injury Prevention Research Training (OIPRT), in concert with programs in Occupational Medicine, Occupational Health Nursing, and Industrial Hygiene, among others, is part of the nationally funded Midwest Center for Occupational Health and Safety. This program provides a multifaceted approach to advanced academic and research training, with a primary goal to prevent and control occupational injuries. This concentration requires a minimum of 74 total course credits.

Epidemiology Course Requirements
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6343 - Epidemiologic Methods III (4.0 cr)

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

Environmental Health Sciences Core Course Requirements
- PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
- PUBH 6104 - Environmental Health Effects (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)

OIPRTTP Course Requirements
- See main website for more information: http://sph.umn.edu/
- 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 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 6325 - Data Processing with PC-SAS (1.0 cr)
- PUBH 6742 - Ethics in Public Health Research and Policy (1.0 cr)
- PUBH 8100 - Topics: Applied Analyses of Occupational Health Data (1.0 - 4.0 cr)
- PUBH 8120 - Occupational Health and Safety Research Seminar (1.0 cr)
- PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
- PUBH 8141 - Doctoral Seminar in Observational Inference (2.0 cr)
- GRAD 8101 - Teaching in Higher Education (3.0 cr)
- IE 5511 - Human Factors and Work Analysis (4.0 cr)
- IE 5513 - Engineering Safety (4.0 cr)
- PSY 5501 - Vocational and Occupational Health Psychology (3.0 cr)

Grants Writers' Seminars and Workshops, L.L.C: Write Winning Grants (2 days)

ERC Interdisciplinary Seminar Series (minimum attendance: 5 of 9 per year)

Thesis Credit Requirement
- 24 thesis credits required.
- PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Electives
- Electives chosen in consultation with advisor to meet the minimum required 74 course credits.
- Take 1 or more course(s) from the following:
  - PUBH 6348 - Writing Research Grants (2.0 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 7430 - Statistical Methods for Correlated Data (3.0 cr)
  - PUBH 7435 - Latent Variable Measurement Models and Path Analysis (3.0 cr)
  - PUBH 7450 - Survival Analysis (3.0 cr)
  - PUBH 8142 - Epidemiologic Uncertainty Analysis (2.0 cr)
  - PUBH 8813 - Measurement of Health-Related Social Factors (3.0 cr)
  - GRAD 8102 - Practicum for Future Faculty (3.0 cr)
  - GRAD 8200 - Teaching and Learning Topics in Higher Education (1.0 cr)
  - PUBH 6115 - Worker Protection Law (1.0 cr)
  - PUBH 6116 - Environmental Law (1.0 cr)
  - PUBH 6123 - Violence Prevention and Control: Theory, Research, and Application (2.0 cr)
  - PUBH 6130 - Occupational Medicine: Principles and Practice (2.0 cr)
  - PUBH 6173 - Exposure to Physical Agents (2.0 cr)
  - PUBH 6344 - Completing the Culminating Experience: Secondary Data Analysis (2.0 cr)
  - PUBH 6355 - Pathophysiology of Human Disease (4.0 cr)
  - PUBH 6806 - Principles of Public Health Research (2.0 cr)
  - PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)

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Information current as of April 04, 2017
Occupational Health Services Research and Policy
The OHSRP training program is an innovative collaboration between the Division of Environmental Health Sciences and the Division of Health Policy and Management. The program prepares researchers that will help meet the demand for more rigorous evaluation of workplace policies and programs designed to reduce the nation's burden of occupational illness and injury and to protect and promote the well-being of the American workforce. This concentration requires a minimum of 74 total credits.

Public Health Core Curriculum
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 6170 - Introduction to Occupational Health and Safety (3.0 cr)
- PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
- PUBH 6104 - Environmental Health Effects (2.0 cr)
- PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
- PUBH 8120 - Occupational Health and Safety Research Seminar (1.0 cr)

Supporting Coursework in Health Policy and Management
- PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
- PUBH 6855 - Medical Sociology (3.0 cr)
- PUBH 8801 - Health Services Policy Analysis: Theory (3.0 cr)
- PUBH 6845 - Using Demographic Data for Policy Analysis (3.0 cr)

Potential Electives
Select electives in consultation with advisor to meet the required minimum of 74 total credits. Take 1 or more course(s) from the following:
- PUBH 6803 - Conducting a Systematic Literature Review (3.0 cr)
- PUBH 6810 - Survey Research Methods (3.0 cr)
- PUBH 8813 - Measurement of Health-Related Social Factors (3.0 cr)
- PUBH 6325 - Data Processing with PC-SAS (1.0 cr)
- PUBH 6835 - Principles of Health Policy (2.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
- PUBH 8140 - Validity Concepts in Epidemiologic Research (2.0 cr)
- PUBH 8142 - Epidemiologic Uncertainty Analysis (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.

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.

Required Coursework
The Industrial Hygiene 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. Requires a minimum of 63 total credits.

Public Health Core Courses
- 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)
- PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

Choose one of the following courses:
- PUBH 6414 - Biostatistical Literacy (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)

**Environmental Health Core Courses**
PUBH 6103 - Exposure to Environmental Hazards (2.0 cr)
PUBH 6104 - Environmental Health Effects (2.0 cr)
PUBH 6105 - Environmental and Occupational Health Policy (2.0 cr)
PUBH 7194 - Culminating Experience: 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)

**Industrial Hygiene Electives**
Select electives in consultation with adviser.
Take 1 or more course(s) from the following:
- PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 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)
- CEGE 4561 - Solid Hazardous Wastes (3.0 cr)
- CEGE 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)

**Course Group 1**
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- 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.

Students complete a 48-credit curriculum for the standard program. Many epidemiology and other health-related graduate-level courses are available as electives. These allow students to develop a specialty emphasis in either specific public health topics or methodological areas. The 48-credit curriculum includes 22 Epidemiology core course credits, 8 SPH core course credits, 8 credits of biostatistics, and elective credits. An alternative, 42-credit curriculum is offered for students who have completed M.D., D.D.S., D.V.M., or Ph.D. work in a related field. The 42-credit curriculum includes 18 Epidemiology core course credits, 8 SPH core course credits, 8 credits of biostatistics, and elective credits. The standard and alternate programs require a final examination.

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.

Minimum qualifications include a baccalaureate degree with coursework in the basic sciences. Occupational health nursing/medicine applicants must have a relevant degree from an accredited school.

Other requirements to be completed before admission:
For more information visit www.sph.umn.edu

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 150
  - General Test - Quantitative Reasoning: 150
  - General Test - Analytical Writing: 3.5
• GMAT
• MCAT
  - Verbal Reasoning score: 10
  - Physical Science score: 10
  - Biological Reasoning score: 10
  - Writing Sample score: 10
• 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 C: Plan C requires 18 to 22 major credits and 24 to 26 credits outside the major. The is no final exam. A capstone project is required.

Capstone Project: Culminating Experience

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 6350 - Epidemiologic Methods III: Lab (1.0 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 6420 - Introduction to SAS Programming (1.0 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)
or PUBH 6389 - Nutritional Epidemiology (2.0 cr)
or PUBH 6381 - Genetics in Public Health (2.0 cr)
or PUBH 6605 - Reproductive and Perinatal Health (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)
  - PUBH 6101 - Environmental Health (2.0 cr)
or PUBH 6102 - Issues in Environmental 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.

**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 (HDIC) 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. 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

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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- 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.

Other requirements to be completed before admission:
Please visit www.sph.umn.edu for admission requirements.

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 semesters 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 (MPH) program through the School of Public Health (SPH). For more information on the MPH degree, please 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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2016
- 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 minors in epidemiology are open to students in master's and doctoral programs that allow a minor, and who want to take some focused coursework in epidemiology. For the doctoral minor, there is the expectation that an aspect of epidemiology is incorporated into the student's doctoral thesis, and a requirement that an epidemiology faculty member represent the minor on the student's preliminary oral and final oral committees.

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.

Other requirements to be completed before admission:
Admission to the epidemiology graduate minor is contingent upon prior admission to a University of Minnesota master’s or doctoral degree-granting program. Students should first consult with their major program advisor about the advisability of a minor in epidemiology. They will then need to contact the program level assistants about the minor and how to get approval to complete it. For the master's minor, please contact Shelley Cooksey at cooks001@umn.edu; for the doctoral minor, please contact Andrea Kish at kish@umn.edu.

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.

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.

Masters
Required Courses
PUBH 6341 - Epidemiologic Methods I (3.0 cr)
PUBH 6342 - Epidemiologic Methods II (3.0 cr)
Take 2 or more credit(s) from the following:
- PUBH 6381 - Genetics in Public Health (2.0 cr)
• PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
• PUBH 6386 - Public Health Aspects of Cardiovascular Disease (2.0 cr)
• PUBH 6387 - Cancer Epidemiology (2.0 cr)
• PUBH 6389 - Nutritional Epidemiology (2.0 cr)
• PUBH 6605 - Reproductive and Perinatal Health (2.0 cr)

Doctoral

Doctoral Minor Options
The doctoral minor can be completed in one of two ways: Option 1 is for students with prior epidemiology training; Option 2 is for students without prior epidemiology training.

Option 1
Option 1 is for students with prior training in epidemiology.

Required Coursework
Take the following courses for a total of 10 credits:
- PUBH 8341 - Advanced Epidemiologic Methods: Concepts (3.0 cr)
- PUBH 8342 - Advanced Epidemiologic Methods: Applications (3.0 cr)
- PUBH 7401 - Fundamentals of Biostatistical Inference (4.0 cr)

Electives
Take at least 2 credits in an epidemiology- or biostatistics-related area, as approved by the epidemiology director of graduate studies.
- PUBH 5xxx
- PUBH 6xxx
- PUBH 7xxx
- PUBH 8xxx

-OR-

Option 2
Option 2 is for students without prior training in epidemiology.

Required Coursework
Take the following 3 courses for at least 10 credits:
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6342 - Epidemiologic Methods II (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)

Electives
Take at least two credits in an epidemiology- or biostatistics-related area, as approved by the epidemiology director of graduate studies.
- PUBH 5xxx
- PUBH 6xxx
- PUBH 7xxx
- PUBH 8xxx
Contact Information:
School of Public Health, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Doctorate
- Requirements for this program are current for Fall 2016
- Length of program in credits: 61
- 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 PhD 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 61 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 1.

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Analytical Writing: 4

International applicants must submit score(s) from one of the following tests:
- TOEFL
  - Internet Based - Total Score: 100
Program Requirements
37 credits are required in 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 PhD program includes a minimum curriculum of 61 credits. Students must pass written and oral preliminary examinations, serve as a teaching assistant for one semester, write and defend a dissertation, and prepare a first-authored manuscript for publication.

Required Coursework
Take the following courses for a total of 13 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 8341 - Advanced Epidemiologic Methods: Concepts (3.0 cr)
- PUBH 8342 - Advanced Epidemiologic Methods: Applications (3.0 cr)

Take one of the following teaching courses for at least 1 credit:
- GRAD 8101 - Teaching in Higher Education (3.0 cr)
or
- GRAD 8200 - Teaching and Learning Topics in Higher Education (1.0 cr)

Thesis Credits
Take at least 24 doctoral thesis credits.
- PUBH 8888 - Thesis Credit: Doctoral (1.0 - 24.0 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
A minimum of 23 credits is required.

Biological Methods/Statistics Requirement (6 credits minimum)
Take one of the following required courses:
- PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)
or
- PUBH 6363 - Design and Analysis of Group-Randomized Trials in Epidemiology (3.0 cr)
Choose additional credits from the following to complete the biological methods/statistics requirement:

- PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)
- PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
- PUBH 7407 - Analysis of Categorical Data (3.0 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 8804 - Advanced Quantitative Methods Seminar (3.0 cr)

**Content Area Requirement (4 credits minimum)**

Take at least 4 credits from the following:

- 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)

**Additional Credits (13 credits minimum)**

Select courses in consultation with the advisor. Courses can include biological methods/statistics courses listed above not used to satisfy the biological methods/statistics requirement, or other appropriate courses.

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**Social/Behavioral Epidemiology**

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**

A minimum of 23 credits is required.

**Behavioral Methods/Statistics Requirement (6 credits minimum)**

Take one of the following required courses:

- PUBH 6363 - Design and Analysis of Group-Randomized Trials in Epidemiology (3.0 cr)
- OR PUBH 7420 - Clinical Trials: Design, Implementation, and Analysis (3.0 cr)

Choose additional credits from the following to complete the Behavioral Methods/Statistics requirement:

- 1 or more course(s) from the following:
  - PUBH 7402 - Biostatistics Modeling and Methods (4.0 cr)
  - PUBH 7430 - Statistical Methods for Correlated Data (3.0 cr)
  - PUBH 7407 - Analysis of Categorical Data (3.0 cr)
  - PUBH 6915 - Nutrition Assessment (2.0 cr)
  - PUBH 8804 - Advanced Quantitative Methods Seminar (3.0 cr)

**Content Area Requirement (4 credits minimum)**

Take at least 4 credits from the following:

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

**Additional Credits (13 credits minimum)**

Select courses in consultation with the advisor. Courses can include biological methods/statistics courses listed above not used to satisfy the biological methods/statistics requirement, or other appropriate courses.
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:
School of Public Health, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-osrr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2016
- 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)

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

Other requirements to be completed before admission:
Admission to the gerontology minor is contingent upon prior admission to a master's or doctoral degree-granting program.

Students should first consult with their major program adviser about the advisability of a minor in gerontology. They will then need to contact the director of graduate studies, Dr. Robert Kane at kanex001@umn.edu, for minor information and to design their course program.

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.

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 credit(s) from the following:
• FSOS 8105 - Family Gerontology (3.0 cr)
• GERO 5100 - Topics in Gerontology (0.5 - 4.0 cr)
• 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)
• GERO 5125 - Gerontology Service Learning (3.0 cr)
• GERO 8021 - Application of Proteomics to Aging (1.0 cr)
• GERO 8022 - Fostering a Career in Aging Research (1.0 cr)
• GERO 8023 - Aging Policy Seminar (2.0 cr)
• PUBH 6904 - Nutrition and Aging (2.0 cr)
• PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)
• SW 5810 - Seminar: Special Topics (1.0 - 4.0 cr)

-OR-

Doctoral Minor
Take 12 or more credit(s) from the following:
• FSOS 8105 - Family Gerontology (3.0 cr)
• GERO 5100 - Topics in Gerontology (0.5 - 4.0 cr)
• 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)
• GERO 5125 - Gerontology Service Learning (3.0 cr)
• GERO 8021 - Application of Proteomics to Aging (1.0 cr)
• GERO 8022 - Fostering a Career in Aging Research (1.0 cr)
• GERO 8023 - Aging Policy Seminar (2.0 cr)
• PUBH 6904 - Nutrition and Aging (2.0 cr)
• PUBH 8803 - Long-Term Care: Principles, Programs, and Policies (2.0 cr)
• SW 5810 - Seminar: Special Topics (1.0 - 4.0 cr)
Global Health 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, A395 Mayo Memorial Building, 420 Delaware Street SE, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636; FAX 612-624-4498.
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- Length of program in credits: 15
- This program does not require summer semesters for timely completion.
- Degree: Global Health 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 global nature of public health is increasingly apparent and recognized by all including the United Nations, individual nations, and numerous non-governmental agencies (NGOs). Public Health students and professionals also recognize this need and many aspire to careers in global health. The certificate program will leverage Minnesota faculty skills and international connections to provide career-building experiences for our graduate (MS, PhD) and professional (MPH) students.

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.

Other requirements to be completed before admission:
Applicants must hold a baccalaureate degree.

Special Application Requirements:
Applicants must submit to SOPHAS Express, a centralized online application service:
- Completed SOPHAS Express application and application fee, designating the University of Minnesota School of Public Health
- Personal statement describing the applicant's reason for applying, career goals, and how the certificate will help them achieve their goals
- One letter of recommendation
- Unofficial transcripts of record from each college/university where a degree was earned. (If admitted, official transcripts will need to be sent directly to the School of Public Health.)
- Resume or C.V.

For detailed application instructions and requirements visit 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

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.

#### Global Health Certificate Requirements

- **PubH 6390** -- Topics in Epidemiology: Foundations of Global Health (2.0 cr)
- **PubH 7200** -- Topics in Public Health Practice: Global Health Certificate Capstone Seminar (1.0 cr)
- **PUBH 6131** - Working in Global Health (2.0 cr)
- **PUBH 7296** - Field Experience: Public Health Practice (0.5 - 8.0 cr)

#### 8 credits of electives

Students must complete a minimum of 8 elective credits. Below is an approved list, but other global health related courses may be considered. Please consult with the Global Health certificate program staff about seeking elective approval.

- **PUBH 6085** - Alcohol and Tobacco: Ongoing Threats to Global Health (2.0 cr)
- **PUBH 6134** - Sustainable Development and Global Public Health (2.0 cr)
- **PUBH 6290** - International Humanitarian Crisis Simulation (1.0 cr)
- **PUBH 6385** - Epidemiology and Control of Infectious Diseases (2.0 cr)
- **PUBH 6601** - Born a Girl: Global Women’s Health (1.0 cr)
- **PUBH 6605** - Reproductive and Perinatal Health (2.0 cr)
- **PUBH 6686** - Global Reproductive Health (2.0 cr)
- **PUBH 6730** - International Comparative Health Systems (2.0 cr)
- **PUBH 6807** - Global Health Relief, Development, and Religious and Non-Religious NGOs (3.0 cr)
- **PUBH 6906** - Global Nutrition (2.0 cr)
- **PUBH 7262** - Globalization and Health (1.0 cr)
- **PA 5451** - Immigration, Health and Public Policy (3.0 - 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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- 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 (CAHME)

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.

Other requirements to be completed before admission:
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.

Visit SPH for detailed application requirements at www.sph.umn.edu

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: 150
  - General Test - Quantitative Reasoning: 150
  - 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 up to null credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: Please see website for information: www.sph.umn.edu

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.

Required Courses
PUBH 6560 - Operations Research and Quality in Health Care (3.0 cr)
PUBH 6556 - Health and Health Systems (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 6562 - Information Technology in Health Care (2.0 cr)
PUBH 6558 - Health Finance II (3.0 cr)
PUBH 6565 - Innovation of Healthcare Services (2.0 cr)
PUBH 6568 - Interprofessional Teamwork in Health Care (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)

Advanced Problem Solving or New Product Design (Full-time MHA students only)
Students choose between the full-time or executive MHA program. 42 credits are required for the Executive MHA program, and 60 required for the full-time program. Students in the full-time program have the option of choosing the Advanced Problem Solving or New Product Design EMPHASIS with the consent of their adviser.

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 7565 - Health Care Delivery, Design & Innovation (2.0 cr)
PUBH 7556 - Health and Health Systems (2.0 cr)
PUBH 7551 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 7535 - Managerial Accounting for Health Services (3.0 cr)
PUBH 7566 - The Henry Capstone: Core Concepts in Managing Health Care Organizations (2.0 cr)
PUBH 7536 - Health Finance I (3.0 cr)
PUBH 7576 - Legal Considerations in Health Services Organizations (2.0 cr)
PUBH 7568 - Interdisciplinary Teamwork in Health Care (2.0 cr)
PUBH 7569 - Health Care Policy (1.0 cr)
PUBH 7541 - Statistics for Health Management Decision Making (3.0 cr)
PUBH 7577 - Health Finance II (3.0 cr)
PUBH 7564 - Private Purchasers of Health Care (2.0 cr)
PUBH 7547 - Health Care Human Resource Management (2.0 cr)
PUBH 7555 - Topics in Health Economics (2.0 cr)
PUBH 7562 - Information Technology in Health Care (2.0 cr)
PUBH 7571 - Organizational Integration in Health Care Delivery (2.0 cr)
PUBH 7572 - Health Care Strategies in Competitive Markets (2.0 cr)
PUBH 7573 - Managing the Embedded Medical Practice (2.0 cr)
PUBH 7553 - Health Care Management Ethics (1.0 cr)
PUBH 6570 - Topics: Healthcare Administration (1.0 - 4.0 cr)

-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 - Initiating 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 - Initiating New Product Design and Business Development (2.0 - 4.0 cr)
or PUBH 6577 (2 cr) Advanced Problem Solving.

Joint- or Dual-degree Coursework: Master of Healthcare Administration (MHA) and Master of Business Administration (MBA) Student may take a total of 24 credits in common among the academic programs.

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/Executive MHA Program

Saudi Arabia
Twin Cities Campus
Health Equity 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, 420 Delaware Street SE, Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2016
- Length of program in credits (Masters): 7
- 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 is intended for highly motivated students who are interested in addressing the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and disadvantaged social groups, both in the U.S. and globally, as well as experiencing unequal quality of and access to healthcare. The minor supports the missions of the University of Minnesota, School of Public Health, and Academic Health Center by emphasizing education, practice in the community, and promoting public health.

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.

Other requirements to be completed before admission:
Declaring this minor is contingent upon prior admission to a University master's or doctoral degree-granting program.

Students should first consult with their program advisor, then contact the Health Equity director of Graduate Studies regarding requirements.

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.

Required Capstone Seminar
All students pursuing the health equity minor must complete the following capstone seminar:
Take exactly 1 course(s) totaling exactly 1 credit(s) from the following:
• PUBH 6772 - Health Disparities Capstone Seminar (1.0 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.

Master's Coursework
Students must select coursework in consultation with their academic advisor and the Health Equity director of Graduate Studies.
Take 6 or more credit(s) from the following:

• CSPH 5115 - Cultural Awareness, Knowledge and Health (3.0 cr)
• PUBH 6066 - Building Communities, Increasing Health: Preparing for Community Health Work (2.0 cr)
• PUBH 6055 - Social Inequalities in Health (2.0 cr)
• PUBH 6855 - Medical Sociology (3.0 cr)

Doctoral Coursework
Students must select coursework in consultation with their academic advisor and the Health Equity director of Graduate Studies.

Take 11 or more credit(s) from the following:

• CSPH 5115 - Cultural Awareness, Knowledge and Health (3.0 cr)
• PUBH 6066 - Building Communities, Increasing Health: Preparing for Community Health Work (2.0 cr)
• PUBH 6055 - Social Inequalities in Health (2.0 cr)
• PUBH 6855 - Medical Sociology (3.0 cr)
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- Length of program in credits: 34
- This program requires 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 MS-HSRPA program enables students to obtain the knowledge and skills for careers as health analysts and researchers with which to develop the evidence that is used in research, clinical, business, and policy environments; examine the causes and correlations of health outcomes; and analyze quality and costs in organizational and policy contexts, such as public reporting and payment policies.

The program includes a core of courses that are foundational to research and analytics, and has a generous number of elective credits that can be applied to a specialization enabling students to tailor much of the coursework to their individual interests and career goals.

The specializations are: health intelligence and analytics; cost effectiveness; health care quality improvement/operations research; health services research and evaluation; health policy; health economics; social determinants of health; public health informatics. Students may also create their own specialization in consultation with their advisor.

The program requires a minimum of 34 credits, that can be completed in one to two years depending on the specialization.

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: 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 B: Plan B requires 19 to 23 major credits and 11 to 15 credits outside the major. The final exam is oral. A capstone project is required.

Capstone Project: There are two options for completing the master's project: 1) An industry-specific project where the student works on a project with a local organization and presents their findings. 2) Independent research conducted on a relevant topic of interest, with the guidance of the academic advisor.

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.

Good math skills are essential. Previous coursework in algebra, statistics, or other quantitative coursework is recommended.

Core Requirements

The core curriculum includes 19 to 23 credits of coursework and Plan B project credits.

Take 19 - 23 credit(s) from the following:

Coursework
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)
  or PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6806 - Principles of Public Health Research (2.0 cr)
  or PUBH 6864 - Conducting Health Outcomes Research (3.0 cr)
- PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
  or PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)

Plan B Project
Take 2 to 5 Plan B project credits, in consultation with the advisor.

PUBH 7894 - MS in Health Services Research, Policy, and Administration Plan B Project (1.0 - 5.0 cr)

Specialization Areas

Students choose from the following specialization areas, or design and propose their own specialization area, in consultation with their advisor. Remaining credits to meet minimum credit requirements or to address other areas of interest are also chosen in consultation with the advisor.

Take 11 - 15 credit(s) from the following:

Health Intelligence and Analytics
Take exactly 6 credit(s) from the following:
- PUBH 6813 - Managing Electronic Health Information (2.0 cr)
- PUBH 6814 - Data and Information for Population Health Management (2.0 cr)
- PUBH 6805 - Introduction to Project Management for Health Professionals (2.0 cr)

Cost Effectiveness
Take exactly 8 credit(s) 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 6809 - Advanced Methods in Health Decision Science (3.0 cr)

Health Care Quality Improvement/Operations Research
Take 6 or more credit(s) from the following:
- PUBH 6560 - Operations Research and Quality in Health Care (3.0 cr)
- PUBH 6765 - Continuous Quality Improvement: Methods and Techniques (3.0 cr)
- PUBH 6561 - Quantitative Methods Applied to Health Administration Problems (2.0 cr)
- PUBH 6571 - Leading Performance Improvement in Health Care (2.0 cr)
  or PUBH 6727 - Health Leadership and Effecting Change (2.0 cr)

Health Services Research and Evaluation
Take 6 or more credit(s) from the following:
- PUBH 6717 - Decision Analysis for Health Care (2.0 cr)
- PUBH 6863 - Understanding Health Care Quality (2.0 cr)
• PUBH 6803 - Conducting a Systematic Literature Review (3.0 cr)
• PUBH 6810 - Survey Research Methods (3.0 cr)
• PUBH 6845 - Using Demographic Data for Policy Analysis (3.0 cr)
• PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)

Health Policy
Take 6 or more credit(s) from the following:
• PUBH 6078 - Public Health Policy as a Prevention Strategy (2.0 cr)
• PUBH 6711 - Public Health Law (2.0 cr)
• PUBH 6702 - Integrative Leadership Seminar (3.0 cr)
• PUBH 6835 - Principles of Health Policy (2.0 cr)
  or PUBH 8802 - Health Services Policy Analysis: Applications (2.0 cr)
• PUBH 6832 - Economics of the Health Care System (3.0 cr)
  or PUBH 6555 - Topics in Health Economics (2.0 cr)

Health Economics
Take 6 or more credit(s) from the following:
• PUBH 6862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)
• PUBH 6780 - Topics: Public Health Administration and Policy (1.0 - 3.0 cr)
• PUBH 6832 - Economics of the Health Care System (3.0 cr)
  or PUBH 6555 - Topics in Health Economics (2.0 cr)

Social Determinants of Health
Take 6 or more credit(s) from the following:
• PUBH 6055 - Social Inequalities in Health (2.0 cr)
• PUBH 6066 - Building Communities, Increasing Health: Preparing for Community Health Work (2.0 cr)
• PUBH 6281 - Immigrant Health Issues (3.0 - 4.0 cr)
• PUBH 6675 - Women's Health (2.0 cr)
• PUBH 6811 - Health Disparities Research: Measures, Methods, and Data (2.0 cr)
• CSPH 5115 - Cultural Awareness, Knowledge and Health (3.0 cr)
• PUBH 6855 - Medical Sociology (3.0 cr)
• PUBH 6634 - Children and Families: Public Health Policy and Advocacy (2.0 cr)

Public Health Informatics
Take 6 or more credit(s) from the following:
• HINF 5430 - Health Informatics I (3.0 cr)
• PUBH 6876 - Public Health Systems Analysis and Design (2.0 cr)
• PUBH 6877 - Public Health Systems Analysis and Design - Practicum (2.0 cr)
• PUBH 6880 - Introduction to Public Health Informatics (2.0 cr)
• PUBH 6025 - e-Public Health (2.0 cr)

Joint- or Dual-degree Coursework: Joint Degree Program with Law and MS in Health Services Research, Policy, and Administration (JD/MS) Student may take a total of 8 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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate minor related to major
- Requirements for this program are current for Fall 2016
- 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)

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

Required prerequisites
Course Group 1

Other requirements to be completed before admission:
Admission to the health services research, policy, and administration graduate minor is contingent upon prior admission to a master's or doctoral degree-granting program. Students enrolled in graduate programs throughout the University are eligible for this minor.

Students should first consult with their major program adviser about the advisability of a minor in health services research, policy, and administration. They will then need to contact the director of graduate studies, Dr. Kathleen Call at callx001@umn.edu or director of graduate studies assistant, Maureen Andrew at andre031@umn.edu for minor information.

Special Application Requirements:
The master's minor in health services research, policy, and administration is 6 credits and will be individually tailored via consultation with the HSRP&A program director.

The Ph.D. minor is 12 credits and has some specific course requirements. Both the master's and doctoral minor require approval by the HSRP&A program director.

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.

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 (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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Doctorate
- Requirements for this program are current for Fall 2016
- Length of program in credits: 69 to 82
- 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.

Other requirements to be completed before admission:
Preferred GRE scores from exams taken before August 1, 2012 are: Verbal: 600, Quantitative: 600, Analytical Writing: 5.0. Minimum GRE scores taken after Aug. 1, 2012 are: 300 (combined verbal and quantitative), and 4.0 Analytical Writing.

The PhD 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:
Please visit www.sph.umn.edu for admission requirements

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**

33 to 46 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.

**Required Coursework**

Take all of the following core courses, including the biostatistics or econometrics series, for a total of 31 credits.

- **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 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 8801** - Health Services Policy Analysis: Theory (3.0 cr)
- **PUBH 8341** - Advanced Epidemiologic Methods: Concepts (3.0 cr)

**Biostatistics and Econometrics Options**

Complete the 31-credit core course requirement by taking the biostatistics or econometrics series.

- **Biostatistics**
  To complete the biostatistics series, take the following courses for 8 credits:
  - **PUBH 7401** - Fundamentals of Biostatistical Inference (4.0 cr)
  - **PUBH 7402** - Biostatistics Modeling and Methods (4.0 cr)

- **Econometrics**
  To complete the econometrics series, take the following courses for 8 credits:
  - **APEC 8211** - Econometric Analysis I (4.0 cr)
  - **APEC 8212** - Econometric Analysis II (4.0 cr)

**Thesis Credits**

Take at least 24 doctoral thesis credits.

- **PUBH 8888** - Thesis Credit: Doctoral (1.0 - 24.0 cr)

**Concentration Areas**

**Multidisciplinary Social Science**

**Required Concentration Coursework**

- **PUBH 8805** - Sociological Theory in Health Services Research (3.0 cr)
- **APEC 5151** - Applied Microeconomics: Firm and Household (3.0 cr)

**Required Theory Course**
Choose a theory course from the list below, in consultation with your advisor.

- 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 Policy (3.0 cr)
- or SOC 8701 - Sociological Theory (4.0 cr)
- or SOC 8721 - Theories of Social Psychology (3.0 cr)
- or PUBH 8804 - Advanced Quantitative Methods Seminar (3.0 cr)
- or PUBH 6717 - Decision Analysis for Health Care (2.0 cr)
- or PUBH 6809 - Advanced Methods in Health Decision Science (3.0 cr)

**Supporting Program Requirement**
Take at least 12 outside credits in consultation with the advisor and concentration faculty.

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**Health Organizations and Management Science**

**Required Concentration Coursework**
Take 6 - 8 credit(s) from the following:
- MGMT 8301 - Seminar in Organizational Behavior (4.0 cr)
- MGMT 8302 - Seminar in Organizations Theory (4.0 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)
- HRIR 8802 - Core Seminar: Organizational Behavior (4.0 cr)
- IDSC 8721 - Behavioral Decision Theory (3.0 cr)

**Required Methods Foundation Course**
Take one of the following methods foundations courses:
- SOC 8412 - Social Network Analysis: Theory and Methods (3.0 cr)
- EPSY 5247 - Qualitative Methods in Educational Psychology (3.0 cr)
- HRIR 8812 - Core Seminar: Research Methods in Work and Organizations (4.0 cr)

**Supporting Program Requirement**
Take at least 12 outside credits in consultation with the advisor and concentration faculty.

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**Health Decision Science**

**Required Concentration Coursework**
- 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)

**Additional Coursework**
Take 2 or more credit(s) from the following:
- IDSC 8721 - Behavioral Decision Theory (3.0 cr)
- IDSC 8511 - Conceptual Topics and Research Methods in Information and Decision Sciences (3.0 cr)

**Supporting Program Requirement**
Take at least 12 outside credits from the list below, or other outside coursework, in consultation with the advisor and concentration faculty.
- 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)

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**Sociology of Health and Illness**

**Required Concentration Coursework**

**Theoretical Foundations Courses**
Take 6 or more credit(s) from the following:
- PUBH 8805 - Sociological Theory in Health Services Research (3.0 cr)
- SOC 8701 - Sociological Theory (4.0 cr)
- SOC 8731 - Sociology of Knowledge (3.0 cr)
- SOC 8211 - The Sociology of Race & Racialization (3.0 cr)
- MGMT 8302 - Seminar in Organizations Theory (4.0 cr)

**Supporting Program Requirements**
Take at least 12 outside credits in consultation with the advisor and concentration faculty. At least 8 credits must be from an area of specialization, and at least 4 credits must be advanced methodology coursework.

**Specialization Courses**
Take at least 8 credits from the following list:
- 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 Courses**

Take at least 4 credits from the following list:

- 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)
- PUBH 8804 - Advanced Quantitative Methods Seminar (3.0 cr)

**Clinical Outcomes Research**

**Required Concentration Coursework**

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 6803 - Conducting a Systematic Literature Review (3.0 cr)

**Supporting Program Requirement**

Take at least outside 12 credits in consultation with the advisor and area of concentration faculty.

Take 12 or more credit(s) 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 8730 - Statistical Methods for Correlated Data (3.0 cr)
- PUBH 6810 - Survey Research Methods (3.0 cr)
- PUBH 7450 - Survival Analysis (3.0 cr)

**Health Policy and Analysis**

The health policy and analysis concentration requires students to complete PUBH 6724 or PUBH 6556 by the end of the first year in the program. Consult with the advisor and concentration faculty to determine whether the required prerequisite can be satisfied by testing out, or substituting other coursework.

**Required Concentration Coursework**

PUBH 8802 - Health Services Policy Analysis: Applications (2.0 cr)

**Supporting Program Requirement**

Take at least 12 outside credits in consultation with the advisor and concentration faculty. Students can choose to complete the supporting program requirement one of two ways: a methods focus or a topic-specific focus.

**Methods Focus**

Students choosing this option are strongly encouraged to take PUBH 6845 and PUBH 8804.

Take 12 or more credit(s) 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 8730 - Statistical Methods for Correlated Data (3.0 cr)
- PUBH 6810 - Survey Research Methods (3.0 cr)
- PUBH 8804 - Advanced Quantitative Methods Seminar (3.0 cr)

**Topic-specific Focus**

Take courses in focus areas such as LTC, economics, health disparities, or ethics. Approval of the concentration faculty is required prior to taking the courses.

**Health Economics**

The health economics concentration requires prerequisites in calculus, statistics, and microeconomics. Consult with the advisor and concentration faculty about satisfying this requirement.

**Required Concentration Coursework**

Take the following coursework, including one microeconomics series.

PUBH 8821 - Health Economics II (3.0 cr)
Required Microeconomics Series
Applied Microeconomics
- 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)

Supporting Program Requirement
Take at least 12 outside credits in consultation with the advisor and concentration faculty. At least 8 of the 12 credits must be from the methods coursework list.

Methods Coursework
Choose at least two courses from the options below. Multi-course sequences count as one course, e.g. APEC 8211 must be taken with 8212. ECON 8205, must also include 8206, 8207, and 8208. ECON 8117 must also include 8118.

Take 2 or more course(s) totaling 8 or more credit(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 8812 - Core Seminar: Research Methods in Work and Organizations (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 8206 - Dynamic Optimization: Applications in Economics and Management (3.0 cr)
- PUBH 8804 - Advanced Quantitative Methods Seminar (3.0 cr)

Additional Supporting Program Coursework
Take additional outside coursework as needed to complete the 12-credit supporting program requirement, in consultation with the advisor and concentration faculty.

Take 0 or more course(s) from the following:
- ECON 8xxx
- APEC 8xxx
- PUBH 8862 - Cost-Effectiveness Analysis in Health Care (3.0 cr)

Joint- or Dual-degree Coursework
Joint Degree with Law & PhD in Health Services Research, Policy & Administration (JD/PhD)
Student may take a total of 12 credits in common among the academic programs.
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:
School of Public Health, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- 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.

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

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.

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 MHA 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 MHA program for students to further develop and demonstrate their leadership and team competencies, and receive constructive feedback on these competencies, prior to graduation.

MHA 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 (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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- 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 MPH 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 nonprofit 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)
- 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.

Other requirements to be completed before admission:
Prefer 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.

Also prefer a basic understanding of physiological and/or psychological human development as demonstrated by coursework, experience, and/or referenced readings.

Applicants to the advanced standing (online) track must hold either an advanced degree (e.g., MS, MD, MA, MSW) 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: 150
  - General Test - Quantitative Reasoning: 150
  - 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 C**: Plan C requires 42 to 48 major credits and up to null credits outside the major. The final exam is written and oral. A capstone project is required.

**Capstone Project**: See department for more details.

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.

Please visit www.sph.umn.edu for the current curriculum options available.

**Standard Program -- Scientific Basis Coursework**

Select at least 8 credits from the following list, in consultation with the advisor.

Take 8 or more credit(s) from the following:

- **PUBH 6686** - Global Reproductive Health (2.0 cr)
- **PUBH 6695** - 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)
- **PUBH 6123** - Violence Prevention and Control: Theory, Research, and Application (2.0 cr)
- **PUBH 6950** - From Kid to Community: Personal, Social and Environmental Influences on Youth Obesity (2.0 cr)
- **PUBH 6955** - Using Policy to Address Child and Adolescent Obesity Prevention (1.0 cr)
- **PA 5451** - Immigration, Health and Public Policy (3.0 - 4.0 cr)

**Standard Program -- Required Methodological and Analytical Skills Course**

Take one of the following two courses, in consultation with the advisor.

- **PUBH 6034** - Evaluation (3.0 cr)
- **PUBH 6852** - Program Evaluation in Health and Mental Health Settings (2.0 cr)

**Standard Program -- Additional Methodological and Analytical Skills Coursework**

Take at least 3 courses from the following list, in consultation with the advisor.

Take 4 - 11 credit(s) from the following:

- **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 6420** - Introduction to SAS Programming (1.0 cr)
- **PUBH 6451** - Biostatistics II (4.0 cr)
- **PUBH 7400** - Topics: Biostatistics (0.5 - 4.0 cr)
- **PUBH 6617** - Practical Methods for Secondary Data Analysis (3.0 cr)
- **PUBH 6636** - Qualitative Research Methods in Public Health Practice (2.0 cr)
- **PUBH 6765** - Continuous Quality Improvement: Methods and Techniques (3.0 cr)
- **PUBH 6806** - Principles of Public Health Research (2.0 cr)
- **PUBH 6810** - Survey Research Methods (3.0 cr)
- **PUBH 6845** - Using Demographic Data for Policy Analysis (3.0 cr)
• PUBH 6910 - Critical Review of Research in Public Health Nutrition (1.0 cr)
• PUBH 6914 - Community Nutrition Intervention (3.0 cr)

Standard Program -- Grant Writing Course
Take one of the following courses:
PUBH 6673 - Grant Writing for Public Health (1.0 cr)
or NURS 5925 - Grant Writing and Critique (1.0 cr)

Standard Program -- Foundation Course
Take one of the following courses:
PUBH 6630 - Foundations of Maternal and Child Health Leadership (3.0 cr)
or PUBH 6655 - Principles and Programs in Maternal and Child Health (2.0 cr)

Standard Program -- Management Policy or Advocacy Skills Coursework
Take one course from the following list, in consultation with the advisor.
Take 1 or more course(s) from the following:
PUBH 6045 - Skills for Policy Development (1.0 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 6634 - Children and Families: Public Health Policy and Advocacy (2.0 cr)
PUBH 6571 - Leading Performance Improvement in Health Care (2.0 cr)
PUBH 6700 - Foundations of Public Health (3.0 cr)
PUBH 6702 - Integrative Leadership Seminar (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 6893 - Introduction to Project Management for Health Professionals (2.0 cr)
PUBH 6807 - Global Health Relief, Development, and Religious and Non-Religious NGOs (3.0 cr)
PUBH 6835 - Principles of Health Policy (2.0 cr)

Standard Program -- Public Health Core Coursework
Environmental Health
Take one of the following courses:
PUBH 6101 - Environmental Health (2.0 cr)
or PUBH 6102 - Issues in Environmental Health (2.0 cr)

Epidemiology
Take one of the following courses:
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
or PUBH 6341 - Epidemiologic Methods I (3.0 cr)

Biostatistics
Take one of the following courses:
PUBH 6414 - Biostatistical Literacy (3.0 cr)
or PUBH 6450 - Biostatistics I (4.0 cr)

Ethics
Take one of the following 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)

Management
Take exactly 1 course(s) from the following:
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

Standard Program -- Field and Culminating Experience
Take at least 2 credits of PUBH 7696, and 1-2 credits of PUBH 7694.
PUBH 7696 - Field Experience: Maternal and Child Health (1.0 - 4.0 cr)
PUBH 7694 - Culminating Experience: Maternal and Child Health (1.0 - 4.0 cr)

Standard Program -- Electives
Take elective credits, in consultation with the advisor, to meet the 48-credit requirement.

Joint- or Dual-degree Coursework:
J.D./M.P.H.-Maternal and Child Health
M.S.W./M.P.H.-Maternal and Child Health
Student may take a total of 12 credits in common among the academic programs.

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

Online

**Online Program -- Required Coursework**

**Scientific Basis Courses**

Take 6 or more credit(s) from the following:
- PUBH 6686 - Global Reproductive Health (2.0 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 -- Required Course**

PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)

**Additional Methods Courses**

Take 3 credits in consultation with the advisor.

Take 3 or more credit(s) from the following:
- PUBH 6420 - Introduction to SAS Programming (1.0 cr)
- PUBH 6765 - Continuous Quality Improvement: Methods and Techniques (3.0 cr)
- PUBH 6400 - Topics: Biostatistics (0.5 - 4.0 cr)

**Management and Communication Skills Courses**

Take the following two courses:

NURS 5925 - Grant Writing and Critique (1.0 cr)

PUBH 6655 - Principles and Programs in Maternal and Child Health (2.0 cr)

**Additional Management and Communications Courses**

Take 3 credits from the following list, in consultation with the advisor:

Take 3 or more credit(s) from the following:
- PUBH 6700 - Foundations of Public Health (3.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)

**Culminating and Field Experience Courses**

Take 1 to 2 credits of PUBH 7694 and 2 credits of PUBH 7696.

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

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

**Electives**

Take elective credits, in consultation with the advisor, to meet the 42-credit minimum. Elective credits can include courses offered during the School of Public Health's Summer Institute.

**Public Health Core Courses**

Take the following required courses:
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6101 - Environmental Health (2.0 cr)
- PUBH 6102 - Issues in Environmental Health (2.0 cr)

**Health Disparities Interdisciplinary Concentration Area**

The Health Disparities Interdisciplinary Concentration (HDIC) addresses the unequal burden of health risks, morbidity and mortality experienced by minority cultural and social groups in the US, 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. 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 MPH 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

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Information current as of April 04, 2017
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
Molecular and Systems Toxicology, PhD
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, A395 Mayo Memorial Building, 420 Delaware Street SE, Minneapolis, MN 55455. (612-626-3500 OR 1-800-774-8636, FAX 612-624-4498).
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Doctorate
- Requirements for this program are current for Fall 2016
- Length of program in credits: 53
- This program requires summer semesters for timely completion.
- The PhD research project can occur at any of the University of Minnesota coordinate campuses.
- 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.

This program is an interdisciplinary major offering the Ph.D. degree housed in the Division of Environmental Health Sciences within the School of Public Health. All requirements of the University of Minnesota School of Public Health must be completed within a seven-year time frame degree completion. A master's degree is not required for completion of the Ph.D. in Molecular and Systems Toxicology.

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.

B.A. or B.S. in basic sciences from an accredited institution of higher education required.

Other requirements to be completed before admission:
Basic chemistry through organic chemistry, biochemistry, and cell biology.

Special Application Requirements:
Physiology course recommended before starting program.

Applicants must submit their test score(s) from the following:
- GRE
  - General Test - Verbal Reasoning: 150
  - General Test - Quantitative Reasoning: 150
  - General Test - Analytical Writing: 3.5

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

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

Key to test abbreviations (GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.
Program Requirements
23 credits are required in the major.
6 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 3.0 is required for students to remain in good standing.

Current topics in toxicology (PubH 8165) must be taken for 1 credit each over two separate terms.

Required Courses
PUBH 6112 - Environmental Health Risk Assessment: Application to Human Health Risks from Exposure to Chemicals (2.0 cr)
PUBH 6164 - Toxicological Analysis (2.0 cr)
PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
PUBH 6414 - Biostatistical Literacy (3.0 cr)
PUBH 6742 - Ethics in Public Health: Research and Policy (1.0 cr)
PUBH 8163 - Toxicology (5.0 cr)
PUBH 8165 - Current Topics in Toxicology (1.0 cr)
PUBH 8166 - Experiences in Toxicology Research (3.0 cr)

Minimum of six credits of electives

Electives
Selected in consultation with academic advisor
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- Length of program in credits: 42 to 44
- This program requires summer semesters for timely completion.
- PCAS Data Entry
- 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.

Other requirements to be completed before admission:
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.

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 C: Plan C requires 42 to 44 major credits and up to null credits outside the major. The is no final exam. A capstone project is required.

Capstone Project: Culminating Experience

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.

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

Required SPH Core Courses

M.P.H. Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUBH 6020</td>
<td>Fundamentals of Social and Behavioral Science</td>
<td>3.0 cr</td>
</tr>
<tr>
<td>PUBH 6751</td>
<td>Principles of Management in Health Services Organizations</td>
<td>2.0 cr</td>
</tr>
<tr>
<td>PUBH 6101</td>
<td>Environmental Health</td>
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</tr>
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<td>3.0 cr</td>
</tr>
<tr>
<td>PUBH 6414</td>
<td>Biostatistical Literacy</td>
<td>3.0 cr</td>
</tr>
<tr>
<td>PUBH 6741</td>
<td>Ethics in Public Health: Professional Practice and Policy</td>
<td>1.0 cr</td>
</tr>
</tbody>
</table>

PHAP Core Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUBH 6700</td>
<td>Foundations of Public Health</td>
<td>3.0 cr</td>
</tr>
<tr>
<td>PUBH 6724</td>
<td>The Health Care System and Public Health</td>
<td>3.0 cr</td>
</tr>
<tr>
<td>PUBH 6755</td>
<td>Planning and Budgeting for Public Health</td>
<td>2.0 cr</td>
</tr>
<tr>
<td>PUBH 6806</td>
<td>Principles of Public Health Research</td>
<td>2.0 cr</td>
</tr>
<tr>
<td>PUBH 7796</td>
<td>Field Experience: Public Health Administration and Policy</td>
<td>2.0 cr</td>
</tr>
<tr>
<td>PUBH 7784</td>
<td>Master's Project Seminar: PHAP and HSRP&amp;A</td>
<td>1.0 cr</td>
</tr>
<tr>
<td>PUBH 7794</td>
<td>Master's Project: Public Health Administration and Policy</td>
<td>2.0 - 3.0 cr</td>
</tr>
<tr>
<td>PUBH 6780</td>
<td>Topics: Public Health Administration and Policy</td>
<td>1.0 - 3.0 cr</td>
</tr>
</tbody>
</table>

Specialty Areas (includes concentrations, emphasis)

Students must complete 7 credits within one specialty area. NOTE: If a student chooses an interdisciplinary concentration, a specialty area need not be chosen.

Management

For this area, PUBH 6727 is a required course; remaining credits will be chosen along with the advisor from a list of courses.

- PUBH 6727 - Health Leadership and Effecting Change (2.0 cr)

-OR-

Analysis

For this area, PUBH 6717, 6811, 6845 and 6852 are required courses; remaining credits will be chosen along with the advisor from a list of courses.

- PUBH 6717 - Decision Analysis for Health Care (2.0 cr)
- PUBH 6811 - Health Disparities Research: Measures, Methods, and Data (2.0 cr)
- PUBH 6845 - Using Demographic Data for Policy Analysis (3.0 cr)
- PUBH 6852 - Program Evaluation in Health and Mental Health Settings (2.0 cr)
-OR-

**Policy**
For this area, PubH 6711 and 6835 are required courses; remaining credits will be chosen along with the advisor from a list of courses.

**PubH 6711 - Public Health Law (2.0 cr)**
**PubH 6835 - Principles of Health Policy (2.0 cr)**

-OR-

**General Health Policy and Management**
For this area, PubH 6726 and 6835 are required courses; remaining credits will be chosen along with the advisor from a list of courses.

**PubH 6727 - Health Leadership and Effecting Change (2.0 cr)**
**PubH 6835 - Principles of Health Policy (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.

**Executive Public Health Administration and Policy**
This sub-plan is limited to students completing the program under Plan C.

The e-PHAP degree is a 42 credit program designed to be completed in 25 months. It is designed for working public health professionals who are in, or would like to move into, leadership or managerial roles in organizations that provide core public health functions. Students enrolled in the program will spend 17 days on campus where they will complete four intensive (7 credits total) in-person courses that include an online component. The remainder of the program is delivered in an online environment.

Three years of professional public health experience.

**ePHAP Core Courses**
These courses are required for students enrolled in the Executive Public Health Administration and Policy program, along with the required M.P.H core courses (14 credits), plus two credits of electives.

Course will review how to use and understand data to help make decisions within a public health organization. First time offered fall 2014. Syllabus currently in development. Course is two credits.

**PubH 6700 - Foundations of Public Health (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 6835 - Principles of Health Policy (2.0 cr)**
**PubH 7796 - Field Experience: Public Health Administration and Policy (2.0 cr)**

Course will review how to lead an organization through changes determined via evaluating program effectiveness. First time offered fall 2015. Syllabus currently in development. Course is two credits.

This course will address basic concepts of public health law and the legal bases for the existence and administration of public health programs. First time offered spring 2015. Syllabus currently in development. Course is one credit.

**PubH 6765 - Continuous Quality Improvement: Methods and Techniques (3.0 cr)**
**PubH 6780 - Topics: Public Health Administration and Policy (1.0 - 3.0 cr)**

**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
Health Disparities Interdisciplinary Concentration Area
The Health Disparities Interdisciplinary Concentration (HDIC) 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. 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
Public Health Policy Interdisciplinary Concentration (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.

Arizona State University
The Public Health Administration & Policy (PHAP) program hosted by Arizona State University is a 44 credit program designed to be completed by students located in the Phoenix area in a hybrid format.

Students earn a University of Minnesota MPH degree, by taking a combination of online classes from the University of Minnesota and in-person classes at the Arizona State University Campus.

The program is targeted to students in Phoenix and the surrounding area interested in working with government agencies, nonprofits, or private health care organizations that seek to advance public health. This program prepares students to:
- Lead, manage and evaluate public health programs and agencies
- Design and implement research to guide evidence-based decision-making
- Evaluate and inform public policy that impacts population health

**MPH Core**
Students will be required to take the MPH core courses for a total of 14 credits.

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6102 - Issues in Environmental Health (2.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6414 - Biostatistical Literacy (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)

**PHAP Core**
Students will be required to take the PHAP Core courses for a total of 17 credits.

- PUBH 6700 - Foundations of Public Health (3.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6755 - Planning and Budgeting for Public Health (2.0 cr)
- PUBH 6806 - Principles of Public Health Research (2.0 cr)
PUBH 6780 - Topics: Public Health Administration and Policy (1.0 - 3.0 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)
PUBH 7796 - Field Experience: Public Health Administration and Policy (2.0 cr)

**General Health Policy and Management Specialty Area**

These courses are required for students enrolled in the Public Health Administration and Policy program located at Arizona State University. Students will choose an additional 3 credits (for a total of 7) to complete the specialty area from the University of Minnesota approved by the advisor and program coordinator.

PUBH 6727 - Health Leadership and Effecting Change (2.0 cr)
PUBH 6835 - Principles of Health Policy (2.0 cr)

**Electives**

Students will take 6 elective credits from the University of Minnesota that have been approved by the advisor and program coordinator.

**JD/MPH with William Mitchell College of Law**

The University of Minnesota (UMN) School of Public Health (SPH) created a Joint Degree Program through which qualified students may combine a Master of Public Health (MPH) in Public Health Administration & Policy (PHAP) with a Juris Doctor (JD) degree from William Mitchell College of Law (WMCL JD).

The PHAP MPH degree requires 44 credits, 12 of which may include approved WMCL course credits. The JD requires 83 credits, 12 of which may include approved SPH course credits. Each institution will be entitled to make determinations about which courses from the other program will count towards that institutions degree requirements. Allowing cross-counted (double-counted) transfer credits to fulfill requirements in each degree program will have the effect of reducing the length of the overall joint degree program by two semesters. Careful attention to the content of courses that cross count will ensure that neither institution comprises the core competencies of their individual programs.

**MPH Core**

(PUBH 6020 and PUBH 6751 and (PUBH 6101 or PUBH 6102 ) and (PUBH 6320 or PUBH 6341 ) and (PUBH 6414 or PUBH 6450 ) and (PUBH 6741 or PUBH 6742 ) )

- 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 Health (2.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
  or PUBH 6341 - Epidemiologic Methods I (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
  or PUBH 6414 - Biostatistical Literacy (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)

**PHAP/WMCL Core**

- PUBH 6700 - Foundations of Public Health (3.0 cr)
- PUBH 6724 - The Health Care System and Public Health (3.0 cr)
- PUBH 6835 - Principles of Health Policy (2.0 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)
- PUBH 7796 - Field Experience: Public Health Administration and Policy (2.0 cr)

**Electives**

Remaining courses are a combination of PubH courses with 12 credits transferred from William Mitchell College of Law.
**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, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)  
Email: [sph-oasr@umn.edu](mailto:sph-oasr@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 2016  
- 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.

**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)  
- 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.

Other requirements to be completed before admission:  
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 Express, a centralized online application service:  
- Completed SOPHAS Express application and application fee, designating the University of Minnesota School of Public Health  
- Personal statement describing the applicant's reason for applying, career goals, and how the certificate will help them achieve their goals  
- One letter of recommendation  
- Unofficial transcripts of record from each college/university where a degree was earned. (If admitted, official transcripts will need to be sent directly to the School of Public Health.)  
- Resume or C.V.

For detailed application requirements and instructions visit [www.sph.umn.edu](http://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
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 MPH 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 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 Literacy (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)
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, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

• Program Type: Post-baccalaureate credit certificate/licensure/endorsement
• Requirements for this program are current for Fall 2016
• 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.

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.

Other requirements to be completed before admission:
Applicants must hold a baccalaureate degree.

Special Application Requirements:
Applicants must submit to SOPHAS Express, a centralized online application service:
- Completed SOPHAS Express application and application fee, designating the University of Minnesota School of Public Health
- Personal statement describing the applicant's reason for applying, career goals, and how the certificate will help them achieve their goals
- One letter of recommendation
- Unofficial transcripts of record from each college/university where a degree was earned. (If admitted, official transcripts will need to be sent directly to the School of Public Health.)
- Resume or C.V.

For detailed application instructions and requirements visit 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
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 7231 - Surveillance of Foodborne Diseases in Humans (1.0 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 5-6 additional credits from an approved list to complete the required 14 certificate credits. Courses at the Public Health Institute are topical and will change from year to year. Please consult the program staff for appropriate courses.
Twin Cities Campus
Public Health Informatics 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, A395 Mayo Memorial Building, 420 Delaware Street SE, Minneapolis, MN 55455  (612-626-3500 OR 1-800-774-8636; fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- Length of program in credits: 43
- This program does not require summer semesters for timely completion.
- Courses are available both on campus and in a hybrid format where students attend classes remotely using WebEx or similar technology.
- 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.

Information is key to effective public health administration. Surveillance systems provide information on infectious disease tracking, disease clusters, food-borne outbreaks, and injuries. Environmental monitoring systems provide information on health risks such as toxic chemicals or airborne pollutants. Registries contain information on vital statistics such as birth, death, and immunization. E-Public Health integrates information from electronic health records to use in improving population health.

Students pursuing the MPH in Public Health Informatics (MPH-PHI) learn how to manage public health information systems, including vital statistics systems, online analytical processing tools, immunization registries, population health surveillance, community health information networks, and more.

The MPH-PHI is offered both in-person and fully online. This program will prepare you to:

- Understand the significance of the various public health information systems and how to leverage these systems to improve health of the public
- Conceive, design, develop, implement, and use IT by applying informatics skills to population health
- Manage information systems within an organization or network of organizations
- Create state-of-the-art solutions at the intersection of informatics and global public health

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.

Other requirements to be completed before admission:
All application materials are submitted directly to SOPHAS;
Statement of purpose and objectives: Provide an essay describing your past education, experience, and current professional career objectives. You are encouraged to comment on any or all of the following: plans you have to use your education and training; the needs and/or challenges you perceive as important in your field of study; and any personal qualities, characteristics, and skills you believe will enable you to be successful in your chosen field of study.
Resume or CV
Official post-secondary transcripts from all US 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 your academic work; clinical, public health, or professional experiences; or leadership potential in public health.

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

- **GRE**
  - General Test - Verbal Reasoning: 150
  - General Test - Quantitative Reasoning: 150
  - 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

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

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 C:** Plan C requires 43 major credits and up to null credits outside the major. There is no final exam. 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 informatics; 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.

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.

**Required Coursework**

**M.P.H. Core Coursework**

Students must satisfy competency requirements in the six core areas of public health - administration, behavioral science, biostatistics, environmental health, epidemiology, and ethics.

Take 15 credits of MPH core courses from the following list:

**Administration**

- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)

**Behavioral Science**

- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)

**Biostatistics**

- PUBH 6450 - Biostatistics I (4.0 cr)

**Environmental Health**

- PUBH 6101 - Environmental Health (2.0 cr)
  or PUBH 6102 - Issues in Environmental 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)

**Epidemiology**

- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
  or PUBH 6341 - Epidemiologic Methods I (3.0 cr)

**Public Health Informatics Core Coursework**

Take 21 credits of PHI core courses from the following list:

- HINF 5430 - Health Informatics I (3.0 cr)

PUBH 6806 - Principles of Public Health Research (2.0 cr)
PUBH 6876 - Public Health Systems Analysis and Design (2.0 cr)
PUBH 6877 - Public Health Systems Analysis and Design - Practicum (2.0 cr)
PUBH 6880 - Introduction to Public Health Informatics (2.0 cr)
PUBH 6881 - Advanced Public Health Informatics Applications (2.0 cr)
PUBH 6878 - Public Health Systems Analysis and Development Practicum (2.0 cr)
PUBH 6879 - Public Health Systems Analysis and Development Practicum (2.0 cr)
PUBH 6813 - Managing Electronic Health Information (2.0 cr)
PUBH 6814 - Data and Information for Population Health Management (2.0 cr)

Elective Credits
Take at least 7 elective credits from the following list. Other graduate-level courses, including courses from outside the School of Public Health, can be taken with prior approval of the program director. Students are strongly encouraged to take PUBH 6805, as most PHI-related work is related to projects.

Take 7 or more credit(s) from the following:
• PUBH 6805 - Introduction to Project Management for Health Professionals (2.0 cr)
• PUBH 6705 - Community Health Assessment (3.0 cr)
• PUBH 6025 - e-Public Health (2.0 cr)
• PUBH 6727 - Health Leadership and Effecting Change (2.0 cr)
• PUBH 7108 - Population Health Informatics (2.0 cr)
• HINF 5431 - Health Informatics II (3.0 cr)
• HINF 5520 - Clinical Informatics and Patient Safety (2.0 cr)
• HINF 5540 - Interprofessional Health Informatics (2.0 cr)
• NURS 5116 - Consumer Health Informatics (1.0 cr)

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

Health Disparities Interdisciplinary Concentration Area
The Health Disparities Interdisciplinary Concentration (HDIC) addresses the unequal burden of health risks, morbidity, and mortality experienced by minority cultural and social groups in the US, 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.

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 MPH, 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 MPH 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 Informatics Post-Baccalaureate 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 Mayo Memorial Building, 420 Delaware Street SE, Minneapolis, MN 55455 (612-626-3500 or 1-800-774-8636; fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- Length of program in credits: 13
- This program does not require summer semesters for timely completion.
- Courses are available both on campus and in a hybrid format where students attend classes remotely using WebEx or similar technology.
- Degree: Public Health Informatics PostBaccalaureate 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 certificate in public health informatics (Cert-PHI) is a 9-12 month program designed to prepare professionals for leadership positions that bridge information technology and public health.

Students who complete the certificate will be able to implement and manage public health information systems, including: vital statistics systems, online analytic processing tools that support decision-making, immunization registries, population health surveillance, community health information networks, and electronic public health data interchange.

This certificate is awarded upon successful completion of 12 credits. We expect students who complete the Cert-PHI to have expanded and supplemented their current domain knowledge in a way that opens up new corridors of discovery and employment for them.

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.

Baccalaureate degree or higher

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.

In addition to the required courses specified below, Cert PHI students are strongly encouraged to take the following course as most work in PHI involves projects:

PUBH 6805 - Project Management for Health Professionals (2.0 cr).

**Required Coursework**

- HINF 5430 - Health Informatics I (3.0 cr)
- PUBH 6813 - Managing Electronic Health Information (2.0 cr)
- PUBH 6814 - Data and Information for Population Health Management (2.0 cr)
- PUBH 6876 - Public Health Systems Analysis and Design (2.0 cr)
- PUBH 6877 - Public Health Systems Analysis and Design - Practicum (2.0 cr)
- PUBH 6880 - Introduction to Public Health Informatics (2.0 cr)
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-ask@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Graduate free-standing minor
- Requirements for this program are current for Fall 2016
- 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 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.

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.

Other requirements to be completed before admission:
Admission to the public health graduate minor is contingent upon prior admission to a master's or doctoral degree-granting program at the University of Minnesota. Students enrolled in graduate programs within the School of Public Health are not eligible for this minor.

Students should first consult with their major program adviser about the advisability of a minor in public health. They will then need to contact the director of graduate studies, Kristin Anderson, PhD, MPH (ander116@umn.edu or 612-624-1818) or plan level coordinator, Carol Francis (franc004@umn.edu or 612-624-6952), for minor information.

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.

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.
Masters
The masters minor coursework must be selected from graduate courses offered by the School of Public Health in each of the following
disciplines: biostatistics, epidemiology, and environmental health. The minimum GPA for coursework applied to the Public Health minor is 3.0.

Core Requirements
Take at least 8 credits from the following:

Biostatistics
- PUBH 6414 - Biostatistical Literacy (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)

Epidemiology
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)

Environmental Health
- PUBH 6101 - Environmental Health (2.0 cr)
- PUBH 6102 - Issues in Environmental Health (2.0 cr)

Doctoral
The doctoral minor coursework must be selected from graduate courses offered by the School of Public Health in each of the following
disciplines: biostatistics, epidemiology, and environmental health.

If students have already taken comparable graduate-level courses in these disciplines, other public health courses, with the public health advisor and director of graduate studies, can be used to complete the minor. The minimum GPA for coursework applied to the Public Health minor is 3.0.

Core Requirements
Take at least 8 credits from the following:

Epidemiology
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6341 - Epidemiologic Methods I (3.0 cr)

Biostatistics
- PUBH 6414 - Biostatistical Literacy (3.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)

Environmental Health
- PUBH 6101 - Environmental Health (2.0 cr)
- PUBH 6102 - Issues in Environmental Health (2.0 cr)

Electives
To meet 14-credit minimum credit requirement select remaining credits from the following course list and in consultation with the public health advisor or director of graduate studies.
Take 6 or more credit(s) from the following:
- PUBH 6385 - Epidemiology and Control of Infectious Diseases (2.0 cr)
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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph.oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Master's
- Requirements for this program are current for Fall 2016
- Length of program in credits: 44 to 64
- 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.

Other requirements to be completed before admission:
The following courses are required for admission: one general biology course with lab; two general chemistry classes with labs; one organic chemistry; one biochemistry; one human nutrition course; 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: 150
  - General Test - Quantitative Reasoning: 150
  - 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 C: Plan C requires 44 to 64 major credits and up to null credits outside the major. The is no final exam. A capstone project is required.

Capstone Project: Culminating Experience

This program may be completed with a minor.

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

At least 2 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 credit(s) from the following:
  - PUBH 6034 - Evaluation (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 6389 - Nutritional Epidemiology (2.0 cr)
• PUBH 7250 - Designing and Conducting Focus Group Interviews (1.0 cr)
• NURS 8171 - Qualitative Research Design and Methods (3.0 - 4.0 cr)

Public Health Core

PUBH 6101 - Environmental Health (2.0 cr)
* or PUBH 6102 - Issues in 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 Literacy (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 credit(s) from the following:
• PUBH 6034 - Evaluation (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 6389 - Nutritional Epidemiology (2.0 cr)
• PUBH 7250 - Designing and Conducting Focus Group Interviews (1.0 cr)
• NURS 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 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 Literacy (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.

-OR-

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 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 courses 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.

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 (HDIC) 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. 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.
Arizona State University
This sub-plan is limited to students completing the program under Plan C.

Public Health Nutrition Core
Students take PubH 6901, 6914 and 6933 from the U of MN as part of the nutrition core in addition to PubH 69XX nutrition assessment course (to be developed)

Research Methods
Students will take three research methods credits that are approved by the advisor and program coordinator. Students are also required to take PubH 6910 and PubH 7994 from the U of MN.

Electives
Students will take elective credits from the U of MM that have been approved by the advisor and program coordinator.

additional nutrition science courses for non-nutrition/dietetics undergrad majors
PubH 69XX: Human Pathophysiology (3 cr)
PubH 69XX: Advanced Macronutrient Metabolism (3 cr)
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, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- 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.

NOTE: APPLICATIONS FOR THIS CERTIFICATE ARE NOT CURRENTLY BEING ACCEPTED.

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.

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

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.

Other requirements to be completed before admission:
NOTE: APPLICATIONS FOR THIS CERTIFICATE ARE NOT CURRENTLY BEING ACCEPTED.

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
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 - Advanced Performance Improvement Methods in Public Health (2 cr)
- PUBH 6780 - Public Health Process Improvement Project - Practicum (3 cr)
- PUBH 6780 - Performance Management and Transformational Change (2 cr)

Students choose 2 elective credits with their advisor.
**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, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@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 2016
- 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:
- 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.

Other requirements to be completed before admission:
Please visit [www.sph.umn.edu](http://www.sph.umn.edu) for 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 C: Plan C requires 42 major credits and up to null credits outside the major. There is no final exam. A capstone project is required.

Capstone Project: Each student must complete a culminating experience in which they synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles in a context that reflects an aspect of professional practice. The culminating experience must be used as a means by which faculty judge whether the student has mastered the body of knowledge and can demonstrate proficiency in the required competencies through written and oral presentation.

Students are expected to demonstrate familiarity with the tools of applied research or scholarship in public health practice, the ability to work independently, and the ability to apply skills learned in coursework by completing a Research Paper, Systematic Literature Review, Consultative Report, Grant Proposal. Students also have the option of taking the Certificate Public Health exam (CPH) instead of completing a 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 3.0 is required for students to remain in good standing.

Applicants must have an advanced degree or be admitted or enrolled in a DDS, MPP, MURP, LAW, PHARMD, DVM, MD, CMU or DNP program.

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 (1.0 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 Literacy (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 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 - 8.0 cr)

Electives
Students have the opportunity to choose their elective courses based on their career goals and interests. Students are required to choose at least one class from each of the four public health practice domains as established by the APHA Council on Linkages. Minimum of 19 credits

Specialty areas (includes concentrations, dual degree programs)
Students applying to a dual degree program must be admitted to both schools that are listed as official sub-plans. Students have the option to add a concentration area or minor.

DDS/MPH Dual Degree
This dual degree will provide students with a unique opportunity in the Upper Midwest to integrate dentistry and the practice of public health to identify and solve community health problems in areas of oral health. Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102.

-OR-

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Information current as of April 04, 2017
MPP/MPH or MURP/MPH Dual Degree
This dual degree will provide students with a unique opportunity in the Upper Midwest to gain in-depth training in the planning, public policy, and the public health arenas at the master's level. Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102.

Or:

PharmD/MPH Dual Degree
This dual degree will provide students with a unique opportunity in the Upper Midwest to make significant contributions in areas such as health education and prevention of disease in our state and nation. Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102.

Or:

JD/MPH Dual Degree
This dual degree will provide students with a unique opportunity in the Upper Midwest to make significant contributions between the legal and health-care delivery systems in our state and nation. Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102.

Or:

MD/MPH Dual Degree
This dual degree will provide students with a deeper understanding of population-based science and the cultural and environmental factors that affect patients. Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102.

Or:

DVM/MPH Dual Degree
This dual degree will provide students with credentials to work at the interface of human wellness and animal health. Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102.

Or:

Global One Health-CMU
The School of Public Health is collaborating with Chiang Mai University in Northern Thailand to provide their students with a U of MN TC Master of Public Health degree, Executive Program in Public Health Practice. Students are required to have an advanced degree and to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102.

Or:

DNP/MPH Dual Degree
This dual degree will provide students with a unique opportunity in the Upper Midwest to provide advanced nursing care as leaders of interprofessional health care teams, emphasizing population-focused practice and quality improvement to impact patient outcomes. Students are required to take SPH core courses: PubH 6751, PubH 6020, PubH 6299, PubH 6320 or 6341 or PubH 6342, and PubH 6414 or PubH 6450 or PubH 6451, and PubH 6741 or PubH 6742, and PubH 6101 or PubH 6102.

Joint- or Dual-degree Coursework: DDS/MPH Public Health Dentistry Dual Degree Program, MPP/MPH Public Health Public Policy Dual Degree Program, MURP/MPH Public Health Urban and Regional Planning Dual Degree Program, PharmD/MPH Public Health Pharmacy Dual Degree Program, LAW/MPH Public Health Law Dual Degree Program, MD/MPH Public Health Medicine Dual Degree Program, DVM/MPH Veterinary Public Health Dual Degree Program, Global One Health - CMU, DNP/MPH Public Health Doctor of Nursing PracticeStudent may take a total of 14 credits in common among the academic programs.

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

*These are established interdisciplinary concentrations and the name of the concentration will be listed on the student's transcript. Students must complete and submit a proposal form; please refer to the website for full information.

Students are required to complete the core curriculum, M.P.H. culminating experience, field experience, and elective courses chosen to meet their academic and career interests.

**Required courses**

Our hybrid executive MPH offers a flexible curriculum that students can tailor to fit their career and practice goals. Online classes comprise the core curriculum, with elective options online or in person at the yearly Public Health Institute.

The program is designed for health professionals with an advanced degree, such as an MD, DDS, DV., PharmD, PhD, MS, or public health professional with significant work experience who have completed a Public Health Core Concept Certificate.

**PUBH 6299 - Public Health Is a Team Sport: The Power of Collaboration (1.0 cr)**
**PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)**
**PUBH 6102 - Issues in Environmental Health (2.0 cr)**
**PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)**
**PUBH 6414 - Biostatistical Literacy (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 7294 - Master's Project: Public Health Practice (0.5 - 4.0 cr)**
**PUBH 7296 - Field Experience: Public Health Practice (0.5 - 8.0 cr)**

Students may choose up to 24 credits of elective classes.

**Public Health Dentistry**

This sub-plan is limited to students completing the program under Plan C.

This dual degree will provide students with a unique opportunity in the Upper Midwest to integrate dentistry and the practice of public health to identify and solve community health problems in areas of oral health.

Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102, and PUBH 7294, and PUBH 7296, and PUBH 6299.

**Course Group 1**

This dual degree will provide students with a unique opportunity in the Upper Midwest to integrate dentistry and the practice of public health to identify and solve community health problems in areas of oral health.

**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 6102 - Issues in Environmental Health (2.0 cr)**
**PUBH 6414 - Biostatistical Literacy (3.0 cr)**
**PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)**
**PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)**
**PUBH 6299 - Public Health Is a Team Sport: The Power of Collaboration (1.0 cr)**
**PUBH 7296 - Field Experience: Public Health Practice (0.5 - 8.0 cr)**

Student may choose up to 23 credits of electives and may transfer up to 14 credits from a school of dentistry upon approval of the program director.

**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 6299 - Public Health Is a Team Sport: The Power of Collaboration (1.0 cr)
- PUBH 6450 - Biostatistics I (4.0 cr)
- PUBH 6451 - Biostatistics II (4.0 cr)
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6102 - Issues in Environmental Health (2.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6741 - Ethics in Public Health: Professional Practice and Policy (1.0 cr)
- PUBH 6210 - Public Health Medicine Seminar (1.0 cr)
- PUBH 6751 - Principles of Management in Health Services Organizations (2.0 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.

Public Health Nursing Practice

This sub-plan is limited to students completing the program under Plan C.

The Public Health Nursing Practice (DNP/MPH) dual degree program provides training in nursing practice and community health.

Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102 and PUBH 7294 and PUBH 7296.

Required

As a graduate student pursing a DoDNP/MPH, you seek to lead, deliver and improve patient-centered care by bringing the latest evidence-based knowledge to clinical practice and protect, restore and promote public health. With approval, you may use up to 14 credits of DNP credits towards the MPH and 12 credits of the Public Health courses towards the DNP.

Public Health Public Policy

This sub-plan is limited to students completing the program under Plan C.

The Public Policy/Public Health (MPP/MPH) dual degree program provides training in planning, public policy, and in the public health arenas.

Students are required to take SPH core courses: PUBH 6751, PUBH 6020, PUBH 6299, PUBH 6320 or PUBH 6341 or PUBH 6342, and PUBH 6414 or PUBH 6450 or PUBH 6451, and PUBH 6741 or PUBH 6742, and PUBH 6101 or PUBH 6102 and PUBH 7296.

Required

As a graduate student pursing a Public Policy, you seek to advance the common good; as a School of Public Health student, you seek to protect, restore and promote health. Together, the dual degrees provide the skills to create significant change. With approval, you may use up to 14 credits of MPP courses toward the MPP, and 12 credits of Public Health courses toward the MPP.

- 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 6102 - Issues in Environmental Health (2.0 cr)
- PUBH 6414 - Biostatistical Literacy (3.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6299 - Public Health Is a Team Sport: The Power of Collaboration (1.0 cr)
PUBH 6751 - Principles of Management in Health Services Organizations (2.0 cr)
PUBH 7296 - Field Experience: Public Health Practice (0.5 - 8.0 cr)
Students may choose up to 23 credits of elective courses and may transfer up to 14 credits from a Master of Public Policy program with approval from the director.

Public Health Urban and Regional Planning
This sub-plan is limited to students completing the program under Plan C.

The Master Urban & Regional Planning/Master Public Health (MURP/MPH) dual degree program provides training in planning, public policy, and in the public health arenas.

As a graduate student pursing Urban Regional Planning degree, you seek to advance the common good; as a School of Public Health student, you seek to protect, restore and promote health. Together, the dual degrees provide the skills to create significant change.

With approval, you may use up to 14 credits of MURP courses toward the MPH, and 12 credits of Public Health courses toward the MURP.

The dual degree in Master Urban & Regional Planning/Master Public Health (MURP/MPH) provides training in planning, public policy, and in the public health arenas.

**Required**
The dual degree in Master Urban & Regional Planning/Master Public Health (MURP/MPH) provides you with training in planning, public policy, and in the public health arenas. With approval, you may use up to 14 credits of MURP courses toward the MPH, and 12 credits of Public Health courses toward the MURP.

- PUBH 6299 - Public Health Is a Team Sport: The Power of Collaboration (1.0 cr)
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6102 - Issues in Environmental Health (2.0 cr)
- PUBH 6320 - Fundamentals of Epidemiology (3.0 cr)
- PUBH 6414 - Biostatistical Literacy (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 7296 - Field Experience: Public Health Practice (0.5 - 8.0 cr)

Students may choose up to 23 credits of elective courses and may transfer up to 14 credits from a Master of Urban and Regional Planning program with approval from the director.

**Veterinary Public Health**
The Veterinary Public Health D.V.M./M.P.H. dual degree 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.

There are formal MOUs with the following Colleges of Veterinary Medicine: Cornell University, Purdue University, Western University of Health Science and Ross University.

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 program director. 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.

**Required**
- PUBH 6299 - Public Health Is a Team Sport: The Power of Collaboration (1.0 cr)
- PUBH 6020 - Fundamentals of Social and Behavioral Science (3.0 cr)
- PUBH 6102 - Issues in Environmental Health (2.0 cr)
Global One Health-CMU
This sub-plan is limited to students completing the program under Plan C.

The University of Minnesota, School of Public Health (SPH) recognizes the need for more global presence in the MPH curriculum and for more opportunities for students across the world to share learning experiences. The SPH is collaborating with Chiang Mai University (CMU) in northern Thailand to provide CMU students with a University of Minnesota Master of Public Health degree in Public Health Practice. This is a distance program offered at a new site.

For admission requirements go to www.sph.umn.edu.

Course Group 0
Global One Health - Chiang Mai University (CMU) is designed for Chiang Mai University students with an advanced degree to earn MPH degrees from UMN and CMU within two years. Students will complete 25 credits with the UMN and 17 credits with CMU.

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 (HDIC) 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. 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 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, MMC 819, A395 Mayo Memorial Building, 420 Delaware Street, Minneapolis, MN 55455 (612-626-3500 OR 1-800-774-8636, Fax: 612-624-4498)
Email: sph-oasr@umn.edu
Website: http://www.sph.umn.edu

- Program Type: Post-baccalaureate credit certificate/licensure/endorsement
- Requirements for this program are current for Fall 2016
- 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.

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.

Other requirements to be completed before admission:
Applicants must hold a baccalaureate degree.

Special Application Requirements:
Applicants must submit to SOPHAS Express, a centralized online application service:
- Completed SOPHAS Express application and application fee, designating the University of Minnesota School of Public Health
- Personal statement describing the applicant's reason for applying, career goals, and how the certificate will help them achieve their goals
- One letter of recommendation
- Unofficial transcripts of record from each college/university where a degree was earned. (If admitted, official transcripts will need to be sent directly to the School of Public Health.)
- Resume or C.V.

For detailed application requirements and instructions visit 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

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

All students take the following 4 courses for 4 credits:

- PUBH 7223 - Concepts of Disaster Behavioral Health (1.0 cr)
- PUBH 7227 - Incident Management Systems: The Public Health Role (1.0 cr)
- PUBH 7221 - Planning for Urgent Threats (1.0 cr)
- PUBH 7214 - Principles of Risk Communication (1.0 cr)

Students must take at least one course from the following:

- PUBH 7231 - Surveillance of Foodborne Diseases in Humans (1.0 cr)
- PUBH 7230 - Topics in Infectious Disease (0.5 - 4.0 cr)

Electives

Students select remaining credits from an approved list to complete the certificate's 12-credit minimum. Courses at the Public Health Institute are topical and will change from year to year. Please consult the program staff for appropriate courses.

- PUBH 7200 - Topics: Public Health Practice (0.5 - 4.0 cr)
- PUBH 6711 - Public Health Law (2.0 cr)
- PUBH 5231 - Emergency Preparedness: A Public Health Perspective (2.0 cr)
- PUBH 7210 - Topics: Global Food Systems (0.5 cr)
- PUBH 7237 - Using Risk Analysis Tools: Estimating Food Safety on the Farm to Table Continuum (1.0 cr)