

ABET Self-Study Report

for the

Master of Science in Environmental and Occupational Health Sciences

at

The City University of New York Graduate School of Public Health & Health Policy

September 2019

CONFIDENTIAL

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BACKGROUND INFORMATION

A. Contact Information

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B. Program History

Include the year implemented and the date of the last general review. Summarize major program changes with an emphasis on changes occurring since the last general review.

The Master of Science in Environmental and Occupational Health Sciences (MS-EOHS) was founded in 1971 at the Hunter College Institute of Health Sciences. The initial focus of the program was two-fold: to develop specialists in environmental impact assessment and to train teachers seeking careers in environmental education. The industrial hygiene and occupational health curriculum was added in 1978 in response to workforce development needs, arising from the formation of the U.S. Occupational Safety and Health Administration (OSHA). The MS-EOHS program has also been a part of the National Institute for Occupational Safety and Health (NIOSH)-New York/New Jersey Educational Resource Center (ERC) since the late 1970s and receives government support to train and develop industrial hygienists. The MS-EOHS program received its first accreditation from ABET in 2001.

In 2007, the MS-EOHS program, along with other public health programs at Hunter College, Lehman College, Brooklyn College, and the Graduate Center, were united to create a collaborative school of public health within the City University of New York (the CUNY SPH), integrating the resources of the previously independent programs under the leadership of a single Dean. In 2011, the School received its first full five-year accreditation from its School's professional accrediting body, the Council on Education for Public Health (CEPH), and in 2013, the MS-EOHS program received a six-year re-accreditation from ABET. Also in 2013, following a national search, the CUNY Board of Trustees appointed Dr. Ayman El-Mohandes as the School's first permanent Dean. Dr. El-Mohandes is an internationally recognized pediatrician, epidemiologist, and academic leader whose research has focused on reducing infant mortality in low income and minority populations. Prior to his appointment at the CUNY SPH, he served as Dean of the College of Public Health at the University of Nebraska Medical Center for four years, where he tripled the school's research portfolio, doubled the faculty, grew the student body tenfold, and launched several innovative academic programs.

In November 2015, the CUNY Board of Trustees approved a resolution directing the former Chancellor to develop and implement a plan to transition this consortial School to a single graduate school that would administer all of its own master's and doctoral-level degree programs. As part of this consolidation, the following occurred:

• The name of the School was changed to the Graduate School of Public Health and Health Policy.

- The School revised its governance plan, which was approved by faculty and by the CUNY Board of Trustees Committee on Faculty, Staff, and Administration.
- The School transitioned to operate as a unit within the CUNY Graduate School and University Center, through which it receives regional accreditation by the Middle States Commission on Higher Education, and degree-granting authority by the New York State Education Department (see Figure A).
- Faculty, staff, and students were transferred to a state-of-the-art research and instructional space at 55 West 125th Street in Harlem, New York, offering 54,000 square feet, with an additional 3,000 square feet recently secured for community engagement.

In 2016, the CUNY SPH was re-accredited by CEPH for a full seven years. Shortly thereafter, CEPH released updated criteria, directing faculty to make substantive changes to its curriculum. While these revisions primarily impacted the School's Master of Public Health (MPH) degree, it served as an opportunity for faculty to revisit the MS-EOHS program, as well, as ABET shared updates to its Student Outcomes. These curriculum changes are effective Fall 2019 and reflected in Criterion 4.B.

C. Options

List and describe any options, tracks, concentrations, etc. included in the program.

The MS-EOHS program does not offer any options, tracks, or concentrations within the program. All students must complete the curriculum as published in the <u>School's catalog</u>.

D. Program Delivery Modes

Describe the delivery modes used by this program, e.g., days, evenings, weekends, cooperative education, traditional lecture/laboratory, off-campus, distance education, web-based, etc.

The MS-EOHS program is offered through a mix of fully online, hybrid, and in-person classes. Hybrid and in-person sessions take place in the evening (between 4:00 PM and 9:50 PM) to accommodate students who are employed full-time. In-person classes take place primarily on campus in classrooms, though faculty may bring students to off-campus sites for practice experience.

E. Program Locations

Include all locations where the program or a portion of the program is regularly offered (this would also include dual-degrees, international partnerships, etc.).

The entire MS-EOHS program takes place at the School's only campus, 55 West 125th Street in New York City. Off-campus visits arranged for students are not regularly scheduled.

F. Public Disclosure

Provide information concerning all the places where the Program Educational Objectives (PEOs), Student Outcomes (SOs), annual student enrollment and graduation data are posted or made accessible to the public. If this information is posted to the Web, please provide the URLs.

Program Educational Objectives and Student Outcomes are found on the <u>MS-EOHS program's webpage</u>. <u>Annual student enrollment and graduation data</u> are posted on this page, as well.



Figure A: CUNY Graduate School and University Center

G. Deficiencies, Weaknesses or Concerns from Previous Evaluation(s) and the Actions Taken to Address Them

Summarize the Deficiencies, Weaknesses, or Concerns remaining from the most recent ABET Final Statement. Describe the actions taken to address them, including effective dates of actions, if applicable. If this is an initial accreditation, it should be so indicated.

While no deficiencies were found in the 2013 evaluation, Criterion 4: Continuous Improvement, was noted as a program weakness: "Criterion 4, Continuous Improvement, requires that the program must regularly use appropriate, documented processes for assessing and evaluating the extent to which the Student Outcomes are being attained. The results of these evaluations must be systematically utilized as input for the continuous improvement of the program." The report recommended that a professionals and employers' survey utilized by the School at the time should be disseminated in a more timely fashion.

However, the School has not found employer surveys to be the best indicators of attainment of Student Outcomes, and the distribution of such a survey is associated with significant logistical issues. For example, many employers are wary of providing an evaluation of their employees because of legal implications. However, a number of other methods are employed by the School to ensure student learning, including student progress in coursework, as per School policy; comprehensive exam scores; student and alumni surveys; and Capstone Projects. These tools and their results are detailed in Criterion 4.A.2 and 4.A.4, and reviewed as part of the five-year academic program evaluation.

CRITERION 1: STUDENTS

A. Student Admissions

Summarize the requirements and process for accepting new students into the program.

The Office of Admissions is responsible for overseeing student recruitment and admissions. Recruitment efforts are consistent with the University's equal opportunity and non-discrimination policy, and seek to achieve the following goals:

- Recruit potential applicants from underrepresented populations
- Recruit highly qualified students
- Maintain racial and ethnic diversity of the student body

The Director of Admissions and two full-time recruiters work closely with the Interim Assistant Dean for Student Affairs and Alumni Relations to coordinate and carry out a variety of recruitment activities, as detailed below:

- Internal recruitment activities for the MS-EOHS program include social media blasts, on-campus presentations, and a speaker's bureau comprised of current students and alumni. Partnerships with STEM departments across the University are established to increase targeted undergraduate recruitment. The program will also be featured prominently in *City Health*, the School's bi-annual magazine.
- External recruitment events include professional conferences and meetings, such as the APHA and the ASPPH Annual Meeting, and graduate school fairs including the "This is Public Health" fair. In addition, the recruiters participate in activities that target underrepresented groups including Health Start Brooklyn and recruitment sessions with the East and Central Harlem District Public Health Office.
- Virtual admission chats allow staff to engage with prospective students and answer any questions they may have about programs, deadlines, and admission requirements. Chats are offered three times per week.
- SOPHAS (Schools of Public Health Application Service) Virtual Fairs connect prospective students with representatives of participating schools/programs of public health. The fairs are hosted for SOPHAS by CareerEco.com and are held four times each year.
- CUNY Graduate Admission Fairs offer another opportunity to speak with prospective students, distribute literature, and answer questions. Typically, booths and tables are set up for admission representatives and financial aid officers. For prospective students who would like to explore programs further, hour-long workshops allow them to meet with faculty and learn more.
- Information sessions give an overview of public health, the School, programs and career opportunities, degree requirements and costs, and the application process. Students then have the opportunity to meet with program faculty. These sessions are offered regularly throughout the academic year.

Features of programs that are highlighted in recruitment activities and materials include the low tuition compared to similar programs at private universities; the faculty's commitment to teaching, as well as research; evening classes, both part-time and full-time options; School diversity; and an emphasis on classroom and practice-based learning. As of 2017, the CUNY SPH offers both Fall and Spring admission cycles.

The Office of Admissions and the School's Admissions Committee ensure the integrity and adherence to admission policies and procedures, including setting and reviewing admissions standards. All applications are processed through SOPHAS, a web-based schools of public health application service, that digitizes all application data including letters of reference and college transcripts. Acceptance is based on the number of seats available, taking into account the applicants' diverse backgrounds, GPAs, academic history, GRE scores (if applicable), and work experience. No criterion weighs more heavily than the others. Minimum requirements are detailed below:

- Completed SOPHAS application
- Undergraduate degree from an accredited university; GPA (overall and major) of at least 3.0 preferred
- 40 credit hours in biology, chemistry, health sciences, mathematics, statistics, physics, and/or engineering completed prior to admission
- GRE or MCAT scores (applicants with a 3.0 GPA or above may waive the standardized test requirement)
- Background in the field: at least one year of experience in public health or related field
- Two letters of recommendation for an application to be considered complete; SOPHAS requires three evaluations
- Personal statement/statement of purpose (at least 500 words)
- Resume
- TOEFL scores are required if language of instruction for prior degrees was not English
- Transcript evaluation from WES or ECE for foreign transcripts
- Applicants who have a post-graduate degree from a U.S. accredited school or a post-graduate degree in clinical or allied health that WES or ECE has deemed equivalent to its U.S. counterpart may request a standardized test waiver. Waivers are granted on a case by case basis.

The review process begins with notification from the Office of Admissions that applicants are ready for review. The specific admissions review process beginning at the departmental level is detailed below:

- 1. Two program faculty from the Department of Environmental, Occupational, and Geospatial Health Sciences log into SOPHAS and independently review each application.
- 2. Each faculty member enters online notes for the applicant and makes a recommendation (admit unconditionally, recommend for the Industrial Hygiene certificate program, offer non-degree admission, or reject).
- 3. The Department Chair reviews faculty recommendations for each student and enters a departmental determination. If the recommendations of two faculty members regarding an individual's admission are in conflict, the Department Chair may discuss the student's merits and weaknesses with faculty during a departmental meeting. A third reviewer from the department may be asked to review the application if a consensus cannot be made.
- 4. After the Department Chair enters a departmental determination, the Dean (or appropriate representative) approves the recommendation or may require further discussion regarding the applicant.
- 5. The Office of Admissions sends the applicant official notice of their outcome.

Students admitted as non-degree are permitted to complete up to twelve credits of graduate coursework. If a non-degree student is later accepted for matriculation into the MS-EOHS program, credits earned with a grade of B or better may be counted toward the degree. Students enrolled in the Industrial Hygiene certificate program may complete up to the program's required twelve credits. If an Industrial Hygiene certificate student is later accepted for matriculation into the MS-EOHS program, credits earned may be counted toward the degree.

A record of all application materials is maintained electronically and includes the following:

- Name of applicant
- Undergraduate major, overall GPA, school, date degree awarded
- GPA by subject area and coursework
- Highest degree earned, major, graduation date
- GRE score (verbal, quantitative, written) and TOEFL score if applicable
- Previous public health courses taken at the CUNY SPH or elsewhere (name, dates, grade), total credits
- Related work experience (job title, employer, dates of employment)
- Recommendation for acceptance, acceptance into Industrial Hygiene certificate program, acceptance as a non-degree student, or rejection

B. Evaluating Student Performance

Summarize the process by which student performance is evaluated and student progress is monitored. Include information on how the program ensures and documents that students are meeting prerequisites and how it handles the situation when a prerequisite has not been met.

The CUNY SPH has a number of policies and procedures in place in order to support student performance. Students are expected to maintain a B average (a minimum cumulative GPA of 3.0) and complete their program in five matriculated years. A number of individuals at the School ensure satisfactory student performance. Upon acceptance into the MS-EOHS program, all students are assigned a full-time faculty member as an advisor, who they are encouraged to meet with once a semester to discuss long-term academic and professional goals. In addition, a full-time staff advisor is available to discuss academic policies and procedures, anticipated course enrollment, and time to graduation. Students register for courses via CUNYFirst, a University-wide data system, in which their academic record is also stored. This in-house software prevents students from registering in courses they have not completed the necessary pre-requisites for, tracks their allowed maximum time to graduation, and calculates their GPA. The Office of Institutional Research retrieves data from this system, alerting the faculty advisor, staff advisor, Program Director, and Department Chair when students have entered or are at risk of academic probation. Those on probation have a hold placed on their accounts, and are unable to register for subsequent semesters until they meet with a staff advisor and determine a corrective action plan. These plans span a variety of approaches and include reducing course load, determining a more manageable course load (for example, combining analytic courses with non-analytic courses), discussing time management skills, and referring students to academic resources (writing support and quantitative tutoring). Students who are unable to make satisfactory progress and improve to good academic standing by the end of the following semester are dismissed from the program.

Additional information on tracking student academic performance can be found in Criterion 4.

C. Transfer Students and Transfer Courses

Summarize the requirements and process for accepting transfer students and transfer credit. Include any state-mandated articulation requirements that impact the program.

Transfer students are evaluated by the same admission requirements as new students. Transfer credits taken prior to admission at the CUNY SPH may be applied toward the degree, provided the courses were completed with a grade of B or higher within five years preceding the time of application and are equivalent to comparable courses in the student's program. Students are required to take at least 70% of all credits required for the degree in residence at the CUNY SPH (the MS-EOHS program requires 39

credits, which would allow for a transfer of 11 credits). Graduate courses completed as part of one graduate degree may not be used for credit toward another graduate degree. Undergraduate courses are not considered for transfer credit. More information on this policy and its procedures can be found in the <u>School Catalog</u>. State-mandated articulation requirements that impact the program are not applicable.

D. Advising and Career Guidance

Summarize the process for advising and providing career guidance to students. Include information on how often students are advised, who provides the advising (program faculty, departmental, college or university advisor).

As discussed in Criterion 1.B, all students are assigned a faculty advisor and have access to a full-time staff advisor. Each serves different roles: the faculty advisor primarily reviews long-term academic and professional goals, and advises on elective coursework and the Capstone Project, while the staff advisor is available to discuss academic policies and procedures, course registration, and time to graduation. The Program Director and Department Chair are accessible to students as well, meeting with them to discuss professional credentials and program activities. Lastly, all faculty are required to hold a minimum of two office hours per week.

<u>The Office of Career Services</u> offers students one-on-one career coaching, a career opportunities listserv, and a variety of other activities and events including career fairs, resume workshops, and webinars.

E. Work in Lieu of Courses

Summarize the requirements and process for awarding credit for work in lieu of courses. This could include such things as life experience, Advanced Placement, dual enrollment, test out, military experience, etc.

Not applicable.

F. Graduation Requirements

Summarize the graduation requirements for the program and the process for ensuring and documenting that each graduate completes all graduation requirements for the program. State the name of the degree awarded (Master of Science in Safety Sciences, Bachelor of Technology, Bachelor of Science in Computer Science, Bachelor of Science in Electrical Engineering, etc.).

Students in the Master of Science in Environmental and Occupational Health Sciences degree program must complete a minimum of 39 credits, including 6 credits of public health core coursework, 21 credits of industrial hygiene-related coursework, and 9 credits of elective work. In addition, students must pass a 0-credit asynchronous online course emphasizing foundational knowledge of public health, a 120-question comprehensive exam, which covers all domains of the industrial hygiene curriculum, and a 3-credit culminating Capstone experience. A full-time staff member is available for academic advising, meeting with students to identify remaining course requirements. Faculty advisors make recommendations related to elective coursework and Capstone Project topics. This is discussed further in Criterion 1.D.

Students applying for graduation must complete a <u>program of study worksheet</u>, which must be approved by the faculty advisor. The Registrar's Office audits the student's transcript to confirm the accuracy of this worksheet and that all requirements for graduation have been met. If any errors are found, the faculty advisor and student are notified.

G. Transcripts of Recent Graduates

The program will provide transcripts from some of the most recent graduates to the visiting team along with any needed explanation of how the transcripts are to be interpreted. These transcripts will be requested separately by the team chair. State how the program and any program options are designated on the transcript. (See 2013-2014 APPM, Section II.G.4.a.). Master's degree programs under review must also provide copies of the students' undergraduate academic transcripts that were used to make an admission decision.

Transcripts of MS-EOHS graduates are endorsed to state that the student has received a "MS-Env Occ Health Sci Degree." Transcripts of recent graduates, as well as their undergraduate transcripts used to make an admission decision, will be provided to the site visit team.

CRITERION 2: PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statement Provide the institutional mission statement.

The <u>mission of CUNY</u> states in part: "The Legislature's intent is that The City University be supported as an independent and integrated system of higher education on the assumption that the University will continue to maintain and expand its commitment to academic excellence and to the provision of equal access and opportunity for students, faculty and staff from all ethnic and racial groups and from both sexes. The City University is of vital importance as a vehicle for the upward mobility of the disadvantaged in the City of New York."

Aligned with the University mission, the CUNY SPH mission is to provide a collaborative and accessible environment for excellence in education, research, and service in public health, to promote and sustain healthier populations in New York City and around the world, and to shape policy and practice in public health for all. The vision is to promote health and social justice in New York City and across the globe through innovation and leadership. To realize its mission and vision, the School works with communities, nonprofit and private organizations, and the government at all levels to build the capacities that help people lead healthier and more productive lives.

Lastly, the mission of the MS-EOHS program is to educate public health professionals to recognize, evaluate, and control occupational hazards in order to reduce the risk of injuries and illnesses. The core of the mission is to educate students to practice the four pillars of environmental and occupational hygiene practice: anticipation, recognition, evaluation, and control of environmental and occupational hazards. The classroom and research experiences are designed to provide students with the comprehensive background to practice environmental health and safety with competency, while working with their counterparts in medicine, health education, nutrition, and other disciplines in the health sciences to improve environmental conditions and population health. Upon completion of the degree, students have the requisite skills and experience to anticipate and recognize chemical, biological, safety, and physical hazards as well as methods for quantifying human exposure, utilize controls to reduce or eliminate occupational exposures, apply toxicological principles to anticipate adverse health outcomes, and interpret and apply applicable regulations.

The MS-EOHS program mission statement was developed by faculty, reviewed by School leadership and stakeholders, and is aligned with the CUNY SPH mission statement and the core pillars of environmental and occupational hygiene practice.

B. Program Educational Objectives

List the Program Educational Objectives and state where these can be found by the general public.

The MS-EOHS Program Educational Objectives address what a student should achieve in the few years following graduation. They can be found below:

- 1. Establish a career in the field of occupational health and safety.
- 2. Maintain a code of professional ethics as outlined by ABIH.
- 3. Become professionally certified through ABIH or other relevant professional organization(s).
- 4. Pursue continuing education and professional development opportunities and remain apprised of developments in the field.

5. Employ an interdisciplinary approach to manage occupational health issues by engaging with other professionals including safety specialists, occupational nurses and physicians, ergonomists, within or outside the graduate's organization.

The Program Educational Objectives are publicly available on the School's website.

C. Consistency of the Program Educational Objectives with the Mission of the Institution Describe how the Program Educational Objectives are consistent with the mission of the institution.

The Program Educational Objectives developed support the School in fulfilling its mission, specifically in providing excellence in public health education, and providing industrial hygiene training in order to promote and sustain healthier populations in New York City and beyond.

D. Program Constituencies

List the program constituencies. Describe how the Program Educational Objectives meet the needs of these constituencies.

The constituencies of the MS-EOHS program are diverse. First are active students of the program, who are primarily New York City residents and early- to mid-career professionals in the occupational and/or environmental field or other science-related occupations. Recently, the CUNY SPH has seen an increase in students who have applied for admissions directly from an undergraduate program. In addition to current students, there are more than five hundred graduates of the program from the last three decades. Most alumni have remained in the New York/New Jersey Metropolitan area after graduation and maintain close contact with program faculty, often requesting letters of support for employment opportunities, certification applications, and doctoral-level study. Faculty also frequently interact with graduates through local and national chapters of the American Industrial Hygiene Association (AIHA). Post-graduate outcomes and other survey responses indicate that graduates are successfully entering and building careers within the field, as emphasized throughout the Program Educational Objectives.

Environmental and occupational health and safety professions in the metropolitan area employ the CUNY SPH graduates and offer valuable input regarding the program's curriculum, content, and educational objectives. These professionals include members of the Metro Chapter of AIHA, colleagues in the NIOSH New York-New Jersey ERC, the members of the American Society of Safety Engineers (ASSE), and academic colleagues at Mt. Sinai Medical School, New York University, New Jersey Institute of Technology, and Rutgers University. Additionally, the CUNY SPH MS-EOHS program is a member of the New York/New Jersey NIOSH ERC which meets yearly with an External Advisory Board (EAB). The EAB consists of regional professionals and academics along with other ERC program directors. The EAB discusses new trends in the field of environmental and occupational hygiene practice, issues in recruitment, retention, and providing internships and full-time employment to students and graduates of the program. In order to become a member of the EAB, one must have extensive experience in environmental and occupational health and safety in a supervisory position, and practice in the metropolitan New York City region. This requirement is essential for EAB members to lend advice regarding the knowledge essential for MS-EOHS graduates to make valuable contributions to their workplace. With input from the above parties, the CUNY SPH ensures its Program Educational Objectives are current and relevant, in turn, providing them with knowledgeable and skilled graduates prepared for employment.

Lastly, members the CUNY SPH administration, governing body, and various committees are considered important constituencies. Appropriate Program Educational Objectives support the School in achieving its mission and advocating, on the program's behalf, to University administration and external funders for necessary resources.

E. Process for Review of the Program Educational Objectives

Describe the process that periodically reviews the Program Educational Objectives including how the program's various constituencies are involved in this process. Describe how this process is systematically utilized to ensure that the program's educational objectives remain consistent with the institutional mission, the program constituents' needs and these criteria.

The MS-EOHS Program Educational Objectives are designed to produce graduates who have the core set of skills and knowledge necessary to practice environmental and occupational hygiene and apply general scientific processes. These objectives are evaluated as part of the comprehensive <u>five-year academic</u> program review. Faculty begin this review by revisiting the University and School mission, as well as the existing Program Educational Objectives. A number of data sources and feedback from stakeholders are considered, including the Program Educational Objectives of comparable programs nationwide; EAB insights regarding the practice of environmental and occupational hygiene; NIOSH ERC's written assessment of the program; informal feedback gathered during the annual one-day meeting of all ERC Industrial Hygiene academic program directors at the AIHA conference; and student feedback and post-graduate outcomes gathered through surveys, focus groups, and web research.

In the 2016-2017 academic year, the MS-EOHS faculty revised the Program Educational Objectives to align better with the School's updated mission following consolidation. Most recently, and as part of its full program review in the 2019-2020 academic year, these objectives were updated again to better reflect goals of students in the years following their graduation. Assessment results indicate that students are successfully attaining the Program Educational Objectives set, as detailed below:

- Alumni data collected demonstrate successful post-graduate outcomes. Of the nineteen graduates from the 2014-2015, 2015-2016, and 2016-2017 academic years, two had unknown statuses. Of known outcomes, sixteen (94%) were employed, and one (6%) was continuing their education/training.
- Alumni survey responses collected from the 2014-2015, 2015-2016, and 2016-2017 academic years indicated that 100% of employed students (n=8) worked in a field related to their earned degree. When asked how strongly they agreed that the training they received at the CUNY SPH had prepared them well for a career in their chosen field, 89% (n=9) strongly agreed or agreed. When asked how strongly they agreed that the training they received at the CUNY SPH had helped them to achieve their professional goals, 89% (n=9) strongly agreed or agreed.
- Program students and recent graduates were surveyed on the certification exams attempted and passed. Alumni reported a number of exams attempted, including the Certified Industrial Hygienist (CIH) exam, the Certified Safety Professional (CSP) exam, the Certified Hazardous Materials Manager (CHMM) exam, the Registered Environmental Health Specialists (REHS), exam, the Associate Safety Professional (ASP) exam, the Construction Health and Safety Technician (CHST) exam, and the Certified Utility Safety Professional (CUSP) exam. Of total exams attempted (n=19), 74% were passed.

CRITERION 3: STUDENT OUTCOMES

A. Process for the Establishment and Revision of the Student Outcomes Describe the process used for establishing and revising Student Outcomes.

The MS-EOHS Student Outcomes originate from ANSAC-ABET criteria, which are designed to produce graduates from accredited programs across the country with a common set of skills. The CUNY SPH will continue to monitor ABET accreditation criteria in the event that ANSAC modifies the General and Program Student Outcomes. Additionally, these outcomes are reviewed and revised as needed during a comprehensive five-year <u>academic program review</u>, in which faculty working groups are asked to revisit their program's mission statement, competencies, and relevant goals.

B. Student Outcomes

List the Student Outcomes for the program and describe their relationship to those in Criterion 3 of the general criteria and any applicable program criteria. Display this information in Table 3-1. Indicate where the Student Outcomes are documented.

The ABET Student Outcomes for baccalaureate-level Applied and Natural Science Programs were updated since the previous 2013 accreditation cycle and include the following:

- 1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple.
- 2. An ability to formulate or design a system, process procedure or program to meet desired needs.
- 3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions.
- 4. An ability to communicate effectively with a range of audiences.
- 5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
- 6. An ability to function effectively on teams that establish goals, plan, tasks, meet deadlines, and risk and uncertainty.

In addition to the General Student Outcomes listed above, ABET has generated Student Outcomes for baccalaureate-level industrial hygiene programs, which are listed below, and are relatively unchanged since 2013:

- a. Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or processes.
- b. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors.
- c. understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body.
- d. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry.
- e. Calculate, interpret, and apply statistical and epidemiological data.
- f. Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards.
- g. Demonstrate an understanding of applicable business and managerial practices.
- h. Interpret and apply applicable occupational and environmental regulations.
- i. Understand fundamental aspects of safety and environmental health.
- j. Attain recognized professional certification.

Student Outcomes are made available on the School's website.

C. Relationship of Student Outcomes to Program Educational Objectives Describe how the Student Outcomes prepare graduates to attain the Program Educational Objectives.

Student Outcomes attained by graduation are well aligned with the Program Educational Objectives, preparing students with the knowledge and skills necessary to perform effectively on job sites; engage with other professionals, both in and out of the industrial hygiene occupation; demonstrate ethical and responsible decision making; and attain professional certification in the field. While primarily addressed in required courses, Student Outcomes are also emphasized through co-curricular activities and professional opportunities, as detailed below for each Program Educational Objective.

- 1. Establish a career in the field of occupational health and safety:
 - Broad curriculum and opportunity for multiple applied electives allow students to develop a diverse skillset prior to entering the labor market.
 - CUNY's AIHA student local section hosts speakers to address career development within the field.
 - School career services offer one-on-one resume writing support and interview preparation, as well as annual career fairs.
- 2. Maintain a code of professional ethics as outlined by ABIH:
 - Students complete CITI training in order to enroll in the Capstone Project (PUBH 698), in which responsible conduct in research is addressed.
 - Professional ethics are emphasized in Hazard Evaluation and Instrumentation (EOHS 625).
- 3. Become professionally certified through ABIH or other relevant professional organization(s):
 - Path to ABIH certification is addressed in Principles of Industrial Hygiene (EOHS 623).
 - Comprehensive examination is modeled after the CIH Exam.
 - Coursework is mapped to cover all domains of the CIH Exam.
- 4. Pursue continuing education and professional development opportunities and remain apprised of developments in the field:
 - The CUNY SPH is partnered with Rutgers University Center for Public Health Workforce Development, which provides students with continuing education courses at low to no cost. Students can receive professional certification and continuing education opportunities prior to graduation.
 - The CUNY SPH hosts a 40-hour HAZWOPER course for students and in-field professionals.
- 5. Employ an interdisciplinary approach to manage occupational health issues by engaging with other professionals including safety specialists, occupational nurses and physicians, ergonomists, within or outside the graduate's organization:
 - Occupational Site Assessment (EOHS 646) allows students to partner with other occupational health disciplines (safety engineering, ergonomics, occupational nurses, and physicians) to evaluate industrial processes and design controls to minimize exposure.
 - Optional annual historical perspectives tour embarks on a five-day tour of industrial sites throughout the United States, where students work in interdisciplinary teams to assess manufacturing sites.

| Table 3-1: Relationship Between Program Student Outcomes and General Criteria Student Outcomes | | | | | | | | | | |
|--|------------------|---|---|---|---|---|--|--|--|--|
| Program Student | General Criteria | | | | | | | | | |
| Outcomes | 1 | 5 | 6 | | | | | | | |
| Α | Х | | | | | | | | | |
| В | Х | | | | | | | | | |
| С | Х | | | | | | | | | |
| D | Х | | | | | | | | | |
| Ε | | | X | | | | | | | |
| F | | X | X | | | | | | | |
| G | | | | Х | | Х | | | | |
| Н | | | | | Х | | | | | |
| Ι | | | | X | X | | | | | |
| J | | | | | X | | | | | |

Criterion 4: Continuous Improvement

A. Student Outcomes

It is recommended that this section include:

1. A listing and description of the assessment processes used to gather the data upon which the evaluation of each student outcome is based. Examples of data collection processes may include, but are not limited to, specific exam questions, student portfolios, internally developed assessment exams, senior project presentations, nationally-normed exams, oral exams, focus groups, industrial advisory committee meetings, or other processes that are relevant and appropriate to the program.

2. The frequency with which these assessment processes are carried out.

The SPH employs multiple methods to monitor and evaluate individual student progress in achieving learning outcomes, as detailed below with their frequency of occurrence.

- Course-level assessments: Each semester, instructors must develop a plan which is reflected on course syllabi, noting how Student Outcomes are aligned with specific course learning objectives, and how student achievement is assessed. (Program Student Outcomes addressed by required coursework can be found in Table 5-2.) Department Chairs are responsible for reviewing and monitoring syllabi in order to achieve compliance. Examples of course-level assessments include exams, written papers, presentations, and other projects. Overall grade distributions for each required course are monitored each semester, indicating the extent to which students have or have not attained Student Outcomes.
- Capstone Project: The Capstone experience is designed so that students synthesize the knowledge and experience they have gained in coursework and develop a major writing project based on an applied science project or research activity. Students take this course in their final semester of the program, and are expected to use a combination of evidence, theoretical models, and empirical research to answer a public health research question or practice problem using interdisciplinary perspective.
- Comprehensive Examination: Students are required to pass a comprehensive examination at the conclusion of their studies. Exam topics are mapped to required courses, which are in turn mapped to Student Outcomes.
- Course Evaluations: Students complete evaluations for each of their courses every semester. While this assessment tool does not assess individual student progress, it is a useful method that collects overall student feedback and flags potential issues with course content and pedagogy.
- Academic advising: A full-time academic advisor, as well as faculty advisors, meet with students to track progress to graduation and discuss post-graduate goals. Those who are in poor academic standing are required to meet with their advisor and develop corrective action plans. It is also an opportunity for faculty advisors to informally collect student feedback that is ultimately brought to the Program Director.
- Student/Alumni Surveys and Post-Graduate Data: Student surveys are distributed to all students each Fall semester and to graduating students at the conclusion of each semester. An alumni survey distributed in the year following student graduation and web research informs post-graduate outcomes, including employer information, employment title, employment satisfaction, and salary.

3. The expected level of attainment for each of the Student Outcomes.

The School's academic policies stipulate that graduate students maintain a B average (i.e., a minimum cumulative GPA of 3.0). Students whose grades fall below this standard are placed on probation and may be dismissed if they are unable to return to good academic standing. Students must complete the Capstone Project (PUBH 698) with a passing grade and pass a comprehensive examination in order to graduate. The maximum time allowed for program completion is five matriculated years; students and their faculty advisors are alerted one year prior to reaching this time limit.

4. Summaries of the results of the evaluation process and an analysis illustrating the extent to which each of the Student Outcomes is being attained.

Results of the evaluation process, as found below, have been provided primarily for the 2016-2017 academic year, as substantive changes to the program were proposed and approved in 2017-2018 academic year, with implementation occurring in the 2019-2020 academic year. More recent data is available upon request.

- Mean grade received in required coursework in the 2016-2017 academic year:¹
 - Student Outcomes 3, E
 EPID 610, Fundamentals of Epidemiology: 3.90 (Fall 2016), 4.00 (Spring 2017)
 - Student Outcomes 1, 3, C-E
 BIOS 610, Fundamentals of Biostatistics: 4.00 (Fall 2016), 4.00 (Spring 2017)
 - Student Outcome 4 HPAM 610, Fundamentals of Health Policy and Management: 3.63
 - Student Outcome 4 CHSS 610: Fundamentals of Social and Behavioral Health: 4.00 (Fall 2016), 3.85 (Spring 2017)
 - Student Outcomes 1-4, A-F, H-I
 EOHS 610, Fundamentals of Environmental Health: 3.90 (Fall 2016), 3.70 (Spring 2017)
 - Student Outcomes 1-4, A-F, H-I
 EOHS 620, Introduction to Occupational Safety and Health: 3.65
 - Student Outcomes 1-5, A-D, F, H-J
 EOHS 622, Environmental and Occupational Toxicology: 3.59
 - Student Outcomes 1-5, A-F, H-J
 EOHS 623, Principles of Industrial Hygiene: 3.81
 - Student Outcomes 1-3, 5, A-D, F
 EOHS 626, Industrial Ventilation and Indoor Air Quality: 3.83
 - *Student Outcomes 1-4, B-D, F, H-I* EOHS 627, Noise and Radiation Hazards and Controls: 3.39
 - Student Outcomes 1-6, B-H
 EOHS 628, Environmental Measurements Laboratory: 3.29
 - Student Outcomes 4, 6
 PUBH 696, Supervised Fieldwork: 100% Pass
 - *Student Outcomes 3-4, E, H* PUBH 698, Capstone Project
 - Mean grade received: 3.40 (Fall 2016), 3.85 (Spring 2017)

¹ Only MS-EOHS students included in courses required across multiple degree concentrations (EPID 610, BIOS 610, HPAM 610, CHSS 610, EOHS 610, PUBH 696, PUBH 698); as a result, sample sizes for these results are small.

- Informal review of student performance indicated students struggled to apply methods to content (for example, difficulties applying biostatistics to analyze industrial hygiene data)
- Average scores received in comprehensive examinations in the 2017-2018 academic year, as mapped to required coursework:
 - Student Outcomes 1-4, A-F, H-I EOHS 610, Fundamentals of Environmental Health: 79
 - Student Outcomes 1-4, A-F, H-I EOHS 620, Introduction to Occupational Safety and Health: 80
 - Student Outcomes 1-5, A-D, F, H-J EOHS 622, Environmental and Occupational Toxicology: 74
 - Student Outcomes 1-5, A-F, H-J EOHS 623, Principles of Industrial Hygiene: 81
 - Student Outcomes 1-3, 5, A-D, F
 EOHS 626, Industrial Ventilation and Indoor Air Quality: 71
 - *Student Outcomes 1-4, B-D, F, H-I* EOHS 627, Noise and Radiation Hazards and Controls: 65
- Average evaluation of course in the 2016-2017 academic year (1 = Excellent, 5 = Poor):¹
 Student Outcomes 1, 3, C-E
 - BIOS 610, Fundamentals of Biostatistics: 1.00 (Fall 2016), 3.00 (Spring 2017)
 - Student Outcome 4 HPAM 610, Fundamentals of Health Policy and Management: 2.33
 - Student Outcome 4 CHSS 610: Fundamentals of Social and Behavioral Health: 1.00 (Fall 2016), 4.00 (Spring 2016)
 - *Student Outcomes 1-4, A-F, H-I* EOHS 610, Fundamentals of Environmental Health: 1.00 (Fall 2016), 2.00 (Spring 2017)
 - Student Outcomes 1-4, A-F, H-I EOHS 620, Introduction to Occupational Safety and Health: 1.94
 - Student Outcomes 1-5, A-D, F, H-J
 EOHS 622, Environmental and Occupational Toxicology: 2.57
 - *Student Outcomes 1-5, A-F, H-J* EOHS 623, Principles of Industrial Hygiene: 1.46
 - Student Outcomes 1-3, 5, A-D, F
 EOHS 626, Industrial Ventilation and Indoor Air Quality: 2.29
 - Student Outcomes 1-4, B-D, F, H-I EOHS 627, Noise and Radiation Hazards and Controls: 2.22
 - Student Outcomes 1-6, B-H
 EOHS 628, Environmental Measurements Laboratory: 2.20
 - Student Outcomes 4, 6
 PUBH 696, Supervised Fieldwork: 3.00 (qualitative feedback: "I don't understand why we need to pay to take this course" and "I do not understand the meaning of this course")
- Overall student academic performance:
 - Student Outcomes 1-6, A-J
 - 0 students on academic probation in both Fall 2016 and Spring 2017
 - Completion of coursework and other program requirements, including the Capstone Project and a comprehensive examination, indicate students' ability to attain Student Outcomes. Of the 25 students who entered in academic years 2011-2012, 2012-2013, and 2013-2014, 72% have graduated, and 12% are still enrolled in the program.

- Informal student feedback collected during faculty advising sessions:
 - Students indicated a need for additional elective requirements in order to more deeply explore content they were interested in.
 - *Student Outcome I* Students indicated a need for additional coursework in safety.
- Post-graduate outcomes
 - Student Outcome I

Post-graduate outcomes of alumni are collected annually and include employer information and job titles. A number of graduates were found to be working in environmental and safety roles (facility environmental health and safety specialist, food safety specialist, senior safety advisor, health and safety officer).

5. How the results are documented and maintained.

Student academic progress is tracked through CUNYFirst, a University in-house data system that manages students' education and records. The CUNY SPH Office for Institutional Research provides a list of students who are both in danger of entering probation and being placed on probation, as well as students nearing or having reached their maximum time to graduation. These students cannot register for subsequent semesters until they meet with an academic advisor and determine a corrective plan. Graduation rates are reported to internal and external stakeholders including senior administrators, the University, and the Schoolwide accrediting body.

Samples of student work, including the Capstone Project and comprehensive examination, are stored electronically or in hard-copy by faculty, and are formally reviewed during the comprehensive program evaluation. Findings and recommended actions are shared department-wide and with the School's Curriculum Committee. Any revisions made to policy or curriculum must be approved at all School, University, and if appropriate, state levels.

Course evaluations and alumni surveys are distributed and stored through Qualtrics, an electronic survey software. Course evaluation results are shared with the Department Chair and senior administrators. Student and alumni survey results and data are shared in aggregate, schoolwide.

B. Continuous Improvement

Describe how the results of evaluation processes for the Student Outcomes and any other available information have been systematically used as input in the continuous improvement of the program. Describe the results of any changes (whether or not effective) in those cases where re-assessment of the results has been completed. Indicate any significant future program improvement plans based upon recent evaluations. Provide a brief rationale for each of these planned changes.

Based on results of the assessments listed in 4.A.2, as well as changes to School's accrediting body criteria, updates to the MS-EOHS program have been made. They are summarized below:

- Revision to Master's-level Public Health Core Curriculum Requirements: New accreditation criteria were implemented by the School's professional accrediting body, the Council on Education for Public Health (CEPH) in October 2016, for the first time, defining the student learning outcomes of a master's-level public health core curriculum, and making the argument for integrated courses that would eliminate redundancy and provide context to skills learned. To ensure the School was meeting the twenty-two competencies prescribed by CEPH, the core curriculum underwent substantive changes, which in turn impacted the MS-EOHS program.
 - New integrated public health core courses Designs, Concepts, and Methods in Public Health Research (PUBH 613) and Quantitative and Qualitative Data Analysis Methods in

Public Health Research (PUBH 614) were included as program requirements, allowing students to more strongly develop applied data analysis skills within the context of industrial hygiene.

- Fundamentals of Environmental and Occupational Health Sciences (EOHS 610) was removed as a public health core course. As a result, Introduction to Environmental and Occupational Health (EOHS 633) was created to merge elements of the deleted public health core course and Introduction to Occupational Safety and Health (EOHS 620).
- Deletion of Supervised Fieldwork (PUBH 696) and Development of Occupational Site Assessment (EOHS 646): Low course evaluations scores, combined with qualitative feedback from students, prompted faculty to reconsider Supervised Fieldwork (PUBH 696) as a program requirement. Additionally, the course is primarily concerned with practice in public health and does not specifically emphasize industrial hygiene content. As a result, the course was ultimately removed as a requirement and more appropriate opportunities for in-field, practical experience now exist in Occupational Site Assessment (EOHS 646) and in co-curricular activities.
- Revision to Noise and Radiation Hazards and Controls (EOHS 627): The average grade received by students in this course was found to be lower than those received for other required courses. In addition, lower-than-average performance on the comprehensive examination indicated that students struggled to grasp Student Outcomes addressed in this course. As a result, revisions were made to better emphasize quantitative skills, to better incorporate concepts covered in the CIH exam, and the course's exams were updated to mimic the CIH exam format.
- Replacement of Environmental Measurements Laboratory (EOHS 628) with Hazard Evaluation and Instrumentation (EOHS 625): The average grade received by students in this course was found to be lower than those received for other required courses. As a result, EOHS 628 was replaced with a new instrumentation course, EOHS 625, which better integrated concepts for a more applied, hands-on learning experience. This course replacement also more effectively reinforced core industrial hygiene concepts addressed in didactic course EOHS 623, EOHS 626, and EOHS 627.
- Development of Industrial Safety and Management (EOHS 643): Post-graduate outcomes of alumni, as well as informal student feedback of professional goals and curriculum requirements of peer institutions indicated the need for additional coursework in safety. As a result, EOHS 643 was developed, to better address overall environmental health and safety topics, rather just strictly industrial hygiene.
- Requirement of Two Electives Increased to Three: Informal feedback indicated a need for additional elective requirements, in order to allow students to more deeply explore content they were interested in.

The above curriculum revisions will be implemented in the 2019-2020 academic year. Therefore, no data is available at this time to confirm these changes have resulted in more complete attainment of Student Outcomes. The program will continue to track assessment data to determine the effectiveness of these revisions.

C. Additional Information

Copies of any of the assessment instruments or materials referenced in 4.A. and 4.B must be available for review at the time of the visit. Other information such as minutes from meetings where the assessment results were evaluated and where recommendations for action were made could also be included.

All assessment instruments and materials referenced above will be available to reviewers upon request.

CRITERION 5: CURRICULUM

A. Program Curriculum

1. Complete Table 5-1 that describes the plan of study for students in this program including information on course offerings in the form of a recommended schedule by year and term along with average section enrollments for all courses in the program over the two years immediately preceding the visit. State whether you are on quarters or semesters and complete a separate table for each option in the program.

The plan of study, course offerings, a recommended schedule by year and term, as well as average section enrollments is provided in Table 5-1. The School operates on a fall/spring semester basis, with optional and limited course offerings in summer and winter sessions.

2. Describe how the curriculum aligns with the Program Educational Objectives.

The curriculum has four components: 1) required program courses, 2) elective coursework, 3) a culminating project (PUBH 698: Capstone Project), and 4) a comprehensive examination. Students complete two public health courses (PUBH 613: Designs, Concepts, and Methods in Public Health Research and PUBH 614: Quantitative and Qualitative Data Analysis Methods in Public Health Research) to deepen their understanding of quantitative and qualitative methodologies used to identify and evaluate public health issues. Meanwhile, concentration requirements are designed to prepare graduates for professional practice by developing their competencies in general science and environmental and occupational hygiene. See Criterion 3.C for more detailed alignment of Program Educational Objectives to the curriculum.

3. Describe how the curriculum and its associated prerequisite structure support the attainment of the Student Outcomes.

Admission requirements for the MS-EOHS degree program includes a baccalaureate from an accredited college or university, as well as 40 credit hours in biology, chemistry, health sciences, mathematics, statistics, physics, and/or engineering completed prior to admission. While it is expected that students enter the MS-EOHS program having attained the General Student Outcomes, all of them, as well as all Program Student Outcomes, are addressed in MS-EOHS coursework, sequenced with appropriate pre-requisites (see recommended course sequences and Criterion 5.A.4) to best support student learning. A discussion of how Student Outcomes are addressed in coursework can be found below, while curriculum maps of required coursework aligned with Program Student Outcomes can be found in Table 5-2.

Matriculated students must complete twenty-seven credits of required coursework, as shown in Table 5-1. The courses are designed to instruct students to anticipate, recognize, and quantify human exposure to a variety of hazards and to reduce exposure through engineering and non-engineering controls. The curriculum includes an introductory course (EOHS 633: Environmental and Occupational Health), as well as more advanced courses in anticipation (EOHS 622: Environmental and Occupational Toxicology), recognition (EOHS 643: Industrial Safety and Management), evaluation (EOHS 623: Industrial Hygiene, EOHS 627: Noise and Radiation Hazards and Controls, EOHS 625: Hazard Evaluation and Instrumentation), and controls (EOHS 626: Industrial Ventilation and Indoor Air Quality).

Many courses in the curriculum, including EOHS 623, EOHS 625, and EOHS 627 require students to apply college-level mathematics to quantify human exposure to chemical, biological, and physical hazards. EOHS 627 makes extensive use of exponentials and logarithms in measuring noise levels,

exponential decay over time of radionuclides, and exponential loss of gamma-ray beam intensity in shielding. College-level algebra is used throughout EOHS 623 and EOHS 625 to solve realistic industrial hygiene problems that students will encounter in their professional careers.

Students also gain an understanding of the theory and application of statistics and epidemiology through coursework (PUBH 613: Designs, Concepts, and Methods in Public Health Research, PUBH 614: Quantitative and Qualitative Data Analysis Methods in Public Health Research). For example, in PUBH 613, students apply their mathematical skills to calculate basic measures of exposure and disease incidence, and prevalence and risk, as indicated in the attached syllabi. In PUBH 614, students learn the theory of biostatistics and apply those methods in EOHS 625 to analyze exposure data generated in class.

Other courses require students to extend and apply basic knowledge of biology, chemistry, and physics, such as EOHS 622, EOHS 633, EOHS 623, EOHS 626, and EOHS 627. For example, EOHS 633 extends students' knowledge of human physiology in studying human response, defense mechanisms, and symptoms of overexposure to toxic chemicals. In EOHS 622 students learn about human physiology and biochemical processes in the body through study of the metabolism of exogenous chemicals. Applications and extensions of basic physics and chemistry knowledge take place in EOHS 623, EOHS 626, and EOHS 627, and include topics on the ideal gas laws, partial pressure, and the physics of energy.

Term papers in most required and elective courses provide students with an opportunity to enhance research, critical analysis, and writing skills. Such term papers are a requirement in EOHS 633, EOHS 643, and PUBH 613.

| Table 5-3: Elective Courses for MS-EOHS Students | | | | | | | | |
|--|--------------------------------------|--|--|--|--|--|--|--|
| EOHS 621 | Environmental Chemistry | | | | | | | |
| EOHS 634 | Exposure and Risk Assessment | | | | | | | |
| EOHS 630 | Principles of GISc | | | | | | | |
| EOHS 624 | Environmental Audits and Remediation | | | | | | | |
| EOHS 646 | Occupational Site Assessment | | | | | | | |
| EOHS 695 | Climate Change | | | | | | | |
| BIOS 620 | Applied Biostatistics I | | | | | | | |
| EPID 620 | Epidemiological Methods I | | | | | | | |

In addition to the twenty-seven credits of required coursework, students must take nine credits of elective coursework. See Table 5-3 below for a list of potential electives.

Electives are chosen by the student in consultation with their faculty advisor. These courses serve to deepen and broaden the student's grasp of the Student Outcomes, and better prepare a student for employment. Environmental Chemistry (EOHS 621) and Environmental Audits and Remediation (EOHS 624) are two electives frequently selected by students. Students are often encouraged to enroll in Occupational Site Assessment (EOHS 646), allowing them to visit industrial facilities during working hours and assess safety hazards in the facility. Students that are preparing themselves for a career in research or future doctoral studies are encouraged to enroll in advanced biostatistics and epidemiology courses, such as Applied Biostatistics I (BIOS 620) and Epidemiological Methods I (EPID 620).

The questions presented on the comprehensive examination are designed to teach students what to expect when taking the Board Certification Examination to become a Certified Industrial Hygienist. Likewise, the conditions maintained while students take the exam are similar to those of the actual Board Certification Examination. Approximately 20% of the questions in the MS-EOHS comprehensive examination involve quantitative calculations. The majority of questions also involve applications of knowledge in inorganic and organic chemistry, biochemistry, physics, human physiology and other aspects of the biological sciences. Sections of the current comprehensive examination include the following:

- Environmental Health
- Environmental and Occupational Toxicology
- Occupational Health and Safety
- Industrial Hygiene
- Industrial Ventilation and Engineering Controls
- Noise and Radiation (Physical Hazards)

Finally, students complete a culminating three-credit Capstone Project, typically taken in the final semester. In this experience, students must demonstrate synthesized knowledge of the subject matter and a high level of communication through a major writing project and presentation.

| Table 5-1: MS-EOHS Curriculum Requirements | | | | | | | | | |
|---|----------------------------------|------------|-----------------|--------------|-------|------------------|----------------------|--|--|
| Course | Indicate Whether | Сиг | rricular Area (| Credit Hours | s) | Last Two Terms | Average Section | | |
| (Department, Number, Title) | Course is Required, | College- | Advanced | General | Other | the Course was | Enrollment | | |
| List all courses in the program by term starting with the first term of the first | Elective, or a | level Math | Technical | Education | | Offered: | for the Last Two | | |
| year and ending with the last term of the final year. | Selective Elective by | & | &/or Science | | | Year and, | Terms the | | |
| | an R, an E or an SE ¹ | Sciences | Topics | | | Semester, or | Course was | | |
| | | | | | | Quarter | Offered ² | | |
| Fall Semester, Year One | | | | | | | | | |
| PUBH 601: Foundations of Public Health Knowledge ² | R | | | 0 | | N/A ³ | N/A ³ | | |
| PUBH 613: Designs, Concepts, and Methods in Public Health Research ⁴ | R | | | 3 | | N/A ³ | N/A ³ | | |
| EOHS 633: Introduction to Environmental and Occupational Health ⁵ | R | | 3 | | | N/A ³ | N/A ³ | | |
| EOHS 623: Principles of Industrial Hygiene ⁵ | R | | 3 | | | SP18, SP19 | 18.5 | | |
| Elective Course 1 (EOHS 621 Environmental Chemistry) | Е | 3 | | | | FA17, FA18 | 22.5 | | |
| Spring Semester, Year One | | | | | | | | | |
| PUBH 614: Quantitative and Qualitative Data Analysis Methods in Public | р | | | 2 | | N/A ³ | N/A ³ | | |
| Health Research ⁴ | ĸ | | | 5 | | | | | |
| EOHS 622: Environmental and Occupational Toxicology ⁵ | R | 3 | | | | SP18, SP19 | 30.5 | | |
| EOHS 626: Industrial Ventilation and Indoor Air Quality ⁵ | R | | 3 | | | SP18, SP19 | 16.5 | | |
| Fall Semester, Year Two | | • | | | | | | | |
| EOHS 625: Hazard Evaluation and Instrumentation ⁵ | R | | 3 | | | N/A ³ | N/A ³ | | |
| EOHS 627: Noise and Radiation Hazards and Controls ⁵ | R | | 3 | | | FA17, FA18 | 13.5 | | |
| EOHS 643: Industrial Safety and Management ⁵ | R | | 3 | | | N/A ³ | N/A ³ | | |
| Spring Semester, Year Two | | • | • | • | | • | • | | |
| Elective Course 2 (EOHS 624: Environmental Audits and Remediation) | Е | | 3 | | | SP18, SP19 | 21 | | |
| Elective Course 3 (BIOS 620: Applied Biostatistics I or EPID 620: | Е | | | 3 | | FA18, SP19 | 15.5 (BIOS 620) | | |
| Epidemiological Methods I) | | | | | | | 17 (EPID 620) | | |
| Comprehensive Exam | R | | 0 | | | N/A | N/A | | |
| PUBH 698 Capstone Project | R | | 3 | | | FA18, SP19 | 19 | | |
| OVERALL TOTAL CREDIT HOURS FOR THE DEGREE | 39 | 6 | 24 | 9 | | | | | |
| PERCENT OF TOTAL | | 15% | 62% | 23% | 0% | | | | |

 ² Administered by the Office of Academic Affairs; students must complete twelve asynchronous online modules addressing foundational public health knowledge.
 ³ Offered as a requirement of the new curriculum for the first time in Fall 2019-Spring 2020 academic year.
 ⁴ Offered by the Department of Epidemiology and Biostatistics.
 ⁵ Offered by the Department of Environmental, Occupational, and Geospatial Health Sciences.

| Table 5-2: Identification of MS-EOHS Program Courses in Which Curricular Content Areas Identified in Program-Specific Criteria are | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|
| Addressed | | | | | | | | | | |
| Program- | Α | В | С | D | E | F | G | Н | Ι | J |
| Specific Course | | | | | | | | | | |
| PUBH 613 | | | | | Х | | | | | |
| PUBH 614 | | | Х | Х | Х | | | | | |
| EOHS 622 | Х | Х | Х | Х | | X | | Х | X | X |
| EOHS 623 | Х | Х | Х | Х | X | X | | Х | X | X |
| EOHS 625 | | Х | Х | Х | Х | X | X | X | | |
| EOHS 626 | Х | Х | Х | Х | | X | | | | |
| EOHS 627 | | Х | Х | Х | | X | | X | X | |
| EOHS 633 | Х | Х | Х | Х | Х | X | | X | X | |
| EOHS 643 | X | X | X | X | X | | X | | X | X |
| PUBH 698 | | | | | X | | | X | | |

4. Attach a flowchart or worksheet that illustrates the prerequisite structure of the program's required courses.

| Table 5-4: Pre-requisites for MS-EOHS Required Courses | | | | | | | |
|--|--|--|--|--|--|--|--|
| Course | Pre-requisite | | | | | | |
| PUBH 613: Designs, Concepts, and Methods in | None | | | | | | |
| Public Health Research | | | | | | | |
| PUBH 614: Quantitative and Qualitative Data | Pre or Co-requisite PUBH 613 | | | | | | |
| Analysis Methods in Public Health Research | | | | | | | |
| EOHS 622: Environmental and Occupational | None | | | | | | |
| Toxicology | | | | | | | |
| EOHS 623: Principles of Industrial Hygiene | None | | | | | | |
| EOHS 626: Industrial Ventilation and Indoor Air | None | | | | | | |
| Quality | | | | | | | |
| EOHS 627: Noise and Radiation Hazards and | None | | | | | | |
| Controls | | | | | | | |
| EOHS 633: Introduction to Environmental and | None | | | | | | |
| Occupational Health | | | | | | | |
| EOHS 625: Hazard Evaluation and | PUBH 614 and EOHS 633 | | | | | | |
| Instrumentation | | | | | | | |
| EOHS 643: Industrial Safety and Management | None | | | | | | |
| PUBH 698: Capstone | Departmental permission. To be taken during a | | | | | | |
| | student's final semester, after completion of all | | | | | | |
| | core coursework, fieldwork (when applicable), | | | | | | |
| | and at least three concentration courses. ⁶ | | | | | | |

See Table 5-4 below for a list of all pre-requisites by course.

A recommended course sequence for full-time students beginning their program during the fall semester can be found in Table 5-1.

5. For each curricular area specifically addressed by either the general criteria or the program criteria as shown in Table 5-1, describe how your program meets the specific requirements for this program area in terms of hours and depth of study.

The ways in which coursework meets general criteria and program criteria are discussed in detail in Criterion 5.A.3. In compliance with the New York State Education Department's regulations, one semester hour per week during a fifteen-week semester (fall and spring) is equivalent to one credit. Each credit earned requires at least fifteen hours of instruction and at least thirty hours of supplementary instruction and/or assignments. This may include traditional in-person or online contact time, as well as laboratory sessions, supervised fieldwork, individual meetings, electronic communication, and field trips.

6. If your program has a capstone or other culminating experience for students specifically addressed by either the general or program criteria, describe how this project or experience is based upon the cumulative knowledge and skills acquired in earlier course work.

All students in the MS program are required to complete three credits of a culminating Capstone course (PUBH 698), building upon the knowledge and skills developed through coursework. Prior to registering for this course, students meet individually with their faculty advisor to develop an area of research that

⁶ New pre-requisites to be published and implemented Fall 2019.

addresses Student Outcomes 3, 4, E, and H, and others (if relevant). Students must submit a proposal for approval, which includes a literature review, analysis plan, and expected results.

The Capstone course requires students to attend regular meetings with faculty, which are designed to assist them in writing a professional quality scientific paper and deliver an oral presentation on some aspect of their project. The paper and presentation may focus on collection and analysis of data or project implementation. The initial Capstone draft is reviewed by the student's Capstone faculty member who provides written comments and gives final approval on the revised draft.

Each year a number of students work on environmental and occupational hygiene research projects either with department faculty, NIOSH ERC faculty, or other health and safety professionals. All ERC scholarship students are specifically encouraged to participate in research studies with departmental faculty, although this is not and cannot be a term or condition of the scholarship award. Examples of Capstone Projects include:

- Artisinal gold mining and mercury exposure
- Exposure assessment/Risk assessment from RF Micro Cellular Antennas in the NYC Subway System
- Measuring concentrations of tungsten in air, water, soil and urine of miners and local residents near a Vietnam tungsten mine
- An Environmental Noise Exposure Assessment in Residential Neighborhoods
- Heavy Metal Exposure to World Trade Center Recovery Workers
- Noise and Silica Assessment at a Countertop Manufacturing Facility
- Lead (Pb) in New York City residential soils and its link to local childhood elevated Blood Lead (BPb) levels
- Commuters Heat Stress Assessment in New York City / New Jersey Subway System
- Qualitative and Quantitative fit test in measuring respirator fit: A Systematic Review
- Hazards and Unwanted Behaviors in the Workplace: A Study of Migrant Beer Promoters in Cambodia, Laos, and Thailand
- New York City Subway System: A Possible Source of Noise Exposure
- Chemical Composition and Trend Analysis of Fine Particulate Matter (PM 2.5) in Metropolitan New York City over Ten Years (2007-2016): An Investigation of Temporal and Spatial Trends of Three EPA-Monitored Sites
- Indoor air quality in NYC restaurants
- Comparison of Methods to Estimate Outdoor Air Make-up Rates to Indoor Spaces and their Ease of Implementation

Other MS-EOHS students choose to conduct a project at their place of employment, which is permitted as long as the faculty advisor approves, the specific project is not part of the student's normal duties, and is designed to enhance specific environmental health and safety knowledge and skills.

7. If your program allows cooperative education to satisfy curricular requirements specifically addressed by either the general or program criteria, describe the academic component of this experience and how it is evaluated by the faculty.

Not applicable

8. Describe by example how the review team will be able to relate the display materials, i.e. course syllabi, textbooks, sample student work, etc., to each student outcome. (See the 2013-2014 APPM section II.G.6.b.(2) regarding display materials.)

Course syllabi are included in this self-study as Appendix A and include information such as required textbooks, expected Student Outcomes, and required assessments. Sample student work will be made available for the review team electronically during the site visit.

B. Course Syllabi

In Appendix A, include a syllabus for each course used to satisfy the mathematics, science, and discipline-specific requirements required by Criterion 5 or any applicable program criteria. For required courses with multiple sections that do not use a common syllabus, please include a syllabus for each of the different sections.

Syllabi for all required coursework can be found in Appendix A.

Criterion 6: Faculty

A. Faculty Qualifications

Describe the qualifications of the faculty and how they are adequate to cover all the curricular areas of the program and also meet any applicable program criteria. This description should include the composition, size, credentials, and experience of the faculty. Complete table 6-1. Include faculty resumes in Appendix B.

Currently, the program is guided by Program Director Brian Pavilonis, Department Chair Mary Schooling, and three full-time faculty, with an ongoing search for a fourth. Faculty qualifications are summarized below and detailed in Table 6-1. Faculty curriculum vita can be found in Appendix B. Together, program faculty represent 170 years of combined experience in teaching, research, and practice in the labor, government, and private industries. Faculty have been principal or co-principal investigators in over \$1.3 million of research and training grants since 2013. They are actively involved in regional and national professional organizations including the American Hygiene Association and the American Public Health Association.

Dr. Brian Pavilonis is a Certified Industrial Hygienist who has been working in occupational health and exposure science since 2012. Dr. Pavilonis joined the CUNY SPH faculty in 2014 as tenure-track Assistant Professor. Prior to CUNY SPH, Dr. Pavilonis was a post-doctoral fellow at Rutgers University in the Exposure Science Division after earning his PhD at the University of Iowa in Industrial Hygiene in 2012. At the CUNY SPH, Dr. Pavilonis has developed and taught courses in Industrial Hygiene, Noise and Radiation, Industrial Ventilation, Environmental Measurements, and Environmental Health. In 2016, he was named Industrial Hygiene Program Director for the NY/NJ NIOSH ERC. His research aims to understand human exposure in the occupational environment and characterize risk due to exposure, both areas in which he has published extensively on. His current research is focused on characterizing exposures among nail salon workers and understanding barriers within the salon that limit the implementation of controls.

Dr. C. Mary Schooling is an environmental epidemiologist who has been working in public health since 2002. In addition to her appointment at the CUNY SPH, Dr. Schooling holds an appointment in the School of Public Health at the University of Hong Kong. Dr. Schooling's work focuses on the health effects of various environmental exposures, including air pollution, endocrine disruptors and occupational exposures. Dr. Schooling is a keen proponent of novel and rigorous methods, which has generated several award winning publications, and infuses the teaching. In total she has published more than 275 peer reviewed publications, including ones that have influenced policy in the <u>United States</u> and <u>Canada</u>. Dr. Schooling is a member of several journal editorial boards, and regularly reviews grant applications for a variety of bodies including NIH, Wellcome Trust, Cancer Research, and the UK Medical Research Council.

Dr. Jean Grassman is an industrial hygienist and environmental health scientist with over twenty-five years of experience. She specializes in studying the sources, detection, and impact of chemical exposure in vulnerable populations with an emphasis on biological monitoring approaches. She joined the CUNY faculty as an Assistant Professor in 1999 and was promoted to Associate Professor in 2004. Prior to coming to CUNY, as an AAAS Policy Fellow, she evaluated the impact of interindividual variability in susceptibility to toxicants. Her laboratory-based research includes developing an assay to detect hemoglobin adducts in blood; and studies of the impact of dioxins, fire retardants, and dietary constituents upon signaling pathways in primary and immortalized human cells. As an NIEHS Postdoctoral Fellow, she provided biological monitoring analyses for studies of dioxin exposure in Seveso, Italy; Boehringer Ingelheim, Germany; and among North Carolina residents. Her field work situates workplace concerns

within the broader spectrum of environmental and psychosocial stressors with projects focusing on mercury exposure in communities engaged in artisanal gold mining; environmental and occupational factors associated with mosquito-borne illness; and gender-related hazards among young migrant women employed as beer promoters. These projects build on academic and community collaborations in Russia, Canada, Bolivia, Haiti, and southeast Asia. She has written on chemical warfare and is developing a database to better define the continuing impact of Agent Orange in Vietnam. On the policy level, as a member of the ACGIH Biological Exposure Indices (BEI) Committee, she develops guidelines for using biological monitoring to protect workers. She practices industrial hygiene on behalf of the members of her union and advocates for workplace justice as a member of the NYCOSH Board of Directors. She continues to teach biology-based public health courses to undergraduates at Brooklyn College. At the CUNY SPH, she teaches courses in occupational health, emerging environmental issues, and environmental auditing and remediation.

Dr. Ilias Kavouras is an environmental chemist who has been working in environmental and occupational exposure and health sciences since 1998. Dr. Kavouras joined the CUNY SPH faculty in 2018 as tenured Full Professor. He is also Affiliated Faculty with the Environmental Sciences Initiative at CUNY's Advanced Research Science Center. Prior to CUNY SPH, Dr. Kavouras was Associate Professor and Director of the Graduate Programs at University of Alabama at Birmingham Ryals School of Public Health and the University of Arkansas for Medical Sciences Fay W. Boozman College of Public Health. At the CUNY SPH, Dr. Kavouras has developed and taught the courses of Environmental Chemistry, and Climate Change and Global Health. His research aims to understand the interplay between air pollution and human health through the development and application of novel exposure characterization, chemical analysis and geospatial models. He had published more than seventy peerreview publications that are extensively cited in the scientific literature and NAAQS federal regulation. He is on the editorial board of Heliyon and a review panel member for NIEHS, NSF, EPA and NOAA. More recent work include the pulmonary and cardiovascular effects of smoke inhalation of wildland firefighters in partnership with The Nature Conservancy, a non-for-profit environmental conservation organization. In collaboration with Harvard T.H. Chan School of Public Health Center for Nanotechnology and Nanotoxicology, Dr. Kavouras and his team studied the chemical composition of electronic cigarettes vapors and the lifecycle implication of nano-enabled consumer products leading to several peer-review publications in Inhalation Toxicology, AIHA's Journal of Occupational and Environmental Hygiene and RSC Environmental Sciences: Nano.

Dr. Andrew Maroko is a health geographer who has been working in spatial analysis and computational geography since the early 2000s. Dr. Maroko has been teaching as a tenure-track faculty member in the CUNY system since 2010, first at Lehman College and now at the CUNY SPH, where he is a tenured Associate Professor. He is also affiliated faculty in the CUNY Graduate Center's PhD program in Earth and Environmental Sciences and is Associate Director of the Urban GISc Lab at Lehman College. He has worked extensively on the spatial analysis of environmental factors, including the built, natural, and social environments which influence morbidity and mortality. His research interests include the examination of exposures (e.g., proximity-based methods, dispersion modeling), geographic accessibility, health disparities, and environmental justice in a spatial framework. This entails exploration of the spatial variation of, and geographic associations among, the environment (built, natural, and social) and health. Most recently, Dr. Maroko has started examining potential cumulative exposures from both occupational and ambient environmental sources simultaneously. This new transdisciplinary work has resulted in one publication (Maroko & Pavilonis, 2018) with a number of other related projects underway including an international partnership with the Barcelona Laboratory for Urban Environmental Justice and Sustainability. Dr. Maroko has designed and taught various courses around environmental and occupational health, including introductory classes (Principles of Environmental and Occupational Health; Principles of GIS for Public Health) and advanced methods classes (Environmental Modeling and Spatial Analysis).

Adjunct faculty offer specialized experience in the field and are highly rated in student course evaluations.

Professor Anthony Devito has served as adjunct lecturer for the MS-EOHS program for twenty-one years. Professor Devito has managed and supervised the treatment of thousands of HVAC, process, and portable water systems. He has been principal environmental consultant and supervisor for the treatment of process water systems in hospitals, manufacturing faculties, plating plants, commercial buildings, and residential buildings for three major water treatment companies for over forty years. He supervised a wet chemistry laboratory, performing analyses of process and HVAC water systems by Standard Methods. He is a New York State Department of Environmental Conservation pesticide training instructor since 2014.

B. Faculty Workload

Complete Table 6-2, Faculty Workload Summary and describe this information in terms of workload expectations or requirements for the current academic year.

Faculty workload policies and procedures are determined by the contract between CUNY and the Professional Staff Congress. CUNY faculty members at the rank of Assistant, Associate, and Full Professors are contractually obligated to teach twelve credits per academic year. Per New York State Education regulations, each credit is equivalent to at least fifteen hours of instruction and at least thirty hours of supplementary instruction and/or assignments. This may include traditional in-person or online contact time, as well as laboratory sessions, supervised fieldwork, individual meetings, and electronic communications. Release time may be granted for faculty assigned administrative duties, research, or other special assignments as delegated by the Dean. New untenured faculty receive twenty-four credits of release time from teaching, to be utilized within the first five years and intended to support their research. Workload for the 2018-2019 academic year can be found in Table 6-2.

In addition to teaching, faculty are required by contract to complete research and service activities. Research responsibilities vary by faculty, who have been principal or co-principal investigators in over \$1.3 million of research and training grants since 2013. Faculty have over 600 publications, with recent publications found in *Environmental Research, International Journal of Environmental Research and Public Health, Environmental Science-Nano*, and *American Journal of Epidemiology*. MS-EOHS Faculty have provided a great deal of public and professional service as advisory board members, instructors, committee members, and reviewers for grants and scholarly journals. School and University service completed by faculty includes serving on faculty search committees, governance committees, and workgroups related to curriculum and research activities.

C. Faculty Size

Discuss the adequacy of the size of the faculty and describe the extent and quality of faculty involvement in interactions with students, student advising, and oversight of the program.

The program's five full-time faculty members are of sufficient size, and with appropriate qualifications to teach the MS-EOHS curriculum, establish a research base, and provide a critical mass for intellectual and academic support for students. The average class size for MS-EOHS required courses is eighteen students, and the additional faculty line to be filled by Fall 2020 will only further increase the program's bandwidth.

Student academic advising is available by both staff and faculty members. Staff advising is primarily focused on program completion, while faculty advising offers mentorship and guidance on electives and Capstone Projects. Each of the above faculty members is assigned an average of 3.5 MS-EOHS students, with an additional 12.8 master's degree students in other related programs.

Program Director Brian Pavilonis is responsible for providing day-to-day oversight of the MS-EOHS program. This involves monitoring the admission of new students, tracking progress of current students, and other related duties. He is also available to all MS-EOHS students to assist with any additional concerns.

D. Professional Development

Provide detailed descriptions of professional development activities for each faculty member.

Faculty are encouraged to participate in professional development activities to enhance their skills and maintain current knowledge of the field. Funding from the department, periodic allocations from the Senior Associate Dean's office, as well as NIOSH ERC support these efforts. New faculty are provided with start-up funds that can be used at their discretion for equipment, continuing education, research assistants, and professional memberships. For example, Program Director Brian Pavilonis has used his funds in part to attend an ACGIH course on industrial ventilation. All faculty participate in their respective professional associations (AIHA, APHA, ACGIH), attending national and regional meetings.

E. Authority and Responsibility of Faculty

Describe the role played by the faculty with respect to course creation, modification, and evaluation, their role in the definition and revision of Program Educational Objectives and Student Outcomes, and their role in the attainment of the Student Outcomes. Describe the roles of others on campus, e.g., dean or provost, with respect to these areas.

Faculty are responsible for conducting comprehensive reviews of the MS-EOHS programs every five years. Beginning Fall 2019, this process will be highly formalized and documented. Routine changes, such as revisions to competencies, can be implemented without further approval. Substantive and other routine changes, including revised program requirements, must be approved by the department, School Curriculum Committee, and the School's governing body, the Faculty-Student Council. Substantive changes are then reviewed by the University's Board of Trustees, and if appropriate, submitted to the New York State Education Department. Staff and senior administrators, including the Institutional Research Specialist, Director of Academic Affairs, Interim Assistant Dean of Curriculum Innovation and Implementation, and Senior Associate Dean of Student and Academic Affairs offer support and guidance through all approval processes.

| Table 6-1: Faculty Qualifications for MS-EOHS | | | | | | | | | | | |
|---|--|-------------------|---|----------|------------------------|----------|------------------|---|-------------------------------|-----------------------------|---------------------------------------|
| | | | | | Years of Experience | | of ice | tion/ | Level of Activity | | |
| Faculty Name | Highest Degree Earned- Field and Year | Rank ⁷ | Type of Academi Appointment ⁸ | FT or PT | Govt./Ind. Practice | Teaching | This Institution | Professional Registra Certification | Professional Organizations | Professional Development | Consulting/summer work in industry |
| Anthony Devito | MS - Env and Occ Health Science, 1992 | Ι | NTT | РТ | 46 | 21 | 3 | Certificate in Online Instruction (COI) | М | L | Н |
| Jean Grassman | PhD – Environmental Health Sciences, 1993 | ASC | Т | FT | 5 | 21 | 3 | Certified in Public Health | М | L | Н |
| Ilias Kavouras | PhD – Chemistry, 1998 | Р | Т | FT | 13 | 8 | 1 | - | Н | М | L |
| Andrew Maroko | PhD – Earth and Environmental Science, 2010 | ASC | Т | FT | 16 | 14 | 3 | Certificate of Completion of Online Instruction Course (COI); Certificate of Completion and Program Scholar: Workshop in Geographically Weighted Regression | Н | L | М |
| Brian Pavilonis | PhD – Occupational and Environmental Health, 2012 | AST | TT | FT | 0 | 7 | 3 | Certified Industrial Hygienist (CIH); American Board of Industrial Hygiene (ABIH); Certificate of Completion of Online Instruction Course (COI) | Н | М | L |
| Mary Schooling | PhD – Epidemiology, 2001 | Р | Т | FT | 6 | 13 | 3 | - | Н | L | L |

⁷ Code: P = Professor ASC = Associate Professor AST = Assistant Professor I = Instructor A = Adjunct O = Other

⁸ Code: TT = Tenure Track T = Tenured NTT = Non Tenure Track
| Table 6-2: Faculty Workload Summary for MS-EOHS in 2018-2019 Academic Year | | | | | | |
|--|-------------|---|--|----------------------------|---------------------|--|
| | | | Program Activity Distribution ⁹ | | % of Time | |
| Faculty Member (name) | PT or FT | Classes Taught (Course No./Credit Hrs.) in 2018-2019 | Teaching | Research or Scholarship | Other ¹¹ | Devoted to the Program ¹⁰ |
| Anthony Devito | PT | Fall 2018: BIOS 611/3cr, EOHS 625/3cr, BIOS 610/3cr Spring 2019: BIOS 610/3cr, EOHS 628/4cr | 100% | - | - | 100% |
| Jean Grassman | FT | Fall 2018: EOHS 620/3cr Spring 2019: EOHS 624/3cr, Independent Study | 50% | 50% | - | 50% |
| Ilias Kavouras | FT | Fall 2018: EOHS 621/3cr, EOHS 695/3cr Spring 2019: PUBH 898/0cr, EOHS 622/3cr, Independent Study, Independent Study, Capstone Project/3cr | 50% | 50% | - | 75% |
| Andrew Maroko | FT | Fall 2018: None Spring 2019: EOHS 610/3cr, Independent Study, Independent Study | 50% | 50% | - | 25% |
| Brian Pavilonis | FT | Fall 2018: EOHS 627/3cr, Capstone Project/3cr Spring 2019: EOHS 695/3cr, EOHS 623/3cr, EOHS 626/3cr, Independent Study | 50% | 50% | - | 100% |
| Mary Schooling | FT | Fall 2018: PUBH 613/3cr, EPID 823/3cr, Capstone Project/3cr Spring 2019: Independent Study, Capstone Project/3cr, Independent Study | 50% | 50% | - | 75% |

 ⁹ All faculty are contractually required to complete teaching, research, and service activities.
 ¹⁰ Time devoted to program out of total time employed at the institution is calculated by the number of required MS-EOHS courses taught (one course = 25%, as faculty teaching workload is twelve credits per academic year).
 ¹¹ "Other" defined as sabbatical.

Criterion 7: Facilities

A. Offices, Classrooms and Laboratories

Summarize each of the program's facilities in terms of their ability to support the attainment of the Student Outcomes and to provide an atmosphere conducive to learning.

1. Offices (such as administrative, faculty, clerical, and teaching assistants) and any associated equipment that is typically available there.

The CUNY SPH is located at 55 West 125th Street. Currently the School occupies two full floors and has partial occupancy on an additional two floors, totaling 54,000 square feet, with an additional 3,000 square feet recently secured for community engagement in Harlem, New York. There are a total of 45 faculty offices, 16 senior administrator offices, and 22 staff offices. Each faculty office is a minimum of 120 square feet and contains bookcases, a full size desk, a computer, and printer. In addition to faculty space, there are 27 cubicles and 64 workstations designated for staff. Each station contains a computer and is connected to a shared printer. MS-EOHS program faculty are located on the fifth floor.

2. Classrooms and associated equipment that are typically available where the program courses are taught.

The campus offers a 120-person lecture hall, a video production room, and 8 classrooms. Classrooms are equipped with projection systems and/or wall-mounted large screen TVs, digital podiums with computers, and high-speed Wi-Fi networks. Facilities for live-streaming events and creating digital content for distance learning are also available.

3. Laboratory facilities including those containing computers (describe available hardware and software) and the associated tools and equipment that support instruction. Include those facilities used by students in the program even if they are not dedicated to the program and state the times they are available to students. Complete Appendix C containing a list of the major pieces of equipment used by the program in support of instruction.

Students complete hands-on work with industrial hygiene instrumentation in a traditional classroom setting, primarily in Hazard Evaluation and Instrumentation (EOHS 625). This course serves as an introduction to instrumental methods used to assess environmental and occupational health hazards, reviewing principles and the operation of commonly used direct reading instruments. Equipment used by the program in support of instruction can be found in Appendix C.

B. Computing Resources

Describe any computing resources (workstations, servers, storage, networks including software) in addition to those described in the laboratories in Part A, which are used by the students in the program. Include a discussion of the accessibility of university-wide computing resources available to all students via various locations such as student housing, library, student union, off-campus, etc. State the hours the various computing facilities are open to students. Assess the adequacy of these facilities to support the scholarly and professional activities of the students and faculty in the program.

The CUNY SPH maintains state-of-the-art technology and facilities to meet the needs of students, faculty, administration, and staff. Building hours are 8 a.m. to 10 p.m.

The computing infrastructure is supported by software and hardware specialists. Services include support for faculty, students, administration, and staff as well as comprehensive monitoring and maintenance of

hardware, adhering to regulations and best practices for data protection and disaster recovery. Faculty, administrators, and staff at the School are provided with desktop and/or laptop computers (Dell PC/Apple iMac), high-speed internet access, and local and networked printers. The School is equipped with a specialized computer laboratory with twenty terminals, a general-use student lounge with fourteen terminals, and a mobile laboratory with twenty laptop computers. Every laboratory provides access to several software packages including Microsoft Office, SPSS, ArcGIS, Mathematica, EndNote, Refworks, SAS, IBM SPSS, ESRI ArcGIS, Maplesoft, Wolfram Mathematica, Adobe Creative Suite, and others. Program-specific software such as CAMEO, ALOHA, MARPLOT, IEUBK, and industrial hygiene exposure modeling software are available. Computing facilities also include a dedicated video recording room, equipped with a green screen, lighting equipment, high definition camera, high-quality audio recording equipment, and a workstation with video and audio editing software. The entire facility is blanketed with Wireless LAN, providing secure access to the datacenter for the CUNY SPH community and isolated internet access for guests. Faculty members also have access to a high-performance computer cluster for research, providing 96 processor cores, 1 TB RAM, and 88 TB of storage. This data center is available for computing, data storage, and as a platform to host client-server applications. All faculty and staff are provided with access to a Microsoft SharePoint-based intranet, supporting communication, collaboration, and secure document repositories.

The CUNY SPH library services are provided by CUNY's City College, located approximately one mile away from the School's campus. City College's main library, Cohen Library, offers nearly one hundred computer stations, with all basic software installed. These are available to students 7 a.m. to midnight Monday through Thursday, 7 a.m. to 9 p.m. on Friday, 9 a.m. to 5 p.m. on Saturday, and noon to 5 p.m. on Sunday. They are available twenty-four hours a day during midterms and finals weeks. The CUNY SPH students also have access to other City College libraries, including the science and engineering library, architecture library, music library, and the library of the Dominican Studies Institute, offering additional computing resources.

C. Guidance

Describe how students in the program are provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories.

All MS-EOHS students must complete instrumentation course, EOHS 625, in which guidelines are presented for health and safety. This course is discussed in more detail in Criterion 7.A.3.

D. Maintenance and Upgrading of Facilities

Describe the policies and procedures for maintaining and upgrading the tools, equipment, computing resources, and laboratories used by students and faculty in the program.

Program-specific equipment is maintained and upgraded based on the recommendation of the Program Director and program faculty. Funding for this purpose includes a modest departmental budget and the securing of grants. In 2017, a grant totaling \$59,900 was awarded by Graduate Research Technology Initiative (GRTI) to purchase new equipment. An additional \$5,000 is awarded annually by NIOSH to maintain and re-calibrate equipment. The Information Technology office maintains a separate budget for computer hardware and software replacement.

E. Library Services

Describe and evaluate the capability of the library (or libraries) to serve the program including the adequacy of the library's technical collection relative to the needs of the program and the faculty, the adequacy of the process by which faculty may request the library to order books or subscriptions, the library's system or locating and obtaining electronic information, and any other library services relevant to the needs of the program.

Students and faculty have in-person and remote access to the City College Library, the largest system within CUNY. Students, faculty, administrators, and staff are provided with access to bibliographic databases and full-text journal articles for public health education and research. The City College library system owns more than 1.6 million print volumes and provides access to more than 200,000 electronic books and 77,000 electronic databases. As a federal depository since 1884, the library holds more than 230,000 government documents. These collections can be accessed through the library's catalog, online databases, and online journal collections; the online research subject guides allow focused inquiry 24/7. CUNY also maintains an interlibrary loan service that will electronically deliver any unsubscribed journal articles within days. All CUNY campus library system is a federation of twenty-eight libraries and the CUNY Central Office of Library Services. Taken as a whole, this system has more than 7.5 million print volumes and several hundred thousand e-books. The CUNY SPH has a dedicated librarian available on site to provide database training and instructional and research support.

F. Overall Comments on Facilities

Describe how the program ensures the facilities, tools, and equipment used in the program are safe for their intended purposes (See the 2018-2019 APPM I.E.5.b.(1)).

The MS-EOHS Program Director is charged with ensuring compliance with all federal, state, and local environmental and occupational health safety requirements. Hands-on equipment used by students include direct reading instruments only; there are no chemicals or other hazardous materials or supplies on site.

Criterion 8: Institutional Support

A. Leadership

Describe the leadership of the program and discuss its adequacy to ensure the quality an continuity of the program and how the leadership is involved in decisions that affect the program.

The MS-EOHS program is housed in the Department of Environmental, Occupational, and Geospatial Health Sciences, one of four departments at the CUNY SPH. It is led by Department Chair Mary Schooling and Program Director Brian Pavilonis, who is a Certified Industrial Hygienist. There are an additional three full-time environmental faculty members who teach and advise in the MS-EOHS program, and at this time, an ongoing search for a fourth. This fulfills CEPH requirements for four primary instructional faculty for the School's master's degree programs in Environmental and Occupational Health Sciences. Departmental faculty serve as representatives on a number of governance committees, including the Curriculum Committee, Assessment Committee, and Admissions Committee.

At the senior administrator level, Interim Assistant Dean for Student Affairs and Alumni Relations Lynn Roberts, Interim Assistant Dean of Curriculum Innovation and Implementation Elizabeth Kelvin, Interim Associate Dean of Faculty Affairs Marilyn Auerbach, and Senior Associate Dean of Student and Academic Affairs Ashish Joshi offer support, ensure financial resources, and provide constructive leadership at the School level to assure the continued strength and viability of this program. The Dean of the School reports directly to the University Chancellor. An organizational chart of the School's reporting structure for academic programs can be found in Figure 8-1.





B. Program Budget and Financial Support

1. Describe the process used to establish the program's budget and provide evidence of continuity of institutional support for the program. Include the sources of financial support including both permanent (recurring) and temporary (one-time) funds.

The CUNY Office of Budget, Finance, and Fiscal Policy oversees and manages the budget and finances for the central administration and CUNY's twenty-four colleges and schools, and represents the University on operating budget matters. Within it, the University Budget Office is responsible for the overall management of three billion dollars in city and state tax-levy operating funds, including more than one billion dollars in tuition revenues. New York State tax-levy funds are the principal funding source for CUNY's senior colleges and professional schools, including the CUNY SPH, financing approximately 55% of operating costs. Funds are allocated to CUNY using line-item legislative appropriations as outlined in the approved State Adopted Budget. The University Budget Office allocates a "base" or annual operating budgets at the beginning of the academic year to each of the twenty-four colleges and schools. In turn, the CUNY SPH Office of Business Service and Finance's Senior Associate Dean meets individually with Department Chairs to determine allocation of funds. The majority of spending supports personnel services, including full-time, adjunct, and part-time faculty, staff and administrators.

In addition to the above tax-levy dollars, and with the support of the CUNY SPH Foundation, additional financial support exists from external sources:

- The NIOSH ERC training grant has been awarded to the CUNY SPH's MS-EOHS program since consolidation of the School in 2016. The grant provides for student tuition, student and faculty professional development, travel costs, and educational equipment and supplies. Approximately twelve students are supported by the grant every year. The majority of the funding is used to subsidize tuition costs for those students, an average of \$120,000 per year in total. Approximately \$600 is spent on professional development for students, including Hazwoper and other environmental and occupational safety trainings. Travel and attendance fees are funded at \$3,000 yearly for students to present at AIHAs annual conference and participate in the ERC worksite-visits bus tour. Faculty members are also provided \$3,000 to attend both events. Finally, \$5,000 from the grant is used to purchase supplies and equipment that support MS-EOHS classroom, laboratory, and fieldwork activities.
- The CUNY SPH was awarded a two-year \$200,000 grant from the New York Community Trust to provide ten scholarships annually to aspiring women or minority graduate students who wish to pursue the MS-EOHS degree. Through these scholarships, the School seeks to infuse the rapidly growing industrial hygiene field with a group of diverse and talented CUNY-educated professionals. The New York Community Trust is a grant-making foundation dedicated to improving the lives of residents of New York City and its suburbs.

2. Describe how teaching is supported by the institution in terms of graders, teaching assistants, teaching workshops, etc.

The CUNY SPH has developed faculty workload policies and procedures to ensure faculty support and equity. In-person classes with labs are capped at thirty students and allow for an additional instructor. Inperson classes without labs, and online courses are capped at thirty-five students. Courses with enrollment above that cap, up to forty students, are provided with a college assistant for grading and administrative purposes. Above forty students, and a new class section is created.

Professional development opportunities in the area of teaching and pedagogy are available to all faculty. Dr. Sergio Costa, Lecturer in Distance Education and Instructional Technology, has over fifteen years of

experience in online education, and offers faculty one-on-one support in addition to a Lunch & Learn series, geared toward showcasing educational technology throughout CUNY. In the past, faculty have also had the opportunity to complete training for online teaching with the CUNY School of Professional Studies Office of Faculty Development and Central Michigan University's 5-week Certificate in Online Instruction. At the University level, CUNY offers <u>additional opportunities and support</u>, including the Preparation for Teaching Online Workshops.

3. To the extent not described above, describe how resources are provided to acquire, maintain, and upgrade the infrastructures, facilities, and equipment used in the program.

External funding the program has received in the past includes training, research, and contracts from the New York City Department of Environmental Protection, Mount Sinai, New York City Mayor's Fund, and Professional Staff Congress. The CUNY SPH Foundation supports efforts to secure additional funds as available.

4. Assess the adequacy of the resources described in this section with respect to the students in the program being able to attain the Student Outcomes.

University and Schoolwide commitment to the MS-EOHS program ensures academic quality and the ability of its graduates to attain Student Outcomes. While the program currently maintains modern equipment for hands-on student learning, it anticipates the need for additional supplies as the program's student body grows.

C. Staffing

Describe the adequacy of the staff (administrative, instructional, and technical) and institutional services provided to the program. Discuss methods used to retain and train staff.

Forty-five full-time tax levy staff support School and program functions, including a full-time departmental administrator, seven information technology staff members, three sponsored activities and research staff members, and a director of career services. All other necessary administrative functions (registrar, bursar, human resources, and student financial aid) are staffed appropriately.

The University and the CUNY SPH have an ongoing commitment to developing, promoting, and retaining its staff. A <u>Professional Development and Learning Management Office</u> manages training and professional development opportunities designed to enhance the knowledge, skills, and competencies of all CUNY employees. Professional development workshops include How to Write Fast Under Pressure, Resolving and Managing Conflict, Professional Presence, and Essentials of Supervision for the 21st Century. Skill-enhancement certificates are available, including the Certificate for Administrative Professionals, the Certificate for Professional Staff, Managerial Competencies Certificate, and the Supervisory Competencies Certificate. In addition, the Professional Staff Congress <u>awards approximately</u> <u>\$500,000 in small grants to approximately 450 awardees University-wide</u>. The School offers financial support for staff professional development, as well. Annual evaluations for staff include a section for career development.

D. Faculty Hiring and Retention

1. Describe the process for hiring of new faculty.

University-wide policies, a <u>CUNY Diversity Action Plan</u>, and a <u>CUNY Search Committee Guide</u> direct the hiring of new faculty with the goals of attracting a broad range of qualified applicants, identifying the most highly qualified candidates, completing searches efficiently and effectively, and providing fair and

equitable treatment in search and selection. For each planned hire, a search committee is assembled, comprised of individuals who have enough knowledge and skill to accurately evaluate candidates. The search committee members may also assist with recruiting by proactively utilizing personal and departmental networks to identify potential candidates. A search committee chair identified is responsible for leading the committee. CUNY's Affirmative Action program calls for broad outreach and proactive recruitment campaigns to attract members of protected groups and provide equal employment opportunity for all candidates. A Chief Diversity Officer is responsible for assuring that all members of faculty and staff search committees fully understand the search process and the necessary monitoring required to ensure that each step is followed. Faculty and staff positions in public health are widely advertised, locally and nationally, in general venues (e.g., *Chronicles of Higher Education* and the *New York Times*); minority-serving venues (e.g., *Hispanic Outlook, Women and Minority Doctoral Directory, HBCU.com,* and *Diverse Issues in Higher Education*]; public health-specific venues (e.g., APHA's *Career Mart*); and professional publications, organizational listservs, and websites (e.g. *National Association of Hispanic-Serving Health Professions Schools's* job bank, the *Environmental Careers' Network*, and relevant *APHA* section listservs).

Once the posting for the opening is closed, search committee members complete an initial screening of candidates, in which they determine whether applicants have the minimum qualifications for the role, and identify the highly-qualified candidates they wish to interview. Interview questions are developed to be directly related to the job duties and/or qualifications, and are open-ended. Faculty searches may also include a campus tour, additional interviews with the Dean and leadership, informal meetings during meals, and a job talk, in which the candidate makes a brief presentation open to all faculty and staff.

Once a final candidate is identified by the search committee, a number of parties including the Chief Diversity Officer, Dean, Human Resources, and Office of Business Service and Finance must sign off. If a search fails, the search committee, hiring manager, and Chief Diversity Officer may discuss whether the search should be re-posted, and what aspects of the search process need to be revised in the next round to promote success.

2. Describe strategies used to retain current qualified faculty.

Since the School consolidated in 2016, faculty's required teaching workload has been reduced significantly, from twenty-one credits to twelve credits. This has allowed faculty increased time to dedicate to research and service activities, ultimately supporting their efforts for promotion and tenure. For tenured faculty, the CUNY SPH has several options to be released from these contractual twelve-credits. Faculty are periodically released for doing advanced committee work, accreditation report writing, assessments, community service and inter-agency agreements. The retention of senior faculty is also augmented with the recently enhanced fellowship leave (sabbatical) rules. Prior to 2007, the sabbatical rate was 50% of salary. Presently, the value has been increased to 80% of annual salary. Additionally, the School offers all new tenure-track faculty twenty-four credits of release time to be used in their first five years for research activities. During this time, new faculty are encouraged to submit grants for research funding and develop their teaching skills and service networks. This new program has been well received and improves both retention of faculty and increases in research funding.

Sources of research support at the University level, including the Mid-Career Faculty Fellowship Program, seek to specifically increase retention of faculty, and can be found in Table 8-2.

E. Support of Faculty Professional Development

Describe the adequacy of support for faculty professional development, how such activities such as sabbaticals, travel, workshops, seminars, etc., are planned and supported.

Faculty professional development opportunities are available at the University level, School level, and program level. <u>The CUNY Office of Professional Development and Learning Management</u> manages training and professional development opportunities designed to enhance the knowledge, skills, and competencies of all CUNY employees. <u>The CUNY Professional Development Program</u> offers courses in professional development and workplace skills and effectiveness. The office also serves as CUNY's liaison to <u>New York City's Citywide Training Center</u>. A list of University-wide funding opportunities can be found in Table 8-2. In addition, Article 25 of the Professional Staff Congress-CUNY contract allows for sabbatical leave, as described in Criterion 8.D.2.

At the School level, a wide range of resources and support is provided, including research support and consultation, information technology support and troubleshooting (discussed in Criterion 7.B), and library assistance (discussed in Criterion 7.E). Faculty are encouraged to join public health and specialty professional organizations and associations, and to participate in related conferences and events. The School and University notify faculty of professional events, conferences, and opportunities for practice engagement. Leadership opportunities exist for faculty within the School with avenues for participation at all levels of University governance. The CUNY SPH Office of Sponsored Programs supports faculty in identifying appropriate funding opportunities; developing project ideas; organizing, editing, and preparing grant applications; generating protocols for protection of human subjects (IRB); budgeting; contract development, review, and editing of pitch sheets; and grant administration, including conformance with payment requirements and personnel hiring. Support in instructional design and online teaching is discussed in Criterion 8.B.2.

At the program level, the MS-EOHS program receives funding from NIOSH for professional development, travel, and student support (see Criterion 8.B.1), as well as faculty start-up funds (see Criterion 6.D). Faculty are provided additional financial support for travel, workshops, and seminars. For example, Program Director Brian Pavilonis has attended the ABET workshop and the AIHA conference annually to meet with other ERC industrial hygiene program directors and discuss developments in the discipline and higher education; and Mary Schooling attended the CUNY Department Chair Leadership Program in Spring 2019.

| | Table 8-2: CUNY-Wide Sources of Research Support | | | | |
|--------------------------|---|--|--|--|--|
| Name | Description | | | | |
| Professional Staff | Professional Staff Congress-CUNY Research Awards is a major vehicle for the University's encouragement and support of faculty research and leverage of | | | | |
| Congress-CUNY | external funding. It seeks to enhance the University's role as a research institution, to further the professional growth and development of its faculty, and to | | | | |
| Research Awards | provide support for the established and the younger scholar. Awards are made in three categories: Traditional A Awards of up to \$3,500, Traditional B Awards | | | | |
| | of between \$3,600 and \$6,000, and enhanced Awards of \$6,500 to \$12,000. Preference is given to junior faculty in the allocation of funds. | | | | |
| CUNY Diversity | The Vice Chancellor for Human Resources Management established the Diversity Projects Development Fund to support scholarly research projects and other | | | | |
| Projects | educational activities for or about populations that are traditionally underrepresented within higher education. The purpose of the fund is to assist in the | | | | |
| Development Fund | development of educational projects, scholarly research, creative endeavors, and professional activities which promote diversity, multiculturalism, affirmative | | | | |
| | action, and non-discrimination on the basis of the following categories: race, color, national or ethnic origin, religion, age, sex, sexual orientation, gender status, | | | | |
| | disability, genetic predisposition or carrier status, alienage or citizenship, veteran, or marital status. Projects that are sustainable, replicable, or with potential for | | | | |
| | University-wide impact are particularly encouraged. | | | | |
| CUNY Faculty | This program is sponsored by the University Office for Compliance and Diversity Programs and is part of CUNY's commitment to increasing diversity in the | | | | |
| <u>Fellowship</u> | faculty. CUNY protected-class members are particularly encouraged to apply. The program is designed to assist full-time, untenured CUNY faculty in the | | | | |
| Publication Program | design and execution of scholarly writing projects in their discipline. The goal of the program is the successful completion of a scholarly work to assist in | | | | |
| | meeting requirements for tenure. Eligible faculty must be untenured at the assistant or associate professor rank, hired on or after September 2000, have earned a | | | | |
| | doctorate, and be employed full-time for at least one academic year in humanities, social sciences, mathematics, or computer science. | | | | |
| CUNY Scholar | The purpose of this award is to facilitate scholarly research by members of the faculty on leaves of absence not supported by the University. The amount of the | | | | |
| Incentive Awards | award may be up to 25% of annual salary, and the effect is to place its recipient on leave of absence without pay for at least the 75% of annual salary for which | | | | |
| | the recipient does not receive CUNY compensation. The common use of the award is to mediate the difference between a research grant or fellowship and | | | | |
| | annual salary. Eligibility is limited to full-time faculty members who have completed one full year or more of continuous paid full-time service. | | | | |
| Advanced Research | The Advanced Research Collaborative (ARC) awards tenured and tenure-track faculty conducting research in specified areas. Fellowships awarded in the 2019- | | | | |
| <u>Collaborative</u> | 2020 year will focus on research in the following areas: inequality, immigration, multilingualism and translation, global cities, and critical university studies. | | | | |
| Travel Awards | Includes the Stewart Travel Award for Assistant Professors and the Stefan Bernard Baumrin Travel Award for Association Professors. Funds provided for | | | | |
| | faculty who travel to funding agencies, especially federal agencies, to discuss specific RFPs or RFAs or their individual proposals. The Office of the Vice | | | | |
| | Chancellor for Research has limited funds that can be made available to assist with travel for such occasions. | | | | |
| Bridge Fund | CUNY faculty who run externally funded research programs and who run into a funding crisis due to a competitive renewal of their grant not being funded may | | | | |
| Program | apply for bridge funds under specific circumstances. In appropriate cases this program will provide up to a maximum of \$25,000, with an equal match | | | | |
| | requirement from the home campus of the faculty member. Faculty receiving any external funding must repay 50% of the funding within six months from | | | | |
| | indirect costs generated by the newly funded grant(s). | | | | |
| Feliks Gross | Two awards at \$500 granted annually for assistant professors in recognition of outstanding research, or potential for such, in the humanities or sciences, | | | | |
| Endowment | including social and life sciences. | | | | |
| Mid-Career Faculty | This program aims to help retain and advance a diverse faculty at CUNY. The program support's CUNY's commitment to academic excellence and "equal | | | | |
| Fellowship Program | access and opportunity for students, faculty, and staff from all ethnic and racial groups" and sexes. | | | | |
| <u>Urban Innovations</u> | The grant seeks to support and encourage faculty research who will tackle challenges or problems that affect the needs of urban populations and the urban | | | | |
| Interdisciplinary | environment. Applications that address specific challenges in ways that can be approached by combining expertise across disciplines (such as the health/social | | | | |
| Research Grant | sciences, natural sciences, humanities) is encouraged. | | | | |
| Advanced Science | The Advanced Science Research Center Seed Program encourages an interdisciplinary approach that spans multiple initiatives: nanoscience, photonics, | | | | |
| Research Center | structural biology, neuroscience, and environmental sciences. These grants will fund research between tenured and tenure-track faculty. The primary goal is to | | | | |
| | seed research that will become the basis of new external grant proposals. | | | | |

PROGRAM CRITERIA

Describe how the program satisfies any applicable program criteria. If already covered elsewhere in the self-study report, provide appropriate references.

I. Program Criteria for Baccalaureate Level Programs

Not applicable.

II. Program Criteria for Master's Level Programs *Master's Level Admission Requirements*.

As noted in Criterion 1.A, an undergraduate degree from an accredited university is required for admission, with a preferred overall and major GPA of 3.0. Additionally, applicants must have completed 40 credit hours in biology, chemistry, health sciences, mathematics, statistics, physics, and/or engineering prior to admission.

Master's Level Curriculum.

Students enrolled in the MS-EOHS program must complete 39 credits comprised of the following requirements, as printed in the School catalog (see Appendix F) and website:

| Table B: MS-EOHS Curriculum Requirements | | | |
|---|---|--|--|
| Requirement | Course | | |
| Foundational Knowledge (0 credits) | PUBH 601: Foundations of Public Health | | |
| | Knowledge | | |
| Public Health and Program-Specific Coursework | PUBH 613: Designs, Concepts, and Methods in | | |
| (27 credits) | Public Health Research | | |
| | PUBH 614: Quantitative and Qualitative Data | | |
| | Analysis Methods in Public Health Research | | |
| | EOHS 622: Environmental Occupational | | |
| | Toxicology | | |
| | EOHS 626: Principles of Industrial Hygiene | | |
| | EOHS 627: Noise and Radiation Hazards and | | |
| | Controls | | |
| | EOHS 633: Introduction to Environmental and | | |
| | Occupational Health | | |
| | EOHS 625: Hazard Evaluation and | | |
| | Instrumentation | | |
| | EOHS 643: Industrial Safety and Management | | |
| Elective Coursework (9 credits) | Three electives chosen in consultation with | | |
| | faculty advisor | | |
| Culminating Experience (3 credits) | PUBH 698: Capstone Project | | |

All courses have been developed with the depth and rigor of master's-level work, which exceeds the minimum ABET requirement of one year of study beyond the basic level. Capstone Project (PUBH 698), which is discussed in detail in Criterion 5.A.6, satisfies the requirement for an applied science project or research activity resulting in a report that demonstrates both mastery of the subject matter and a high level of professional and public communication skills. While students are expected to have a foundation in statistics, applied sciences, and/or related professional practice upon entering the program (see admission

requirements above), Designs, Concepts, and Methods in Public Health Research (PUBH 613), Quantitative and Qualitative Data Analysis Methods in Public Health Research (PUBH 614), Environmental Occupational Toxicology (EOHS 622), Principles of Industrial Hygiene (EOHS 626), Noise and Radiation Hazards and Controls (EOHS 627), and Hazard Evaluation and Instrumentation (EOHS 625) address these topic areas, strengthening student knowledge and skills. Advanced qualitative and quantitative problem-solving skills are emphasized in Designs, Concepts, and Methods in Public Health Research (PUBH 613) and Quantitative and Qualitative Data Analysis Methods in Public Health Research (PUBH 614).

Master's Level Faculty.

The MS-EOHS program is led by Program Director Brian Pavilonis, who earned his PhD in Industrial Hygiene from the University of Iowa, and is a certified industrial hygienist. All other full-time MS-EOHS program faculty have earned their doctorate degree. Table 6-2 demonstrates adequate faculty participation in professional activities including research.

Appendix A: Course Syllabi

- PUBH 613: Designs, Concepts, and Methods in Public Health Research
- PUBH 614: Quantitative and Qualitative Data Analysis Methods in Public Health Research
- EOHS 622: Environmental and Occupational Toxicology
- EOHS 623: Principles of Industrial Hygiene
- EOHS 625: Hazard Evaluation and Instrumentation
- EOHS 626: Industrial Ventilation and Indoor Air Quality
- EOHS 627: Noise and Radiation Hazards and Controls
- EOHS 633: Environmental and Occupational Health
- EOHS 643: Industrial Safety and Management
- EOHS 698: Capstone Project



COURSE SYLLABUS

PUBH 613: Designs, Concepts and Methods in Public Health Research

3 Credits Fall 2018

| Time and location | Tuesday, 4:00pm – 5:50pm (lecture); Thursday, 5:00pm – 6:00pm (lab) | |
|--------------------|---|--|
| Instructor | C Mary Schooling, Professor | |
| | Email: mary.schooling@sph.cuny.edu | |
| | Telephone: 646-364-9519 | |
| | | |
| | Diana Romero, Associate Professor | |
| | Email: <u>diana.romero@sph.cuny.edu</u> | |
| | Telephone: 646-364-9522 | |
| | | |
| | Glen Johnson, Associate Professor | |
| | Email: <u>glen.johnson@sph.cuny.edu</u> | |
| | Telephone: 646-364-9518 | |
| Office hours | C Mary Schooling: 3-5 pm, Thursdays | |
| | Diana Romero: 3-5pm, Thursdays | |
| • • • • | Glen Johnson: 2-4pm, Tuesdays | |
| Course website | <https: bbhosted.cuny.edu=""></https:> | |
| Support resources | For technical assistance with school computers or connecting to the | |
| | internet, write to <u>helpdesk@sph.cuny.edu</u> . Visit the <u>Library Services</u> for | |
| | help with library resources and research assistance. Visit the Writing | |
| | <u>Center</u> website for writing resources and assistance. | |
| Course description | The course introduces students to both quantitative and qualitative | |
| | research methods, principles, theory and measures commonly used in | |
| | public health; to understand the different study designs, their strengths | |
| | and limitations as well as their threats to validity and causal inferences; to | |
| | develop research questions and hypotheses as well as to identify the | |
| | data collection methods appropriate for such research questions. In | |
| | addition, the course provides students with an overview of systems | |
| | science thinking and systems models that promote understanding of the | |
| Course | | |
| course | none | |
| Course format | | |
| Poquired reading | Cordia Loon Enidemialogy 5 th Edition Dhiladelphia: Soundare: 2014 | |
| and resources | Bitchia I Lawis I Nicholls CM Ormston R. Qualitative Posoarch | |
| | Practice: A Guide for Social Science Students and Researchers. London: | |
| | Same: 2014 | |
| | Ougo, 2017. | |

| | Course textbooks are available for order through the School of Public Health Online Bookstore, <www.sphbookstore.com></www.sphbookstore.com> |
|------------------------------------|---|
| Suggested reading and resources | Additional readings will be provided in class and/or on Blackboard. |

| MPH Foundational Competencies | MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|---|--|---|---|
| This course will help you to: | This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| 1. Apply epidemiological methods to the breadth of settings and situations in public health practice | e. Calculate, interpret, and apply statistical and epidemiological data | Identify broadly the different types of public health questions (surveillance, risk prediction, causality and implementation/policy). Identify what is already known about a specific public health question, quantitative or qualitative Define and critically interpret QALY, DALY and life expectancy as measures of population health Define and Interpret incidence, attack rate, prevalence, mortality, casefatality and morbidity rates to identify the burden of disease Calculate and interpret age-standardized rates Distinguish between two usages of risk factor as: -A risk predictor -An explanatory factor Critically examine the strengths, weaknesses and uses of different risk prediction models Describe examples of person, place and time variables and discuss the contribution of PPT studies to public health. Explain the role of screening in public health Define and apply the following terms: Sensitivity, Specificity, Positive predictive value, Negative predictive value Explain the difference between relative and absolute risk Identify major observational study designs Explain why RCTs, Instrumental variable analysis and sibling designs are less open to confounding than observational studies Describe the attributes of valid and reliable measuring instruments Explain how to assess generalizability and transportability Appraise threats to internal validity in observational studies, such as confounding, selection bias and information bias, using directed acyclic graphs | Project 1 |

| | | Demonstrate knowledge of the principles of the ethical conduct of research with human subjects and the role of IRB | |
|--|--|---|-----------|
| 2. Select quantitative and qualitative data collection methods appropriate for a given public health context | 3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. | Explain the relevance of representative samples Explain the strengths and weaknesses of different surveillance methods, and how qualitative methods can be used Explain the role of case definitions in surveillance Describe key data collection methods, such as focus groups & in-depth, interviews Explain the difference between a population and a sample and the different approaches to sampling strategies Explain the various qualitative sampling approaches, including the concept of theoretical sampling Explain the major strengths and limitations of focus groups and in-depth interviews Explain how qualitative methods can provide in-depth contextual data to explain or answer research questions Define trustworthiness, including concepts of credibility, dependability, confirmability, and transferability in a qualitative study and explain how they influenced your interpretation of findings. Explain the qualitative research methods of document review and content analysis Explain the major strengths and limitations of document review and content analysis Explain the strengths and weaknesses of different types of data used for causal inference, such as big data Describe the qualitative research methods of document review and content analysis Explain the major strengths and limitations of document review and content analysis Explain the major strengths and limitations of document review and content analysis Explain the major strengths and limitations of ethnographic and observational methods | Project 2 |
| 22. Apply systems thinking tools to a public health issue | N/A | Describe the use of science in public health Explain why solving public health problems is so complex Explain the major applications of system dynamics, network modeling and agent-based model | Project 3 |

| | • Operationalize a public health issue in terms of a testable, simplified, model | |
|--|--|--|
| | of reality, for example as a static epidemic model or a simulation | |

Course Assessments

Projects

Students will deliver solutions to public health problems, such as designing a study, designing a sampling strategy and applying a systems model. There will be 3 projects, listed below:

- **Project 1:** Students will design studies to address a range of public health issues, including surveillance, risk stratification and assessing the effectiveness of an intervention, in a range of settings.
- **Project 2:** Determine (a) the appropriate sampling approach matched to proposed research projects, and then (b) pick one qualitative and quantitative sampling approach and write up *your own* research scenarios that would be appropriately addressed by the respective sampling approaches.
- **Project 3:** Apply one of the systems thinking tools reviewed in class (e.g., causal loop diagram, stock and flow diagram using software such as Vensim) to develop a preliminary diagram to model a public health issue or problem.

CITI Assessment

The CITI is an online training program (www.citiprogram.org) that provides certification for human subject research. Students must complete the Basic Module by the second lab session and upload their certificate to Blackboard. Note that the Basic Module requires approximately 3-4 hours to complete.

Homework assignments

Each of the homework assignments may include multiple choice questions, short answer questions and software exercises. The final homework grade will be based on all assignments combined – each will be given equal weight.

Midterm

The midterm will be disseminated electronically on Blackboard. The test will be available for one week, but once you begin the exam, it will have a time limit of 2 hours – NOTE: you cannot save your work and return to it. It will consist of multiple-choice, true/false and short answer questions in a format similar to the homework assignments. The midterm is a chance for you to assess your knowledge of the material covered thus far and to prepare for the final exam.

Final in-class exam

There is no opportunity for a make-up final exam. You will have the entire class period to complete the in-class exam on the date listed on the Course Schedule below. The exam will consist of multiple-choice, short answer and Excel interpretation questions in a form similar to the homework assignments. You are allowed to use a calculator (no cell phones) and **one page** of prepared notes (front and back on 8 1/2 x 11-inch paper). The last lab session will be a review for the final.

Attendance and class participation

The reading assignments will help you master course materials and actively participate in class. As they are not long, you are expected to complete all of the required reading assignments; 10% of your grade will be based on your class participation in both lecture and lab sessions and attendance.

Grading

Evaluation criteria

Grading rubrics for each course component will be available on Blackboard.

The relative weight of each course component is as follows:

| Assessment | Weight |
|--------------------------|--------|
| Homework Assignments | 20% |
| Projects | 30% |
| Midterm | 20% |
| In-class Final Exam | 20% |
| Attendance/participation | 10% |
| | 100% |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| В- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

<u>Withdrawal</u>

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the <u>Academic</u> <u>Calendar</u> for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by a legitimate and documented emergency. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's <u>academic policies</u> for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's <u>academic policies</u>.

Course Policies

Attendance and class participation

Students are expected to attend class regularly and to be active, informed participants in all class and lab discussions. The instructor may assign students as discussion leaders and will call on students in class to join discussions and exercises.

Late/incomplete submission of assignments

Late or incomplete assignments will not be accepted.

Make-ups, rewrites, and extra credit

There are no make-ups, rewrites, or extra credit allowed.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez,

Email: <u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Academic integrity

CUNY regards acts of academic dishonesty (e.g. plagiarism, cheating on exams, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. CUNY is committed to enforcing the <u>Policy on</u> <u>Academic Integrity</u> and will pursue cases of academic dishonesty.

Course Schedule

| Class | Торіс | Learning Objectives | Readings/Assessments Due | | |
|-------|--|---|--|--|--|
| 1 | Why research? Role, purpose, and application of research methods in public health | Identify broadly the different types of public health questions (surveillance, risk prediction, causality and implementation/policy). Describe the use of science in public health Demonstrate knowledge of the principles of the ethical conduct of research with human subjects and the role of IRB Classify a selection of articles from AJPH, NEJM, SSM, HP and EHP Compare the roles of technician, engineer and scientist Classify your current role and explain your aspirations Complete CITI for human subjects research | Gordis: Chapter 1, 20 Carter et al (2009). Doing good qualitative research in public health: not as easy as it looks. <u>http://www.phrp.com.au/wp-content/uploads/2014/10/NB09018.pdf</u> Ritchie et al. Qualitative Research Practice, 2nd edition. Chapter 1 (Foundations) Phillips CV, Goodman KJ. Causal criteria and counterfactuals; nothing more (or less) than scientific common sense. Emerg Themes Epidemiol. 2006 May 26;3:5. Schooling CM, Jones HE. Clarifying questions about "risk factors": predictors versus explanation. Emerg Themes Epidemiol. 2018 Aug 8;15:10. <u>Advanced/optional</u>: Ritchie et al. Qualitative Research Practice, 2nd edition. Chapter 2 (Applications) Chapter 4 (Ethics) | | |
| 2 | Surveillance PH surveillance and data sources, both qualitative and quantitative | Define and Interpret incidence, attack rate, prevalence, mortality, case-fatality and morbidity rates to identify the burden of disease Describe examples of person, place and time variables and discuss the contribution of PPT studies to public health Explain the role of case definitions in surveillance | Gordis: Chapter 2,3 Ritchie et al. Qualitative Research Practice, 2nd edition: Chapter 3 (Design Issues) | | |

| Class | Торіс | Learning Objectives | Readings/Assessments Due | |
|-------|---|---|--|--|
| | | Explain the strengths and weaknesses of different surveillance methods, and how qualitative methods can be used Calculate incidence of a condition Give examples of conditions with low incidence and high prevalence and vice versa Characterize a disease by person, place and time Give examples of conditions that are easy to measure accurately and hard to measure accurately Review the strengths, weaknesses and application of google flu trends | | |
| 3 | Burden of disease and measures of population health | Define and critically interpret QALY, DALY and life expectancy as measures of population health Calculate and interpret age-standardized rates Explain why some conditions contribute differently to DALYs, mortality rates and number of deaths in the US and globally Plot US life expectancy over time compared with other countries Define population structure Map US life expectancy by state Compare mortality rates across countries with and without age standardization | Gordis: Chapter 4 | |
| 4 | Predicting versus explaining disease Risk v Causality: applications in epidemiology, community health, environmental health and health policy | Define and interpret a simplified, model of reality, for example as an epidemic model Identify what is already known about a specific public health question, quantitative or qualitative | Gordis: Chapter 11,12, 14 Schooling CM, Jones HE. Clarifying questions about "risk factors": predictors versus explanation. Emerg Themes Epidemiol. 2018 Aug 8;15:10. | |

| Class | Торіс | Learning Objectives | Readings/Assessments Due |
|-------|--|--|---|
| | | Explain the difference between relative and absolute risk Distinguish between two usages of risk factor as: -A risk predictor -An explanatory factor Critically examine the strengths, weaknesses and uses of different risk prediction models Review a model for transmission of infection, impact of social networks, changes of social norms, beliefs, etc. Identify a specific public health question Search systematically and reproducibly for information about a specific public health question Give examples of where relative risk may be high but absolute risk may be low and vice versa Give an example of a risk factor that is not causal and an explanatory factor that is not associated with the condition it causes. Review the strengths, weaknesses and application of Globorisk | Hajifathalian K, et al. A novel risk score to predict cardiovascular disease risk in national populations (Globorisk): a pooled analysis of prospective cohorts and health examination surveys. Lancet Diabetes Endocrinol. 2015 May;3(5):339-55. |
| 5 | Generating explanations – what do we know already? | Use exposure characteristics and pathways/routes to infer likely human health effects Identify the strengths and weaknesses of inferring human health effects from nonhuman studies Characterize potential exposure pathways/routes relevant to human health Compare and contrast the health effects of key exposures, such as air or water | Gordis: Chapter 6, 16 |

| Class | Торіс | Learning Objectives | Readings/Assessments Due |
|-------|--|---|---|
| | | pollution, when acting via different pathways/routes Characterize different types of non- human studies assessing health effects Compare and contrast the limitations of different types of non-human studies for assessing health effects | |
| 6 | Use of Qualitative Methods to Generate Research Questions Key Methods (Focus groups, in-depth interviews) | Explain how qualitative methods use indepth contextual data to explain or answer research questions Describe key data collection methods, such as focus groups & in-depth interviews Explain the major strengths and limitations of focus groups and in-depth interviews Identify when to use focus groups & indepth interviews Develop a focus group topic guide or an in-depth interview guide [group assignment] | Ritchie et al. Qualitative Research Practice, 2nd edition. Chapter 7 (Interviews) Chapter 8 (Focus Groups) Ulin, Robinson, Tolley. Qualitative Methods in Public Health: A Field Guide for Applied Research. (2005, Jossey-Bass). p.139-169, focus on pages 162-169 on trustworthiness. Chapter 6 (Qualitative Data Analysis) Romero D, Flandrick K, Kordosky J, Vossenas P. On-the-ground health and safety experiences of non-union casino hotel workers: A focus-group study stratified by four occupational groups. American Journal of Industrial Medicine. First Online: 17 September 2018. https://doi.org/10.1002/ajim.22896 Romero D, Flandrick K. A focus group and key informant interview study of experience with the NYC Health & Hospitals Options program. Journal of Health Care for the Poor and Underserved. In press. <u>Advanced/optional</u>: Krueger RA. Focus Groups: A Practical Guide for Applied Research. Sage. 2015. 280 pp |

| Class | Торіс | Learning Objectives | Readings/Assessments Due |
|-------|---|--|--|
| 7 | Generating explanations from data Observational Study Designs | Identify major observational study designs Appraise threats to internal validity in observational studies, such as confounding, selection bias and information bias, using directed acyclic graphs Characterize observational study designs Identify the major sources of bias in answering each type of public health question using epidemiological methods, i.e., the relevance of representative samples, confounding and selection bias. | Gordis: Chapter 9,10, 15 The Book of Why, Pearl J & Mackenzie D, Chapter 4 & 5 |
| 8 | Ethnographic & Observational Methods in Qualitative Research & Implementing Solutions | Describe ethnographic & observational qualitative research methods Explain the major strengths and limitations of ethnographic and observational methods Explain how to use theory and research evidence to translate findings for diverse population groups and contexts and implement them in practice Design a data collection plan involving ethnographic/ observational methods Compare and contrast how elements of research findings can be adapted for use in practice | Ritchie et al. Qualitative Research Practice, 2nd ed. Chapter 9 (Observation) Hesse-Biber SN, Leavy P. The Practice of Qualitative Research. (2011, 2nd ed; 2017, 3rd ed). Chapter 8 (Ethnography) Reeves et al. Qualitative research methodologies: ethnography. <i>BMJ</i>. 2008. <u>http://www.bmj.com/content/337/bmj.a1</u> 020.log Morgan-Trimmer S, Wood F. Ethnographic methods for process evaluations of complex health behavior interventions. <i>Trials</i>. 2016. 17:232. MIDTERM DISTRIBUTED |
| 9 | Document Review & Content Analysis Methods in Qualitative Research | Describe the qualitative research methods of document review and content analysis Explain the major strengths and limitations of document review and content analysis | Hesse-Biber SN, Leavy P. The Practice of Qualitative Research. (2011, 2nd ed; 2017, 3rd ed). Chapter 9 (Content Analysis and Unobtrusive Methods) Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. <i>Qualitative</i> <i>Health Research</i>. 2005;15:1277-1288. |

| Class | Торіс | Learning Objectives | Readings/Assessments Due |
|-------|--|--|---|
| | | Define trustworthiness, including concepts of credibility, dependability, confirmability, and transferability in a qualitative study and explain how they influenced your interpretation of findings List potential sources for conducting a document review of a specific topic Develop an abstract form for conducting a content analysis of a specific topic | Borzekowski DL, Schenk S, Wilson JL, Peebles R. e-Ana and e-Mia: A content analysis of pro-eating disorder Web sites. <i>Am</i> <i>J Public Health</i>. 2010;100:1526-34. Abroms LC, Padmanabhan N, Thaweethai L, & Phillips T. (2011). iPhone Apps for Smoking Cessation: A content analysis. <i>American</i> <i>Journal of Preventive Medicine</i>. 40(3):279- 285. |
| | | | Content analysis web-based resource from CSU: <u>https://writing.colostate.edu/guides/guide.cf</u> <u>m?guideid=61</u> |
| | | | |
| 10 | Testing explanations Quasi-experimental and Randomized Clinical Trial designs | Explain why RCTs, Instrumental variable analysis and sibling designs are less open to confounding than observational studies Explain how to assess generalizability and transportability Explain the strengths and weaknesses of different types of data used for causal inference, such as big data Place major policy guidelines, such as those concerning nutrition or the environment, within the "pyramid of evidence" and interpret them with reference to specific populations Describe different means of reducing unhealthy environmental exposures including concepts, such as the hierarchy of controls | Gordis: Chapter 7,8 The Book of Why, Pearl J & Mackenzie D, Chapter 1 & chapter 7, pp. 245-57 T.R. Goldman, Dietary Guidelines for Americans, Health Policy Brief <u>https://www.healthaffairs.org/do/10.1377</u> /hpb20151214.174872/full/ Kodali HP, Pavilonis BT, Schooling CM. Effects of copper and zinc on ischemic heart disease and myocardial infarction: a Mendelian randomization study. Am J Clin Nutr. 2018 Aug 1;108(2):237-242. |

| Class | Торіс | Learning Objectives | Readings/Assessments Due |
|-------|--|--|--|
| | | Compare estimates of the effect of vitamin D on health and of birth weight on heart disease from different study designs Give an examples of where acting on observational evidence has benefited public health and where it has harmed public health Comment on the generalizability of a study of the use of sunscreen to reduce skin cancer Identify how the data available may limit the questions that can be answered | |
| 11 | Sampling in quantitative and qualitative study designs | Explain the relevance of representative samples Explain the difference between a population and a sample and the different approaches to sampling strategies Explain the various qualitative sampling approaches, including the concept of theoretical sampling Explain the differences between the samples needed for surveillance, prediction, and causal inference Define a sampling frame Describe the advantages and disadvantages of different ways of sampling in terms of cost, feasibility, inference and utility Design a sampling plan for a qualitative study involving focus groups with stratification | Kelsey et al. Methods in Observational Epidemiology, Volume 26; Volume 1996. Chapter 12. Methods of Sampling and Estimation of sample size Ritchie et al. Qualitative Research Practice, 2nd edition. Chapter 5 (Sampling) Morse J. Determining Sample Size. <i>Qual</i> <i>Health Research</i>. 2000;10:3. Schooling CM. Selection bias in population- representative studies? A commentary on Deaton and Cartwright. Soc Sci Med. 2018 Aug;210:70. <u>Advanced/optional</u>: Small ML. 'How many cases do I need?' On science and the logic of case selection in field-based research. <i>Ethnography</i>. 2009; 10(1): 5-38. |
| 12 | Measurement Issues in Research, including environmental | Explain the role of screening in public health Define and apply the following terms: | Gordis: Chapter 5 DUE: PROJECT 2 |

| Class | Торіс | Learning Objectives | Readings/Assessments Due |
|-------|---|---|---|
| | exposures, qualitative methods and screening | Sensitivity Specificity Positive predictive value Negative predictive value Describe the attributes of valid and reliable measuring instruments Explain the strengths and limitations of different methods of measuring and validating exposures in relation to 'gold standards' in quantitative and qualitative studies Debate: Universal screening should be provided for prostate cancer Exercise using mammogram, colonoscopy, HIV, or other type of screening tests Assess what constitutes: a valid measuring instrument Classify measuring instruments | |
| 13 | Systems thinking and its relevance to public health | Explain why solving public health problems is so complex Explain the interrelationship of human activity, behavior and characteristics with unhealthy environments and planetary health Apply non-linearity and systems thinking by causal loop diagram (CLD) approach Create a casual loop diagram (CLD) of obesity Stock and flow (using software tool Vensim) | Meadows and Wright. Thinking in Systems: A Primer. Chelsea Green Pub 2008. Chapter 1: The basics Leischow SJ, Best A, Trochim WM, et al. Systems thinking to improve the public's health. <i>American Journal of Preventive</i> <i>Medicine</i>. 2008;35:S196-S203. Milstein B, Homer J, Briss P, et al. Why behavioral interventions are needed to improve health at lower cost. <i>Health Affairs</i>. 2011;30:823-832. |

| Class | Торіс | Learning Objectives | Readings/Assessments Due |
|-------|---|--|--|
| 14 | Systems Tools Selecting appropriate systems tools for public health research | Explain the major applications of system dynamics, network modeling and agent-based model Operationalize a public health issue in terms of a testable, simplified, model of reality, for example as a static epidemic model or a simulation | Meadows and Wright. Thinking in Systems: A Primer. Chelsea Green Pub 2008. Chapter 3: Why Systems work. Hovmand P, Anderson DF, Rouwette E, et al. Group model-building 'scripts' as a collaborative planning tool. Systems Research and Behavioral Science. 2012;29:179-193. Thompson KM, Tebbens RJD. Eradication versus control for poliomyelitis: an economic analysis. Lancet. 2007;369:1363-1371. Metcalf SS, Northridge ME, Lamster IB. A systems perspective for dental health in older adults. American Journal of Public Health. 2011;101:1820-1822. Editorial. |
| 15 | FINAL EXAM | | DUE: PROJECT 3 |



COURSE SYLLABUS

PUBH 614: Quantitative and Qualitative Data Analysis Methods in Public Health Research 3 Credits

Fall 2019

| Time and location | Thursday, 5:00-7:50pm | |
|----------------------|---|--|
| Instructor | Emma Tsui, Assistant Professor | |
| | Email: emma.tsui@sph.cuny.edu | |
| | Telephone: 646-364-0258 | |
| | Office: 817 | |
| | | |
| | Glen Johnson, Associate Professor | |
| | Email: glen.johnson@sph.cuny.edu | |
| | Telephone: 646-364-9518 | |
| | Office: 518 | |
| Office hours | Tuesday and Thursday, 8:00-9:00 | |
| Course website | < <u>https://bbhosted.cuny.edu/</u> > | |
| Support resources | For technical assistance with school computers or connecting to the | |
| | internet, write to <u>helpdesk@sph.cuny.edu</u> . Visit the <u>Library Services</u> | |
| | for help with library resources and research assistance. Visit the | |
| | Writing Center website for writing resources and assistance. | |
| Course description | The course provides students with the tools to identify quantitative | |
| | and qualitative methods and the appropriate software and | |
| | programming to analyze and interpret data analysis results for use | |
| | on public health, policy and practice applications. | |
| Course prerequisites | Pre-requisite or Co-requisite: PUBH 613 | |
| Course format | In person | |
| Required reading and | OpenIntro Statistics: Third Edition. CreateSpace Independent | |
| resources | Publishing Platform. Diez, D. M., Barr, C. D., Cetinkaya- | |
| | Rundel M. (2015). ISBN-10: 194345003X, ISBN-13: 978- | |
| | 1943450039 | |
| | Ritchie J, Lewis J, Nicholls CM, Ormston R. Qualitative | |
| | Research Practice: A Guide for Social Science Students and | |
| | Researchers. London: Sage; 2014 | |
| | | |
| | Course textbooks are available for order through the School of | |
| | Public Health Online Bookstore. < <u>www.SPHBookstore.com</u> > | |
| Suggested reading | See Blackboard | |
| and resources | | |

| MPH Foundational Competencies | MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|---|---|---|---|
| This course will help you to: | This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| 3. Analyze quantitative and qualitative data using biostatistics, informatics, computer- based programming and software, as appropriate | An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. | Apply statistical methods to describe and model trends in the burden of disease, to compare groups, to predict risk, to assess causal effects and to evaluate interventions Present descriptive statistics numerically and graphically Create a new public health resource by matching and merging publicly available data Characterize common statistical distributions from plots of public health data Interpret confidence interval, P-value, and effect size (or z-score) correctly Explain the concept of statistical power Compare groups with a t-test and a chisq-test and identify when to use different types of t-test Interpret an explanatory model using linear and logistic regression Interpret meta-analysis Demonstrate the difference between descriptive and interpretive analysis Practice reflexivity as an initial step in the analytic process Apply knowledge of qualitative analytic approaches for different types of data Apply descriptive and interpretive qualitative analysis skills Develop and revise a codebook for qualitative analysis | Exam, Part 1 (qualitative), Exam, Part 2 (quantitative), Qualitative Analysis Project, Quantitative Analysis Project |

| | d. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. | Employ interpretive qualitative analysis to identify key themes Produce graphic diagrams to represent key thematic findings Illustrate parsimonious mixed-methods study designs matched to specific research questions | |
|---|--|---|---|
| 4. Interpret results of data analysis for public health research, policy or practice | e. Calculate, interpret, and apply statistical and epidemiological data. | Explain the concepts of reliability, validity, trustworthiness, and credibility, as they apply to quantitative and qualitative findings, respectively Apply the concepts of generalizability/transferability, reliability/dependability, validity/credibility, as they pertain to quantitative and qualitative findings, respectively Apply levels of evidence Summarize the Standards for Reporting Qualitative Research (SRQR) Systematically review evidence on a topic Apply guidelines to rate/evaluate study quality, including STROBE, PRISMA, and SRQR | Exam, Part 1 (qualitative), Exam, Part 2 (quantitative), Qualitative Analysis Project, Quantitative Analysis Project |

Course Assessments

Your understanding of the course material will be evaluated through an in-class exam, homework assignments, and a final project. All students must complete the final project and exam. For the best possible grade, you must demonstrate an understanding of basic concepts, as well as mastery of basic computer skills.

Exam, Part 1 (qualitative): Students will analyze coded qualitative data on students' academic experience in Dedoose, interpret data and summarize data on a specific theme, and provide at least two ideas for translating these findings into actions or messages that could help to improve recruitment of students.

Exam, Part 2 (quantitative): Students will be provided an SPSS dataset related to mental health, and apply descriptive and inferential statistical methods. Based on their analysis, they will answer questions requiring them to test hypotheses, draw conclusions about those hypotheses, and suggest at least two ideas for translating these findings into actions.

Qualitative Analysis Project

For this project you will complete the following tasks:

- Describe the analytic procedures you will use, and justify why these are appropriate
- Develop a codebook for your data, and describe the development process in 300-500 words
- Write an analytic memo discussing one aspect of the analysis you are doing for your class project
- Complete the analysis of your data and summarize your findings in approx. 1000 words
- Develop a diagram representing key thematic findings for your class project and describe your process for developing this diagram
- Interpret overall trustworthiness of your project's findings and propose next steps for increasing trustworthiness

Quantitative Analysis Project

For this project you will complete the following tasks:

- Develop a testable research question and create numerical and graphical descriptive statistics using statistical software
- Compare groups on numerical and categorical variables using statistical software and interpret associated CI and effect size
- Test a hypothesis using linear or logistic model using statistical software and interpret findings
- Build and interpret a risk prediction model using linear or logistic regression using statistical software

Grading

Evaluation criteria

The relative weight of each course component is as follows:

| Assessment | Weight |
|-------------------------------|--------|
| Homework Assignments | 30% |
| Qualitative Analysis Project | 15% |
| Quantitative Analysis Project | 15% |
| Exam (Part 1 and Part 2) | 30% |
| Attendance and Participation | 10% |
| | 100% |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| В- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

Withdrawal

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the <u>Academic</u> <u>Calendar</u> for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by a legitimate and documented emergency. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's <u>academic policies</u> for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's <u>academic policies</u>.

Course Policies

Attendance and class participation

Students are expected to attend class regularly and to be active, informed participants in all class discussions. The instructor may assign students as discussion leaders and will call on students in class to join discussions and exercises.

Late/incomplete submission of assignments
Late or incomplete assignments will not be accepted.

Make-ups, rewrites, and extra credit

There are no make-ups, rewrites, or extra credit allowed.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez, Email:

<u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Academic integrity

| Week | Торіс | Learning Objectives | Readings/Assessments Due |
|------|---|---|---|
| 1 | Introduction to quantitative, qualitative, and mixed methods | Explain the concepts of reliability, validity, trustworthiness, and credibility, as they apply to quantitative and qualitative findings, respectively Apply levels of evidence Summarize the Standards for Reporting Qualitative Research (SRQR) | Diez et al. OpenIntro Statistics, 3rd edition. Chapter 1.1-1.5 on Introduction to Data. O'Brien BC1, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014 Sep;89(9):1245-51. |
| 2 | Data sources and descriptive statistics | Present descriptive statistics numerically and graphically Create a new public health resource by matching and merging publicly available data | Diez et al. OpenIntro Statistics, 3rd edition. Chapter 1.6-1.8 on Introduction to Data. DUE: Merge publically available datasets using statistical software |
| 3 | Data distributions and probability | Characterize statistical distributions from plots of public health data | Diez et al. OpenIntro Statistics, 3rd edition. Chapter 2.1-2.2 and 3.1-3.2 on Probability and Data Distributions. DUE: Identify statistical distributions from plots and calculate probabilities based on the binomial and Gaussian (normal) distributions |
| 4 | Bivariate analysis – Confidence Intervals | Apply statistical methods to describe and model trends in the burden of disease, to compare groups, to predict risk, to assess causal effects and to evaluate interventions Interpret confidence intervals, <i>p</i>-values and effect size (or z-score) correctly Explain the concept of statistical power | Diez et al. OpenIntro Statistics, 3rd edition. Chapter 4.1-4.3 and 5 on Inference for numerical data. DUE: Define confidence intervals, P-value and effect sizes and discuss their interpretation Define statistical power and determine factors that affect statistical power |
| 5 | Bivariate analysis – Hypotheses testing | Apply statistical methods to describe and model trends in the burden of disease, to compare groups, to predict risk, to assess causal effects and to evaluate interventions Compare groups with a t-test and a chisq-test and identify when to use different types of t-test | Diez et al. OpenIntro Statistics, 3rd edition. Chapter 4.1-4.3 and 5 on Inference for categorical data. |

| 6 | Multivariable regression (explanatory models) | Apply statistical methods to describe and model trends in the burden of disease, to compare groups, to predict risk, to assess causal effects and to evaluate interventions Interpret an explanatory model using linear and logistic regression | Diez et al. OpenIntro Statistics, 3rd edition. Chapter 7 on Linear Regression. Sainani, K. (n.d.). Explanatory versus predictive modeling. PM & R : The Journal of Injury, Function, and Rehabilitation., 6(9), 841-844. |
|----|---|--|---|
| 7 | Multivariable regression (risk prediction models) | Apply statistical methods to describe and model trends in the burden of disease, to compare groups, to predict risk, to assess causal effects and to evaluate interventions Interpret a risk prediction model using stepwise regression | Diez et al. OpenIntro Statistics, 3rd edition. Chapter 8 on Logistic Regression. DUE: Quantitative Analysis Project |
| 8 | Approaches to qualitative data analysis and the role of reflexivity | Demonstrate the difference between descriptive and interpretive analysis Practice reflexivity as an initial step in the analytic process | Ritchie et al. Qualitative Research Practice, 2nd edition. Chapter 10 on Analysis: Principles and Processes. Watt, D. On Becoming a Qualitative Researcher: The Value of Reflexivity. The Qualitative Report Volume 12 Number 1 March 2007 82-101 http://www.nova.edu/ssss/QR/QR12- 1/watt.pdf |
| 9 | Developing an analytic plan, considerations with diff data collection methods | Apply knowledge of qualitative analytic approaches for different types of data Apply descriptive and interpretive qualitative analysis skills | Ritchie et al. Qualitative Research Practice, 2nd edition. Chapter 11 on Analysis in Practice |
| 10 | Developing a qualitative codebook and analytic memos | Develop and revise a codebook for qualitative analysis Produce analytic memos | Ryan GW, Bernard HR. Techniques to Identify Themes. Field Methods. 2003; 15: 85-109. Corbin J, Strauss A. Basics of Qualitative Research: Techniques & Procedures for Developing Grounded Theory. 4th Edition. 2015. – Chapter 5: Strategies for Qualitative Data Analysis |
| 11 | Thematic analysis, graphic diagrams | Employ interpretive qualitative analysis to identify key themes | Corbin J, Strauss A. Basics of Qualitative Research: Techniques & Procedures for Developing Grounded Theory. 4th Edition. 2015Chapter 6: Memos and Diagrams |

| | and writing as analysis | Produce graphic diagrams to represent key thematic findings | Advanced/optional: Miles, Huberman and Saldana. |
|----|---|---|--|
| | , | 3 | Qualitative Data Analysis: A Sourcebook. (2014, 3rd ed) |
| 12 | Mixed methods designs and assessing study findings | Illustrate parsimonious mixed-methods study designs matched to specific research questions Apply the concepts of generalizability/transferability, reliability/dependability, validity/credibility, as they pertain to quantitative and qualitative findings, respectively | Creswell et al. Best Practices for Mixed Methods Research in the Health Sciences. Office of Behavioral and Social Science Research, NIH. 2011. p.4-10. Ritchie et al. Qualitative Research Practice, 2nd edition. Chapter 12: Generalising from Qualitative Research Two journal articles that are examples of mixed methods research, selected by instructors DUE: Find an example of a strong mixed methods study, describe the approach taken, and discuss why this was a strong approach in 500 words |
| 13 | Systematic reviews | Systematically review evidence on a topic Apply guidelines to rate study quality, including STROBE, PRISMA, SRQR | Vandenbroucke JP, von Elm E, Altman DG, Gøtzsche PC, Mulrow CD, Pocock SJ,Poole C, Schlesselman JJ, Egger M; STROBE Initiative. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE):explanation and elaboration. Epidemiology. 2007 Nov;18(6):805-35. PMID: 18049195 Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097 DUE: Search systematically and reproducibly for information about a specific public health question Rate a published study using STROBE or PRISMA Guidelines |
| 14 | Meta-analysis | Interpret meta-analysis | Two journal articles that are examples of meta-analyses of observational and experimental studies, selected by instructors |
| | | | |

| | | DUE: Identify steps and interpret a published meta-analysis study Ovalitative Analysis Device the statemeta study |
|----|-----------------------|---|
| | | Qualitative Analysis Project Exam |
| 15 | Project Presentations | |

CUNY SPH graduate school of public health & health policy

COURSE SYLLABUS

EOHS 622: Environmental and Occupational Toxicology 3 Credits Spring 2019

| Time and | Tuesdays 8:00-9:50PM |
|-------------------|---|
| location | CUNY SPH Room 504 |
| Instructor | Prof. Ilias Kavouras |
| | ilias.kavouras@sph.cuny.edu |
| | CUNY SPH Room 520 |
| | Telephone #: 646-364-9628 |
| Office hours | Tuesday: 4:00-6:00 p.m., Friday 12:00-2:00 p.m. |
| Course website | https://bbhosted.cuny.edu |
| Support | For technical assistance with school computers or |
| resources | connecting to the internet, write to <u>helpdesk@sph.cuny.edu</u> . |
| | Visit the <u>Library Services</u> for help with library resources and |
| | research assistance. Visit the Writing Center website for |
| | writing resources and assistance. |
| Course | Introduction to principles of toxicology with emphasis on |
| description | environment and occupational aspects. Systematic review of the |
| | toxicology of major organ systems; health effects of categories of |
| | toxins, such as solvents and metals; and review of toxicological |
| | testing and evaluation. |
| Course | PRE: EOHS 633 for MPH students; MS and Industrial Hygiene |
| prerequisites | Certificate students are waived |
| Course format | In-person |
| Required reading | Principles and Practice of Toxicology in Public Health, Second |
| and resources | Edition by Ira Richards and Marie Bourgeois – JB Learning - |
| | Paperback - 522 pages – ISBN: 1449645267 |
| | |
| | Course textbooks are available for order through the School of |
| | Public Health Unline Bookstore. < <u>www.SPHBookstore.com</u> > |
| | |
| Suggested reading | Lecture slides posted on BlackBoard |
| and resources | |
| | |

| MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|--|--|---|
| This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| 4. An ability to communicate effectively with a range of audiences. a. Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or processes. | Assess chemical hazard warnings and warning systems Describe sources and exposure circumstances for chemical hazards of health importance | Paper |
| 2. An ability to formulate or design a system, process procedure or program to meet desired needs. c. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. i. Understand fundamental aspects of safety and environmental health. | Interpret and apply occupational and environmental chemical exposure measurements to assess delivered doses and health risks | Paper, Midterm and Final exam |

| An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. | • | Apply biological and chemical principles to explain toxic action of chemicals. Apply typical occupational and environmental measurements to determining delivered dose of chemicals to people Describe the origin, scientific basis, implementation and strength and weaknesses of different approaches to risk assessment Describe the biological basis for occupational and environmental exposure limits | Paper, Midterm and Final exam |
|--|---|---|-------------------------------|
| 5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts. h. Interpret and apply applicable occupational and environmental regulations. | • | Describe the bases of occupational and environmental chemical exposure standards and societal processes for change. | Paper |
| f. Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards. | • | Interpret averaging periods for occupational and environmental exposure standard Select PPE to reduce exposures from common work processes and tasks, based on appropriate control principles | Paper, Final Exam |

| j. Attain recognized professional certification. | • | Answer typical questions from industrial hygiene certification exams Determine appropriate sampling media to evaluate airborne hazards. | Midterm, Homework Assignment #4, Exam #2, Homework Assignment #6, Final Exam |
|--|---|---|--|
| | • | Apply occupational exposure assessment strategy to inform sampling methodology. Understand the benefits and limitations of direct reading instruments Recognize and evaluate hazards in the non-industrial environment. Understand how to interpret and collect biological monitoring data | |

Course Assessments

Your understanding of the course material will be evaluated through homework assignments and exams

Grading

Evaluation criteria

<u>Individual Readiness Assessments (IRA):</u> IRAs are short quizzes assessing preparation (i.e. review of readings prior to accessing module lessons) (pre-) and comprehension of module lessons (post-).

- The pre-IRA is a 10-minute quiz composed of questions on the key concepts of the reading materials. You can retake the test once. The best score will be kept.
- The post-IRA is a 20-minute quiz composed of questions (including those in the pre-IRA and new questions) on all module materials. You <u>cannot</u> retake the post-IRA test.
- Pre-IRA scores represent 5% of the grade and post-IRA scores represent 10% of the grade.
- IRAs are <u>open book quizzes</u>. *Make sure you allocate sufficient time and resources to complete the quizzes.*

Exams: Both mid-term and final exams are **close-book exams administered in classroom.** The exams will be administered as scheduled. The exams must be completed within the allocated time period (<u>110 minutes</u>). The mid-term and final exam are independent, the final exam is not cumulative. However, some material discussed after the midterm is linked to pre-midterm materials and thus may appear on the final.

<u>Paper:</u> Students have to choose a topic for their paper. Students need to get the approval of the topic selection from **Dr. Kavouras on/before 2/21**. Each student's <u>topic should be</u> <u>unique to others</u>, so the topic pool is on a first come first served basis. The topics, once approved, will be posted to Blackboard. The **final paper counts for 30% of the grade** and it is due on May 16 at 5pm through Blackboard. <u>The grade of paper late submission will be</u> <u>downgraded by 10 points for every day and will not be accepted after May 18, 2018 at 5:00 pm.</u>

Attendance and class participation

Class attendance will be taken every session. Students must sign in at the beginning of class. Five percent of the final grade is class participation. It is your responsibility to sign in every class period.

The relative weight of each course component is as follows:

| Assessment/Activity | Percent |
|-------------------------|---------|
| Pre-IRA | 5 |
| Post-IRA | 10 |
| Midterm Exam | 25 |
| Final Exam | 30 |
| Paper | 30 |
| Total Percentage | 100 |

The grading system for CUNY SPH is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

Withdrawal

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the <u>CUNY SPH Academic Calendar</u> for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by legitimate and documented emergencies. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's academic policies for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's academic policies.

Course Policies

Attendance and class participation

You are expected to attend all lectures. However, you may be excused from two lectures without penalty. Please notify me via email if you will be late or not able to attend the lecture.

All questions concerning the assignments and lecture materials should be posted to the discussion board on the course's blackboard site. Discussion board questions should be clearly labeled to allow other students to quickly navigate the questions and answers. You should expect an answer to your question within 24 hours. Questions posted over the weekend may take longer to answer. Please plan accordingly.

Late/incomplete submission of assignments

Homework and exams handed in 24 hours after the due date will be given 75% credit. No credit will be given for work handed in after 24 hours.

Make-ups, rewrites, and extra credit

No make-ups, rewrites, or extra credit assignments are allowed under any circumstance.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez, Email: <u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Religious Accommodations

The Graduate School of Public Health and Health Policy follows the <u>CUNY Religious</u> <u>Accommodations Policy</u>.

Academic integrity

The schedule is subject to change throughout the semester. The revised syllabus will be posted on the course website.

The SPH Academic Calendar is posted <u>here</u>. Please refer to it for information regarding withdrawal dates.

| SESSION | TOPIC | READINGS (CHAPTERS) |
|---------|--|--|
| Week 1 | Course Overview Chemicals and Toxicity | <i>Principles and Practice of Toxicology in Public Health</i> , Chapters 1 and 2 |
| Week 2 | Principles of toxicology | <i>Principles and Practice of Toxicology in Public Health</i> , Chapters 3, 4 and 6 |
| Week 3 | Absorption of chemicals and models of disposition | <i>Principles and Practice of Toxicology in Public Health</i> , Chapter 7 |
| Week 4 | Distribution, storage and elimination of chemicals | Principles and Practice of Toxicology in Public Health, Chapter 8 |
| Week 5 | Biotransformation and mutagenesis | <i>Principles and Practice of Toxicology in Public Health</i> , Chapters 9 and 10 |
| Week 6 | Carcinogenicity | Principles and Practice of Toxicology in Public Health, Chapter 11 |
| | MID-TERM EXAM (CHAPTERS 1, 2, 3 | 3, 4, 6, 7, 8, 9, 10 AND 11) |
| Week 7 | Immune system toxicology | Principles and Practice of Toxicology in Public Health, Chapter 12 |
| Week 8 | Skin toxicology | Principles and Practice of Toxicology in Public Health, Chapter 13 |
| Week 9 | Liver and kidney toxicology | <i>Principles and Practice of Toxicology in Public Health</i> , Chapter 14 |
| Week 10 | Cardiovascular toxicology | Principles and Practice of Toxicology in Public Health, Chapter 15 |
| Week 11 | Respiratory toxicology | <i>Principles and Practice of Toxicology in Public</i> <i>Health</i> , Chapter 16 |
| Week 12 | Nervous system toxicology | Principles and Practice of Toxicology in Public Health, Chapter 17 |
| | Spring Recess | |
| Week 13 | Module 13: Endocrine system | Principles and Practice of Toxicology in Public Health, Chapter 18 |
| Week 14 | Module 14: Regulatory toxicology | Principles and Practice of Toxicology in Public Health, Chapters 19 and 20 |
| Week 15 | Module 15: Toxicology and risk assessment | Principles and Practice of Toxicology in Public Health, Chapters 21 and 24 |
| | FINAL EXAM (CHAPTERS 12, 13, 14 Paper Due | , 15, 16, 17, 18, 19, 20, 21 AND 24) |



COURSE SYLLABUS

EOHS 623 Principles of Industrial Hygiene 3 Credits Spring 2019

| Time and | Tuesdays 6:00-7:50PM. |
|-------------------|--|
| location | CUNY SPH Room 504 |
| Instructor | Brian Pavilonis, Ph.D., CIH |
| | Brian.Pavilonis@sph.cuny.edu |
| | CUNY SPH Room 503 |
| | Telephone #: 646-364-9509 |
| | |
| | Mike lerardi, MES |
| | anthony.ierardi55@sphmail.cuny.edu |
| Office hours | Tuesday: 4:00-6:00 p.m., Friday 12:00-2:00 p.m. |
| Course website | https://bbhosted.cuny.edu |
| Support | For technical assistance with school computers or |
| resources | connecting to the internet, write to <u>helpdesk@sph.cuny.edu</u> . |
| | Visit the <u>Library Services</u> for help with library resources and |
| | research assistance. Visit the <u>Writing Center</u> website for |
| | writing resources and assistance. |
| Course | Recognition, evaluation, and control of industrial hazards due to |
| description | chemical and physical agents. Topics include occupational health |
| | buman health sampling and control of hazards, and current issues |
| | |
| Courses | |
| Course | N/A |
| | |
| Course format | In-person |
| Required reading | Fundamentals of Industrial Hygiene, Author: Barbara Plog, Publisher: National Sefety Council, Edition: 6th Veer Published |
| and resources | |
| | |
| | Course textbooks are available for order through the School of |
| | Public Health Online Bookstore. < <u>www.SPHBookstore.com</u> > |
| | |
| Suggested reading | Lecture slides posted on BlackBoard |
| and resources | |
| | |

| MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|---|---|---|
| This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| j. Attain recognized professional certification. | Understand the various certifications for EHS professionals | Exam 1 |
| 3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. e. Calculate, interpret, and apply statistical and | Apply statistical methods to evaluate exposure data | Homework Assignment #2 |
| epidemiological data. | | |
| c. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. | Understand basic toxicological principles and identify routes of exposure in an occupational setting | Exam 1 |
| b. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors. | Calculate and interpret exposure measurements | Homework Assignment #3 |
| 1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. | Learn the principles of operation, calibration, and methodology for using basic sampling instrumentation to detect hazards in the work environment | Homework Assignment #4 |
| d. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. | | |
| i. Understand fundamental aspects of safety and environmental health. | | |
| 2. An ability to formulate or design a system, process procedure or program to meet desired needs. h. Interpret and apply applicable occupational and environmental regulations. | Determine appropriate sampling media to evaluate airborne hazards. Apply occupational exposure assessment strategy to inform sampling methodology. | Homework Assignment #4, Exam 2 Homework Assignment #6 Exam #2 Final Exam |
| 4. An ability to communicate effectively with a range of audiences.a. Identify agents, factors, and stressors generated by | Understand the benefits and limitations of direct reading instruments Recognize and evaluate hazards in the non-industrial environment. | |

| and/or associated with defined sources, unit operations, and/or processes.h. Interpret and apply applicable occupational and environmental regulations. | • | Understand how to interpret and collect biological monitoring data | |
|--|---|--|------------|
| 5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts. | • | Select PPE to reduce exposures from common work processes and tasks, based on appropriate control principles | Final Exam |
| f. Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards. | | | |

Course Assessments

Your understanding of the course material will be evaluated through homework assignments and exams

Grading

Evaluation criteria

<u>Exams</u>

Three, equally weighted, exams will be given throughout the semester. Exam 1 and 2 will be in class exams while the final will be a take home exam. Exams should be written legibly with all calculations shown. Exams can be scanned and submitted via email or handed in to the instructor.

Homework

Seven equally-weighted homework assignments will be given throughout the course. It is due prior to the start of class. You must show all your work and write legibly to receive full credit. We will spend a significant portion of class time going over the solutions to problems and you will be called on in class to present answers.

Attendance and class participation

Class attendance will be taken every session. Students must sign in at the beginning of class. Five percent of the final grade is class participation. It is your responsibility to sign in every class period.

The relative weight of each course component is as follows:

| Assessment | Weight |
|----------------------|--------|
| Homework Assignments | 25% |
| Exam 1 | 25% |
| Exam 2 | 25% |
| Final Exam | 25% |
| | 100% |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

Withdrawal

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the GSPHHP Academic Calendar for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by legitimate and documented emergencies. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's academic policies for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's academic policies.

Course Policies

Attendance and class participation

You are expected to attend all lectures. However, you may be excused from two lectures without penalty. Please notify me via email if you will be late or not able to attend the lecture.

All questions concerning the assignments and lecture materials should be posted to the discussion board on the course's blackboard site. Discussion board questions should be clearly labeled to allow other students to quickly navigate the questions and answers. You should expect an answer to your question within 24 hours. Questions posted over the weekend may take longer to answer. Please plan accordingly.

Late/incomplete submission of assignments

Homework and exams handed in 24 hours after the due date will be given 75% credit. No credit will be given for work handed in after 24 hours.

Make-ups, rewrites, and extra credit

No make-ups, rewrites, or extra credit assignments are allowed under any circumstance.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez, Email: <u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Religious Accommodations

The Graduate School of Public Health and Health Policy follows the <u>CUNY Religious</u> <u>Accommodations Policy</u>.

Academic integrity

The schedule is subject to change throughout the semester. The revised syllabus will be posted on the course website.

The SPH Academic Calendar is posted <u>here</u>. Please refer to it for information regarding withdrawal dates.

| Session | Торіс | Readings | Assessment |
|---------|--|---|-------------------------------|
| 1 | Introduction to industrial hygiene (IH) | <i>Fundamentals of Industrial Hygiene:</i> Chapter 1 Appendix A | |
| 2 | Basic IH statistics and toxicology | <i>Fundamentals of Industrial</i> <i>Hygiene:</i> Chapter 6 | Homework Assignment #1 due |
| 3 | IH calculations | <i>Fundamentals of Industrial Hygiene:</i> Appendix C and D | |
| 4 | Calibrating air sampling equipment | <i>Fundamentals of Industrial</i> <i>Hygiene:</i> Chapter 16 | Homework Assignment #2 due |
| 5 | Sampling for gasses and vapors | <i>Fundamentals of Industrial</i> <i>Hygiene:</i> Chapter 7 | |
| 6 | Exam 1 | | Homework Assignment #3 due |
| 7 | Respiratory deposition and particulate sampling | <i>Fundamentals of Industrial Hygiene:</i> Chapters 2 and 8 | |
| 8 | Asbestos, mineral fibers, and silica | | |
| 9 | Indoor air quality | See BlackBoard (BB) readings | Homework Assignment #4 due |
| 10 | Direct reading instruments/ Occupational exposure assessment | Fundamentals of Industrial Hygiene: Chapter 17 | |
| 11 | Exam 2 | | Homework Assignment #5 due |
| 12 | Non-engineering occupational controls | <i>Fundamentals of Industrial</i> <i>Hygiene:</i> Chapters 18, 22, and 23 | |
| 13 | Biological hazards/Biomonitoring | <i>Fundamentals of Industrial</i> <i>Hygiene:</i> Chapter 14 | Homework Assignment #6 due |
| 14 | Nanomaterials | See BlackBoard (BB) readings | Homework Assignment #7 due |
| 15 | Final Exam | | |



COURSE SYLLABUS

EOHS 625: Hazard Evaluation and Instrumentation

3 Credits Fall 2019

| Time and | Thursdays, 6 – 7:50pm |
|----------------|---|
| location | |
| Instructor | Tony Devito |
| | Email: <u>Anthony.Devito@sph.cuny.edu</u> |
| Office hours | Mondays and Wednesdays, 2-4pm |
| Course website | https://bbhosted.cuny.edu |
| Support | For technical assistance with school computers or connecting to the |
| resources | internet, write to <u>helpdesk@sph.cuny.edu</u> . Visit the <u>Library Services</u> for |
| | help with library resources and research assistance. Visit the Writing |
| | Center website for writing resources and assistance. |
| Course | This is an introduction to instrumental methods used to assess |
| description | environmental and occupational health hazards. Principles and operation |
| | of commonly used direct reading instruments and demonstration of their |
| | application |
| Course | PRE: (PUBH 614 or BIOS 610 or BIOS 611), (EOHS 633 or EOHS 620) |
| prerequisites | |
| Course format | In class lecture, laboratories, and problem solving |
| Required | Fundamentals of Industrial Hygiene, Author: Barbara Plog, Publisher: |
| reading and | National Safety Council, Edition: 6th, Year Published: 2012 |
| resources | |
| | Course textbooks are available for order through the School of Public |
| | Health Online Bookstore. < <u>www.SPHBookstore.com</u> > |
| Suggested | Lecture slides posted on BlackBoard |
| reading and | |
| resources | |

| This course will help you to:After successfully completing this course, you are expected to be able to:Competencies and learning objectives will be assessed as part of the following course assignments:1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying technical topics to areas relevant to the disciple.• Anticipate, recognize, and evaluate environmental and occupational hazards. • Apply appropriate standard sampling and analytical methods such as those developed by NIOSH, OSHA, and EPA. • Learn the principles of operation, calibration, and methodology for using basic sampling instrumentation to detect hazards in the work environment. • Determine appropriate sampling media to evaluate particulate exposure. • Determine appropriate sampling media to evaluate basics of environments. • Learn the basics of environmental metals sampling using a XRF.• Improject, Critical appraisal, Memo report 1, IH report 36. Understand physiological and/or regonomic agents, factors, and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body.After successfully completing this course, you are expected to be able to:Competencies and learning objectives will be assessed as part of the following course assignments:0. Assess qualitative and quantitative aspects of definite human body.• Anticipate, recognize, and evaluate analytical methods such as those developed by NIOSH, OSHA, and EPA. • Determine appropriate sampling media to evaluate particulate exposure. • Determine appropriate sampling media to evaluate biological and/or coupational sources of non-ionizing radiation exposure.IH report 2, IH report 3 <t< th=""><th>MS-EOHS Student Outcomes</th><th>Course Learning Objectives</th><th>Assessment Methods</th></t<> | MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|---|--|--|---|
| 1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. 2. An ability to formulate or design a system, process procedure or program to meet desired needs. 4. An ability to communicate effectively with a range of audiences. 5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts. c. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. d. Assess qualitative and quantitative aspects of Anticipate, recognize, and evaluate environmental and occupational hazards. Apply appropriate standard sampling and analytical methods such as those developed by NIOSH, OSHA, and EPA. Learn the principles of operation, calibration, and methodology for using basic sampling media to evaluate particulate exposure. Determine appropriate sampling media to evaluate hazards. Recognize and evaluate hazards in non-industrial environments. Learn the basics of environmental and occupational sources of non-ionizing radiation exposure. Know various measurement devices for monitoring noise | This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. g. Demonstrate an understanding of applicable business and managerial practices. h. Interpret and apply applicable occupational and | An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. An ability to formulate or design a system, process procedure or program to meet desired needs. An ability to communicate effectively with a range of audiences. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. Demonstrate an understanding of applicable business and managerial practices. Interpret and apply applicable occupational and | Anticipate, recognize, and evaluate environmental and occupational hazards. Apply appropriate standard sampling and analytical methods such as those developed by NIOSH, OSHA, and EPA. Learn the principles of operation, calibration, and methodology for using basic sampling instrumentation to detect hazards in the work environment. Determine appropriate sampling media to evaluate particulate exposure. Determine appropriate sampling media to evaluate biological hazards. Recognize and evaluate hazards in non- industrial environments. Learn the basics of environmental metals sampling using a XRF. Evaluate common environmental and occupational sources of non-ionizing radiation exposure. Know various measurement devices for monitoring noise. Calculate and measure thermal stress | IH project, Critical appraisal, Memo report 1, IH report 1, IH report 2, IH report 3 |

| 3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. 4. An ability to communicate effectively with a range of audiences. 6. An ability to function effectively on teams that establish goals, plan, tasks, meet deadlines, and risk and uncertainty. | • | Prepare technical summary and synthesize data Apply good teamwork practices | IH project |
|---|---|---|---------------|
| 4. An ability to communicate effectively with a range of audiences.b. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors. | • | Know how to generate known vapor concentrations. | Memo report 2 |
| 4. An ability to communicate effectively with a range of audiences. e. Calculate, interpret, and apply statistical and epidemiological data. f. Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards. | • | Measure and calculate local exhaust ventilation parameters. Know the use and limitations of respiratory protection and fit testing | Memo report 3 |

Course Assessments

Your understanding of the course material will be evaluated through reports, class participation, and exams

Grading

Evaluation criteria

<u>Exam</u>

One take home exam will be given. Exams should be written legibly with all calculations shown. Exams can be scanned and submitted via email or handed in to the instructor.

Memo reports

Three, equally weighted, memo reports will be given throughout the course. The abbreviated reports are due prior to the start of class. The report should be 1-2 pages in length and should include 1-2 figure and/or tables. The report is meant to concisely explain what procedures were performed in the lab and main findings. The report should include an introduction, results, and conclusions.

IH lab reports

Three, equally weighted, full IH lab reports will be given throughout the course. The full reports are due prior to the start of class. The report should be single spaced 3-5 pages in length and should include 3-5 figure and/or tables. The report should follow the outline below:

- Cover page
- Executive summary or abstract
- Objectives- In one paragraph state the purpose of the lab.
- Introduction- Provide a brief introduction concerning the topic. The introduction should include 3-5 citations written in AMA form.
- Methods- List the procedures used and serial number and calibration date of the equipment used. Provide any relevant equations or calculations made in the methods section.
- Results- Section should include tables and figures. Results should only include data and not interpretation.
- Discussion and conclusion- Compare your observed results vs. expected results. Include variables which may have affected your results. Compare your results to various occupational exposure limits (RELs, TLVs, PELs).

All reports will be graded on the accuracy of the results and interpretation of the data. Reports should be proofread and must include all sections outlined above.

IH project

Students will design and perform a semester long project using the instruments and methods discussed in the course. Students should consult with the instructor early in the course to determine an appropriate project. The deliverables for this project will be a full IH lab report and a 5 minute power point presentation to be given to the class.

Attendance and class participation

Class attendance will be taken every day. Students must sign in at the beginning of class. Five percent of the final grade is class participation. It is your responsibility to sign in every class period.

The relative weight of each course component is as follows:

| U | |
|--------------------|--------|
| Assessment | Weight |
| Critical appraisal | 5% |
| Memo reports | 18% |
| IH lab reports | 36% |
| Participation | 10% |
| Exam 1 | 11% |
| Class project | 20% |
| | 100% |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

<u>Withdrawal</u>

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the GSPHHP Academic Calendar for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by legitimate and documented emergencies. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's academic policies for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's academic policies.

Course Policies

Attendance and class participation

You are expected to attend all lectures. However, you may be excused from two lectures without penalty. Please notify me via email if you will be late or not able to attend the lecture.

Late/incomplete submission of assignments

Homework and exams handed in 24 hours after the due date will be given 75% credit. No credit will be given for work handed in after 24 hours.

Make-ups, rewrites, and extra credit

No make-ups, rewrites, or extra credit assignments are allowed under any circumstance.

Expectations of students

Students are expected to come to class prepared to discuss the lesson plan for the day and homework assignments.

Please silence your cell phones prior to class the start of class. If it is an emergency and you need to make a phone call please quickly and quietly leave the class. Please refrain from texting and checking email while in class as this is disruptive to the instructor and fellow students. Everyone should be respectful of others' opinions and questions.

Expectations for the instructor

I am available for extra help outside of class. Students are encouraged to stop by my office for help with exams and homework assignments. The classroom is a place for discussion and I welcome students' questions about the topics that will be covered in the course.

I am available by email during business hours to answer questions by email. Please do not abuse the email privilege. Consult the syllabus, blackboard, and other course materials first for answers to your questions. Allow 24 to 48 hours for an email response. I cannot answer email while teaching, in meetings, and while I am working on research. I am often not available by email after business hours, on weekends, and during holidays.

Accessibility

Support services and accommodations are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact Velvet Brown (velvet.brown@sph.cuny.edu) with <u>Student Services</u> on the fifth floor of 55 West 125th Street, New York, NY 10027.

Academic integrity

The schedule is subject to change throughout the semester. The revised syllabus will be posted on the course website.

The academic calendar can be found on the School's website, and includes important dates regarding withdrawal and drop deadlines.

| Session | Торіс | Reading(s) | Deliverables |
|---------|--|---|------------------------|
| 1 | Introduction to IH sampling | <i>Fundamentals of Industrial Hygiene</i> Chapter 1 and Chapter 24 | |
| 2 | Exposure assessment | Reading posted on Black Board (BB) | Critical appraisal due |
| 3 | Airflow calibration | Reading posted on Black Board (BB) | |
| 4 | Quantifying particulate exposure | <i>Fundamentals of Industrial Hygiene</i> Chapter 8 | Memo report 1 due |
| 5 | Volatile organic contaminants | <i>Fundamentals of Industrial Hygiene</i> Chapter 7 | |
| 6 | Biological hazards | <i>Fundamentals of Industrial Hygiene</i> Chapter 14 | Memo report 2 due |
| 7 | Indoor air quality | Reading posted on Black Board (BB) | IH report 1 due |
| 8 | Lead and metals analyses XRF | Reading posted on Black Board (BB) | |
| 9 | Exam 1 | | |
| | Spring break | | Exam 1 due |
| 10 | Non-ionizing radiation exposure | <i>Fundamentals of Industrial Hygiene</i> Chapter 11 | IH report 2 due |
| 11 | Noise exposure | <i>Fundamentals of Industrial Hygiene</i> Chapter 9 | |
| 12 | Local exhaust ventilation (LEV) measurements | Fundamentals of Industrial Hygiene Chapter 19 | |
| 13 | Respirator fit testing | Fundamentals of Industrial Hygiene Chapter 29 | IH report 3 due |
| 14 | Thermal stress | <i>Fundamentals of Industrial Hygiene</i> Chapter 12 | Memo report 3 due |
| 15 | IH project | | IH project due |



COURSE SYLLABUS

Industrial Ventilation and Indoor Air Quality EOHS 626 3 Credits Spring 2020

| Time and location | Tuesday 8:00-9:50PM. CUNY SPH Room 504 |
|-----------------------------------|---|
| Instructor | Brian Pavilonis, Ph.D., CIH Brian.Pavilonis@sph.cuny.edu CUNY SPH Room 509 Telephone #: 646-364-9509 |
| Office hours | Tuesday: 4:00-6:00 p.m., Friday 12:00-2:00 p.m. |
| Course website | https://bbhosted.cuny.edu |
| Support resources | For technical assistance with school computers or connecting to the internet, write to <u>helpdesk@sph.cuny.edu</u> . Visit the <u>Library</u> <u>Services</u> for help with library resources and research assistance. Visit the <u>Writing Center</u> website for writing resources and assistance. |
| Course description | This course covers the fundamentals of design, operation and evaluation of air moving systems for local and dilution exhaust ventilation systems. Engineering controls are the preferred method for the control of airborne hazards in the workplace. |
| Course prerequisites | N/A |
| Course format | In-person |
| Required reading and resources | Ventilation for Control of the Work Environment, Author: William A. Burgess, Publisher: John Wiley & Sons Inc, Edition: 2, Year Published: 2004. Course textbooks are available for order through the School of Public Health Online Bookstore, <www.sphbookstore.com></www.sphbookstore.com> |
| Suggested reading and resources | Lecture notes |

| MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|---|---|---|
| This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. An ability to formulate or design a system, process procedure or program to meet desired needs. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts. Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or processes. Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards. | Calculate airflow, velocity, and pressure using ventilation equations Identify instrumentation to properly collect measurements in a ventilation system and interpret data Calculate the required capture velocity to effectively remove contaminants based on hood design Understand the design and operation of laboratory exhaust hoods Calculate the system pressure loss of a single hood system using a calculation sheet Properly balance a multiple hood system Identify various types of fans and when each is appropriate based on the system needs Identify proper air cleaning devices for various contaminants Recognize the need for replacement air and calculate the supply rate Determine recommended airflow for non-industrial workplaces | Problem set 1, Problem set 2, exam 1, exam 2, final exam, Problem set 3,Problem set 5, Problem set 6, Problem set 7, Problem set 8, Problem set 9, Problem set 10 |

| b. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors. c. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. | Use GEV equations to predict airborne concentrations of contaminants and airflow required to dilute concentrations to safe levels | Problem set 4, exam 1, final exam |
|--|---|-----------------------------------|
| d. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. | | |

Course Assessments

Your understanding of the course material will be evaluated through three exams and ten homework assignments.

Exams

Throughout the semester three, equally weighted, exams will be given. To receive full credit exams should written legibly with all calculations shown. Exams should be scanned and submitted via blackboard in a single PDF document. Exams will be made available on Monday at 5 p.m. and will be due the following Monday by the end of the day. Due dates for the exams can be found on blackboard.

Homework

Ten, equally weighted, problem sets will be assigned throughout the semester. Problem sets will be available with the corresponding lecture on Monday at 5 p.m.. Problem sets are due one week after they are made available. You must show all your work and write legibly to receive full credit. Problem sets should be scanned and submitted via blackboard in a single PDF document.

Grading

The relative weight of each course component is as follows:

| Assessment | Weight | |
|--------------|--------|--|
| Problem Sets | 25% | |
| Exam I | 25% | |
| Exam II | 25% | |
| Final Exam | 25% | |
| | 100% | |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

<u>Withdrawal</u>

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the <u>Academic Calendar</u> for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by a legitimate and documented emergency. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's <u>academic policies</u> for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's <u>academic policies</u>.

Course Policies

Attendance and class participation

This class is fully online. Each week a lecture will be posted on Monday at 5 p.m. that introduces the material. During the week you must complete all assigned reading materials in addition to the lecture. On most weeks, a problem set will be due the following week that covers the material presented in the lecture and readings.

All questions concerning the assignments and lecture materials should be posted to the discussion board on the course's blackboard site. Each session has its own discussion board section. Please post all questions regarding that session to the corresponding discussion board. Discussion board questions should be clearly labeled to allow other students to quickly navigate the questions and answers. You should expect an answer to your question within 24 hours. Questions posted over the weekend may take longer to answer. Please plan accordingly.

Late/incomplete submission of assignments

Assignments handed in 24 hours after the due date will be given 75% credit. No credit will be given for work handed in after 24 hours.

Make-ups, rewrites, and extra credit

No make-ups, rewrites, or extra credit assignments are allowed under any circumstance.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez, Email:

<u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Religious Accommodations

The Graduate School of Public Health and Health Policy follows the <u>CUNY Religious</u> Accommodations Policy.

Academic integrity

Please see the <u>CUNY Graduate School of Public Health and Health Policy's academic</u> <u>calendar</u> for important dates including holidays and course drop/course withdrawal deadlines.

| Session | Topics/Learning Objectives | Readings | Assignments Due |
|---------|--|--|-----------------|
| 1 | Introduction and Principles of Airflow I | Ventilation for Control of the Work Environment: Chapter 1 and Chapter 2 (pages 12-22) | |
| 2 | Principles of Airflow II | Ventilation for Control of the Work Environment: Chapter 2 (pg. 22- | Problem set 1 |
| 3 | Airflow measurement techniques | Ventilation for Control of the Work Environment: Chapter 3 | Problem set 2 |
| 4 | General exhaust ventilation | Ventilation for Control of the Work Environment: Chapter 4 | Problem set 3 |
| 5 | Exam I | | Problem set 4 |
| 6 | Hood design | Ventilation for Control of the Work Environment: Chapter 5 | |
| 7 | Chemical laboratory hood design | Ventilation for Control of the Work Environment: Chapter 7 | Problem set 5 |
| 8 | Design of a single hood system | Ventilation for Control of the Work Environment: Chapter 8 | Problem set 6 |
| 9 | Design of a multiple hood system | Ventilation for Control of the Work Environment: Chapter 9 | Problem set 7 |
| 10 | Fan selection | Ventilation for Control of the Work Environment: Chapter 10 | Problem set 8 |
| 11 | Exam II | | Problem set 9 |
| 12 | Air cleaning devices | Ventilation for Control of the Work Environment: Chapter 11 | |
| 13 | Replacement air | Ventilation for Control of the Work Environment: Chapter 13 | |
| 14 | HVAC and IAQ | See Blackboard for readings | |
| 15 | Final exam | | Problem set 10 |



COURSE SYLLABUS EOHS 627: Noise and Radiation Hazards and Controls 3 Credits Fall 2019

| Time and location | Tuesdays 8:00PM-9:50PM |
|-----------------------------------|---|
| | CUNY SPH Room 534 |
| Instructor | Brian Davilonia DhD CIU |
| Instructor | Brian Pavilonis, FID, CIT |
| | CLINIX SPH Room 500 |
| | Phone: 6/6-36/-0500 |
| | |
| Office hours | Tuesdays 4:00PM-8:00PM and Thursdays 3:00PM-5:00PM |
| Course website | https://bbhosted.cuny.edu |
| Support resources | For technical assistance with school computers or connecting to the internet, write to <u>helpdesk@sph.cuny.edu</u> . Visit the <u>Library</u> <u>Services</u> for help with library resources and research assistance. Visit the <u>Writing Center</u> website for writing resources and assistance. |
| Course description | Introduction to basic concepts of sound, noise measurement, and noise control in community and occupational environments. Health and safety problems involved with the use of ionizing and non- ionizing radiation, with an emphasis on identification and control. |
| Course prerequisites | N/A |
| Course format | In-person |
| Required reading and resources | Fundamentals of Industrial Hygiene, Author: Barbara Plog, Publisher: National Safety Council, Edition: 6th, Year Published: 2012 Lecture slides posted on BlackBoard. Course textbooks are available for order through the School of |
| | Public Health Online Bookstore. < <u>www.SPHBookstore.com</u> > |
| Suggested reading and resources | Supplemental reading assignments will be posted on Blackboard or available online. It is the student's responsibility to keep track of supplemental reading assignments. |

| MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|--|--|--|
| This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| 3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. b. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors. | Identify common occupational sources of thermal stress Understand the basic physics of sound Understand the basic physics and sources of ionizing radiation Describe the properties of non- ionizing radiation Identify occupational sources of vibration and pressure hazards Calculate thermal stress using various equations Apply appropriate equations to calculate noise dose and sound pressure level Be able to make relevant calculations to predict ionizing radiation exposure Be able to make relevant calculations to predict non-ionizing radiation exposure Calculate maximum weight per lift using the NIOSH lifting equation | Problem sets 1 through 4, Exam 1, Exam 2, Exam 3 |
| c. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. i. Understand fundamental aspects of safety and environmental health. | Recognize the signs and symptoms of thermal stress and describe adverse health effects resulting from thermal stress. Identify the health consequences of excessive noise exposure Describe health effects associated with exposure to ionizing radiation Describe health effects of exposure to non-ionizing radiation Describe various MSDs and contributing factors Describe the health effects resulting from pressure and vibration exposure | Problem sets 1 through 4, Exam 1, Exam 2, Exam 3 |

| An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. An ability to communicate effectively with a range of audiences. Assess qualitative and quantitative aspects of exposure assessment, dose- response, and risk characterization based on applicable pathways and modes of entry. | Determine appropriate measurement devices for conducting noise exposure assessments Evaluate the exposure assessment methods used in occupational health literature | Problem set 2, Critical appraisal, Exam 1 |
|---|--|---|
| An ability to formulate or design a system, process procedure or program to meet desired needs. | Determine appropriate controls to reduce thermal stress Identify appropriate hearing protection to reduce noise exposure | Problem sets 1 through 3, Exam 1, Exam 2, Exam 3 |
| h. Interpret and apply applicable occupational and environmental regulations. | Determine appropriate controls for reducing ionizing radiation exposure | |
| f. Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards. | Determine appropriate controls to reduce vibration exposure | |
Course Assessments

Your understanding of the course material will be evaluated through three exams and five homework assignments.

Exams

Three equally-weighted exams will be given. Two in class and the final exam will be take home. Exams should be written legibly with all calculations shown. The final exam can be scanned and submitted via email or handed in to the instructor.

Homework

Problem Sets

Four equally-weighted problem sets will be given throughout the course. It is due prior to the start of class. You must show all your work and write legibly to receive full credit. We will spend a significant portion of class time going over the solutions to problems and you will be called on in class to present answers.

Critical appraisal

One scholarly publication will be selected for your review. The first step of a critical appraisal process is to read each paper once and make comments in the margins. After your initial read, you can then begin to answer the review questions provided to you.

Please note you may need to do some research on your own. Journal articles are written to contain enough information for someone in the field to understand them. As new students in the environmental and occupational health science discipline you may need to do additional research to understand the concepts presented. In addition to the appraisal, write a 1 page summary of the paper. Do not simply re-write the abstract.

Highlight the strengths and limitation of the study. Include the study population, sampling methodology, and main findings. Do you think the paper make an important contribution to the scientific literature?

Grading

Evaluation criteria

The relative weight of each course component is as follows:

| Assessment | Weight |
|--------------|--------|
| Problem Sets | 25% |
| Exam 1 | 25% |
| Exam 2 | 25% |
| Exam 3 | 25% |
| | 100% |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

Withdrawal

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the <u>Academic Calendar</u> for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by a legitimate and documented emergency. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's <u>academic policies</u> for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's <u>academic policies</u>.

Course Policies

Attendance and class participation

You are expected to attend all lectures. However, you may be excused from two lectures without penalty. Please notify me via email if you will be late or not able to attend the lecture.

Late/incomplete submission of assignments

Homework handed in 24 hours after the due date will be given 75% credit. No credit will be given for work handed in after 24 hours.

Make-ups, rewrites, and extra credit

No make-ups, rewrites, or extra credit assignments are allowed under any circumstance.

Expectations of students

Students are expected to come to class prepared to discuss the lesson plan for the day and homework assignments.

Please silence your cell phones prior to class the start of class. If it is an emergency and you need to make a phone call please quickly and quietly leave the class. Please refrain from texting and checking email while in class as this is disruptive to the instructor and fellow students. Everyone should be respectful of others' opinions and questions.

Expectations for the instructor.

I am available for extra help outside of class. Students are encouraged to stop by my office for help with exams and homework assignments. The classroom is a place for discussion and I welcome students' questions about the topics that will be covered in the course.

I am available by email at Brian.pavilonis@sph.cuny.edu during business hours to answer questions by email. Please do not abuse the email privilege. Consult the syllabus, blackboard, and other course materials first for answers to your questions. Allow 24 to 48 hours for an email response. I cannot answer email while teaching, in meetings, and while I am working on research. I am often not available by email after business hours, on weekends, and during holidays.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez, Email:

<u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Academic integrity

CUNY regards acts of academic dishonesty (e.g. plagiarism, cheating on exams, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. CUNY is committed to enforcing the <u>Policy on</u> <u>Academic Integrity</u> and will pursue cases of academic dishonesty.

Course Schedule

The schedule is subject to change throughout the semester. The revised syllabus will be posted on the course website.

The SPH Academic Calendar is posted <u>here</u>. Please refer to it for information regarding withdrawal dates.

| Session | Торіс | Readings | Assignments Due |
|---------|--|--|-----------------------|
| 1 | Course introductions and expectations/ Thermal stress: health hazards and controls | Fundamentals of Industrial Hygiene: Chapter 12 | |
| 2 | Thermal stress: calculations, instrumentation, and case studies | OSHA Technical Manual Section 4 | |
| 3 | Introduction to noise and basic equations | Fundamentals of Industrial Hygiene: Chapter 9 | Problem Set #1 due |
| 4 | Noise exposure assessment and controls | See BlackBoard for readings | |
| 5 | Noise calculations, case studies; exam 1 review | | Problem Set #2 due |
| 6 | Exam 1 | | |
| 7 | Ionizing radiation: health effects, basic equations, instrumentation, and controls | Fundamentals of Industrial Hygiene: Chapter 10 | |
| 8 | Ionizing radiation calculations | | |
| 9 | Non-ionizing radiation: health effects, basic equations, instrumentation, and controls | Fundamentals of Industrial Hygiene: Chapter 10 | Problem Set #3 due |
| 10 | Non-ionizing radiation calculations; exam 2 review | See BlackBoard for readings | |
| 11 | Exam 2 | | |
| 12 | Ergonomics | Fundamentals of Industrial Hygiene: Chapter 13 | |
| 13 | Barometric hazards and vibrations | Whitebook Chapter 24 & 29 | Problem Set #4 due |
| 14 | Critical appraisal; final exam review | See BlackBoard for readings | Critical appraisal |
| 15 | Final Exam | | |



COURSE SYLLABUS

EOHS 633: Introduction to Environmental and Occupational Health

3 Credits Fall 2019

| Time and location | Monday, 6:00 – 7:50pm |
|----------------------|---|
| Instructor | Jean Grassman, Associate Professor |
| | Email: jean.grassman@sph.cuny.edu |
| | Telephone: 646-594-9517 |
| | Office: 517 |
| Office hours | Mondays and Wednesday, 4 - 6pm |
| Course website | < <u>https://bbhosted.cuny.edu/</u> > |
| Support resources | For technical assistance with school computers or connecting to the |
| | internet, write to <u>helpdesk@sph.cuny.edu</u> . Visit the <u>Library Services</u> |
| | for help with library resources and research assistance. Visit |
| | the <u>Writing Center</u> website for writing resources and assistance. |
| Course description | Introduction to basic concepts and issues in environmental and |
| | occupational health, including chemical, biological, and physical |
| | hazards and the health risk associated with exposure to them. |
| | Mechanisms for reducing exposure to these hazards are discussed. |
| Course prerequisites | N/A |
| Course format | In person |
| Required reading and | Friss, R.L. (2019) Essentials of Environmental Health |
| resources | (3 rd edition). Jones and Bartlett. Sudbury, Massachusetts. |
| | |
| | Course textbooks are available for order through the School of |
| | Public Health Online Bookstore. < <u>www.SPHBookstore.com</u> > |
| Suggested reading | Additional resources to be posted to Blackboard |
| and resources | |

| MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|--|---|--|
| This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the disciple. An ability to communicate effectively with a range of audiences. | Identify common occupational and environmental hazards and describe adverse health effects resulting from exposure Explain the different routes of human exposure and the process by which benchmark doses are calculated Explain how human activity patterns affect air pollution exposure and determine deposition based on chemical properties Describe health effects of element/metal exposure and identify common occupational and environmental sources Explain the difference between ionizing and non-ionizing radiation | Term paper, SDS assignment, Online Quiz 1, Online Quiz 4, Online Quiz 5, Online Quiz 6, Online Quiz 7, Online Quiz 8, Online Quiz 9, Final exam |
| a. Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or processes. b. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors. i. Understand fundamental aspects of safety and environmental health. | Describe the different classes of pesticides and recognize signs, symptoms, and diseases that may be related to pesticide exposure Describe sources of water contamination, methods of treatment, and relevant regulations Identify infectious disease hazards and methods to control exposure Identify common foodborne illnesses and apply food safety principles to reduce contamination Describe environmental policies designed to protect vulnerable populations and health inequities resulting from environmental justice issues | |
| 2. An ability to formulate or design a system, process procedure or program to meet desired needs. d. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. | Evaluate the strengths and limitations of various exposure assessment techniques Identify common occupational and environmental hazards and describe adverse health effects resulting from exposure Explain the different routes of human exposure and the process by which benchmark doses are calculated Explain how human activity patterns affect air pollution exposure and determine deposition based on chemical properties Describe health effects of element/metal exposure and identify common occupational and environmental sources | Online Quiz 10, Term paper, SDS assignment, Online Quiz 4, Online Quiz 5, Online Quiz 6, Online Quiz 7, Online Quiz 8, Online Quiz 9, Final exam |

| h. Interpret and apply applicable occupational and environmental regulations. | Explain the difference between ionizing and non-ionizing radiation Describe the different classes of pesticides and recognize signs, symptoms, and diseases that may be related to pesticide exposure Describe sources of water contamination, methods of treatment, and relevant regulations Identify infectious disease hazards and methods to control exposure Identify common foodborne illnesses and apply food safety principles to reduce contamination | |
|---|---|--|
| c. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. | Identify common occupational and environmental hazards and describe adverse health effects resulting from exposure Explain the different routes of human exposure and the process by which benchmark doses are calculated Explain how human activity patterns affect air pollution exposure and determine deposition based on chemical properties Describe health effects of element/metal exposure and identify common occupational and environmental sources Explain the difference between ionizing and non-ionizing radiation Describe the different classes of pesticides and recognize signs, symptoms, and diseases that may be related to pesticide exposure Describe sources of water contamination, methods of treatment, and relevant regulations Identify infectious disease hazards and methods to control exposure Identify common foodborne illnesses and apply food safety principles to reduce contamination | Term paper, SDS assignment, Online Quiz 4, Online Quiz 5, Online Quiz 6, Online Quiz 7, Online Quiz 8, Online Quiz 9, Final exam |
| 3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. | Assess the strengths and weaknesses of various types of environmental and occupational health studies | Online Quiz 2 |

| e. Calculate, interpret, and apply statistical and epidemiological data. | | |
|--|--|---------------|
| f. Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards. | Know the process of identifying, evaluating, and controlling occupational hazards and the benefits and limitations of various control strategies | Online Quiz 3 |

Course Assessments

Your understanding of the course material will be evaluated through weekly quizzes, a term paper, and exams.

Quizzes

Ten quizzes, each worth 1% of your final grade, will be posted to Blackboard following completion of the lecture session. The quiz will remain active until the start of the next class. It is the student's responsibility to complete the quiz by the scheduled due date.

Safety Data Sheet (SDS) Assignment

Are SDSs informative, accurate and understandable? Students will work independently to select and review a SDS for a commercial or retail chemical product (for example: gasoline, degreasing solvent, rust remover, graffiti remover, spray paint, oven cleaner, drain cleaner, and etc.) An instructional handout will be provided listing a series of questions the student will address in short answer format. The assignment will help students to identify the strengths and weaknesses of this chemical hazard information source and the impacts of a globally harmonized system on the SDS process.

Term Paper

Students will work independently to research and prepare a paper of approximately 10 pages (double spaced with 1" margins). Select a particular environmental or occupational hazard and a geographical location or industry where that hazard is found. You should aim to be as focused and specific as possible. The paper should address the following issues:

- Description of the hazard (chemical, physical properties, adverse health effects, toxicological and/or epidemiological information)
- Description of the geographical location/industry and where the hazard exists
- Data showing the populations who are at risk and the number (or rate) of injuries or illnesses that are associated with the hazard
- The regulations and/or consensus organization recommendations pertaining to the hazard
- What, if any, improvements have been instituted, or can be instituted, to eliminate or mitigate the hazard
- Include at least 10 different references, 3 from peer-reviewed journals.
- Internet citations are OK, but full web site address must be provided, and the site must be from a government agency or a university
- Citations must follow the American Journal of Public Health style of papers. Refer to the Graduate Student Manual for additional information
- The paper should synthesize the literature not merely summarize papers

Grading of the paper will be based on:

1. The presentation: did the paper follow the guidelines?

The cohesiveness of the argument: is there a logical flow to the paper, do the sections fit together, do the recommendations and conclusions follow from the information presented?
 The extent to which the paper reflects an understanding of the material gleaned from the journals and other information sources.

4. Writing skills: grammar, spelling, punctuation (to the extent that they enhance or dampen understanding of the paper)

Grading

The relative weight of each course component is as follows:

| Assessment | Weight |
|----------------|--------|
| Midterm exam | 25% |
| Final exam | 25% |
| SDS assignment | 15% |
| Quizzes | 10% |
| Term paper | 25% |
| | 100% |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

<u>Withdrawal</u>

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the <u>Academic</u> <u>Calendar</u> for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by a legitimate and documented emergency. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's <u>academic policies</u> for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's <u>academic policies</u>.

Course Policies

Attendance and class participation

Students are expected to attend class regularly and to be active, informed participants in all class discussions. The instructor may assign students as discussion leaders and will call on students in class to join discussions and exercises.

Late/incomplete submission of assignments

Late or incomplete assignments will not be accepted.

Make-ups, rewrites, and extra credit

There are no make-ups, rewrites, or extra credit allowed.

Expectations of students

- Be familiar with college academic policies and deadlines--academic standing, academic integrity, grading, and academic calendar.
- Know how to use library resources and citation tools.
- Show respect to everyone in the course.
- Be fully prepared to actively participate in discussion.
- Complete all assignments by their assigned due date. No credit for work completed after the due date.
- No credit for assignments suspected of plagiarism or cheating.
- Be held accountable for all material assigned/covered in the course.
- Regularly check the course website and official university email for course correspondence.
- Questions dealing with the course (course content, assignments) may be generally relevant to others in the class and can be posted in the discussion board.
- Contact professor directly with personal questions and concerns related to the course.
- When in doubt, ask questions and clarify course assignments and expectations.

Expectations for the instructor

- Provide regular announcements and information on the course website
- Monitor, ask follow-up questions, and answer questions presented during discussion
- Respond to student email within 24 hours Monday through Friday and within 48 hours on Saturday or Sunday.
- Grading and feedback on assignments within 2 weeks of the due date.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez,

Email: <u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Academic integrity

CUNY regards acts of academic dishonesty (e.g. plagiarism, cheating on exams, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. CUNY is committed to enforcing the <u>Policy on</u> <u>Academic Integrity</u> and will pursue cases of academic dishonesty.

Course Schedule

Please refer to the School's academic calendar for important dates on withdrawing and dropping the course.

| Session | Торіс | Readings | Assignments Due |
|---------|---|---|-------------------------------------|
| 1 | Introduction, historical background, and EOH professions | Essentials of Environmental Health, Chapter 1 | Pre-test quiz |
| 2 | Environmental toxicology | Essentials of Environmental Health, Chapter 3 | Submit term paper topic |
| 3 | Environmental and occupational health policy and regulation | Essentials of Environmental Health, Chapter 4 | Quiz 1 |
| 4 | Environmental and occupational epidemiology | Essentials of Environmental Health, Chapter 2 | Quiz 2 SDS assignment |
| 5 | Workplace exposures and industrial hygiene | Essentials of Environmental Health, Chapter 13 | Quiz 3 |
| 6 | Ambient and indoor air pollution | Essentials of Environmental Health, Chapter 10 | Quiz 4 |
| 7 | Toxic metals and elements | Essentials of Environmental Health, Chapter 6 | Quiz 5 |
| 8 | Midterm exam | | |
| 9 | Radiological hazards | Essentials of Environmental Health, Chapter 8 | Quiz 6 |
| 10 | Pesticides and endocrine disruptors | Essentials of Environmental Health, Chapter 7 | Quiz 7 Term paper rough draft |
| 11 | Water quality and waste water treatment | Essentials of Environmental Health, Chapter 9 | Quiz 8 |
| 12 | Infectious diseases | Essentials of Environmental Health, Chapter 5 | Quiz 9 |
| 13 | Exposure assessment | Posted on blackboard | Quiz 10 |
| 14 | Food safety and nutrition | Essentials of Environmental Health, Chapter 11 | Final term paper |
| 15 | Final Exam | | |



COURSE SYLLABUS

EOHS 643: Industrial Safety and Management

3 Credits Fall 2019

| Time and location | Tuesday, 6:00 – 7:50pm |
|----------------------|---|
| Instructor | Brian Pavilonis, Assistant Professor |
| | Email: <u>brian.pavilonis@sph.cuny.edu</u> |
| | Phone: 646-364-9509 |
| | Office: 509 |
| Office hours | Tuesdays and Thursdays, 2 – 4pm |
| Course website | < <u>https://bbhosted.cuny.edu/</u> > |
| Support resources | For technical assistance with school computers or connecting to the |
| | internet, write to <u>helpdesk@sph.cuny.edu</u> . Visit the <u>Library Services</u> |
| | for help with library resources and research assistance. Visit |
| | the Writing Center website for writing resources and assistance. |
| Course description | Fundamental concepts and principles of industrial accident |
| | prevention and loss control; safety program organization; hazard |
| | recognition and evaluation; accident investigation; machine |
| | guarding; tire protection; personal protective equipment. |
| Course prerequisites | N/A |
| Course format | In person |
| Required reading and | Brauer, Roger L. Safety and Health for Engineers. John Wiley & |
| resources | Sons, 2016. |
| | |
| | Course textbooks are available for order through the School of |
| | Public Health Online Bookstore. < <u>www.SPHBookstore.com</u> > |
| Suggested reading | Additional resources will be posted to Blackboard |
| and resources | |

| MS-EOHS Student Outcomes | Course Learning Objectives | Assessment Methods |
|--|---|---|
| This course will help you to: | After successfully completing this course, you are expected to be able to: | Competencies and learning objectives will be assessed as part of the following course assignments: |
| 3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions. 4. An ability to communicate effectively with a range of audiences. a. Identify agents, factors, and stressors | Know legal concepts, laws, and standards important for safety professionals Know government and private organizations tasked with promulgating and/or enforcing laws and standards Know fundamental safety concepts and terms Identify knowledge and skills needed in the safety field Know the components of the WWS standard Identify observable WWS hazards | Quiz 1, Quiz 2, Quiz 3, Quiz 4, Quiz 5, Quiz 6, Quiz 7, Quiz 8, Presentation and paper |
| generated by and/or associated with defined sources, unit operations, and/or processes. | Identify selection, use, and limitations of fall protection Identify key aspects of LOTO procedures Demonstrate the application of the standard through case studies Identify tools needed for a LOTO program to function effectively | |
| b. Describe qualitative and quantitative aspects of generation of agents, factors, and stressors. | Know the basics of machine guarding Recognize machines that need guarding and guarding improvements Explain why guarding is necessary | |
| c. Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors within the human body. | Identify hazard associated inadequate machine guarding Determine whether a space is a confined space Identify types of hazards associated with a confined space Know the difference between a confined space and permit-required confined space Describe requirements for entry into a permit-required confined | |
| d. Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry. g. Demonstrate an understanding of applicable business and managerial practices. | space Know the basic chemistry of fires Identify factors that contribute to fires Know the basics of fire protection systems and their maintenance and operation Know the factors that contribute to explosions Identify different types of emergencies and prevention strategies Identify aspects of building design that improve safety | |

| i. Understand fundamental aspects of safety and environmental health. j. Attain recognized professional certification. | Know the severity of injuries associated with materials handling vehicles Identify common causes of incidents and injuries with materials handling vehicles Identify key elements to protect workers on materials Understand the importance of investigating incidents Know the various roles of accident investigators Develop skills to identify root causes Develop recommendations and prioritize corrective actions Demonstrate ability to synthesize standards and literature, apply them to a real site, and recommend preventative measures Demonstrate ability to communicate findings and recommendations to peers | |
|--|--|---------|
| e. Calculate, interpret, and apply statistical and epidemiological data. | Identify whether an injury is recordable Know how to compute key safety metrics | Quiz 9 |
| 5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts. | Know how to work with management to incorporate safety principles | Quiz 10 |

Course Assessments

Your understanding of the course material will be evaluated through weekly quizzes, a term paper, and exams.

Quizzes

Ten quizzes, each worth 1% of your final grade, will be posted to Blackboard following completion of the lecture session. The quiz will remain active until the start of the next class. It is the student's responsibility to complete the quiz by the scheduled due date.

Site Safety Audit and Presentation

Students will perform safety evaluation at their place of employment or a CUNY facility. Each student will work independently and prepare a 6-8 page paper (double spaced with 1" margins). In addition, a brief presentation will be required that discusses the main findings of the report. Details of this project are explained, in full, on blackboard. In brief, each student will generate a report that describes the facility, characterizes the injury and illness rates in this sector, identifies safety hazards at the facility, and recommend controls.

The paper should address the following issues:

- Description of the safety hazards
- Basic information about the facility, such as location, numbers of employees, annual sales, etc. A summary of any violations found by OSHA or other official inspectors is useful.
- Overall injury and illness rates for the industry.
- The regulations and/or consensus organization recommendations pertaining to the hazard.
- Summarize your recommendations for improvements in worker health and safety in the plant or facility.
- Include at least 10 different references, 5 from peer-reviewed journals.
- Internet citations are OK, but full web site address must be provided, and the site must be from a government agency or a university
- Citations must follow the American Journal of Public Health style of papers. Refer to the Graduate Student Manual for additional information
- The paper should synthesize the literature not merely summarize papers
- Appendix should include photos and diagrams of the facility; however, photos and diagrams are not a substitute for text, but a supplement to it.

Grading of the paper will be based on:

1. The presentation: did the paper follow the guidelines?

The cohesiveness of the argument: is there a logical flow to the paper, do the sections fit together, do the recommendations and conclusions follow from the information presented?
 The extent to which the paper reflects an understanding of the material gleaned from the journals and other information sources.

4. Writing skills: grammar, spelling, punctuation (to the extent that they enhance or dampen understanding of the paper)

Case Studies

Two case studies will be presented in class. Each case study will examine hazards common to the industry and accidents or near misses that occurred within that industry. The case studies are meant to be a discussion and all readings should be done prior to class. For each case study every student is required to write a one page paper discussing the steps that lead up to

the incident and controls to that should be implemented to prevent future incidents from occurring.

Grading

The relative weight of each course component is as follows:

| Assessment | Weight |
|------------------------|--------|
| Midterm exam | 25% |
| Final exam | 25% |
| Site safety audit | 25% |
| Quizzes | 10% |
| Incident investigation | 5% |
| Presentation | 10% |
| | 100% |

The grading system for the GSPHHP is as follows:

| Letter Grade | Quality Point Value | Percentage |
|--------------|---------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| В- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

<u>Withdrawal</u>

If an emergency arises, the student must immediately notify the instructor and agree upon a course of action, especially if the student is unable to complete the semester. See the <u>Academic</u> <u>Calendar</u> for more information about deadlines to drop or withdraw from a course.

Grade of incomplete

Incomplete final grades will not be granted unless the request is justified by a legitimate and documented emergency. The granting of an incomplete grade is at the discretion of the instructor. Refer to the School's <u>academic policies</u> for further details.

Grade appeals

A student who wishes to challenge an earned final grade for a course shall use the grade appeals process. Details about the academic appeals procedures can be found in the School's <u>academic policies</u>.

Course Policies

Attendance and class participation

Students are expected to attend class regularly and to be active, informed participants in all class discussions. The instructor may assign students as discussion leaders and will call on students in class to join discussions and exercises.

Late/incomplete submission of assignments

Late or incomplete assignments will not be accepted.

Make-ups, rewrites, and extra credit

There are no make-ups, rewrites, or extra credit allowed.

Expectations of students

- Be familiar with college academic policies and deadlines--academic standing, academic integrity, grading, and academic calendar.
- Know how to use library resources and citation tools.
- Show respect to everyone in the course.
- Be fully prepared to actively participate in discussion.
- Complete all assignments by their assigned due date. No credit for work completed after the due date.
- No credit for assignments suspected of plagiarism or cheating.
- Be held accountable for all material assigned/covered in the course.
- Regularly check the course website and official university email for course correspondence.
- Questions dealing with the course (course content, assignments) may be generally relevant to others in the class and can be posted in the discussion board.
- Contact professor directly with personal questions and concerns related to the course.
- When in doubt, ask questions and clarify course assignments and expectations.

Expectations for the instructor

- Provide regular announcements and information on the course website
- Monitor, ask follow-up questions, and answer questions presented during discussion
- Respond to student email within 24 hours Monday through Friday and within 48 hours on Saturday or Sunday.
- Grading and feedback on assignments within 2 weeks of the due date.

Accessibility

<u>Support services and accommodations</u> are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the CUNY SPH Disability Coordinator, Jeanette Rodriguez,

Email: <u>Jeanette.Rodriguez@sph.cuny.edu</u>, call: 646-364-9770, or visit in person on the 7th floor of 55 West 125th Street, New York, NY 10027.

Academic integrity

CUNY regards acts of academic dishonesty (e.g. plagiarism, cheating on exams, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. CUNY is committed to enforcing the <u>Policy on</u> <u>Academic Integrity</u> and will pursue cases of academic dishonesty.

Course Schedule

Please see the School's academic calendar for important dates regarding withdrawing from the course.

| Session | Торіс | Readings | Assignments Due |
|---------|--|---|--------------------|
| 1 | Introduction, historical background, and fundamental concepts and terms | Safety and Health for Engineers, Chapters 1-3 | |
| 2 | Laws and regulations | Safety and Health for Engineers, Chapters 4 and 5 | Quiz 1 |
| 3 | Walking and working surfaces | Safety and Health for Engineers, Chapter 11 | Quiz 2 |
| 4 | Electrical safety | Safety and Health for Engineers, Chapter 12 | Quiz 3 |
| 5 | Tools and machines | Safety and Health for Engineers, Chapter 13 | Quiz 4 |
| 6 | Confined spaces | Readings posted on blackboard | Quiz 5 |
| 7 | Exam 1 | | |
| 8 | Fire protection and prevention/ Explosions and explosives | Safety and Health for Engineers, Chapters 16 and 17 | Quiz 6 |
| 9 | Emergencies and security/ Facilities planning and design | Safety and Health for Engineers, Chapters 29 and 30 | Quiz 7 |
| 10 | Materials handling | Safety and Health for Engineers, Chapter 15 | Quiz 8 |
| 11 | Reporting injuries illnesses, workers' compensation, OSHA inspections | Safety and Health for Engineers, Chapters 6 and 8 | Quiz 9 |
| 12 | Fundamentals of safety management | Safety and Health for Engineers, Chapters 35 | Quiz 10 |
| 13 | Case studies | Readings posted on blackboard | Case studies |
| 14 | Presentation | | |
| 15 | Final Exam | | |

CUNY SPH graduate school of public health & health policy

COURSE SYLLABUS

PUBH 698: Capstone Project

3 credits Fall 2019

| Time and | Mondova 6:00 7:50 DM |
|------------------|---|
| | |
| IUCALION | CUNY SPH Room 504 |
| Instructor | Instructor |
| | Brian Pavilonis, Ph.D., CIH |
| | Brian.Pavilonis@sph.cuny.edu |
| | CUNY SPH Room 503 |
| | Telephone #: 646-364-9509 |
| Office hours | Tuesday: 4:00-6:00 p.m., Friday 12:00-2:00 p.m. |
| Course website | https://bbhosted.cuny.edu |
| Support | For technical assistance with school computers or connecting to the |
| resources | internet, write to helpdesk@sph.cuny.edu. Visit the Library Services for |
| | help with library resources and research assistance. Visit the Writing |
| | Center website for writing resources and assistance. |
| Course | This course consists of a structured seminar aimed at allowing students to apply |
| description | experiences gained during their graduate program and synthesize that knowledge |
| - | and experience in the form of a major writing project. It is expected that students |
| | use a combination of synthesized evidence, theoretical models, and empirical |
| | research to answer a public health research question or practice problem using |
| | interdisciplinary perspectives. |
| Course | PRE: Completion of at least 33 credits of coursework toward the MPH or MS degree. |
| prerequisites | which must include Supervised Fieldwork, and at least one course in each of the 5 |
| | core areas of public health (biostatistics, epidemiology, social and behavioral |
| | sciences, public health policy and environmental health and safety), and at least 3 |
| | specialization courses: and departmental permission |
| Course formet | In person Note that this source is mostly solf directed. Students have access to |
| Course format | in-person. Note that this course is mostly self-directed. Students have access to |
| | other students work via Blackboard. There are weekly deadlines for writing, |
| | discussion and revisions, and attendance at and participation in the final |
| | presentations of all capstone projects. |
| Required reading | The Capstone Handbook is a critical resource for this course. It can be found in |
| and resources | Blackboard under Resources and on the <u>CUNY SPH website</u> . |
| Suggested | Lecture slides posted on BlackBoard |
| reading and | |
| resources | |

Course Learning Outcomes

Upon completion of the Capstone Project, students will have attained the following outcomes:

3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgement to draw conclusions.

- 4. An ability to communicate effectively with a range of audiences.
- e. Calculate, interpret, and apply statistical and epidemiological data.
- h. Interpret and apply applicable occupational and environmental regulations.

In consultation with the instructor, students may identify additional outcomes they wish to master through the project.

Course Assessments

The major deliverables for the course are the (a) written capstone project and the (b) accompanying oral *or* poster presentation. While the written paper is evaluated by your track Capstone faculty, the oral or poster presentations are evaluated by all Capstone faculty members. The rubrics for grading each component are available on the course Bb site.

Grading and Evaluation Criteria:

Grading rubrics for each course component will be available on Bb The relative weight of each course component is as follows:

| Course Component | Weight |
|---|--------|
| Capstone paper, plus letter of response to reviewers | 70% |
| Oral or poster presentation of capstone paper or master's essay | 15% |
| Meeting deadlines, and attendance and participation at final | 10% |
| presentations | |
| Portfolio (required to earn a grade for the course) | 5% |
| | 100% |

The grading system for CUNY SPH is as follows:

| Letter Grade | Quality Point Value | Percentage |
|-----------------|------------------------|---------------|
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |

Note: You must earn a B or higher to pass the Capstone course.

Course Schedule and Assignments

The schedule of assignments varies depending on the type of project. Review the tables below and use them as a reference, even if your sections don't completely match up with those in the table. For example, if you're writing a policy brief you may not have quantitative results but you will have a description of a new policy.

| | | Assignments / Due-dates |
|---------|--|---|
| Session | Торіс | Submit all assignments (unless noted) to the Track Discussion Group on Blackboard |
| | - Eaculty introductions | All assignments are due by 11:59 p.m. unless otherwise noted. |
| 1 | Course overview Break into Tracks for project updates | Provisional Title uploaded to <u>Blackboard General Discussion</u> <u>Board</u> First Draft of Capstone Proposal uploaded to your <u>Track</u> <u>Discussion Board</u> (see guidelines and worksheets under "Resources" in Blackboard) |
| 2 | Quantitative Methods – Mini Stats Review – Data Analysis – Table Shells | Assessment Due: Template paper(s) (An academic article which you will use as a model for your Capstone paper – sections, tables, etc.) |
| 3 | Set up Capstone faculty meetings, as necessary Qualitative Researchers: Come prepared to discuss your plans and progress on the Methods / Process section | Review readings and materials on Blackboard. Assessment Due: Revised proposal (based on feedback) |
| 4 | Finish your outline | Assessment Due: Outline (w/ table shells, if relevant) |
| 5 | Meet with advisor to discuss progress to date, including preliminary results, if appropriate. Arrange directly with advisor. | Assessment Due: Introduction: Background, Significance, Literature Review / knowledge gap. Also Research Question and Hypothesis (if conducting a research paper) Methods / Process section Graphs / Figures / Table Shells (as relevant to your project) |
| 6 | Work on Portfolio | Assessment Due: Results for quantitative and /or qualitative analysis Main content for practice papers |
| 7 | | Assessment Due: Structured abstract for your Capstone paper |

Course schedule is subject to change – Please Check Blackboard Announcements for Updates

| <u> </u> | | |
|----------|---|---|
| 8 | Work on completing first full | Review readings and materials on Blackboard. |
| | draft of Capstone paper. | |
| 9 | First Draft Due | Assessment Due: |
| | | First Draft Uploaded to Track Discussion Board |
| | | |
| 10 | Work on final presentations and | Review readings and materials on Blackboard. |
| | posters | |
| | Set up meetings with Capstone | |
| | faculty to discuss portfolio | |
| | (optional) | |
| 11 | Work on presentations and | Assessment Due: |
| | posters | Send second draft to your second reader |
| | Work on Portfolios | |
| 12 | Set up meetings with | Review readings and materials on Blackboard |
| 12 | • Set up meetings with | Noview readings and materials on Eldenbeard. |
| | faculty (as necessary) | |
| | | |
| 13 | Work on Presentations | Review readings and materials on Blackboard. |
| | Work on Portfolios | |
| | | |
| 14 | Work on Presentations | FINAL PRESENTATIONS |
| | Work on Portfolios | |
| | Students arrange for posters to | All students must attend 4 of the 5 presentations PLUS the poster |
| | be printed | session. |
| | | |
| 14 | Work on Presentations | FINAL PRESENTATIONS |
| | Work on Portfolios | |
| | | |
| | | |
| 15 | FINAL PAPERS DUE | POSTER SESSION |
| | PORTFOLIOS DUE | Attendance Required for All |
| | | |
| | | Due Friday, 11:59 p.m. to Bb: |
| | | Capstone final paper |
| | | Response letter |
| | | Final portfolio |

Writing, Style and References

For practical advice, look into the writing center at major colleges or universities. A strong example is:

• Purdue Online Writing Lab (OWL). http://owl.english.purdue.edu/

Style

Unless indicated otherwise, Capstone papers should follow the style of the *American Journal of Public Health* (*AJPH*). The *AJPH* style is the same as that of the American Medical Association (AMA).

- AJPH's instructions for authors. <u>http://ajph.aphapublications.org/userimages/ContentEditor/1318438422261/Instructions_for_Authors.pdf</u>
- AMA Style Stat! For Research Papers. A quick reference to using the AMA style in college research papers. <u>http://www.docstyles.com/library/amastat.pdf</u>

Organization of the Capstone Paper

It is customary to organize the capstone paper using the standard IMRAD format: *Introduction, Methods, Results and Discussion.* The IMRAD structure is a direct reflection of the process of scientific discovery. AMA Stat! presents these variations on the IMRAD theme, which are also acceptable:

- For reports of original data: Context, Objective, Design, Setting, Population, Intervention(s), Main Outcome Measure(s), and Results.
- For a systematic literature review: Context, Objective, Data Sources, Study Selection, Data Extraction, Results, and Conclusions.

Please see the AMA Stat! website for detailed descriptions: http://writingcenter.missouristate.edu/assets/WritingCenter/amastat.pdf

Writing the Research Paper

- How to write all sections of a research paper from Rice University: http://www.ruf.rice.edu/~bioslabs/resources_home.html
- Writing a research article: advice to beginners. http://intqhc.oxfordjournals.org/content/16/3/191.full/
- How to write a paper. Bates College: http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html
- Writing research papers. Rice Univ: http://www.ruf.rice.edu/~bioslabs/tools/report/reportform.html
- Preparation of the research report /scientific paper . http://www.sagepub.com/bjohnsonstudy/notes/Ch20_Lecture.doc
- How to write a master's thesis (equivalent to a Capstone Paper): http://www.ldeo.columbia.edu/~martins/sen_sem/thesis_org.html#Conclusions

Structured abstract

- Importance of 180 words (PPT):
- http://www.jpgmonline.com/documents/author/24/4_Aggarwal_11.pdf
- Sample research paper. Although this paper is in the APA style, this site is worth examining for the side notes and also to see how the background section segues into the methodology and results sections of the paper. http://thewritesource.com/apa/apa.pdf
- Synthesis writing. Drew Univ: http://www.users.drew.edu/sjamieso/Synthesis.pdf

Methods

 How to write the methods section of a research paper. <u>http://cancer.dartmouth.edu/documents/pdf/methods_section.pdf</u>

- Logic model Please refer to your PH 737 notes.
- Threats to validity

 --Campbell, D.T. & Stanley, J.(1963). Experimental and Quasi-Experimental Designs for Research.
 Boston: Houghton Mifflin.
 --Trochim, W. Research Methods Knowledge Base.

http://www.socialresearchmethods.net/kb/intval.php http://www.socialresearchmethods.net/kb/external.php

<u>Results</u>

• A strategy for writing up research results. http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWstrategy.html

Discussion

• How to write an effective discussion: http://www.rcjournal.com/content/10.04/10.04.1238.pdf

Conclusions

• UNC: http://writingcenter.unc.edu/resources/handouts-demos/writing-the-paper/conclusions

Bibliography/Citations

- Quick Citation Guide. Penn State: Penn State: http://www.libraries.psu.edu/content/psul/researchguides/citationstyles/CSE_citation.html#cse-citations Annotated bibliographies.
- UNC: http://writingcenter.unc.edu/handouts/annotated-bibliographies/
- Univ Wisconsin:. http://writing.wisc.edu/Handbook/AnnotatedBibliography.html/
- Purdue: http://owl.english.purdue.edu/.

MPH and MS Portfolios

- Univ of Florida: <u>http://mph.ufl.edu/students/on-campus-students/mph-portfolio/</u>
- Medical College of Wisconsin: <u>http://www.mcw.edu/FileLibrary/Groups/MPHProgram/Student_Handbook.pdf_(pp. 10-11)</u>
- University of Missouri: <u>http://publichealth.missouri.edu/assets/StudentPortfolioGuidelines.pdf</u>

Appendix B: Faculty Vitae

- DeVito, Anthony
- Grassman, Jean
- Kavouras, Ilias
- Maroko, Andrew
- Pavilonis, Brian
- Schooling, C. Mary

1. <u>Name:</u> Anthony DeVito

2. Education

| Degree | Discipline | Institution | Year |
|--------|----------------------------|--------------------------|------|
| MS | Env and Occ Health Science | Hunter College CUNY | 1992 |
| BS | Behavioral/Social Science | Polytechnic Institute of | 1971 |
| | | Brooklyn | |

3. Academic Experience

| Institution | Rank | Title | Dates Held | FT/PT |
|--------------------------------------|-------------------|-------|----------------|-------|
| CUNY Graduate School of Public | Adjunct Lecturer | | 2016 – Present | PT |
| Health and Health Policy | | | | |
| Hunter College School of Urban | Adjunct Lecturer | | 1999 – Present | PT |
| Public Health, CUNY School of | | | | |
| Public Health | | | | |
| Rutgers University, School of Public | Course Instructor | | 2004 - Present | PT |
| Health | | | | |

4. <u>Non-Academic Experience</u>

| Organization | Title | Duties | Dates | FT/PT |
|--------------------------|---------------------|---------------|-------------|-------|
| NYC DOHMH | Consulting Contract | Consulting on | 2019 - | PT |
| | _ | Cooling | Present | |
| | | Towers Water | | |
| | | Treatment | | |
| | | Practice | | |
| NYS Dept of Env | Pesticide Training | Teaching | 2014 - | PT |
| Conservation | Instructor | | Present | |
| Chemical Specifics, Inc. | Vice President, | Environmental | 1985 - 2018 | FT |
| | Engineering | Consulting | | |
| Consolidated Water | Chief Engineer | Engineering | 1979 – 1985 | FT |
| Conditioning | | | | |
| Olin Water Services | Quality Assurance | Quality | 1972 – 1979 | FT |
| | Supervisor | management | | |

5. <u>Certifications and Professional Registrations</u>

6. <u>Current Membership in Professional Organizations</u>

- a. Member, Indoor Air Quality Association and ASHRAE (American Society for Heating Refrigeration and Air Conditioning Engineers)
- b. Member, American Water Technologists AWT
- c. Member, National Air Duct Cleaners Association
- d. Member, AIHA American Industrial Hygiene Association Metropolitan NY Chapter
- e. Member, American Public Health Association APHA

7. Honors and Awards

a. Faculty Innovations in Teaching with Technology, (FITT) award recipient, Hunter College, 2012

8. <u>Service Activities (within and outside of the institution)</u>

- a. Curriculum Development:
 - a. Incorporated online and hybrid teaching methods into Environmental Laboratory, Industrial Ventilation and Biostatistics Courses.
 - b. Expanded the hands on portion of the industrial ventilation course to include physical measurement of ducted systems and the design, evaluation and troubleshooting of industrial ventilation systems.

9. <u>Publications and Presentations from Past Five Years</u>

10. <u>Recent Professional Development Activities</u>

- a. Certificate in Online Instruction (COI), Central Michigan University, 2015
- b. Legionnaire's Disease Emergency Disinfection Procedures
 - a. Formulated a response to the NYC DOHMH Blanket Order for the Disinfection of Cooling Towers and the NYS Emergency Health Code Amendments in response to an LD outbreak in the Bronx for 500 Cooling Towers under contract to Chemical Specifics, Inc.
- c. Formulation of Water Treatment Chemicals and Techniques
 - a. Developed and tested proprietary chemical formulations for the inhibition of scaling and corrosion in recirculating evaporative spray water systems, closed recirculating water systems and glycol based antifreeze solutions used in process and HVAC water systems.

1. <u>Name:</u> Jean Grassman

2. Education

| Degree | Discipline | Institution | Year |
|--------|---|-----------------------------------|------|
| PhD | Environmental Health Sciences | University of California-Berkeley | 1993 |
| MS | Environmental Health Sciences (Industrial Hygiene) | University of California-Berkeley | 1986 |
| BS | Anthropology | University of Wisconsin-Madison | 1982 |
| BS | Zoology | University of Wisconsin-Madison | 1982 |

3. Academic Experience

| Institution | Rank | Title | Dates Held | FT/PT |
|---|--|--------------------|----------------------------|-------|
| CUNY Graduate School of Public Health and Health Policy | Associate Professor | | 2016 – Present | FT |
| CUNY Brooklyn College Health and Nutrition Sciences | Associate Professor Assistant Professor | | 2004 - 2016 1999 - 2004 | FT |
| CUNY Graduate Center-Earth & Environmental Sciences | Associate Professor | Affiliated faculty | 2008 – Present | PT |

4. <u>Non-academic Experience</u>

| Institution | Rank | Title | Dates Held | FT/PT |
|-----------------------------|------|-----------------------------|----------------|-------|
| Professional Staff Congress | | Director, Health and Safety | 2008 – Present | PT |
| NIEHS | | Research | 1994 – 1999 | FT |

5. <u>Certifications or professional registrations:</u> Certified in Public Health - CPH (NBPHE Number 530)

6. <u>Current membership in professional organizations</u>

- a. Member, International Society for Exposure Science (ISES)
- b. Member, American Public Health Association (APHA)
- c. Member, American Industrial Hygiene Association (AIHA)

7. Honors and awards

- a. 2015 Environmental Service Award, Capracare Show your Love for Haiti
- b. AAAS Environmental Science and Engineering Fellowship, American Association for the Advancement of Science, Washington, DC (1994)

8. <u>Service activities (within and outside of the institution)</u>

- a. Track Coordinator, CUNY Consortial School of Public Health, 2009 2016
- b. Secretary, Board member, New York Committee for Occupational Safety and Health
- c. Board member, CAPRACARE

9. <u>Publications and presentations from the past five years</u>

- a. Schmeltz M.T., Schmeltz M.T., Grassman J.A., Cheng Z. (2020) Assessing Soil Lead Exposure for Gardeners in New York City – A Pilot Study. In: Vasenev V., Dovletyarova E., Cheng Z., Valentini R., Calfapietra C. (eds) Green Technologies and Infrastructure to Enhance Urban Ecosystem Services. SSC 2018. Springer Geography. Springer, Cham. doi.org/10.1007/978-3-030-16091-3_2
- b. BEI Committee, member (2019) Threshold Limit Values & Biological Exposure Indices. ACGIH
- c. Holland, C., Cohn, M., Helfand, I., Grassman, J. (2017). Chapter 4 Weapons of war and mass destruction. *Preventing War and Promoting Peace: A Guide for Health Professionals* (pp. 61-74). Cambridge University Press.
- d. Johnson, G., Pavilonis, B., Caravanos, J., Grassman, J. (2018). Geo-Spatial Characterization of Soil Mercury and Arsenic at a High-Altitude Bolivian Gold Mine. *Bulletin of environmental contamination and toxicology*, *100*(2), 259-264.
- e. Chernyak, Y. I., Meriniova, A. P., Shelepchikov, A. A., Kolesnikov, S. I., Grassman, J. (2016). Impact of dioxins on antipyrine metabolism in firefighters. *Toxicology Letters*, 250-251, 35-41.
- f. Pavilonis, B., Grassman, J., Johnson, G., Diaz, Y., Caravanos, J. (2017). Characterization and risk of exposure to elements from artisanal gold mining operations in the Bolivian Andes. *Environmental research*, *154*, 1-9.
- g. Schmeltz, M. T., Sembajwe, G., Marcotullio, P. J., Grassman, J., Himmelstein, D. U., Woolhandler, S. (2015). Identifying Individual Risk Factors and Documenting the Pattern of Heat-Related Illness through Analyses of Hospitalization and Patterns of Household Cooling. *PLOS ONE*, 10(3), 1-15. https://doi.org/10.1371/journal.pone.0118958
- h. Clapp, R. W., Baraldi, C., Grassman, J., Mirer, F., Robie, D., Schnall, S. (2014). On Agent Orange in Vietnam. *American journal of public health*, *104*(10), 1860-1.
- i. Grassman, J. (presenter), APHA 2017 Annual Meeting & Expo, "No winners: The health effects of Agent Orange on Vietnamese and American Veterans," APHA, Georgia World Congress Center and the Omni Hotel Atlanta at CNN Center, Atlanta, GA, United States. (November 6, 2017).
- j. Grassman, J. A. (Presenter), Caravanos, J. (co-author), Johnson, G. (co-author), Z, C. (co-author), 10th Annual Symposium on Biological Monitoring (ISBM-10),
 "Mercury exposure in a Bolivian community involved in small scale gold extraction," International Committee on Occupational Health (ICOH), Congress Center of the University of Naples Federico II (Via Partenope,36 – Naples), Naples, Italy. (October 3, 2017).
- k. Grassman, J. (presenter), Johnson, G. (co-author), 143rd APHA Annual Meeting and Exposition, "Elemental mercury exposure in men, women, and children from a Bolivian community engaged in artisanal gold mining," American Association of Public Health, McCormick Place Convention Center, Chicago, IL, Chicago, IL, United States. (October 31, 2015).

10. <u>Recent professional development activities</u>

a. Co-PI on Intersections of Gender, Work and Health: Migrant Beer Sellers in Southeast Asia. Canada Institutes of Health, 2015-2018

1. <u>Name:</u> Ilias Kavouras

2. Education

| Degree | Discipline | Institution | Year |
|--------|------------|---------------------|------|
| PhD | Chemistry | University of Crete | 1998 |
| BSc | Chemistry | University of Crete | 1994 |

3. Academic Experience

| Institution | Rank | Title | Dates Held | FT/ PT |
|--|---------------------------------|-------|----------------|-----------|
| CUNY Graduate School of Public Health and Health Policy | Professor | | 2018 - Present | FT |
| University of Alabama at Birmingham | Associate Professor | | 2015 - 2018 | FT |
| University of Arkansas for Medical Sciences | Associate Professor | | 2011 - 2015 | FT |
| Division of Atmospheric Sciences, Desert Research Institute | Assistant Research Professor | | 2005 - 2010 | FT |
| Institute for Environmental Research and Sustainable Development, National Observatory of Athens | Research Assistant Professor | | 2002 - 2005 | FT |
| Harvard School Public Health | Research Fellow | | 1998 - 2002 | FT |

4. Non-academic Experience

| Organization | Title | Duties | Dates | FT/PT |
|----------------------------------|---------------|----------|-----------|-------|
| French Longitudinal Study of | Environmental | Research | 2010-2011 | FT |
| Children, National Institute for | Health | | | |
| Demographic Studies (INED) | Program | | | |
| | Director | | | |

5. <u>Certifications or professional registrations</u>

6. <u>Current membership in professional organizations</u>

- a. Exposure Modelling and Assessment Advisory Group, Society of Environmental Toxicology and Chemistry, 2015 – Present
- b. Nanotechnology Advisory Group, Society of Environmental Toxicology and Chemistry, 2014 Present
- c. American Chemical Society, 1998 Present
- d. ACS Central Arkansas Chapter, Councilor, 2015
- e. Society of Environmental Toxicology and Chemistry, 2003 Present

7. <u>Honors and awards</u>

- a. Young Scientist Travel Award, International Global Atmospheric Chemistry, 1998
- b. Keith Runcorn Fellowship, European Geophysical Union, 1999

8. <u>Service activities (within and outside of the institution)</u>

- a. Doctoral Program Director, Environmental and Occupational Health, CUNY SPH. 2019 Present,
- b. Member, CUNY SPH EOGHS Department Promotion and Tenure Committee, 2018 -Present

Member, CUNY SPH, Faculty Student Academic Integrity Committee, 2018 - Present

- c. Grant application reviewer: PSC-CUNY; National Institute for Environmental Health Sciences; National Science Foundation; European Research Council.
- d. Editorial Board member: Environmental Research; Heliyon; Environmental Toxicology and Chemistry
- e. Journal reviewer for numerous journals, including: Environmental Health Perspectives; Environmental Toxicology and Chemistry; Environmental Science and Technology; and Atmospheric Environment.

9. <u>Publications and Presentations from Past Five Years</u>

- a. Nored AW, Chalbot MCC, Kavouras IG (2018) Characterization of paint dust aerosol generated from mechanical abrasion of TiO2-containing paints. Journal of Occupational and Environmental Hygiene. 1:1-34.
- b. Zhao J, Nelson J, Dada O, Pyrgiotakis G, Kavouras IG, Demokritou P, (2017) Assessing electronic cigarette emissions: linking physico-chemical properties to product, eliquid flavoring additives, operational voltage and user puffing patterns. Inhalation Toxicology.
- c. Chalbot MCG, Pirela SV, Schifman L, Kasaraneni V, Oyanedel-Craver V, Kavouras IG, Demokritou P. (2017) Functional and structural composition of printer emitted organic aerosol: Implications for carcinogenicity and mutagenicity. Environmental Sciences: Nano, 2017,4, 2144-2156, http://dx.doi.org/10.1039/C7EN00573C
- d. Miousse IR, Murphy LA, Lin H, Schisler MR, Sun J, Chalbot MCG, Sura R, Johnson K, LeBaron MJ, Kavouras IG, Schnackenberg LK, Beger RD, Rasoulpour RJ, Koturbash I. (2017) 'Dose-response analysis of epigenetic, metabolic, and apical endpoints after short-term exposure to experimental hepatotoxicants. Food and Chemical Toxicology.
- e. Kavouras IG, Chalbot MCG. (2017) Influence of ambient temperature on the heterogeneity of ambient fine particle chemical composition and disease prevalence. International Journal of Environmental Health Research, 27(1), 27-39.

10. <u>Recent professional development activities</u>

- a. AIHA National Meeting, 2017
- b. Workshop, "Leadership Academy for Department Chairs," American Council on Education, 2016.
- c. Workshops, "Mentoring Workshop," and "Teaching Certificate," University of Alabama at Birmingham, Birmingham, AL, 2016.
- d. Continuing Education Program, "3D Online Instruction: Design, Develop and Deliver," UAB e-Learning and Professional Studies, Birmingham, AL, 2015.
- e. Organizer, American Chemical Society Symposium: Chemistry of Lower Atmosphere, ACS 247th National Meeting, Dallas, TX, 2014

1. <u>Name:</u> Andrew Maroko

2. Education

| Degree | Discipline | Institution | Year |
|----------------------|---------------------------------|--|------|
| PhD | Earth and Environmental Science | Graduate Center, CUNY | 2010 |
| M. Phil | Earth and Environmental Science | Graduate Center, CUNY | 2009 |
| Graduate Certificate | GISc | Lehman College, CUNY | 2003 |
| BA | Biology | Rutgers College, Rutgers University | 1994 |

3. Academic Experience

| Institution | Rank | Title | Dates Held | FT/PT |
|--------------------------------|---------------------|-------|----------------|-------|
| CUNY Graduate School of Public | Associate Professor | | 2016 – Present | FT |
| Health and Health Policy | | | | |
| Lehman College, CUNY | Assistant Professor | | 2010 - 2016 | FT |
| Lehman College, CUNY | Adjunct Lecturer | | 2006 - 2010 | FT |
| Hunter College, CUNY | Adjunct Lecturer | | 2007 | FT |

4. <u>Non-academic Experience</u>

| Organization | Title | Duties | Dates | FT/PT |
|--------------|-------|--------|-------|-------|
| | | | | |

5. <u>Certifications or professional registrations</u>

6. <u>Current membership in professional organizations</u>

- a. American Public Health Association, 2015 Present.
- b. Association of American Geographers: Medical Geography, Urban Geography, and GIScience specialty groups, 2004 Present.

7. Honors and awards

- a. Excellence in Teaching Award, CUNY SPH, 2017.
- b. Poster Award, New York Medical College, 2015
- c. Poster Award: Research Poster Competition at Governor's Island. CUNY Institute for Sustainable Cities, Sustainable Living for Sustainable Cities, 2009

8. Service activities (within and outside of the institution)

- a. Chair (2019 Present) and Member (2018): New Faculty Search Committee, CUNY SPH.
- b. Chair: Faculty Student Council, CUNY SPH, 2017 Present.
- c. Member, Admissions EOGHS, CUNY SPH, 2018 2019.
- d. Committee Member, EOGHS Admissions, CUNY SPH, 2016.

- e. Curriculum Development: Health Equity, Advocacy and Communication Core Course; Leadership and Management Core Course, 2017.
- f. Reviewer, CUNY Interdisciplinary Research Grant Program, 2017.
- g. Volunteer Capstone Grader, CUNY SPH, 2017.

9. <u>Publications and Presentations from Past Five Years</u>

- a. Haley, S. J., Maroko, A., Wyka, K., Baker, M. R. (2019). The association between county-level safety net treatment access and opioid hospitalizations and mortality in New York. Journal of Substance Abuse Treatment, 100, 52-58.
- b. Farley, S. M., Maroko, A., Suglia, S. F., Thorpe, L. E. (2019). The Influence of Tobacco Retailer Density and Poverty on Tobacco Use in a Densely Populated Urban Environment. Public health reports (Washington, D.C. : 1974), 134(2), 164-171.
- Wiewel, E. W., Borrell, L. N., Maroko, A., Jones, H., Torian, L. V., Udeagu, C. C. (2018). Neighborhood social cohesion and viral suppression after HIV diagnosis. Journal of health psychology, 1359105318810088.
- d. Bryan, A. D., Ginsburg, Z. A., Rubinstein, E. B., Frankel, H. J., Maroko, A., Schechter, C. B., Cooksey Stowers, K., Lucan, S. C. (2018). Foods and Drinks Available from Urban Food Pantries: Nutritional Quality by Item Type, Sourcing, and Distribution Method. Journal of community health.
- e. Maroko, A., Pavilonis, B. (2018). Occupational Groups and Environmental Justice: A Case Study in the Bronx, New York. Preventing chronic disease, 15, E139.
- f. Maantay, J. A., Maroko, A. (2018). Brownfields to Greenfields: Environmental Justice Versus Environmental Gentrification. International journal of environmental research and public health, 15(10).
- g. Maantay, J. A., Maroko, A. (2017). Assessing population at risk: Areal interpolation and dasymetric mapping. In R. Holifield, J. Chakraborty, & G. Parks (Eds.), The Routledge Handbook of Environmental Justice. Routledge.

10. <u>Recent professional development activities</u>

- a. Certificate of Completion of Online Instruction Course, Central Michigan University, 2015 Present.
- b. Certificate of Completion and Program Scholar: Workshop in Geographically Weighted Regression, National Centre for Geostatistics and the Population Research Institute, Pennsylvania State University, State College, PA, 2008 - Present.
- c. Organizer / Presenter, CUNY Geographic Information Science Summit, 2017.
- d. Researcher / Mapper, CUNY SPH Harlem Mapping Project, 2017 Present.
- e. Participant, Bronx Center to Reduce and Eliminate Ethnic and Racial Health Disparities, 2005 Present.
- f. Instructor (workshop), Montefiore, 2014, 2015, 2017.
- g. Instructor / Curriculum Developer, Humanities II High School, 2015 2016.
- h. Spatial Analyst, Community Board 7 (Bronx), 2013 2014.
- i. Medical Center, Westchester Medical Center, Center for Health Care Innovation, Valhalla, NY, 2014 Present.

1. <u>Name:</u> Brian Pavilonis

2. <u>Education</u>

| Degree | Discipline | Institution | Year |
|--------|---------------------------------------|---------------------------------------|------|
| PhD | Occupational and Environmental Health | University of Iowa | 2012 |
| MPH | Environmental Health | University of Illinois at Springfield | 2008 |
| BS | Chemical Environmental Science | University of Iowa | 2005 |

3. <u>Academic Experience</u>

| Institution | Rank | Title | Dates Held | FT/PT |
|--------------------------------|---------------------|-------|----------------|-------|
| CUNY Graduate School of Public | Assistant Professor | | 2016 - Present | FT |
| Health and Health Policy | | | | |
| Hunter College School of Urban | Assistant Professor | | 2014 - 2016 | FT |
| Public Health, CUNY School of | | | | |
| Public Health | | | | |

4. <u>Non-Academic Experience</u>

| Organization | Title | Duties | Dates | FT/PT |
|--------------|-------|--------|-------|-------|
| | | | | |

5. <u>Certifications and Professional Registrations</u>

a. Certified Industrial Hygienist (CIH), American Board of Industrial Hygiene (ABIH), 2017 – Present.

6. <u>Current Membership in Professional Organizations</u>

a. American Industrial Hygiene Association, 2008 - Present.

7. Honors and Awards

- a. Dean's Excellence in Teaching, CUNY SPH, 2017.
- b. Best Student Occupational Epidemiology Poster, American Industrial Hygiene Association Conference and Expo, 2001
- c. Clyde Berry Scholarship, American Industrial Hygiene Association, 2009

8. Service Activities (within and outside of the institution)

- a. Industrial Hygiene Accreditation, ABET, 2018 Present.
- b. Chair, Admission Committee, 2016 Present.
- c. Reviewer/Referee: Indoor Air (2019); Journal of Occupational and Environmental Hygiene. (2018); Environmental Pollution (2018); Ecotoxicology and Environmental Safety. (2017); Environmental Research (2017); Environmental Toxicology and Chemistry (2017); PLOS ONE. (2017); Science of the Total Environment (2017);

Environmental Research (2016); Journal of Industrial Medicine (2015); Environment International. (2014); Environmental Health Perspectives. (2014); Risk Analysis. (2014).

9. <u>Publications and Presentations from Past Five Years</u>

- a. Maroko, A., Pavilonis, B. (2018). Occupational Groups and Environmental Justice: A Case Study in the Bronx, New York. *Preventing chronic disease*, *15*, E139.
- b. Kodali, H. P., Pavilonis, B., Schooling, M. (2018). Effects of copper and zinc on ischemic heart disease and myocardial infarction: a Mendelian randomization study. *The American journal of clinical nutrition.*
- c. Pavilonis, B., Roelofs, C., Blair, C. (2018). Assessing indoor air quality in New York City nail salons. *Journal of Occupational and Environmental Hygiene*, *15*(5), 422-429.
- d. Johnson, G., Pavilonis, B., Caravanos, J., Grassman, J. (2018). Geo-Spatial Characterization of Soil Mercury and Arsenic at a High-Altitude Bolivian Gold Mine. *Bulletin of environmental contamination and toxicology*, *100*(2), 259-264.
- e. Pavilonis, B., Grassman, J., Johnson, G., Diaz, Y., Caravanos, J. (2017). Characterization and risk of exposure to elements from artisanal gold mining operations in the Bolivian Andes. *Environmental research*, *154*, 1-9.
- f. Pavilonis, B., Mirer, F. (2017). Respirable dust and silica exposure among World Trade Center cleanup workers. *Journal of Occupational and Environmental Hygiene*, *14*(3), 187-194.
- g. Caravanos, J., Carrelli, J., Dowling, R., Pavilonis, B., Ericson, B., Fuller, R. (2016). Burden of disease resulting from lead exposure at toxic waste sites in Argentina, Mexico and Uruguay. *Environmental Health*, *15*(1).
- h. Pavilonis, B., Lioy, P. J., Guazzetti, S., Bostick, B. C., Donna, F., Peli, M., Zimmerman, N. J., Bertrand, P., Lucas, E., Smith, D. R., Georgopoulos, P. G., Mi, Z., Royce, S. G., Lucchini, R. G. (2015). Manganese concentrations in soil and settled dust in an area with historic ferroalloy production. *Journal of exposure science & environmental epidemiology*, 25(4), 443-50.
- i. Pavilonis, B., Weisel, C. P., Buckley, B., Lioy, P. J. (2014). Bioaccessibility and Risk of Exposure to Metals and SVOCs in Artificial Turf Field Fill Materials and Fibers. *Risk Analysis*, *34*(1), 44-55.
- j. Pavilonis, B., American Industrial Hygiene Conference and Expo, "Characterization and risk of exposure to elements from artisanal gold mining operations in the Bolivian Andes," Seattle, WA, United States. (June 1, 2017).
- k. Pavilonis, B., American Industrial Hygiene Conference and Expo, "Lead in New York City residential soils and its link to local childhood elevated blood lead levels," Seattle, WA, United States. (June 1, 2017).
- 1. Pavilonis, B., American Industrial Hygiene Conference and Expo, "Respirable dust and silica exposure among World Trade Center cleanup workers," Seattle, WA, United States. (June 1, 2017).

10. Recent Professional Development Activities

- a. American Industrial Hygiene Conference and Expo, 2017
- b. NIEHS Postdoctoral Fellowship, Rutgers University, 2012 2014
1. <u>Name:</u> Mary Schooling

2. Education

| Degree | Discipline | Institution | Year |
|--------|---------------------------------|-------------------------------|------|
| PhD | Epidemiology | University College London, UK | 2001 |
| MSc | Statistics | Birkbeck College, UK | 1987 |
| MSc | Operational Research | Strathclyde University, UK | 1981 |
| MA | Pure Maths and Medieval History | University of St Andrews, UK | 1980 |

3. <u>Academic Experience</u>

| Institution | Rank | Title | Dates Held | FT/PT |
|--------------------------|----------------------|-------------------|---------------|-------|
| CUNY Graduate School | Professor | Department Chair, | 2016–Present | FT |
| of Public Health and | | Environmental, | | |
| Health Policy | | Occupational, and | | |
| | | Geospatial Health | | |
| | | Sciences | | |
| Hunter College School of | Professor; Associate | | 2013–2016; | FT |
| Urban Public Health, | Professor | | 2010-2013 | |
| CUNY School of Public | | | | |
| Health | | | | |
| The University of Hong | Associate Professor; | | 2013-present; | PT |
| Kong | Assistant Professor; | | 2008–2012; | FT |
| | Research Assistant | | 2005-2008 | FT |
| | Professor | | | |

4. <u>Non-Academic Experience</u>

| Organization | Title | Duties | Dates | FT/PT |
|--|--------------------------------|-------------|-----------|-------|
| The University of Hong Kong | Senior Research Assistant | Research | 2004–2005 | PT |
| The University of Hong Kong | Teaching Assistant | Instruction | 2002–2004 | PT |
| IMS Health | Application Manager | Technology | 1995–2001 | PT |
| Legent PLC | Support Manager | Technology | 1988–1995 | FT |
| London Electricity Board | Operational Research | Research | 1984–1988 | FT |
| North East Thames Regional Health Authority | Operational Research Scientist | Research | 1982–1984 | FT |
| IBM | Inventory Control | Technology | 1981–1982 | FT |

5. <u>Certifications or Professional Registrations</u>

6. <u>Current Membership in Professional Organizations</u>

a. Faculty of Public Health, UK, 2017 – Present

7. Honors and Awards

- a. CUNY SPH, Dean's Award for Senior Researcher, 2019
- b. Fellowship by Distinction, Faculty of Public Health, UK, 2017
- c. Paper of the year, Society of Epidemiologic Research, 2013, 2015
- d. Science and Technology award from the Preventive Medicine Association of China (grade 2) (Grant number: 20111907) 2011 (中华预防医学会二等奖)

8. Service Activities (within and outside of the institution)

- a. CUNY SPH, Chair: Curriculum Committee, 2011 Present; DPH First Exam Committee, 2014 Present
- b. GSCARC member, Hunter College, 2015 2016
- c. Associate Editor: Journal of Epidemiology and Community Health, London, 2008 Present; PLoS One, San Francisco, CA, 2012 Present
- d. Advisory Board Member, Social Science and Medicine, 2015 Present
- e. Editorial Review Board Member, Preventive Medicine, 2018 Present
- f. Committee Member, Grant Review Board for the Health and Health Services Research Fund in Hong Kong, Hong Kong, 2009 Present
- g. Grant Proposal Reviewer: NIH; Wellcome Trust; MRC; etc., 2008 Present
- h. Reviewer/Referee: NEJM; BMJ; eLIfe; and many others, 2008 Present

9. <u>Publications and Presentations from Past Five Years</u>

- a. Zhou J, Cowling BJ, Peng W, Lau E, Chan WN, Lee SY, **Schooling CM**, Adiposity and influenza associated respiratory mortality: a cohort study, *Clin Infect Dis* 2015; 60:e49-57
- b. Schooling CM, Tachykinin neurokinin 3 receptor antagonists: a new treatment for cardiovascular disease? *the Lancet*, 2017;390:709-711
- c. Qiu H, Sun S, Tsang H, Wong CM, Lee RS, **Schooling CM**, Tian L, Long-term exposure to Fine Particulate Matter and Incidence of Stroke in Hong Kong, *Neurology*, 2017;88:1709-1717
- d. Huang J, Leung GM, **Schooling CM**, The association of air pollution with pubertal development: evidence from Hong Kong's "Children of 1997" birth cohort, *Am J Epidemiol* 2017;185:914-923
- e. Qiu H, Schooling CM, Sun S, Tsang H, Yang Y, Lee RS, Wong CM, Tian L, Long-term Exposure to Fine Particulate Matter Air Pollution and Type 2 Diabetes Mellitus in Elderly: a Cohort Study in Hong Kong. *Env Int* 2018; 113:350-356
- f. Kodali H, Pavilonis B, **Schooling CM**, Effects of copper and zinc on ischemic heart disease and myocardial infarction: a Mendelian Randomization study, *Am J Clin Nutr*, 2018;108:237-242
- g. Mason TG, Chan KP, Schooling CM, Sun S, Qiu H, Yang Y, Barratt B, Tian L, Air Quality changes after Hong Kong shipping emission policy: An accountability study, *Chemosphere*, 2019;226:616-624
- h. He B, Huang VJ, Man KK, Au Yeung SL, Hui LL, Li AM, Leung GM, **Schooling CM**, The association of early-life exposure to air pollution with lung function at ~17.5 years in "Children of 1997" Hong Kong Chinese Birth Cohort, *Env Int*, 2019;123:444-450
- i. Huang JV, Leung GM, **Schooling CM**, The association of air pollution with body mass index: evidence from Hong Kong's "Children of 1997" birth cohort, *Int J Obes*, 2019;43(1):62-72
- j. Luo S, Au Yeung SL, Zhao JV, Burgess S, **Schooling CM**[•] The association of genetically-predicted testosterone with thromboembolism, heart failure and myocardial infarction: a Mendelian randomization study using UK Biobank, *BMJ*, 2019 Mar 6;364:1476

10. Recent Professional Development Activities

- a. Attendee, 2019 Apr 23-25 CUNY Chair Leadership Program
- b. 2018-9 developed new core course for the MPH PUBH613 at CUNY
- c. Developed and delivered 2 day training course: "Mendelian Randomization Boot Camp" at Columbia University, 25/26 June, 2018 (also scheduled for 5/6 Aug 2019)
- d. Presenter, Mendelian Randomization: In the age of large-scale accessible genomics data, Bristol, UK, July 11-13, 2017
- e. Presenter, Population Health Sciences Research Workshop, Boston University, Oct 19-20, 2017
- f. Presenter, 17th International Congress of Endocrinology, Beijing, China, Aug 31– Sept 4, 2016
- g. Presenter, East-West Alliance Global Symposia, Groningen, The Netherlands, 22–24 November 2015

Appendix C: Equipment

| Quantity | Instrument |
|----------|--|
| 3 | Extech 480846: 8GHz RF Electromagnetic Field Strength Meter |
| 3 | Extech 480823 Single axis EMF/ELF Meter |
| 1 | Quest Temp QT32 |
| 3 | ppbRAE 3000 |
| 4 | IAQ-Calc Indoor Air Quality Meters 7545 |
| 2 | SKC Soap bubble flowmeter |
| 6 | 3M NoisePro DLX Noise Dosimeter |
| 4 | 3M SE-402 Sound Level Meter Kit, Type 2, Datalogging |
| 1 | TSI P-Trak Ultrafine Particle Counter |
| 1 | TSI DustTak 8532 |
| 1 | AccuBalance Air Capture Hood 8380 |
| 4 | Extech HT200 Heat Stress WBGT (Wet Bulb Globe Temperature) Meter |
| 2 | AirChek XR5000 5-pack Deluxe Sample Pump Kit, High-power Li-Ion |
| 1 | Microbial air sampler, digital, aluminum head, 110-220 VAC |
| 3 | BIOS Dry Cal defender 510 |
| 2 | TSI 8038 Portacount |
| 4 | TSI 9515 Thermal Anenometer |
| 1 | Thermo Niton XRF |

Appendix D: Institutional Summary

1. The Institution

a. Name and address of the institution

The CUNY Graduate School of Public Health and Health Policy 55 West 125th Street New York, New York 10027

b. Name and title of the chief executive officer of the institution

Dr. Ayman El-Mohandes, Dean

c. Name the organization by which the institution is now accredited, and the dates of the initial and most recent accreditation evaluations

The CUNY Graduated School of Public Health and Health Policy is regionally accredited by the Middle States Commission on Higher Education as a School that resides within the Graduate School and University Center. Initial accreditation was attained in 1961, with the last reaffirmation in 2015, and an upcoming evaluation in the 2019-2020 academic year.

2. Type of Control

Description of the type of managerial control of the institution, e.g., private-non-profit, private-other, denominational, state, federal, public-other, etc.

The CUNY SPH is a public non-profit, state-supported institution.

3. Educational Unit

Describe the educational unit in which the program is located including the administrative chain of responsibility from the individual responsible for the program to the chief executive office of the institution. Include names and titles. An organization chart may be included.

The MS-EOHS program is located within the Environmental, Occupational, and Geospatial Health Sciences Department. The Program Director, Dr. Brian Pavilonis, is responsible for the program's day-today management, and reports to the Department Chair, Dr. Mary Schooling. All Department Chairs report to the Chief Academic Officer, Senior Associate Dean of Student and Academic Affairs Dr. Ashish Joshi, who reports to Dean Ayman El-Mohandes. The Dean of the School reports directly to the Chancellor of the City University of New York. An organizational chart can be found in Figure 8-1.

4. Academic Support Units

List the names and titles of the individuals responsible for each of the units that teach courses required by the program being evaluated, e.g., mathematics, physics, etc.

All required and all elective coursework in the MS-EOHS program is taught by faculty in one of the four departments within the School, led by the following department chairs:

- Community Health and Health Policy, Dr. Christian Grov
- Environmental, Occupational, and Geospatial Health Sciences, Dr. Mary Schooling
- Epidemiology and Biostatistics, Dr. Luisa Borrell

• Health Policy and Management, Dr. Terry Huang

5. Non-academic Support Units

List the names and titles of the individuals responsible for each of the units that provide non-academic support to the program being evaluated, e.g., library, computing facilities, placement, tutoring, etc.

The staff below are responsible for each listed non-academic unit that provides program support:

- Mohit Arora, Director of Technology, Office of Information Technology
- Kristen Cribbs, Human Research Protection Program Director, Office of Academic Affairs
- Michele Kiely, Associate Dean of Research, Office of Sponsored Programs and Research
- Susanna Lynch, Community Outreach Program Director, Office of Experiential Learning
- Attiga Nadeem, Director of Career Services and Alumni Relations, Office of Career Services
- Emily Pagano, Librarian, Library
- Matthew Paczkowski, Academic Student Support Program Specialist, Office of Academic Affairs
 - o Petro Moysaenko, Writing Support, Office of Academic Affairs
 - o Marcel Ramos, Quantitative Tutor, Office of Academic Affairs

6. Credit Unit

It is assumed that one semester or quarter credit normally represents one class hour or three laboratory hours per week. One academic year normally represents at least 28 weeks of classes, exclusive of final examinations. If other standards are used for this program, the differences should be indicated.

In compliance with the New York State Education Department's regulations, one semester hour per week during a fifteen-week semester (fall and spring) is equivalent to one credit. All required MS-EOHS courses are assigned 3 credits each.

7. Tables

Complete the following tables for the program undergoing evaluation.

Tables D-1 and D-2 can be found below.

| Table D-1: Program Enrollment and Degree Data, Academic Years 2015-2019 MS-Environmental and Occupational Health Sciences | | | | | | | | | | | | | |
|---|------------------|--------------------|---|-----|-----|-----|-------------|-------------------------------------|-----------------|------------|-----------|---------|------------|
| | Academic Year | | Academic Enrollment Year Year | | | | l ergrad | l ergrad 1 1 ¹² | Degrees Awarded | | | | |
| | | | 1st | 2nd | 3rd | 4th | 5th | Tota Und | Tota Grac | Associates | Bachelors | Masters | Doctorates |
| Current Year | 2019 | FT ¹³ | 5 | | | | | N/A | 5 | N/A | N/A | 0 | N/A |
| | | \mathbf{PT}^{14} | 5 | | | | | N/A | 5 | - | | | |
| 1 | 2018 | FT | 5 | 5 | | | | N/A | 5 | N/A | N/A | 0 | N/A |
| | | PT | 5 | 5 | | | | N/A | 5 | - | | | |
| 2 | 2017 | FT | 1 | 1 | 0 | | | N/A | 1 | N/A | N/A | 4 | N/A |
| | | PT | 6 | 6 | 2 | | | N/A | 6 | | | | |
| 3 | 2016 | FT | 1 | 1 | 0 | 0 | | N/A | 1 | N/A | N/A | 8 | N/A |
| | | PT | 8 | 8 | 7 | 1 | | N/A | 8 | - | | | |
| 4 | 2015 | FT | 1 | 1 | 0 | 0 | 0 | N/A | 1 | N/A | N/A | 5 | N/A |
| | | PT | 5 | 5 | 4 | 1 | 1 | N/A | 5 | | | | |

2015 2010 _ .. _

 ¹² Students have been categorized as full-time or part-time based on their total number of credits attempted in their first semester of the program.
 ¹³ Full-time is defined as a student enrolled in twelve or more credits.
 ¹⁴ Part-time is defined as a student enrolled in fewer than twelve credits.

| Table D-2: MS-EOHS Personnel, Fall 2018 | | | | |
|--|------|------------|------|--|
| | HEAD | HEAD COUNT | | |
| | FT | РТ | I'IL | |
| Administrative | 0 | 0 | 0 | |
| Faculty (tenure-track) | 5 | 0 | 5 | |
| Other Faculty (excluding student Assistants) | 0 | 1 | .63 | |
| Student Teaching Assistants ¹⁶ | 0 | 3 | .89 | |
| Technicians/Specialists | 0 | 0 | 0 | |
| Office/Clerical Employees ¹⁷ | 1 | 0 | .5 | |
| Others ¹⁸ | 0 | 0 | 0 | |

¹⁵ One full-time faculty member = one FTE. Other faculty are assigned .25 FTE for each course taught, and .125 FTE for each course co-taught. ¹⁶ 1 FTE equals 15 hours per term, as defined by ABET.

¹⁷ A full-time academic program specialist is shared between the Environmental, Occupational, and Geospatial Department, and the Community Health and Social Sciences Department.

¹⁸ While not dedicated exclusively to the MS-EOHS program, over forty-five full-time staff support school functions and academic programs through areas including academic affairs, student affairs, career services, facilities, security, and information technology.

MS in Environmental & Occupational Health Sciences

CUNY SPH GRADUATE SCHOOL OF PUBLIC HEALTH & HEALTH POLICY



The Environmental & Occupational Health Sciences program is designed for individuals seeking careers as environmental and/ or occupational health professionals. While emphasizing the recognition, evaluation and control of environmental and occupational factors affecting health, the curriculum also includes consideration of economic, sociopolitical, and regulatory issues. In 2001 the program was accredited by the ABET (Accreditation Board for Engineering and Technology) in Industrial Hygiene. The program is a member of the NIOSH supported Education and Research Center for the New York and New Jersey area which offers fellowships to academically qualified individuals wishing to study industrial hygiene.

REQUIREMENTS

- Completed SOPHAS application
- Undergraduate degree from an accredited university with GPA (overall & major) of 3.0 preferred
- Personal statement of purpose (max 500 words)
- Background in the field: at least one year of experience is preferred but not required
- Resume
- Two letters of recommendation. For your application to be deemed complete, SOPHAS requires three evaluations.

- TOEFL scores are required if language of instruction for prior degrees was not English
- Transcript evaluation from WES or ECE for foreign transcripts
- GRE or MCAT scores
- Applicants who hold a post graduate degree from a U.S. accredited school or postgraduate degree in clinical or allied health that WES or ECE have deemed equivalent to its US counterpart may request a standardized test waiver, to be granted on a case-by-case basis

CURRICULUM

Core Coursework (6 CREDITS)

| PUBH 601 | Foundations of Public Health Knowledge |
|----------|--|
| PUBH 613 | Designs, Concepts, and Methods in |
| | Public Health Research |
| PUBH 614 | Quantitative and Qualitative Data Analysis |
| | Methods in Public Health Research |

Elective Coursework (9 CREDITS)

Three (3) electives chosen in consultation with faculty advisor

Required Coursework (21 CREDITS)

- EOHS 622 Environment and Occupational Toxicology
- EOHS 623 Principles of Industrial Hygiene
- **EOHS 626** Industrial Ventilation and Indoor Air Quality
- **EOHS 627** Noise and Radiation Hazards and Controls
- EOHS 633 Introduction to Environment and Occupational Health
- **EOHS 625** Hazard Evaluation and Instrumentation
- EOHS 643 Industrial Safety Management

Culminating Experience (3 CREDITS)

PUBH 698 Capstone Project

TOTAL CREDITS REQUIRED

39



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Graduation timelines accommodate the needs of busy adults. Students can attend on a parttime or full-time basis, and switch between the two as needed.

A student-faculty ratio of 6.8 – 1 gives our students more time with the mentors who will shape their careers.

CUNY SPH IN THE WORKFORCE

A DEGREE FOR SUCCESS

95% of our degree seeking graduates are either employed or furthering their education in the first year following graduation. And 85% of those employed are working in a field related to the degree they earned at CUNY SPH.

MAKE AN IMPACT

An MPH from CUNY SPH will lead you to more than just a job. Our alumni are actively engaged in social justice and social change work every day.



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PROMOTING HEALTH AND Social Justice in New York City and Across the globe Through Innovation And Leadership



MASTER OF PUBLIC HEALTH AND MASTER OF SCIENCE DEGREE PROGRAMS

- Community Health Education (MPH)
- Environmental and Occupational Health (MPH or MS)
- Epidemiology and Biostatistics (MPH)
- Health Policy and Management (MPH)
- Public Health Nutrition (MPH)

CERTIFICATE PROGRAMS

- Advanced Certificate in Public Health: 15 credits, transferable to our MPH degree program
- Advanced Certificate in Industrial Hygiene: 12 credits, transferable to our MS degree program
- Population Health Informatics
- Social Marketing for Health

A CUNY MPH/MS WILL EMPOWER YOU WITH THE TOOLS YOU NEED TO MAKE A DIFFERENCE

- Connect with leading scientists and policy makers in the field
- Understand the environmental, social, and economic factors that shape the health of populations
- Address health disparities and other global population health problems through multidisciplinary research and service
- Use GIS and big data to drive policy change
- CUNY SPH purchases membership in the American Public Health Association for all active students

"The MPH at CUNY SPH provided me with skills that built on my medical training, connected me with renowned experts in the field, and has led to the publication of my research, as well as to an NIH grant that will further my training in epidemiology and clinical and translational research."

- RODRIGO ARCE CARDOZO, MD, MPH

HEALTHY CITIES IN A HEALTHY WORLD

CUNY SPH faculty and students are engaged in research and programs in every borough of NYC, as well as across the globe in Europe, Asia, Africa, and South America.



"CUNY SPH trains the New Yorkers who go on to form the backbone of the city's public health workforce."



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Master of Science & Master of Public Health Degree Programs

- Community Health Education мрн
- Environmental and Occupational Health мрн / мs
- Epidemiology and Biostatistics мрн
- Health Policy and Management мрн
- Public Health Nutrition мрн

Certificate Programs

- Advanced Certificate in Public Health: 15 credits, transferable to our MPH degree program
- Population Health Informatics
- Social Marketing for Health

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CUNY | SPH graduate school of public health & health policy

School Catalog 2019-2020 Academic Year

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<u>Courses</u>

Welcome

Welcome to the CUNY Graduate School of Public Health and Health Policy (CUNY SPH) Catalog. This publication lists academic programs and requirements, course descriptions, student rights, and University policies, as well as links to admissions, tuition and fees, financial aid, academic policies and procedures, and student services.

Disclaimer

The City University of New York (CUNY) reserves the right, because of changing conditions, to make modifications of any nature in the academic programs and requirements of the University and its constituent colleges without advance notice. Tuition and fees set forth in this publication are similarly subject to change by the Board of Trustees of The City University of New York. The University regrets any inconvenience this may cause.

Every effort has been made to make the material presented herein timely and accurate. As changes occur, they will be communicated via traditional media and reflected on the School's website. Students are encouraged to check the website to determine the most up-to-date program and course information. Critical points of fact or interpretation should be considered subject to confirmation by the appropriate office or department of the School.

The School does not guarantee to offer all courses it announces. The announcement is made in good faith, but circumstances beyond the control of the School sometimes necessitate changes. The School may cancel courses if the enrollment does not warrant their being offered or if other contingencies make such a cancellation necessary.

The School

Mission and Vision

The School's *mission* is to provide a collaborative and accessible environment for excellence in education, research, and service in public health, to promote and sustain healthier populations in NYC and around the world, and to shape policy and practice in public health for all.

The *vision* is to promote health and social justice in NYC and across the globe through innovation and leadership. To realize its mission and vision, the School works with communities, nonprofit and private organizations, and the government at all levels to build the capacities that help people lead healthier and more productive lives.

History

The City University of New York, the largest and most diverse urban public university in the United States, began training public health professionals in 1968 at Hunter College. It was one of the first public institutions without a school of public health to meet the growing demand for professionals who could tackle the complex health problems facing the nation's increasingly diverse cities, and to translate the promise of the health and social reforms of the 1960s into public health practice and policy in urban neighborhoods. By 2006, the City University of New York offered MPH degree programs at three campuses: Hunter, Brooklyn, and Lehman Colleges. In 2007, the CUNY Graduate School, home to the University's thirty-four doctoral programs, introduced a Doctor of Public Health (DPH). Believing that New York City and CUNY would be better served by uniting these public health programs, the University developed a collaborative school of public health in 2008, integrating the resources of the previously independent programs under the leadership of a single Dean.

In 2011, the School received its first full five-year accreditation from CEPH. In 2013, the CUNY Board of Trustees adopted changes to the School's governance plan to better reflect the University-wide nature of the School and position it for continued and expanded collaborations, growth, and success including renaming the school to the CUNY School of Public Health.

In November 2015, the CUNY Board of Trustees approved a resolution directing the Chancellor of the University, James B. Milliken, to develop and implement a plan to transition the existing consortial School to a unified graduate school that would administer all master's and doctoral-level degree programs, continuing as a unit within the CUNY Graduate School and University Center. The name of the School was changed to the CUNY Graduate School of Public Health and Health Policy.

Accreditation

The CUNY Graduate School of Public Health and Health Policy is regionally accredited by the Middle States Commission on Higher Education through the Graduate School and University Center.

The School is granted professional accreditation by the <u>Council on Education for Public Health</u> (CEPH).

The MS-EOHS program is granted professional accreditation by the <u>Accreditation Board for</u> <u>Engineering Technology</u> (ABET).

Organization

The Graduate School of Public Health and Health Policy (SPH) is housed administratively within the CUNY Graduate School and University Center. SPH is led by the Dean who reports directly to the CUNY Chancellor.

Administration

The **Dean** has primary responsibility for oversight and management of the Graduate School of Public Health and Health Policy. Other major positions within the School include:

The **Dean's Public Health Advisory Council** provides insight and advice to the Dean with respect to the external public health community. It is comprised of experienced public health and other leaders representing government, health care, business, non-profit, legal, community-based, and media sectors and organizations. The Council advises the Dean on research, academic programs, workforce development, training, and development to help ensure that the School meets the needs of the community.

The **Associate and Assistant Deans** are each responsible for leading and coordinating activities in the areas of administration, academic and faculty affairs, research, and student services, respectively. Their activities are coordinated through senior staff meetings with the Dean.

The Department Chairpersons are responsible for leading the academic programs and leading faculty within their respective departments: Community Health and Social Sciences; Epidemiology and Biostatistics; Environmental, Occupational, and Geospatial Health Sciences; and Health Policy and Management.

The **Dean's Cabinet** consists of the Dean, the Associate and Assistant Deans, department chairpersons, the chair of the Faculty-Student Council and other persons designated by the Dean. The Cabinet meets monthly and advises the Dean with respect to the policies and operations of the School.

Programs and Degrees

The Graduate School of Public Health and Health Policy offers graduate degrees, as listed in the table below. All of the degrees listed below are conferred by the Graduate School and University Center, on behalf of the CUNY SPH.

| Instructional Matrix, CUNY SPH | | | |
|---|----------|---------|--|
| Concentration | Degree | Credits | |
| Public Health | Adv Cert | 15 | |
| Community Health | MPH | 42 | |
| Environmental and Occupational Health Sciences | MPH | 42 | |
| Epidemiology and Biostatistics (students select one track) | MPH | 42 | |
| Health Policy and Management | MPH | 42 | |

| Public Health Nutrition | MPH | 42 |
|--|-----|----|
| Environmental and Occupational Health Sciences | MS | 39 |
| Community Health and Health Policy | PhD | 39 |
| Environmental and Planetary Health Sciences | PhD | 42 |
| Epidemiology | PhD | 42 |
| Community, Society, and Health | DPH | 48 |
| Environmental and Occupational Health | DPH | 48 |
| Epidemiology | DPH | 48 |
| Health Policy and Management | DPH | 48 |

Advanced Certificate Requirements

Advanced Certificate in Public Health

| Required Coursework | PUBH 610 Public Health Leadership & Management |
|------------------------|---|
| | PUBH 611 Health Equity, Communication, and Advocacy |
| | PUBH 612 Designing and Evaluating Public Health Interventions |
| | PUBH 613 Designs, Concepts, and Methods in Public Health Research |
| | PUBH 614 Quantitative and Qualitative Data Analysis Methods in Public Health Research |
| Total Credits Required | 15 |

Advanced Certificate in Industrial Hygiene

| Required Coursework (6 | EOHS 622: Environmental and Occupational Toxicology | |
|------------------------|--|--|
| credits) | EOHS 623: Principles of Industrial Hygiene | |
| Electives (6 credits) | Students choose 2 of the following courses: EOHS 626: Industrial Ventilation and Indoor Air Quality EOHS 627: Noise and Radiation Hazards and Controls EOHS 643 Industrial Safety and Management EOHS 633: Introduction to Environmental and Occupational Health | |
| Total Credits Required | 12 | |

MPH Degree Requirements

Public health professionals work within multiple disciplines to improve population health and demonstrate proficiencies in technical, managerial, communications, and advocacy skills to promote health and prevent disease and death. MPH graduates work as managers, administrators, researchers, planners, educators, environmental and occupational health specialists, public health nutritionists, and community health workers in diverse locations including governments, health facilities, businesses, and community organizations locally, nationally, and internationally. To prepare students for these positions, all MPH students are required to complete core and required coursework, a supervised fieldwork experience that applies core public health coursework, and a culminating experience that demonstrates application and integration of knowledge and skills gained during coursework and fieldwork. Students enroll in one concentration area (students in the Epidemiology and Biostatistics concentration select the epidemiology track or biostatistics track). Upon graduation, students will have attained the core MPH competencies (as found below) and competencies of their selected concentration.

Core MPH Competencies

- Apply epidemiological methods to the breadth of settings and situations in public health practice
- Select quantitative and qualitative data collection methods appropriate for a given public health context
- Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate
- Interpret results of data analysis for public health research, policy or practice
- Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings
- Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels
- Assess population needs, assets and capacities that affect communities' health
- Apply awareness of cultural values and practices to the design or implementation of public health policies or programs
- Design a population-based policy, program, project or intervention
- Explain basic principles and tools of budget and resource management
- Select methods to evaluate public health programs
- Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence
- Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes
- Advocate for political, social or economic policies and programs that will improve health in diverse populations
- Evaluate policies for their impact on public health and health equity
- Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making
- Apply negotiation and mediation skills to address organizational or community challenges
- Select communication strategies for different audiences and sectors
- Communicate audience-appropriate public health content, both in writing and through oral presentation
- Describe the importance of cultural competence in communicating public health content
- Perform effectively on interprofessional teams
- Apply systems thinking tools to a public health issue

• Apply concepts from relevant scientific disciplines, such as toxicology and physiology, to anticipate effects of environmental, occupational and nutritional exposures on both human health and overall planetary health

| MPH - | Epidemiology | and | Biostatistics |
|-------|--------------|-----|---------------|
|-------|--------------|-----|---------------|

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|---|
| Core Coursework (15 credits) | PUBH 610 Public Health Leadership & Management |
| | PUBH 611 Health Equity, Communication, and Advocacy |
| | PUBH 612 Designing and Evaluating Public Health Interventions |
| | PUBH 613 Designs, Concepts, and Methods in Public Health Research |
| | PUBH 614 Quantitative and Qualitative Data Analysis Methods in Public Health Research |
| Required Coursework (15 credits) | BIOS 620 Applied Biostatistics I |
| | BIOS 621 Applied Biostatistics II |
| | EPID 620 Epidemiological Methods I |
| | EPID 621 Epidemiological Methods II |
| | EPID 622 Applied Research: Data Management and Analysis |
| Elective Coursework (9 credits) | Epidemiology students choose 3 of the following, 2 of which must be EPID courses. The selection is dependent in part on course availability (generally 1-2 electives are offered per semester): EPID 623 – Clinical Trials and Experimental Design EPID 624 – Social Epidemiology EPID 625 – Epidemiology of Chronic Diseases EPID 626 – Epidemiology of Infectious Diseases EPID 626 – Epidemiology of Infectious Diseases EPID 627 – Reproductive and Perinatal Epidemiology EPID 629 – Environmental and Occupational Epidemiology EPID 642 – Psychiatric and Mental Health Epidemiology EPID 643 – Public Health Surveillance EPID 695 – Special topics in Epidemiology methods FNPH 624 – Nutritional Epidemiology EOHS 630 – Principles of GISc EOHS 645 – Demography and Population Geography with GISc BIOS 623 – Analysis of Longitudinal Data |
| | Biostatistics students choose 3 of the following, 2 of which must be BIOS courses. The selection is dependent in part on course availability (generally 1-2 electives are offered per semester): BIOS 622 – Analysis of Categorical Data BIOS 623 – Analysis of Longitudinal Data BIOS 624 – Design and Analysis of Complex Surveys BIOS 625 – Survival Analysis BIOS 626 – Data Analysis BIOS 627 – Analysis of Variance EPID 623 – Clinical Trials and Experimental Design |
| Practice Experience (1 credit) | Epidemiology students take EPID 696: Supervised Fieldwork Biostatistics students take BIOS 696: Supervised Fieldwork |

| Culminating Experience (2 credits) | Epidemiology students take EPID 698: Capstone Project Biostatistics students take BIOS 698: Capstone Project |
|------------------------------------|---|
| Total Credits Required for MPH | 42 |

MPH - Environmental and Occupational Health Sciences

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|---|
| Core Coursework (15 credits) | PUBH 610 Public Health Leadership & Management |
| | PUBH 611 Health Equity, Communication, and Advocacy |
| | PUBH 612 Designing and Evaluating Public Health Interventions |
| | PUBH 613 Designs, Concepts, and Methods in Public Health Research |
| | PUBH 614 Quantitative and Qualitative Data Analysis Methods in Public Health Research |
| Required Coursework (15 credits) | EOHS 633 Introduction to Environmental and Occupational Health |
| | EOHS 630 Principles of GISc |
| | EOHS 634 Exposure and Risk Assessment |
| | EOHS 621 Environmental Chemistry |
| | EOHS 622 Environment and Occupational Toxicology |
| Elective Coursework (6 credits) | Two (2) electives chosen in consultation with academic advisor |
| Practice Experience (3 credits) | PUBH 696 Supervised Fieldwork |
| Culminating Experience (3 credits) | PUBH 698 Capstone Project |
| Total Credits Required for MPH | 42 |

MPH - Health Policy and Management

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|---|
| Core Coursework (15 credits) | PUBH 610 Public Health Leadership & Management |
| | PUBH 611 Health Equity, Communication, and Advocacy |
| | PUBH 612 Designing and Evaluating Public Health Interventions |
| | PUBH 613 Designs, Concepts, and Methods in Public Health Research |
| | PUBH 614 Quantitative and Qualitative Data Analysis Methods in Public Health Research |
| Required Coursework (15 credits) | HPAM 620 Public Health Management |

| | HPAM 622 Public Health and Health Care Law |
|------------------------------------|--|
| | HPAM 623 Comparative Analysis of Urban Health Care Systems or HPAM 624 Public Health Advocacy |
| | HPAM 625 Public Health Policy Analysis |
| | HPAM 621 Health Economics |
| Elective Coursework (6 credits) | Two (2) electives chosen in consultation with academic advisor |
| Practice Experience (3 credits) | PUBH 696 Supervised Fieldwork |
| Culminating Experience (3 credits) | PUBH 698 Capstone Project |
| Total Credits Required for MPH | 42 |

MPH - Public Health Nutrition

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|--|
| Core Coursework (15 credits) | PUBH 610 Public Health Leadership & Management |
| | PUBH 611 Health Equity, Communication, and Advocacy |
| | PUBH 612 Designing and Evaluating Public Health Interventions |
| | PUBH 613 Designs, Concepts, and Methods in Public Health Research |
| | PUBH 614 Quantitative and Qualitative Data Analysis Methods in Public Health Research |
| Required Coursework (15 credits) | FNPH 620 Community Nutrition Education |
| | FNPH 622 Food and Nutrition Through the Lifecycle |
| | FNPH 820 Food Policy |
| | FNPH 623 Nutrient Metabolism and Applications in Public Health |
| | FNPH 624 Nutritional Epidemiology |
| Elective Coursework (6 credits) | Two (2) electives chosen in consultation with academic advisor |
| Practice Experience (3 credits) | PUBH 696 Supervised Fieldwork |
| Culminating Experience (3 credits) | PUBH 698 Capstone Project |
| Total Credits Required for MPH | 42 |

MPH - Community Health

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|---|
| Core Coursework (15 credits) | PUBH 610 Public Health Leadership & Management |
| | PUBH 611 Health Equity, Communication, and Advocacy |

| | PUBH 612 Designing and Evaluating Public Health Interventions |
|--------------------------------------|---|
| | PUBH 613 Designs, Concepts, and Methods in Public Health Research |
| | PUBH 614 Quantitative and Qualitative Data Analysis Methods in Public Health Research |
| Required Coursework (15 credits) | CHSS 622 Community Organizing and Development for Health |
| | CHSS 623 Research and Evaluation for Community Health |
| | CHSS 624 Health Program Planning & Funding |
| | CHSS 625 Advanced Seminar on Intersectoral Partnerships |
| Elective Coursework (12 credits) | Four (4) electives chosen in consultation with academic advisor |
| Practice Experience (1.5 credits) | CHSS 696 Community Health Practice Collaborative I |
| Culminating Experience (1.5 credits) | CHSS 698 Community Health Practice Collaborative II |
| Total Credits Required for MPH | 42 |

MS Degree Requirements

The MS degree in Environmental and Occupational Health Sciences prepares students to assess and measure exposures to environmental and occupational hazards and to develop control strategies to remediate these exposures. It offers courses that develop the scientific framework and technical skills needed to achieve these objectives. Graduates work as inspectors, health and safety specialists and industrial hygienists for government agencies, institutions, consulting firms and businesses. Upon graduation, students will have attained the concentration competencies found below.

MS-EOHS Competencies

Core Competencies:

- Apply epidemiological methods to the breadth of settings and situations in public health practice
- Apply concepts from relevant scientific disciplines, such as toxicology and physiology, to anticipate effects of environmental, occupational and nutritional exposures on both human health and overall planetary health
- Select quantitative and qualitative data collection methods appropriate for a given public health context
- Apply systems thinking tools to a public health issue
- Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate
- Interpret results of data analysis for public health research, policy or practice

Concentration Competencies:

- Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or processes
- Describe qualitative and quantitative aspects of generation of agents, factors, and stressors

- Understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors with the human body
- Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry
- Calculate, interpret, and apply statistical and epidemiological data
- Recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards
- Demonstrate an understanding of applicable business and managerial practices
- Interpret and apply applicable occupational and environmental regulations
- Understand fundamental aspects of safety and environmental health
- Attain recognized professional certification

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|---|
| Core Coursework (6 credits) | PUBH 613 Designs, Concepts, and Methods in Public Health Research |
| | PUBH 614 Quantitative and Qualitative Data Analysis Methods in Public Health Research |
| Required Coursework (21 credits) | EOHS 622 Environment and Occupational Toxicology |
| | EOHS 623 Principles of Industrial Hygiene |
| | EOHS 626 Industrial Ventilation and Indoor Air Quality |
| | EOHS 627 Noise and Radiation Hazards and Controls |
| | EOHS 633 Introduction to Environmental and Occupational Health |
| | EOHS 625 Hazard Evaluation and Instrumentation |
| | EOHS 643 Industrial Safety and Management |
| Elective Coursework (9 credits) | Three (3) electives chosen in consultation with academic advisor |
| Culminating Experience (3 credits) | PUBH 698 Capstone Project |
| Total Credits Required | 39 |

MS - Environmental and Occupational Health Sciences

PhD Degree Requirements

The PhD in Public Health will provide candidates with the skills and knowledge to identify public health needs and develop solutions in New York City and around the world. The program will prepare candidates as researchers, academics, and practitioners. Graduates will complete public health core coursework, rigorous training in their concentration area, a dissertation, and a teaching experience. Students focus their studies in one of three concentrations: Community Health and Health Policy (CHHP), Environmental and Planetary Health Sciences (EPHS), or Epidemiology (EPID). The educational and career objectives of the program are:

1. To provide candidates with the skills and knowledge to identify public health needs and

develop solutions.

- 2. To prepare candidates as researchers, academics, and practitioners.
- 3. To address labor demand in the public health workforce.

Core PhD Competencies

- Critically analyze research for appropriateness of study design, sample, measures, data analysis, results, interpretation and dissemination.
- Design a feasible study and apply appropriate research methods to answer public health research questions.
- Develop professional skills in scientific writing, oral communication, and teaching.
- Uphold the highest ethical standards in planning, conducting, and analyzing research, including the involvement of human subjects.
- Apply historical and emerging scientific theories and paradigms to develop research aims and methods.

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|--|
| Core Courses (12 credits) | PUBH 801 Epidemiological Methods I |
| | PUBH 802 Applied Biostatistics I |
| | PUBH 803 Public Health Perspectives on Science |
| | PUBH 804 Qualitative Research Methods with Applications to Urban Health |
| Concentration Courses (27 credits) | CHSS 820 Social and Behavioral Dimensions of Health: Theory and Methods |
| | CHSS 821 Advanced Community Health Interventions |
| | CHSS 810 Cities and Health |
| | HPAM 820 Seminar in Health Policy |
| | HPAM 822 Public Health Economics |
| | Four courses, one of which must emphasis research methods, chosen in consultation with advisor |
| Teaching Experience (0 credits) | Teaching experience to be determined in consultation with advisor |
| Examinations | First Exam and Second Exam |
| Culminating Experience (0 credits) | PUBH 900 Dissertation Supervision |
| Total Required Credits | 39 |

PhD - Community Health and Health Policy

PhD - Environmental and Planetary Health Sciences

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|---|
| Core Courses (12 credits) | PUBH 801 Epidemiological Methods I |

| | PUBH 802 Applied Biostatistics I |
|------------------------------------|--|
| | PUBH 803 Public Health Perspectives on Science |
| | PUBH 804 Qualitative Research Methods with Applications to Urban Health |
| Concentration Courses (30 credits) | EOHS 822 Biology and Pathophysiological Applications in Public Health |
| | EOHS 823 Systems Science in Planetary Health |
| | EPID 821 Epidemiological Methods II |
| | Two selectives chosen from the list below: EOHS 824 Advanced Exposure Assessment and Policy Applications EOHS 821 Environmental and Occupational Health Risk and Hazard Assessment FNPH 821 Nutrient Metabolism and Applications in Public Health FNPH 820 Food Policy |
| | Five electives, chosen in consultation with advisor |
| Teaching Experience (0 credits) | Teaching experience to be determined in consultation with advisor |
| Examinations | First Exam and Second Exam |
| Culminating Experience (0 credits) | PUBH 900 Dissertation Supervision |
| Total Required Credits | 42 |

PhD - Environmental and Planetary Health Sciences

| Foundational Knowledge (0 credits) | PUBH 601 Foundations of Public Health Knowledge |
|------------------------------------|---|
| Core Courses (6 credits) | PUBH 803 Public Health Perspectives on Science |
| | PUBH 804 Qualitative Research Methods with Applications to Urban Health |
| Concentration Courses (36 credits) | EPID 821 Epidemiological Methods II |
| | EPID 822 Epidemiological Methods III |
| | EPID 823 Epidemiological Methods IV |
| | EPID 824 Epidemiological Methods V |
| | EPID 825 Experimental Design |
| | BIOS 821 Applied Biostatistics II |
| | BIOS 822 Applied Biostatistics III |
| | BIOS 823 Applied Biostatistics IV |
| | Four electives, chosen in consultation with advisor |
| Teaching Experience (0 credits) | Teaching experience to be determined in consultation with advisor |

| Examinations | Methods Exam |
|------------------------------------|-----------------------------------|
| Culminating Experience (0 credits) | PUBH 900 Dissertation Supervision |
| Total Required Credits | 42 |

DPH Degree Requirements

The DPH is an advanced graduate degree in public health for students interested in becoming public health researchers, teachers, practitioners, and managers in New York City and around the world. The mission of the CUNY DPH program is to contribute new knowledge to understanding the multi-level determinants of population health and to assist communities, governments, and organizations to conduct research and interventions that promote health and prevent disease in populations. Upon graduation, students will have attained the core DPH competencies (as found below) and competencies of their selected concentration.

Core DPH Competencies

- Identify, develop, evaluate and recommend policy and programmatic interventions to improve population health at individual, community, government and country levels based on empirical evidence of social, political, cultural, biological, economic, historical, behavioral, environmental, and global factors in health and disease.
- Assess the mechanisms and pathways by which factors influence individual and population health.
- Design and conduct etiological, intervention, policy, implementation science and other empirical studies that contribute to new knowledge about population health
- Synthesize and apply methods, theories and data from multiple disciplines to understand and solve population health issues.
- Generate, translate, communicate, and disseminate population health evidence to diverse audiences
- Demonstrate leadership skills to facilitate the goals of population health research and practice.
- Design and deliver innovative educational experiences that promote learning about population health in academic and practice-based settings
- Implement professional and organizational ethical guidelines in population health research and practice.
- Secure resources to conduct population health research and practice

| Core Courses (18 credits) | PUBH 810 Cities, Society, and Health |
|---------------------------|--|
| | PUBH 812 Interdisciplinary Approaches to Urban Health Research |
| | PUBH 811 Quantitative Research Methods with Applications to Urban Health |
| | PUBH 813 Qualitative Research Methods with Application to Urban Health |
| | PUBH 814 Leadership & Organizational Change Seminar |
| | EPID 820 Epidemiologic Methods I |

DPH - Community, Society, and Health

| Concentration Courses (21 credits) | CHSS 821 Advanced Community Health Interventions |
|------------------------------------|---|
| | CHSS 820 Social & Behavioral Dimensions of Health: Theory and Methods |
| | CHSS 822 Evaluation of Public Health Programs and Policies |
| | Four (4) advanced research methods or track-specific practice courses, of which one must be from a Graduate Center department outside of Public Health (DPH courses that are cross-listed with another program can count toward this requirement). |
| Practice Experience (3 credits) | PUBH 896 Practicum Project |
| Examinations | Students in all cohorts and all tracks take two examinations to test their mastery of the curriculum. Students must apply in advance to take each exam and students must be in good academic standing to apply. The First Exam is given after students have completed core coursework. Students work on the Second Exam after all required coursework has been completed except PUBH 816 and the dissertation (PUBH 900 & PUBH 898). Students cannot take PUBH 816 or begin their dissertation research until they have passed this exam. |
| Seminars (6 credits) | PUBH 815 Advanced Research Seminar I |
| | PUBH 816 Advanced Research Seminar II |
| | PUBH 898 Dissertation Seminar |
| Culminating Experience (0 credits) | PUBH 900 Dissertation Supervision |
| Total Required Credits | 48 |

DPH - Epidemiology

| Core Courses (18 credits) | PUBH 810 Cities, Society, and Health |
|------------------------------------|---|
| | PUBH 812 Interdisciplinary Approaches to Urban Health Research |
| | BIOS 820 Applied Biostatistics I |
| | PUBH 813 Qualitative Research Methods with Application to Urban Health |
| | PUBH 814 Leadership & Organizational Change Seminar |
| | EPID 820 Epidemiologic Methods I |
| Concentration Courses (21 credits) | EPID 821 Epidemiologic Methods II |
| | EPID 822 Epidemiologic Methods III |
| | EPID 823 Epidemiologic Methods IV |
| | BIOS 821 Applied Biostatistics II |
| | Three (3) advanced research methods or track-specific practice courses, one of which must be from a Graduate Center program |

| | outside of Public Health (DPH courses that are cross-listed with another program can count toward this requirement). |
|------------------------------------|---|
| Practice Experience (3 credits) | PUBH 896 Practicum Project |
| Examinations | Students in all cohorts and all tracks take two examinations to test their mastery of the curriculum. Students must apply in advance to take each exam and students must be in good academic standing to apply. The First Exam is given after students have completed core coursework. Students work on the Second Exam after all required coursework has been completed except PUBH 816 and the dissertation (PUBH 900 & PUBH 898). Students cannot take PUBH 816 or begin their dissertation research until they have passed this exam. |
| Seminars (6 credits) | PUBH 815 Advanced Research Seminar I |
| | PUBH 816 Advanced Research Seminar II |
| | PUBH 898 Dissertation Seminar |
| Culminating Experience (0 credits) | PUBH 900 Dissertation Supervision |
| Total Required Credits | 48 |

DPH - Environmental and Occupational Health

| Core Courses (18 credits) | PUBH 810 Cities, Society, and Health |
|------------------------------------|--|
| | PUBH 812 Interdisciplinary Approaches to Urban Health Research |
| | PUBH 811 Quantitative Research Methods with Applications to Urban Health |
| | PUBH 813 Qualitative Research Methods with Application to Urban Health |
| | PUBH 814 Leadership & Organizational Change Seminar |
| | EPID 820 Epidemiologic Methods I |
| Concentration Courses (21 credits) | EOHS 820 Emerging Issues in Environmental and Occupational Health |
| | EOHS 821 Environmental and Occupational Health Risk Assessment, Management and Communication in Urban Settings |
| | One (1) urban environment course |
| | Four (4) advanced research methods or track-specific practice courses, one of which must be from a Graduate Center program outside of Public Health (DPH courses that are cross-listed with another program can count toward this requirement) |
| Practice Experience (3 credits) | PUBH 896 Practicum Project |
| Examinations | Students in all cohorts and all tracks take two examinations to test their mastery of the curriculum. Students must apply in advance to take each exam and students must be in good academic standing to |

| | apply. The First Exam is given after students have completed core coursework. Students work on the Second Exam after all required coursework has been completed except PUBH 816 and the dissertation (PUBH 900 & PUBH 898). Students cannot take PUBH 816 or begin their dissertation research until they have passed this exam. |
|------------------------------------|---|
| Seminars (6 credits) | PUBH 815 Advanced Research Seminar I |
| | PUBH 816 Advanced Research Seminar II |
| | PUBH 898 Dissertation Seminar |
| Culminating Experience (0 credits) | PUBH 900 Dissertation Supervision |
| Total Required Credits | 48 |

DPH - Health Policy and Management

| Core Courses (18 credits) | PUBH 810 Cities, Society, and Health |
|------------------------------------|---|
| | PUBH 812 Interdisciplinary Approaches to Urban Health Research |
| | PUBH 811 Quantitative Research Methods with Applications to Urban Health |
| | PUBH 813 Qualitative Research Methods with Application to Urban Health |
| | PUBH 814 Leadership & Organizational Change Seminar |
| | EPID 820 Epidemiologic Methods I |
| Concentration Courses (21 credits) | HPAM 820 Seminar in Health Policy and Management |
| | HPAM 821 Quantitative Methods in Health Services Research |
| | HPAM 822 Public Health Economics |
| | HPAM 823 Health Policy Analysis Methods |
| | Three (3) advanced research methods or track-specific practice courses, one of which must be from a Graduate Center program outside of Public Health (DPH courses that are cross-listed with another program can count toward this requirement) |
| Practice Experience (3 credits) | PUBH 896 Practicum Project |
| Examinations | Students in all cohorts and all tracks take two examinations to test their mastery of the curriculum. Students must apply in advance to take each exam and students must be in good academic standing to apply. The First Exam is given after students have completed core coursework. Students work on the Second Exam after all required coursework has been completed except PUBH 816 and the dissertation (PUBH 900 & PUBH 898). Students cannot take PUBH 816 or begin their dissertation research until they have passed this exam. |

| Seminars (6 credits) | PUBH 815 Advanced Research Seminar I |
|------------------------------------|---------------------------------------|
| | PUBH 816 Advanced Research Seminar II |
| | PUBH 898 Dissertation Seminar |
| Culminating Experience (0 credits) | PUBH 900 Dissertation Supervision |
| Total Required Credits | 48 |

Specializations An optional specialization is available in Maternal, Child, Reproductive, and Sexual Health. Requirements for this specialization can be found on the <u>CUNY SPH website</u>. They do not replace any concentration requirements.

Academic Resources

Academic Calendar

The <u>CUNY academic calendar</u> provides a unified view of university dates. The academic calendar alters some course meeting dates to account for holidays. As an example, turning a Tuesday into Friday, to make up for classes missed as a result of a Friday holiday. If an unexpected schedule change occurs, or if students cannot attend the rescheduled meeting date due to another holiday conflict, then instructors will make up the lost class time, either through on-line instruction, by rescheduling the class or through alternative instruction and assignments. Faculty are required to document how they make up the time.

Academic Policies

Registration

Registration instructions are e-mailed to students accepted into or continuing in the graduate programs at CUNY SPH. All registration is subject to space availability. For courses that require permission, students must obtain approval prior to registration. Questions regarding course requirements and preor co-requisites should be directed to the academic advisor.

Maximum Enrollment

The maximum enrollment during the Fall and Spring semesters is 16 credits each, 4 credits during the Winter term, and 10 credits during the Summer term. Exceptions to the maximum term enrollment must be approved by the School. (See <u>Credit Overload Request</u>.)

Definition of a Credit Hour

In compliance with policy set by the <u>New York State Education Department</u>, one semester hour per week during a 15-week semester (fall and spring) is equivalent to one credit. At least 15 hours of instruction (50 minutes = 1 hour) and at least 30 hours of supplementary assignments are required for each credit earned. The semester hour may include traditional in-person contact time, as well as laboratory sessions, tutorials, supervised fieldwork, individual meetings, electronic communication and field trips. The 15 hours of instruction time can be replaced through other activities equivalent in length that meet the learning outcomes, such as is the case in hybrid and online courses. These activities often include reviewing instructional materials, completing worksheets, discussions and group work (with instructor feedback and participation). Summer and winter courses are subject to the same requirements as those offered during the fall and spring semesters, with respect to the total number of classroom hours and expected learning outcomes.

Definition of Full Time Students

Masters level students are defined as full time if they are enrolled in 12 credits during a regular semester. Doctoral students are defined as full time if they are enrolled in 7 credits during a regular semester.

Levels for Doctoral Students

PhD Levels

Please note that the term "doctoral level" is interchangeable with the term "professional level." PhD students begin the program as Level I. Students will advance to Level II once they have successfully completed 15 credits of their degree. Students will advance to Level III once they have successfully completed all coursework except PUBH 900: Dissertation Supervision.

DPH Levels

Please note that the term "doctoral level" is interchangeable with the term "professional level." DPH students begin the program as Level I. Students will advance to Level II once they have successfully defended their second exam. They will remain in Level II generally for one semester, during which they will register for PUBH 816 Advanced Research Seminar II (3 credits). Students that need to maintain full time (7 credit) status for financial aid, student visa, or fellowship reasons are advised to register for a four credit independent study with their dissertation chair. Upon successful completion of Research Seminar II, students will be advanced to Level III.

Maintaining Matriculation

A matriculated graduate student who is not registered for any courses but is completing other degree requirements for graduation must be registered to maintain matriculation. The fee cannot be waived or refunded. Maintenance of matriculation is not proof of attendance. (See <u>Maintenance of Matriculation</u> <u>Request</u>.)

Student Leave of Absence

A matriculated graduate student in good academic standing is eligible to apply for a leave of absence (LOA). If a student is not in good academic standing or has not completed a semester at CUNY SPH, the student's application will not be considered until grades are posted for the last semester in attendance so that student's academic eligibility can be verified. (See <u>Leave of Absence Request</u>.)

Specific procedures and forms to follow for Leaves of Absence include:

- 1. LOA may be approved for a maximum of 4 semesters (2 academic years).
- Student must have completed (or complete before commencing the leave) at least one semester in the CUNY SPH and must complete the semester immediately before requesting such leave.
- 3. If the student wishes to begin the leave during the course of the semester, the student must drop all classes, in accordance with the Registrar's schedule.
- 4. Any changes to the length of the LOA should be submitted for review and approval.

The academic LOA is intended to accommodate students' plans and needs to ensure easy return to school. Students are guaranteed a place in their current program, without reapplication, provided all deadlines and rules are observed.

If a student plans to take a course while on academic leave at an institution outside the CUNY system, the course must be evaluated for transferability prior to taking the leave.

Any international student with F-1 (student) or J-1 (exchange visitor) status should consult the Office of Student Services before applying for a leave. Any student subject to induction or recall into military service should consult the veteran's certifying officer before applying for an official leave.

Unapproved Leaves

Students failing to register for a regular semester will be dropped automatically from the active student file. If they wish to return, they must apply for readmission. In all cases of nonattendance, students must still observe the time limitations for degree completion. (See <u>Re-Admission Request</u>.)

Limit on Non Degree Student Credits

Non-Degree students may complete a maximum of 12 credits at the Master's level only. Admission is not guaranteed and registration approval is based on space availability. Those interested in taking more than 12 credits must apply for matriculation. Non-degree students are responsible for informing their academic advisor that they wish to re-register for any subsequent semester.

Auditing Courses

Courses may be audited with instructor's permission and based on availability. Students must formally register to audit courses in the same manner as for any other course after receiving permission. The grade notation 'AUD,' which carries no earned credit, cannot be changed to any other credit-bearing grade. Audited courses will be included in the calculation of total credits to determine full- or part-time status. Audited courses cannot be used towards financial aid eligibility and therefore will not count toward financial aid load.

Transfer of Credit and Course Residency

Transfer credits taken prior to admission to the CUNY graduate public health program may be applied toward the degree, provided the courses were completed with a grade of B or higher within five years preceding the time of application and are equivalent to comparable courses at the CUNY SPH. Students are required to take at least 70% of all credits required for the degree in residence at CUNY SPH. Graduate courses completed as part of one graduate degree may not be used for credit toward another graduate degree. (See <u>Transfer Credit Request</u> and <u>Course Waiver or Substitution Request</u>.)

Students Matriculated at CUNY SPH Taking Courses at Other Institutions

CUNY SPH matriculated students in good standing (GPA 3.0) have the option of taking courses at other CUNY colleges on a 'ePermit' basis and receiving credit and the grade earned toward their CUNY SPH degree. Students who would like to enroll in courses at a non-CUNY college should inquire with their academic advisor. The student registers at a non-CUNY college as a nonmatriculated student and at the end of the semester requests that a transcript be sent to the School Registrar.

Students Matriculated Outside CUNY SPH Wanting to Register for CUNY SPH Courses Students matriculated in a graduate program at any other CUNY branch who want to register for a course at CUNY SPH are required to use the ePermit system. Students must complete the ePermit process for approval in CUNYfirst. Information regarding their epermit request will be e-mailed to their official university e-mail address. Tuition payment for courses is made at the student's home school. (See <u>E-Permit Request</u>.)

Awarding of Degrees

Degrees are awarded three times per academic year to candidates that are in good academic standing and that have satisfied all academic degree requirements. Students must maintain active status for the semester in which a student will apply to graduate. Students can do this by taking a course at CUNY SPH (or another CUNY college through e-permit) or paying the maintenance of matriculation fee. The academic transcript is permanent upon graduation.

Time Limits for Degree Completion

Master's Degree: All requirements for the degree must be completed within 5 matriculated years. Doctoral Degree: All requirements for the degree must be completed within 8 matriculated years. (See <u>Time Extension Request</u>.)

| Grading System | | |
|----------------|-------------------|---|
| Grade | Quality Points | Explanation |
| A+ | 4 | 97.5% - 100% |
| А | 4 | 92.5% - 97.4% |
| A- | 3.7 | 90.0% - 92.4% |
| B+ | 3.3 | 87.5% - 89.9% |
| В | 3 | 82.5% - 87.4% |
| B- | 2.7 | 80.0% - 82.4% |
| C+ | 2.3 | 77.5% - 79.9% |
| С | 2 | 70.0% - 77.4% |
| F | 0 | <70% |
| Р | - | Pass |
| S | - | Satisfactory |
| U | 0 | Unsatisfactory |
| CR | - | Credit Earned |
| W | - | Withdrew (student attended at least one class session) |
| WA | - | Administrative Withdrawal non-punitive grade assigned to students who had registered for classes at the beginning of the term but did not provide proof of immunization by compliance date (student attended at least one class session) |
| WD | - | Withdrew Drop (dropped after FA cert date during the program adjustment period. Student attended at least one class session) |
| WF | 0 | Withdrew Failing (student attended at least one class session) |
| WN | - | Never Attended |
| WU | 0 | Withdrew Unofficially (student attended at least one class session) |
| NC | - | No Credit Granted (restricted to regular and compensatory courses. This grade can also be used by colleges for other administrative actions such as disciplinary dismissals.) |
|-----|---|---|
| INC | - | Incomplete |
| FIN | 0 | F from Incomplete (to be used when the INC grade lapses to an F grade) |
| PEN | - | Grade Pending |
| NRP | - | No Record of Progress (exclusive to Dissertation Supervision) |
| SP | - | Satisfactory Progress – restricted to thesis and research courses requiring more than one semester for completion. |
| AUD | - | Auditor |

Incomplete Grades

Instructors may assign the grade INC, meaning that course work (examinations, assignments, classwork, lab work) was not completed. For an INC grade to be changed to a letter grade, all required coursework must be completed no later than one calendar year after the INC grade has been assigned. If not changed to a letter grade, the INC grade will automatically become permanent (FIN) and be treated the same as an 'F' for GPA calculation. Penalties for late submission of coursework that were previously established for the course will remain in effect. Instructors must submit an Incomplete Agreement Proposal for students receiving this grade.

Repeat Courses

Graduate and doctoral students shall not be permitted to repeat courses in which they have previously received a grade of B or better. Courses in which a grade of B- or lower is earned may be repeated only with permission by the Registrar. The maximum number of courses that can be repeated is two. Credit will be granted once, but both course grades will be included in the GPA calculation.

Withdrawal from Courses

If for any reason a student can no longer attend the course, the student must officially withdraw from the course online before the term deadline date recorded in the Academic Calendar. After the program adjustment period, a grade of W is posted to the academic record for withdrawn courses. There is no refund of tuition. W grades are not calculated in a student's GPA; however, W grades may adversely influence a student's ability to receive financial aid or impede progress toward degree completion. Failure to follow this procedure will result in a grade of 'WU' which is equivalent to a failing grade of 'F.' All official withdrawals after the official withdrawal period (3rd – 10th week of classes) must have the approval of the School. Documentation supporting the reason for withdrawing after the official withdrawal date must be provided. Consult with an academic advisor about the necessary documentation.

Academic Standing

Students must remain in good academic standing to continue in the program. Graduate students must maintain a minimum cumulative GPA of 3.0 to remain in good academic standing. In addition, students may not accumulate more than two open grades (e.g., 'INC').

Academic Probation and Disbarment

Students not in good academic standing will be placed on academic probation for at least one semester. Students are placed on probation at the end of each fall and spring semester. The student will be dismissed from further study and the program upon two consecutive semesters on academic probation. Non-degree students whose cumulative GPA falls below 3.0 will not be approved for further study.

Academic Integrity

Academic dishonesty is prohibited. The <u>CUNY Policy on Academic Integrity</u> defines academic dishonesty to include cheating, plagiarism, obtaining unfair advantage, and falsifying records and documents. Penalties for academic dishonesty include academic sanctions, such as failing or otherwise reduced grades, and/or disciplinary sanctions, including suspension or expulsion. The <u>CUNY Policy on Academic Integrity</u> requires that all faculty members report incidents of academic dishonesty. The school follows the procedures outlined in the <u>CUNY Academic Integrity Policy</u>. The Academic Integrity Officer for the school shall be defined as the Chief Academic Officer (CAO). See the Office of Academic Affairs for more information.

Academic Appeals

All academic appeals, including appeals of course grades, academic probation and program dismissal, shall be reviewed by the Student Academic Appeals Committee. The Committee is composed of one faculty member from each department in the School. The procedure for academic appeals include the following steps:

1. In the case of course-related appeals, student must first communicate with the instructor of record to attempt to resolve the matter. Appeals of final grades must be communicated to the instructor within three weeks of the grade posting.

2. Student files a formal written appeal with <u>Academic Affairs</u>. Appeals of final grades must be filed within five weeks of the grade posting.

3. The Student Academic Appeals Committee will review the written appeal and supporting evidence. Appeals of final grades will be reviewed for prejudice, caprice, or other improper conditions such as mechanical error, or assignment of a grade inconsistent with the published grading method. Upon review, the Committee shall reach a final decision (by majority vote), and the student will be notified of the outcome.

Email Communication

Students should note that the School sends official email only to students' official university email addresses.

Advising

Students have access to <u>academic advising</u> through staff and their assigned faculty advisor. New students will be assigned their faculty advisor during the first two weeks of their first semester. Staff advisors assist students with degree requirements, registration, forms, policies, and procedures. Faculty members from the student's department offer professional guidance, assistance with selecting electives, as well as fieldwork and capstone preparation.

Student Services and Student Life

Admission

The Office of Admissions helps prospective students as they navigate the CUNY SPH application and admissions processes. Admissions staff can be contacted at: <u>admissions@sph.cuny.edu</u>.

The admissions policies of the CUNY SPH are based on the CUNY mission of access and excellence. The School seeks students that reflect the diversity of New York City and can meet the needs of the local, national, and international public health workforce. All prospective students are encouraged to attend an information session or book an appointment with an admissions counselor. Appointments can be in person, Skype, email, phone call.

For specific admission requirements, please see the <u>CUNY SPH website.</u>

Office of the Registrar

The Office of the Registrar is responsible for and provides the following essential services:

- Registration and Administrative Advising
- Academic Records and Transcripts
- FERPA Compliance
- Change of Name/Address
- Posting of Grades and Awarding Degrees/Diplomas
- International Students (Designated School Official)
- Veterans (Certifying Official)
- Designee for Disability Services

The Registrar's Office can be contacted at: Registrar@sph.cuny.edu.

Students should enroll in classes in CUNYfirst after receiving orientation and advisement. Consult the <u>CUNYfirst training website</u> to learn how to enroll using CUNYfirst. Students are not permitted to register before their assigned date and time. After enrolling in courses, view class schedule to verify that the enrollment is correct.

Academic Records and Transcripts

Academic enrollment records are maintained by the Office of the Registrar. Students can review their records at any time by logging into CUNYfirst. For help with technical issues with using CUNYfirst, visit the <u>training website</u>.

To request an official transcript during the course of study, the student may submit a <u>Transcript</u> <u>Request Form</u>. There is a \$7 charge (please enclose a check) for a transcript to be sent to an institution outside of the CUNY system. There is no charge for sending a transcript to any CUNY institution.

Students who have financial holds on their record are not permitted to complete registration or obtain a copy of their transcript, academic record, and/or degree.

The academic transcript is permanent upon graduation.

FERPA Compliance

The Family Educational Rights and Privacy Act (FERPA) is a Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. It is also known as the Buckley Amendment.

CUNY SPH is in full compliance with FERPA and the implementation of its regulations. More information can be found under <u>University Policies</u> and on the <u>U.S. Department of Education website</u>.

Per FERPA regulations, CUNY SPH does not release student information (name, attendance dates, address, telephone, e-mail address, fields of study, and degrees received), except to those documenting a legitimate interest. By filing a request with the Office of the Registrar, a student may ask that such information not be released without the individual student's written consent. (See <u>Directory</u> <u>Information Non-Disclosure Form and FERPA Consent to Release Educational Records Form</u>.)

Change of Name, Address, or ID

<u>A request to change your name, address, or ID</u> on file with the School can be submitted to the Registrar's Office.

Degree Audit - Apply to Graduate

Students should refer to the catalog for specific Degree or Certificate Requirements, and consult with their Academic Advisor if additional information is required. Filing procedures are as follows:

- Obtain the applicable Program of Study Worksheet from the links below and in consultation with an Academic Advisor print and fill out the form.
- An Academic Advisor must submit this form by the set deadline to the Office of the Registrar in order for a student to 'officially apply to graduate.'

Application for Graduation - MS & MPH Program of Study Worksheet

Application for Graduation - PhD Program of Study Worksheet

Application for Graduation - DPH Program of Study Worksheet

Application for Graduation - Certificate Program of Study Worksheet

Exact dates for degree/certificate awards may be found in the <u>Academic Calendar</u> for the appropriate Academic Year. If a filing date falls on a weekend, applications and forms are due the following business day without penalty.

Graduation applications will be processed and audited after the filing date. Students will be contacted via email to their institutional email account if there are any problems. Letters verifying the degree/certificate award can be picked up after the conferral date. Instructions for diploma pick up will be emailed to students. Note that a diploma will not be released to anyone with outstanding financial obligations to the institution.

Only one commencement ceremony is held each year in June. All students who have applied for or earned a degree or certificate for that academic year will receive commencement information via email.

International Students (Designated School Officials)

The Designated School Official provides advice and assistance to students from outside the United States, particularly with regard to immigration issues relating to F - 1 Student Status and J - 1 Exchange Visitor Student category. For more information contact the Office of the Registrar.

Veterans (Certifying Official)

The CUNY Office of Veterans Affairs is dedicated to fostering a sense of community and to developing a channel of communication among veteran and reservist students, and with faculty, staff, and administration. The City University of New York welcomes and supports veterans and reservists on its campuses and recognizes the contribution that they make as citizens and students. CUNY is proud of the level of diversity and academic excellence that veterans and reservists bring to our campuses.

<u>CUNY/Veterans</u> is a virtual one-stop source of information regarding services for veterans, reservists and their dependents and survivors. It is a guide to educational benefits, entitlements, counseling and advocacy resources, which will assist veterans in pursuing their academic and civilian careers. <u>Download CUNY's comprehensive brochure for veterans</u>. For more information regarding Veterans services at CUNY SPH, contact the Office of the Registrar.

Disability Services

Support services and accommodations are available to provide students with disabilities greater accessibility to the academic environment. For more information (with confidentiality) contact the disability coordinator.

Religious Accommodations The CUNY Graduate School of Public Health and Health Policy follows the <u>CUNY Religious</u> <u>Accommodations policy</u>.

Financial Aid

The goal for The Office of Financial Aid at CUNY SPH is to provide students with the financial resources and information they need to successfully complete their study. Students receiving Financial Aid will be able to view all of their information in their CUNYfirst account. CUNYfirst announcements are sent via @SPH email addresses. The Financial Aid office can be contacted at: <u>FinancialAid@sph.cuny.edu</u>.

Student Eligibility

To be eligible for federal and state aid, a student must be a United States citizen or an eligible non-citizen who is making satisfactory academic progress toward a degree. Students who have defaulted on a loan or owe a repayment of a federal grant at any post-secondary school must make satisfactory repayment arrangements with that institution before they will be eligible to receive Financial Aid.

Application Procedure

The best way to apply for financial aid is by completing the application online. FAFSA on the Web is available at <u>www.fafsa.ed.gov</u>. When the FAFSA is processed, CUNY will receive an electronic record of the student's application information. The student may be required to provide additional documentation to the Office of Financial Aid to verify the application information or to clarify any

discrepancies in the application. For more details on the application process, visit the <u>CUNY SPH</u> <u>website</u>.

Student Loans

Graduate and professional degree students may be eligible to receive Federal Direct loans. Federal Direct Loan program allows students to borrow funds from the federal government to help cover the cost of attendance. Like all other loans, these loans must be repaid with interest. For more details about student loans, visit the <u>CUNY SPH website</u>. Students can view loan information online by visiting <u>www.nslds.ed.gov</u> and <u>www.studentloans.gov</u>

Satisfactory Academic Progress (SAP)

Satisfactory Academic Progress (SAP) is a standard used to measure a student's successful completion of coursework toward a degree. CUNY Graduate School of Public Health and Policy is required via Financial Aid federal regulation to establish a satisfactory academic progress policy to determine whether an eligible student is making SAP in his or her educational program. Students who are found to be in violation of the parameters set forth by the SAP policy are ineligible to receive most forms of federal financial aid.

All students (whether aid recipients or not) will be measured against the Title IV Satisfactory Academic Progress (SAP) standards at the end of each academic year (spring semester), in order to determine eligibility for the upcoming year.

Those who fail to meet the academic standards will have their federal aid automatically suspended until they meet the minimum standards that are listed below.

NOTE: Private scholarships, tuition waivers, and departmental scholarships are not subject to SAP standards. Merit scholarships have their own set of academic standards.

Federal Satisfactory Academic Progress Standard

Your total academic record will be measured against each of the three progress components at the end of every spring term to determine whether or not you meet the standard of progress. All courses that appear on your permanent academic record count towards the pace of progression and maximum time-frame requirement even if you received no federal financial aid for those courses.

A) Minimum GPA: Students who fail to earn the minimum requirements will be considered as not making satisfactory academic progress and all financial assistance will be terminated or suspended until the student regains minimum satisfactory academic progress standards. You must successfully meet the minimum cumulative GPA as shown below:

Minimum Cumulative GPAMasters3.0DPH3.0

PHD 3.0

B) Maximum time-frame: All students are expected to complete their respective educational programs within a specified timeframe. Once this timeframe has elapsed, students are no longer eligible to receive most forms of financial aid.

Master's Degree: All requirements for the degree must be completed within 5 matriculated years DPH Degree: All requirements for the degree must be completed within 8 matriculated years PHD Degree: All requirement for the degree must be completed within 7 matriculated years

C) Pace of Progression – Student must meet pace and progress toward graduation by successfully completing 2/3 of the cumulative units attempted.

Pace = <u>Cumulative number of hours (credit hours) that you have successfully completed</u> Cumulative number of hours (credit hours) that you have attempted

This means that courses the student drops after the drop/add period has ended will be considered as attempted credit hours. For all students, attempted hours is defined as all courses in which they are enrolled after the drop/add period has ended for the term and for which academic credit will be earned. This means that courses from which students withdraw after the drop/add period has ended will be considered attempted hours. All attempted hours will be counted regardless of whether financial aid was received.

Credit-hours that are transferred into SPH and successfully articulated towards the completion of their degree will be counted as both earned and attempted hours for the purpose of this standard. Courses that are listed as Incomplete (I) or Withdrawal (W) will be counted as attempted but not earned. Repeated courses will always be treated as attempted hours.

Academic Programs, Total Credits Required to Graduate MS in Environmental & Occupational Health Sciences 39 MPH in Community Health 42 MPH in Environmental & Occupational Health Science 42 MPH in Epidemiology and Biostatistics 42 MPH in Health Policy & Management 42 MPH in Public Health Nutrition 42 PhD in Community Health and Health Policy 39 PhD in Environmental and Planetary Health Sciences 42 PhD in Epidemiology 42 DPH in Community, Society, and Health 48 DPH in Environmental and Occupational Health 48 DPH in Epidemiology 48 DPH in Health Policy and Management 48

Readmitted Students

Upon readmission after any period of non-enrollment, your satisfactory progress standing remains as it was at the end of your last semester of attendance. If you were making satisfactory academic progress in your last semester of attendance, your eligibility to receive federal financial aid will not be affected when you return. If you return after an academic probation or dismissal, your financial aid will be in suspended status and you will have to file an appeal to have your eligibility for federal aid restored. Any

action you took during your period of absence that would have brought you back into compliance with the progress standard (such as successfully completing transferable courses at another institution) is factored into the evaluation.

Frequency of SAP Evaluation

SPH will evaluate SAP on an annual basis following the completion of the spring semester. In general, students who are in violation of the parameters set forth by the SAP policy upon an evaluation are not eligible to receive most forms of financial aid during subsequent payment periods. Students who are deemed ineligible upon an evaluation are designated with a status of "Not Meet" and are notified immediately by email upon the status being assigned.

Delay of Disbursements Due to Satisfactory Academic Progress

Financial aid may not be disbursed to a student's account until SAP has been evaluated. The Financial Aid Office cannot complete the SAP evaluation until prior semester grades have been officially posted by the Office of the Registrar. An otherwise eligible student may experience a delayed financial aid disbursement if grades are not made official before the beginning of the subsequent semester.

Notification of Satisfactory Academic Progress Status

Students who have met Satisfactory Academic Progress requirements will not receive a SAP communication. The Financial Aid Office will notify any student who does not meet SAP requirements via email at the SPH student's email address. Students who are notified that they are SAP ineligible for financial aid should consult their academic advisers and the financial aid office.

There are no Financial Aid SAP Warning Periods for graduate/professional students who are evaluated annually.

SAP Appeal

If you have been placed on financial aid suspension, you may appeal to the Committee on Academic Standing to be allowed to receive federal student aid for future semesters.

Your appeal must be based on excusable circumstances resulting from events in your life such as personal illness or injury, illness or death of a family member, loss of employment, or changes in your academic program. Your appeal must include an explanation of how these circumstances caused you to fail to make satisfactory progress and what changes have you made that would allow you to meet the appropriate progress standard in a future evaluation.

If your appeal is denied, the SAP Appeal Committee may permit you to re-submit the appeal with additional documentation. You may continue to submit appeals each time you are found not to be making satisfactory progress, but approval of your appeal is at the discretion of the SAP Appeal Committee.

Office of the Bursar

The Bursar's Office mission is to provide professional, courteous, timely, and accurate services to students and the CUNY SPH community while adhering to all policies, procedures, and regulatory requirements set forth by CUNY, NY State, and the Federal Government. The Office's core responsibilities include collecting and processing tuition and fee payments, maintaining student

financial records, managing student refunds, overseeing student payment plans, and implementing collection. The Bursar's Office can be contacted at: <u>bursar@sph.cuny.edu</u>. Please note that inquiries must be sent from official @SPH email addresses to ensure security verification.

Tuition and Fees

All tuition and fees are determined by the CUNY Board of Trustees and are subject to change without notice. In the event of an increase in the tuition and fee prices, payments already made will be treated as partial payments. Notification will be given to students concerning the amount owed and the deadline date to pay.

Tuition is charged based upon the following criteria:

- Residency Status: NY State Resident or Non-NY State Resident
- Student Status: Doctoral or Graduate Student
- Degree Status: Degree Student (Matriculated) or Non-Degree Student (Non-Matriculated)
- Full-Time or Part-Time Status: some groups pay per credit; please review the table of charges
- Number of Credits: as applicable (some students pay flat rates; please review the table of charges)
- Doctoral Level: each level I, II, and III pay different rates

Mandatory Term Fees are charged based upon the following criteria:

- Full-Time/Part-Time Status
- Student Status (Doctoral or Graduate Student)
- Semester

If a student is enrolled full-time and drops to part-time status on or after the first official day of classes, the full-time fee rate is charged. Mandatory fees are non-refundable except for students who drop all their classes prior to the first official day of classes.

The School also charges general fees for services or special documents. These fees include application fees, re-admission fees, transcript fees, etc. For a complete listing of all tuition rates and fees, please see the <u>Tuition and Fees page</u> on the CUNY SPH website.

Commitment Deposit

New students are required to pay a commitment deposit. The deposit will be applied to tuition charges for the applicable term. Please see view the <u>commitment deposit form</u> on the CUNY SPH website.

Payment and Refunds

Payment due dates can be found on the <u>CUNY SPH Academic Calendar</u>. Information about payment options can be found on the <u>CUNY SPH website</u>. If a student has registered for courses and chooses not to attend, they must drop classes prior to the first official day of the semester (this may not be the first day that their class meets) to avoid tuition and fee charges. Any student that does not officially drop their classes prior to the start of the term will be charged tuition and fees based upon the University's academic calendar and policy.

Students can be issued refunds for a number of reasons including dropped classes, fee changes and excess financial aid. For more details about the <u>refund policy</u> and other payment issues, see the <u>CUNY</u> <u>SPH website</u>.

Administrative appeals for charges should be sent to the School's Student Life representative.

Career Services

Students seeking assistance in job searches, resume and cover letter writing, professional networking, and interview preparation can <u>schedule an appointment with a career services/writing specialist</u>. More information about career services can be found on the <u>CUNY SPH website</u>.

CUNY Policies

All general CUNY policies apply to the CUNY Graduate School of Public Health and Health Policy.

- <u>The City University of New York Policy on Equal Opportunity and Non-Discrimination</u>
- <u>The City University of New York Policy on Sexual Misconduct</u>
- <u>The City University of New York Policy on Freedom of Information Law Requests</u>
- <u>The City University of New York Procedures for Student Grievances of Faculty Conduct</u>

All of these policies and many more are available on the University website.

Courses

| Number | Credits | Course Title | Course Description | Pre-requisite/ Co-requisite |
|-------------|---------|----------------------------------|--|--|
| BIOS 610 | 3 | Fundamentals of Biostatistics | Application and interpretation of basic descriptive and inferential statistical methods for the analysis of public health and other health-related data. | N/A |
| BIOS 611 | 3 | Principles of Biostatistics | This is a first-level requirement for students specializing in EPI-BIOS, who will take subsequent intermediate and advanced level biostatistics courses. It will introduce students to the theoretical basis for and practical application of common statistical methods and principles used in public health. | N/A |
| BIOS 620 | 3 | Applied Biostatistics I | Topics include: simple and multiple linear regression, logistic regression, model building techniques, including assessing for multi-collinearity, effect measure modification, non-linearity and model fit statistics, and their use to answers questions of risk stratification and causal inference. Focus on practical applications, utilizing statistical software. | PRE: (BIOS 610 or BIOS 611) and (EPID 610 or EPID 611) |
| BIOS 621 | 3 | Applied Biostatistics II | Topics include: generalized linear models for binary and count outcomes, random and mixed effects models, and survival analysis. Project-based assessments focus on practical applications utilizing statistical software. | PRE: BIOS 620 and EPID 620 |
| BIOS 622 | 3 | Analysis of Categorical Data | An introduction to statistical models for analyzing categorical data, with emphasis on examples from the health | PRE: BIOS 620 |

| | | | sciences. Topics include: contingency tables and corresponding tests such as chi-square, CMH and trend test, count data, logistic regression and log-linear models. | |
|-------------|---|---|---|------------------|
| BIOS 623 | 3 | Analysis of Longitudinal Data | An introduction to statistical models and methods for analyzing longitudinal data in public health. Topics include: longitudinal designs and cohort sampling, general linear models for longitudinal data, marginal & random effects models, time-dependent covariates, missing values. | PRE: BIOS 620 |
| BIOS 624 | 3 | Design and Analysis of Complex Surveys | This course provides an introduction to statistical issues in the design and analysis of complex surveys, with a particular emphasis on public health research. Topics include: basic sampling techniques, stratified and cluster sampling, non-sampling errors, and case studies. | PRE: BIOS 620 |
| BIOS 625 | 3 | Survival Analysis | An introduction to regression modeling used in the analysis of time-to-event data in epidemiological, biostatistical, and other health-related research. Topics include: survival functions, proportional-hazards, parametric and competing-risks models, missing data, using case studies. | PRE: BIOS 620 |
| BIOS 626 | 3 | Data Analysis | Probability-free alternatives to classical statistics, concentrating on graphical and robust methods. Topics include: data summaries; transformations; the jackknife and resampling schemes; robust estimation; and robust | PRE: BIOS 620 |

| | | | regression methods. | |
|-------------|---|--|--|--|
| BIOS 627 | 3 | Analysis of Variance | Intermediate topics in analysis of variance (ANOVA), with an emphasis on exploratory aspects. Topics including: one, two and many way layouts; decomposition and partitioning of variance; fixed, random, and mixed effects models; repeated measures; contrasts; multiple comparisons; and robust analogs. | PRE: BIOS 620 |
| BIOS 640 | 3 | Introduction to Bayesian Statistics | The course introduces the fundamentals of Bayesian inference. It covers simple Bayesian models and complicated models, including linear regression and hierarchical models. Bayesian computational methods, especially Markov Chain Monte Carlo methods will be discussed. Emphasis will also be placed on model checking and evaluation for public health research applications. | PRE: BIOS 621 and EPI 621 |
| BIOS 696 | 1 | Supervised Fieldwork in Biostatistics | Students carry out 180 hours of supervised field work that is intended to bridge academic preparation and public health practice. Knowledge and skills from the core MPH and specialization courses are applied in a public health agency, community organization or other setting relevant to the student's academic background, specialization and career expectations. This is accomplished under the supervision and guidance of an experienced preceptor. Field-based hours are implemented with classroom and individual meetings along with online communication. | PRE: Completion of at least 18 MPH credits, including PUBH 614, EPID 620, and BIOS 620; and departmental permission |

| | | | Aside from deliverables required by the preceptor, the student develops a reflection paper, a self-evaluation and a capstone proposal. | |
|-------------|-------|---------------------------------------|--|---|
| BIOS 697 | 0.5-6 | Independent Study in Biostatistics | Independent study in biostatistics. | PRE: Departmental permission |
| BIOS 698 | 2 | Capstone Project in Biostatistics | This course consists of a structured seminar aimed at allowing students to apply experiences gained during their graduate program and synthesize that knowledge and experience in the form of a major writing project. It is expected that students use a combination of synthesized evidence, theoretical models, and empirical research to answer a public health research question or practice problem using interdisciplinary perspectives. | PRE: Completion of five MPH core courses, BIOS 696, EPID 621, BIOS 621; and departmental permission |
| BIOS 821 | 3 | Applied Biostatistics II | Topics include: generalized linear models for binary and count outcomes, random and mixed effects models, and survival analysis. Project-based assessments focus on practical applications utilizing statistical software. | PRE: EPID 820 and BIOS 820 |
| BIOS 822 | 3 | Applied Biostatistics III | Topics include extensions of generalized linear models to correlated data (Generalized Estimating Equations and Generalized Linear Mixed Models) and application of instrumental variables and other techniques, such as propensity scores, to causal inference. Missing data imputation methods are also discussed. Focus on practical applications, utilizing statistical software. | PRE: BIOS 821 and EPID 821 |
| BIOS | 3 | Applied Biostatistics IV | Topics include missing data | PRE: BIOS |

| 823 | | | imputation methods and advanced methods such as structural nested model and marginal structural models. Focus on practical applications in public health research setting, utilizing statistical software. | 822 and EPID 822 |
|-------------|-------|--|---|------------------------------------|
| BIOS 695 | 0.5-6 | Topics in Biostatistics | Courses on current topics in biostatistics. | N/A |
| CHSS 697 | 0.5-6 | Independent Study in Community Health | Independent study in community health education. | PRE: Departmental permission |
| CHSS 610 | 3 | Fundamentals of Social and Behavioral Health | This course provides a topical and theoretical survey of social and behavioral issues in public health | N/A |
| CHSS 620 | 3 | Community Health Assessment | This course prepares students to collect and analyze data on community health from a variety of sources, to identify problems and assets, and to develop objectives for community health interventions. | N/A |
| CHSS 621 | 3 | Community Health Interventions | An introduction to community-level interventions as explained by theories of individual, organizational and community change from the disciplines of psychology, sociology and health education. | N/A |
| CHSS 622 | 3 | Community Organizing and Development for Health | Prepares students to work in communities by presenting the theory and practice of organizing for social justice, skills for promoting leadership development within communities, and the tools to create and sustain healthy organizations. | N/A |
| CHSS 623 | 3 | Research and Evaluation for Community Health | Basic concepts, methods and approaches for evaluation research applied to community health education and | N/A |

| | | | health-related programs through a critical review of literature and a program evaluation design. | |
|-------------|---|---|--|--|
| CHSS 624 | 3 | Health Program Planning and Funding | This course will engage students in identifying or designing a health program, finding funding sources, and developing a proposal covering program need, program objectives, a management and quality assurance plan, preliminary work, evaluation, budget, and a plan for funding support. | N/A |
| CHSS 625 | 3 | Advanced Seminar on Intersectoral Partnerships | This course will enable students to critically analyze and assess intersection of policy, race and class that determine the health and well-being of communities. Included will be a review and examination of multiple community-driven strategies (e.g., collaborative action research, public policy advocacy, multi-sectoral partnerships) for advancement of social justice and health equity. Case-study methodologies, including presentations by leading public health advocates, will be used to critically analyze specific health topics of relevance to NYC and other large urban centers. | PRE: CHSS 622, CHSS 624; PRE or CO: CHSS 623 |
| CHSS 660 | 3 | Health Equity and Social Justice | Analysis of health disparities and exploration of social, economic, political, and historical determinants of health, including unequal access and treatment by race and ethnicity, patterns of immigration, cultural bases of health, strategies for communicating with diverse populations, and interventions for reducing and eliminating | N/A |

| | | | ethnic and racial health disparities from an ethics and public policy perspective. | |
|-------------|---|---|---|-----|
| CHSS 661 | 3 | History and Philosophy of Public Health | Examination of historical development and philosophical concepts underlying the practice of public health; social, political, and institutional forces shaping public health policy and the commitment to monitor, protect, and promote the public's health; emphasis on the relationship between public health knowledge, values, and actions. | N/A |
| CHSS 662 | 3 | Planning and Evaluation of Community-based Public Health Programs | Fundamental approaches and methods for planning and evaluating public health programs. Application of theory and the empirical literature as a means of developing skills in evidence-based public health practice. | N/A |
| CHSS 640 | 3 | Communicating Public Health | This course will frame public health communication in terms of history and theory, and engage students in understanding how these are applied in various contexts. Theories and practice will come from the fields of communication, linguistics, sociology & psychology, as well as human factors. The course covers the basics of design, implementation and evaluation of public health communications in the wide range of modalities – written, spoken, graphic and digital. Throughout the course we will focus on developing skills to analyze and critique public health messaging and campaigns. The goal is for students to enhance their ability to communicate effectively to promote public health goals. | N/A |

| CHSS 696 | 1.5 | Community Health Practice Collaborative I | This is the first of a two-part series that together comprise the Applied Practice Experience (APE) and Integrative Learning Experience (ILE) requirements for a CEPH-accredited MPH degree in Community Health. In this course, students work in groups with community organizations to gain real-world experience in the design of a public health project. In this course, students will be presented with several possible collaborative community health projects to work on as part of a group. Groups will comprise approximately five students, in partnership with members from the outside organization (eg, CBO, health department, health center), and with guidance from the instructor. Depending on the nature of the topic, student groups will complete at least two project deliverables in satisfaction of the APE requirement (eg, narrative review, data collection instrument, grant proposal, curriculum development, data collection, data analysis). | PRE: CHSS 622, CHSS 623, CHSS 624; CO OR PRE: CHSS 625 |
|-------------|-----|---|--|---|
| CHSS 698 | 1.5 | Community Health Practice Collaborative II | This is the second of a two-part series that together comprise the Applied Practice Experience (APE) and Integrative Learning Experience (ILE) requirements for a CEPH-accredited MPH degree in Community Health. In this course, students work in groups with a community organization to present a final written deliverable and oral presentation of a public health project. In this course, students will continue their group work with other students and members from an outside organization. The nature of the | PRE: CHSS 696 |

| | | | specific group projects will determine the final written deliverable (eg, project final report, reflection, grant proposal, program curriculum, etc) and oral presentation to satisfy the ILE requirement. | |
|-------------|-------|--|---|--|
| CHSS 897 | 0.5-6 | Independent Study in Community, Society and Health | Independent study in community, society and health | PRE: Departmental permission |
| CHSS 810 | 3 | Cities and Health | This course presents an ecological, multilevel approach to the study of urban health and brings together public health and social science disciplines to examine the impact of city living on population health. | N/A |
| CHSS 820 | 3 | Social and Behavioral Dimensions of Health: Theory and Methods | This course prepares students to understand the impact of social structures and social environments on health and health behavior. Using an interdisciplinary approach, the course examines the contributions of sociology, anthropology, economics, psychology, history and political science to the study of health and health behavior. | N/A |
| CHSS 821 | 3 | Advanced Community Health Interventions | This course prepares students to lead research/intervention teams that plan, implement and evaluate community health interventions in community settings. | PRE or CO: CHSS 820; PRE: at least two master's level courses in program development or evaluation and at least one year of work experience in community health settings. These requirements can be waived |

| | | | | with departmental permission for students who bring other relevant experience to the course. |
|-------------|-------|--|---|---|
| CHSS 822 | 3 | Evaluation of Public Health Programs and Policies | Prepares students to design evaluations of public health programs and policies; uses a systems approach to identify key constituencies and tasks in evaluation; students design an evaluation of an existing program or policy. | N/A |
| CHSS 695 | 0.5-6 | Topics in Community Health Education | Courses on current topics in community health education. | N/A |
| CHSS 895 | 0.5-6 | Topics in Community, Society and Health | Courses on current topics in community, society and health | N/A |
| EOHS 897 | 0.5-6 | Independent Study in Environmental and Occupational Health | Independent study in environmental and occupational health | PRE: Departmental permission |
| EOHS 697 | 0.5-6 | Independent Study in Environmental and Occupational Health Sciences | Independent study in environmental and occupational health sciences | PRE: Departmental permission |
| EOHS 610 | 3 | Fundamentals of Environmental Health | Survey of chemical, physical and biological factors influencing quality of ambient, workplace and home environments. Topics include: air and water pollution; radiation; hazardous substances; solid wastes; food protection; and natural and human-made disasters | N/A |
| EOHS 620 | 3 | Introduction to Occupational Safety and Health | Introduction to basic concepts and issues of occupational safety and health, including recognition and control of chemical and physical hazards, and the regulations governing | PRE or CO: EOHS 610 |

| | | | these hazards | |
|-------------|---|--|---|--|
| EOHS 621 | 3 | Environmental Chemistry | Survey of chemical and physical concepts essential for understanding environmental and occupational health sciences, including study of the atmosphere, air and water pollution, and energy resources. Physical principles of heat and energy, and radioactivity will be discussed | N/A |
| EOHS 622 | 3 | Environmental and Occupational Toxicology | Introduction to principles of toxicology with emphasis on environment and occupational aspects. Systematic review of the toxicology of major organ systems; health effects of categories of toxins, such as solvents and metals; and review of toxicological testing and evaluation | PRE: EOHS 633 for MPH students; MS and Industrial Hygiene Certificate students are waived |
| EOHS 623 | 3 | Principles of Industrial Hygiene | Recognition, evaluation, and control of industrial hazards due to chemical and physical agents. Topics include occupational health standards, regulatory agency activities, effects of contaminants on human health, sampling and control of hazards, current issues. | N/A |
| EOHS 624 | 3 | Environmental Audits and Remediation | Introduction to environmental investigation and remediation technologies commonly used in professional practice. Presents proper practices for assessing and remediating asbestos, lead-based paint, indoor air quality, and underground storage tanks situations and Phase I site audits. | N/A |
| EOHS 625 | 3 | Hazard Evaluation and Instrumentation | An introduction to instrumental methods used to assess environmental and occupational health hazards. Principles and operation of commonly used | PRE: (PUBH 614 or BIOS 610 or BIOS 611) and (EOHS 633 or |

| | | | direct reading instruments and demonstration of their application | EOHS 620) |
|-------------|---|---|--|------------------------|
| EOHS 626 | 3 | Industrial Ventilation and Indoor Air Quality | This course covers the fundamentals of design, operation and evaluation of air moving systems for local and dilution exhaust ventilation systems. Engineering controls are the preferred method for the control of airborne hazards in the workplace. | N/A |
| EOHS 627 | 3 | Noise and Radiation Hazards and Controls | Introduction to basic concepts of sound, noise measurement, and noise control in community and occupational environments. Health and safety problems involved with the use of ionizing and non-ionizing radiation, with an emphasis on identification and control. | N/A |
| EOHS 628 | 4 | Environmental Measurements Laboratory | Physical, chemical, and instrumental methods for measuring environmental and occupational contaminants | PRE or CO: EOHS 621 |
| EOHS 629 | 1 | Environmental Health GISc Lab | Application of GISc to examine and analyze environmental health, population, and natural and built environmental data for planning and research. | N/A |
| EOHS 630 | 3 | Principles of GISc for Public Health | The use of Geographic Information Systems relating to public health in the teaching of social, earth, and life sciences. Demographic studies and graphic presentation of demographic analysis. The use of modern mapping techniques in studies of the Earth Environment with emphasis on environmental health and environmental justice | N/A |
| EOHS 631 | 3 | Spatial Analysis and Environmental Modeling for Public Health | Use of Geographic Information Systems for conducting research and spatial analysis in | PRE: EOHS 630 |

| | | | the natural and social sciences with emphasis on public health. The advanced use of computer mapping and spatial analysis technologies for studying the physical and human components of the earth's environment. | |
|-------------|---|---|---|------------------|
| EOHS 632 | 3 | The Geography of Urban Health | A geographical examination of urban health including the historical perspective of health geography; mapping and spatial analysis of health and health impacts; the social and spatial patterning of health; the geography of health inequalities and disparities; health and social/spatial mobility; and the effects of urban segregation, overcrowding, and poverty on disease illustrated through GISc laboratory exercises. | PRE: EOHS 630 |
| EOHS 633 | 3 | Introduction to Environmental and Occupational Health | Introduction to basic concepts and issues in environmental and occupational health, including chemical, biological, and physical hazards and the health risk associated with exposure to them. Mechanisms for reducing exposure to these hazards are discussed. | N/A |
| EOHS 634 | 3 | Exposure and Risk Assessment | The purpose of this course is to provide students with an overview of environmental policy, with a focus on demonstrating how toxicology and exposure measurements are used in environmental risk assessment and management. Students are presented with the basic elements of a quantitative risk assessment including hazard identification, exposure assessment, dose-response assessment, and risk characterization. Students are taught how municipal, state, | N/A |

| | | | federal and international agencies implement and assess the success of environmental policies, while taking into consideration the social and economic considerations in environmental management frameworks. Several examples from local, federal and international policies will be used to explore the assessment and management process. | |
|-------------|---|--|--|---------------------------------------|
| EOHS 640 | 3 | Biohazards and Emergency Response | This class covers the biology of microorganisms and toxins most frequently considered in perpetrated attacks. It also considers technology for detection and control for first responders, lab practitioners and other healthcare professionals, emergency communication, and prevention. In addition to classroom activities, students participate in group projects to simulate bioterrorism events and responses; government regulation, chain of evidence, and related topics are covered. | PRE or CO: EOHS 633 or EOHS 620 |
| EOHS 641 | 3 | Environmental and Occupational Epidemiology | Using a case study approach, this course will explore epidemiologic methods for studying environmentally and occupationally related diseases. Key methodologic issues, such as exposure and outcome assessment, cumulative and multiple exposures, exposure pathways, research ethics, and policy implications of epidemiological findings will also be discussed. The focus will be on the environmental and occupational health of urban populations. | PRE: EOHS 633 or EOHS 620 |
| EOHS 642 | 3 | Hazardous Waste Management | A review of the sources, transportation and control of | N/A |

| | | | hazardous chemical wastes. Regulatory requirements, disposal methods and health effects will also be presented. | |
|-------------|---|--|--|------------------|
| EOHS 643 | 3 | Industrial Safety and Management | Fundamental concepts and principles of industrial accident prevention and loss control; safety program organization; hazard recognition and evaluation; accident investigation; machine guarding; tire protection; personal protective equipment | N/A |
| EOHS 644 | 3 | Introduction to Quantitative Methods of Geography | Emerging fields of geospatial statistics, applying quantitative techniques to real-world geographic problems. Concepts and application of exploratory spatial data analysis (ESDA), traditional statistics and geospatial statistics within various software packages, including GeoDa, ArcGIS, [R], and Excel. | PRE: PUBH 614 |
| EOHS 645 | 3 | Demography and Population Geography with GISc | The world's population in the context of geography and demography. The theoretical framework, defined by the fields of population geography and demography, will be studied and explored qualitatively and quantitatively. Data sources and acquisition, population metrics (growth, change distribution, and composition), population and food supply, mortality, fertility, and migration. Lab work will provide students with hands-on experience using GISc to explore demographic concepts. | N/A |
| EOHS 820 | 3 | Emerging Issues in Environmental and Occupational Health | This course examines the impact of macro-level trends – such as corporate globalization, immigration patterns, and technological development – on | N/A |

| | | | the urban physical environment. It focuses on the relationship between the urban infrastructure (e.g., housing, transportation, sewage and waste disposal) and environmental media (e.g., air quality, water quality and land use). This course also examines the impact of macro-level trends on occupational health and safety conditions, focusing on such issues as outsourcing of manufacturing jobs to developing nations, the rise in the service and informal economies, immigrant labor, de-unionization, the new working class and the loss of the safety net. It examines the effectiveness of current policies in addressing these problems. Through focused readings and in-depth examination of case studies, students develop the tools for analyzing how macro-social trends affect the urban physical environment, workplaces and health. Teams of students then analyze an environmental and occupational issue, illustrate how it affects urban communities, and develop solutions to reduce environmental and occupational health burdens. | |
|-------------|---|--|--|-----|
| EOHS 821 | 3 | Environmental and Occupational Health Risk and Hazard Assessment | This course will cover the development, principals and use of environmental and occupational health risk assessment, risk communication and the policy implications. Risk assessment and risk management procedures will be evaluated in context of public participation, sustainable development, occupational and environmental | N/A |

| | | | justice, and natural vs.human vs. technological hazards.Strengths and weaknesses of alternative approaches to quantitative risk assessment will also be covered. | |
|-------------|---|---|--|-----|
| EOHS 822 | 3 | Biology and Pathophysiological Applications in Public Health | This course provides the fundamentals of biological causes and the pathophysiology of diseases in the context of public health practice. Students will apply biochemical and mechanistic models to explain their impact on significant public health problems. Students will integrate physiological and pathophysiological concepts in the development of strategies for public health disease prevention and control. Students will learn to develop models to test health effects of potential interventions. | N/A |
| EOHS 823 | 3 | Systems Science in Planetary Health | This course teaches the application of systems science techniques to identifying, explaining and mitigating health risks to humans and the planet. This course will enable students to analyze dynamic interactions between complex environmental, economic, and social systems. Students will be required to model systems and analyze the effects of potential interventions. | N/A |
| EOHS 824 | 3 | Advanced Exposure Assessment and Policy Applications | This course presents an overview of exposure assessment methods for different media (e.g., air, water, food, soil) in the context of the major exposure pathways (e.g., ingestion, inhalation, absorption, injection). It explains optimal study design for exposure assessment and | N/A |

relates findings to policy.

| EOHS 895 | 0.5-6 | Topics in Environmental and Occupational Health | Course on current topics in environmental and occupational health | N/A |
|-------------|-------|--|--|---|
| EOHS 695 | 0.5-6 | Topics in Environmental and Occupational Health Sciences | Courses on current topics in environmental and occupational health sciences | N/A |
| EPID 697 | 0.5-6 | Independent Study in Epidemiology | Independent study in epidemiology | PRE: Departmental permission |
| EPID 897 | 0.5-6 | Independent Study in Epidemiology | Independent study in epidemiology | PRE: Departmental permission |
| EPID 610 | 3 | Fundamentals of Epidemiology | Apply principles and methods of epidemiological analysis. Identify and interpret epidemiological data. Illustrate and investigate incidence, distribution, determinants, and control of disease. | N/A |
| EPID 611 | 3 | Principles of Epidemiology | A first-level requirement for student specializing in EPI-BIOS, who will take subsequent intermediate and advanced level epidemiology courses. It will introduce students to epidemiologic theory, principles, methods and measures commonly used in public health. | N/A |
| EPID 620 | 3 | Epidemiological Methods I | A rigorous introduction to the design and conduct of epidemiologic studies, including causal inference, measurement, major study designs, threats to validity, such as confounding and selection bias, and their application to public health issues. The class includes lectures on research methods, hands-on data analysis exercises and discussions about determining causation through epidemiological | PRE: PUBH 614 OR (BIOS 610 or BIOS 611) & (EPID 610 or EPID 611) |

| | | | research. | |
|----------|---|---|--|---|
| EPID 621 | 3 | Epidemiological Methods II | Modern approaches to the design and conduct of epidemiologic studies, including use of directed acyclic graphs to inform study design and the use of instrumental variables to avoid confounding. Emphasis is placed on identifying threats to validity. This course will also cover survey methods used in epidemiologic research. | PRE: BIOS 620 and EPID 620 |
| EPID 622 | 3 | Applied Research: Data Management and Analysis | An opportunity to apply epidemiological and statistical concepts to create a database, enter, format and clean data and work with publicly available data to answer research questions, test the hypotheses associated with it, and report results in manuscript format. | PRE: BIOS 621 and EPI 621 |
| EPID 624 | 3 | Social Epidemiology | Theory and methods of social epidemiology to gain an understanding of how an individual's interactions with factors associated with the social fabric of the society affect and shape health outcomes. This class will also examine the etiology and prevention of disease within both ecological (multi-level) and multidisciplinary frameworks. | PRE: PUBH 614 OR (BIOS 610 or BIOS 611) &(EPID 610 or EPID 611) |
| EPID 625 | 3 | Epidemiology of Chronic Diseases | Description and quantification of the role chronic diseases in population health with an overview of the etiology, risk prediction, prevention and control of major chronic diseases. Prevailing theories and controversies regarding the etiology of chronic diseases will be addressed in a national and global context. | PRE: PUBH 614 OR (BIOS 610 or BIOS 611) & (EPID 610 or EPID 611) |
| EPID 626 | 3 | Epidemiology of Infectious Diseases | This course is an introduction to concepts regarding the | PRE: PUBH 614 OR (BIOS |

| | | | occurrence of infections and infectious diseases in human populations, epidemiologic methods for studying infectious diseases, and approaches to infectious disease control. | 610 or BIOS 611) & (EPID 610 or EPID 611) |
|----------|---|---|--|---|
| EPID 627 | 3 | Reproductive and Perinatal Epidemiology | This course covers current research, controversial issues, and methodological problems in the epidemiology of male and female reproduction and perinatal health. Topics include: epidemiology of fertility and infertility, contraception and hormone usage, reproductive cancers and other diseases, pregnancy complications, maternal mortality, adverse pregnancy outcomes and birth defects. | PRE: PUBH 614 OR (BIOS 610 or BIOS 611) & (EPID 610 or EPID 611) |
| EPID 629 | 3 | Environmental and Occupational Epidemiology | Using a case study approach, this course will explore epidemiologic methods for studying environmentally and occupationally related diseases. Key methodological issues, such as exposure and outcome assessment, cumulative and multiple exposures, exposure pathways, research ethics, and policy implications of epidemiological findings will also be discussed. The focus will be on the environmental and occupational health of urban populations. | PRE: PUBH 614 OR (BIOS 610 or BIOS 611) & (EPID 610 or EPID 611) |
| EPID 630 | 3 | Fundamentals of Population Health Informatics | This course will provide students with an introduction to the fundamentals of population health informatics, its history, relevant concepts and related informatics domains. The course will further describe the fundamentals of computing, data, information and knowledge principles, information architecture of | N/A |

| | | | population health systems and role of data standards in the development of population health information systems. Students will be introduced to the concepts of big data, cloud computing and other emerging technological innovations that can contribute to the improvement of population health. The course will also provide students with a knowledge of issues related to privacy, security and confidentiality related to health data collection, storage, and its processing. | |
|----------|---|--|---|-----|
| EPID 631 | 3 | Principles of Consumer Health Informatics | This course will provide students with an understanding of how the Internet and social media can be utilized to design, develop, and implement consumer health information solutions. Further, students will acquire skills to evaluate the quality of health information on the Internet and utilize various tools that facilitate delivery of credible health information online. Lastly, students will gain knowledge of various theoretical frameworks that focus on delivering personalized and tailored health information to the patients, healthcare professionals, and other stakeholders through the use of mobile and internet-enabled health technological solutions | N/A |
| EPID 632 | 3 | Applications of Population Health Informatics | This course will provide students with an understanding of Electronic Health records (EHR), Personal health record (PHR), decision support tools, and telehealth applications to enhance healthcare delivery. Students will also acquire the knowledge and skills to explore | N/A |

| | | | factors influencing the adoption and utilization of EHR, PHR, and telehealth applications. The course will cover topics related to innovations, sustainability and entrepreneurship in health technologies, and methods that are essential to conduct health technology assessment. Future challenges and opportunities related to applications of population health informatics will be discussed. | |
|----------|---|---|---|-----|
| EPID 633 | 3 | Design and Development of Population Health Information Systems | This course will examine the relevance of design principles to population health informatics tools and technologies, and the various theoretical frameworks guiding the design process. The course will equip students with an ability to differentiate between the various techniques that are employed when designing health technology interventions. Further, students will develop an understanding of how to conduct technological evaluations related to population health systems. | N/A |
| EPID 634 | 3 | Population Health Dashboards | This course will examine population health data visualization across space and time, introducing concepts of visualization literacy and the importance of presenting data in a meaningful and user-friendly format. Students will be able to differentiate between information visualization and geographic visualization of healthcare data. Students will be familiar with the design principles of population health dashboards and identify visualization techniques that best display the population health data. | N/A |

| EPID 635 | 3 | Mobile Health Interventions: Opportunities, Challenges, and Applications | This course explores the growing usage of mHealth technologies, its opportunities, and its challenges. Students will examine mHealth application classification and regulatory standards, and apply tools to evaluate mHealth applications quality of evidence. | N/A |
|----------|---|---|--|---|
| EPID 642 | 3 | Psychiatric and Mental Health Epidemiology | An introduction to the epidemiology of mental health and mental illness. This course takes an explicit epidemiologic perspective, focusing on the study of the burden and determinants of mental illness. It reviews the extant literature on the epidemiology of specific disorders and evaluates studies that investigate risk factors for mental illness. We will consider methodological challenges involved in the study of mental health and illness such as limitations to diagnostic techniques and screening instruments and issues surrounding co-morbidity. The course will also address the social consequences of mental illness, and consider how we may apply epidemiologic methods to promoting psychological wellbeing in the general population | PRE: PUBH 614 OR (BIOS 610 or BIOS 611) & (EPID 610 or EPID 611) |
| EPID 643 | 3 | Public Health Surveillance | Public health surveillance is the fundamental mechanism that public health agencies use to monitor the health of the communities they serve. It is a core function of public health practice, and its purpose is to provide a factual basis from which agencies can appropriately set priorities, plan programs, and take actions to identify and reduce disparities, promote, and protect the | PRE: PUBH 614 OR (BIOS 610 or BIOS 611) & (EPID 610 or EPID 611) |

| | | | public's health. This course will cover the principles of public health surveillance, including historical context, vital registration, disease reporting regulations and notifiable diseases, surveillance registries, surveillance for behaviors and risk factors, administrative data sources in surveillance, epidemiologic uses of surveillance data, legal and ethical issues, and dissemination of surveillance information | |
|----------|---|--------------------------------------|--|--|
| EPID 696 | 1 | Supervised Fieldwork in Epidemiology | Students carry out 180 hours of supervised field work that is intended to bridge academic preparation and public health practice. Knowledge and skills from the core MPH and specialization courses are applied in a public health agency, community organization or other setting relevant to the student's academic background, specialization and career expectations. This is accomplished under the supervision and guidance of an experienced preceptor. Field-based hours are implemented with classroom and individual meetings along with online communication. Aside from deliverables required by the preceptor, the student develops a reflection paper, a self-evaluation and a capstone proposal. | PRE: Completion of at least 18 MPH credits, including PUBH 614, EPID 620, and BIOS 620; and departmental permission |
| EPID 698 | 2 | Capstone Project in Epidemiology | This course consists of a structured seminar aimed at allowing students to apply experiences gained during their graduate program and synthesize that knowledge and experience in the form of a | PRE: Completion of five MPH core courses, EPID 696, EPID 621, BIOS 621; and |

| | | | major writing project. It is expected that students use a combination of synthesized evidence, theoretical models, and empirical research to answer a public health research question or practice problem using interdisciplinary perspectives. | departmental permission |
|----------|---|----------------------------|---|--|
| EPID 700 | 6 | PopHI Project | This course includes two components: 180 hours of supervised fieldwork followed by a capstone project. The course is intended to address technological solutions to public health problems; students will translate their research findings into practice that will improve population health outcomes across diverse settings. Students will first complete 180 hours of fieldwork under the supervision and guidance of an experienced preceptor. Knowledge and skills from the Population Health Informatics curriculum are to be applied at a government agency, healthcare facility, community institution/organization, health technology industry, or other setting relevant to the student's academic background, specialization, and career goals. In the second half of this course, students create and present a capstone project that addresses a 21st century public health challenge. | N/A |
| EPID 821 | 3 | Epidemiological Methods II | Modern approaches to the design and conduct of epidemiologic studies, including use of directed acyclic graphs to inform study design and the use of instrumental variables to avoid confounding. Emphasis is | PRE: (PUBH 801 or EPID 820) and (PUBH 802 or BIOS 820), or equivalent |

| | | | placed on identifying threats to validity. This course will also cover survey methods used in epidemiologic research. | |
|----------|---|--------------------------------|---|----------------------------------|
| EPID 822 | 3 | Epidemiological Methods III | This course exposes students to advanced methods in epidemiologic research and provides students with an opportunity to consider how these strategies complement and improve upon the more commonly used strategies. Emphasis will be placed on developing practical skills relevant to contemporary epidemiologic research. Students will explore individual-level exposure-disease associations using classic study designs and techniques, as well as use methods that shift away from identifying individual risk factors for disease causation to the description and analysis of environmental systems that give rise to both exposures and health states. The class includes lectures on research methods, hands-on data analysis exercises and discussions about determining causation through epidemiological research. | PRE: EPID 821 and BIOS 821 |
| EPID 823 | 3 | Epidemiological Methods IV | New and emerging approaches in epidemiology using rigorous and axiomatic causal inference techniques. Topics covered included Mendelian randomization, g-estimation and marginal structural models. Consideration is also given to the role of data generating models in contrast to data driven agnostic approaches, including the use of "big data". | PRE: EPID 822 and BIOS 821 |
| EPID 824 | 3 | Epidemiological Methods V | A seminar course that provides | PRE: EPID |
| | | | an in-depth understanding of current advanced epidemiological techniques for data analysis and promotes lifelong learning via student-led applications and discussions of these methods | 822 and BIOS 821 |
|-------------|-------|--|--|---|
| EPID 825 | 3 | Experimental Design | In-depth consideration of experimental study designs, with a focus on the various design options for randomized controlled trials (RCT) for medical and behavioral interventions. The strengths and limitations of the various experimental study design options as well as experimental approaches in comparison with related observational epidemiologic studies is discussed. Specific topics to be discussed include sampling, intervention allocation options, hypotheses that might be tested (e.g. superiority versus non-inferiority), sample size and power considerations, adverse event monitoring, regulatory (FDA) considerations, and statistical analysis of trial data. Students apply the concepts discussed to analyze data from an RCT and prepare their findings in manuscript format. | PRE: (PUBH 801 or EPID 820) and (PUBH802 or BIOS 820), or equivalent |
| EPID 895 | 0.5-6 | Topics in Epidemiology | Courses on current topics in epidemiology | N/A |
| EPID 695 | 0.5-6 | Topics in Epidemiology | Courses on current topics in epidemiology | N/A |
| FNPH 697 | 0.5-6 | Independent Study in Food and Nutrition in Public Health | Independent study in food and nutrition in public health | PRE: Departmental permission |
| FNPH 620 | 3 | Community Nutrition Education | Nutrition programs and materials for health promotion in the community | N/A |
| FNPH | 3 | Principles of Public Health | Fundamentals of nutrition in | N/A |

| 621 | | Nutrition | public health as they apply to health promotion and disease prevention for individuals and society, with emphasis on urban populations | |
|-------------|---|---|--|---|
| FNPH 622 | 3 | Food and Nutrition Through the Lifecycle | Relation of nutrition to growth and development. Food and nutrition requirements throughout the lifecycle | N/A |
| FNPH 623 | 3 | Nutrient Metabolism and Applications in Public Health | This class is designed to prepare graduate students to apply basic biochemical and metabolic concepts to public health problems. The course focuses on the biochemical reactions and regulation of the energy-yielding nutrients metabolism. This approach includes the structure and function of biological molecules and their surrounding environment and how alterations in the biochemical pathways leading to the disease state. The course will serve as the foundation to integrate basic nutrition knowledge with an understanding of the biochemical reactions involved in the processing of carbohydrates, fat, and protein. Students will be able to describe and discuss the biochemical processes that affect the utilization and storage of the energy-yielding nutrients, carbohydrates, fats, and proteins, and illustrate how alteration in the biochemical pathways can lead to diseases of public health relevance. | PRE: FNPH 620 |
| FNPH 624 | 3 | Nutritional Epidemiology | This course is designed to help students interpret and evaluate current research in nutritional epidemiology and design and conduct epidemiologic studies in nutrition, including use of | PRE: PUBH 614 OR (EPID 610 or EPID 611) & (BIOS 610 or BIOS 611) |

| | | | secondary analyses of large-scale studies, such as NHANES, NYCHANES, BRFSS, PRAMS, etc. | |
|-------------|---|--|--|--|
| FNPH 820 | 3 | Food Policy | This policy course examines the influence of the food industry and of government on the U.S. food system and the way we eat, and on efforts to prevent and treat chronic diet-related conditions, such as obesity. | PRE: 24 credits that apply to MPH degree. (The above to be confirmed with departmental permission.) |
| FNPH 821 | 3 | Nutrient Metabolism and Applications in Public Health | This course builds on basic concepts of biochemistry to explore the structure, function, and metabolism of nutrients in the human body. Topics include energy metabolism, function and regulation of enzymes and coenzymes, and the cellular environment as it relates to systems science, metabolism of the energy-yielding nutrients and the regulation of these pathways by enzymes, coenzymes, and cofactors. | PRE: Two undergraduate level courses in chemistry and math. These requirements can be waived with departmental permission for students who bring other relevant experience to the course. |
| FNPH 690 | 3 | Seminar in Food and Nutrition Practice | Group supervision for students enrolled in food and nutrition practice courses. Includes discussion of current issues in a context of students' experiential learning. | PRE: Departmental permission |
| FNPH 691 | 3 | Supervised Practice in Medical Nutrition Therapy | Supervised practice and experiential learning in application of medical nutrition therapy. | PRE: Departmental permission |
| FNPH 692 | 3 | Supervised Practice in Food Service | Supervised practice and experiential learning in professional food service settings | PRE: Departmental permission |
| FNPH 693 | 3 | Supervised Practice in Community and Public Health Nutrition | Supervised practice and experiential learning in professional food service | PRE: Departmental permission |

settings

| FNPH 695 | 0.5-6 | Topics in Public Health Nutrition | Courses on current topics in nutrition | N/A |
|-------------|-------|---|--|------------------------------------|
| HPAM 697 | 0.5-6 | Independent Study in Health Policy and Management | Independent study in health policy and management | PRE: Departmental permission |
| HPAM 897 | 0.5-6 | Independent Study in Health Policy and Management | Independent study in health policy and management | PRE: Departmental permission |
| HPAM 641 | 3 | Exploring Evidence in Health Policy & Services | Course will teach students to evaluate evidence from major health policy initiatives in recent decades. Investigations of the effects of the RAND and Oregon Health Insurance Experiments, the Massachusetts Health Insurance Reform, and the Affordable Care Act will be critically analyzed, as will other regional and local policies enacted to lower cost, or increase quality and access. Students will analyze secondary observational data and prepare a research brief. | N/A |
| HPAM 610 | 3 | Fundamentals of Health Policy and Management | Examination of the organization, delivery and financing of health care in the United States as it pertains to the health policy-making process, including the organization of the agencies and personnel constituting the health care system, and analysis of government structure, laws, and regulations. Theoretical concepts, practice, and implementation of health programs in organized settings, including the planning, administration, management, evaluation, and policy analysis of public health agencies and private sector managed care. | N/A |

| HPAM 620 | 3 | Public Health Management | Focuses on management issues in a variety of organizational settings and the larger public health environment; describes managerial functions and problem solving strategies, financial management principles, and management models for change; develops specific skills in program management, budgeting, workforce development, and managing intersectoral programs. | N/A |
|-------------|---|---|---|--|
| HPAM 621 | 3 | Health Economics | This course in health economics introduces students to essential microeconomic concepts as they apply to health systems, individual and public health. | PRE: PUBH 613 or BIOS 610 or BIOS 611 |
| HPAM 622 | 3 | Public Health and Health Care Law | Reviews key areas of the legal process relevant to health care delivery and public health; analyzes major court decisions that have affected the field and selected federal, state and local statutes that affect public health and health care practice; acquaints students with the basics of legal research and legal reasoning as applied to public health and health care. | N/A |
| HPAM 623 | 3 | Comparative Analyses of Urban Health Care Systems | Examines unique challenges and opportunities for delivering health care in developed and developing world cities; analyses impact of national and local policies and social and political factors on health care access, quality and outcomes; introduces empirical methods for making comparative studies across municipalities and nations. | N/A |
| HPAM 624 | 3 | Public Health Advocacy | Prepares students to advocate for policies that promote public | N/A |

| | | | health, develops skills in planning and implementing advocacy campaigns; assess theories on role of coalitions and advocacy in changing health policy. | |
|-------------|---|---|--|-----|
| HPAM 625 | 3 | Public Health Policy Analysis | Examines common approaches and concepts of policy analysis for public health, including market efficiency and failures, cost-benefit analysis, problem and decision making analysis; describes critiques of such models with public health examples; focuses on the Health Impact Assessment as a method for analyzing costs and benefits of health and non-health policies. | N/A |
| HPAM 626 | 3 | International and Migrant Health Organizations | This course will provide an in-depth study of the historical development, structure, and function of the institutions and initiatives constituting the international health system. The course will first examine the basic architecture and entities that make-up the international organization system as well as the conceptual tools that facilitate further understanding of how and why these organizations function. The second segment will explore the varying organizational arrangements that have been formed to address international and migrant health, the normative differences between them, respective advantages and disadvantages, emerging new models, and their subsequent roles in the global context. The third segment provides an overview of the major operational outputs produced by IOs to address global and migrant health. The | N/A |

| | | | final segment explores international and migrant health organizations within the context of international relations, foreign policy, and globalization. Here we will discuss the 'international health system' in a rapidly changing and diversifying environment, how the system has stagnated or evolved, and how domestic, cross-border, and cross-sector organizations function together (or should) to maximize the benefits of an increasingly global society on public health | |
|-------------|---|-----------------------------------|---|-----|
| HPAM 627 | 3 | Migration and Health | This course provides an overview of public health research relevant to immigrant and migratory groups (e.g. refugees) within a 21st century context. The course has an explicit focus on examining the social conditions that influence the distribution and development of disease in these populations. The course helps students recognize that health and disease are shaped by multiple social factors operating at multiple levels of influence, which are experienced in the country of origin of immigrants and in their new homeland. Students will critically evaluate theoretical, topic specific, and methodological issues, and identify strengths and gaps in migrant health research through class readings, online discussions, quizzes, and a group project. Although the course is largely U.S. focused, global health patterns will also be examined. | N/A |
| HPAM 628 | 3 | Global Health Policy and Politics | This course will provide a framework for understanding | N/A |

| | | | both the theory and practice of advancing global health. International systems, bilateral and multilateral initiatives and globalization trends and their effect on population health will be studied from a comparative perspective across countries and regions. The course aims at promoting an understanding the biomedical, socioeconomic and political effects of the globalization process on population health. During the semester, students will examine the emerging field of global health from an interdisciplinary perspective, by addressing the main health issues experienced by mothers and children worldwide. | |
|-------------|---|---|---|--|
| HPAM 629 | 3 | Global Health Law: Human Rights, Regulation, Migration, and Trade | This course explores the history, theory, development and practical use of international health regulations, trade negotiations and human rights agreements and conventions in advancing global health. During the course we will examine a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global and migrant health, and the relationship between health and human rights. | N/A |
| HPAM 640 | 3 | Introduction to Health Survey and Methodology | Introduction to health survey design and methodology. Topics include: types of inquiries best suited for survey instruments, conditions necessary for sampling, how to design, and develop both questions and survey instruments, how to test validity and reliability, conduct data | PRE: PUBH 613 or BIOS 610 or BIOS 611 |

| | | | cleaning and analysis. | |
|-------------|---|-------------------------------------|---|-----|
| HPAM 661 | 3 | Health Care Financial Management | Study of the basic principles of health-care accounting. Analysis of health-care financial statements and responsibility-accounting techniques. Evaluation of methods of managing working capital, budgeting, using cost information in decision making, controlling costs, and financing capital projects in the health-care setting. Analysis of approaches to pricing, rate setting, and cost control in the health-care reimbursement environment. | N/A |
| HPAM 662 | 3 | Health Economics | Economic analysis of the structure, performance, and government policy in the health care sector of the economy. Demand and supply of health care services, the role of third party payers, and the public policy debate over government reform of the health care system. Microeconomic, econometric, and political philosophy concepts relevant to issues of justice in health care. | N/A |
| HPAM 820 | 3 | Seminar in Health Policy | The objective of the course is to understand patterns in the organization, financing, and delivery of health care, and their relationship to population-based health outcomes, through an integrated exploration of research from the various disciplines informing the health policy and management fields. With an emphasis on the development of critical thinking skills, students are introduced to multidisciplinary models from the social sciences as conceptual sources for health policy and management | N/A |

| | | | research. The course adapts a trans disciplinary approach to the examination of important topics in urban public health management and policy, such as the relationship between health systems and the urban-based health economy, and the interface between managerial functions and health policy analysis in addressing health status and outcomes disparities. | |
|-------------|---|---|--|------------------|
| HPAM 821 | 3 | Quantitative Methods in Health Services Research | This course focuses on quantitative reasoning skills in health services research within the context of the principles of the scientific method and the logic of the research process. The logic and methodologies of problem formulation, development of hypotheses and objectives, multidisciplinary research design, sampling, operationalization and measurement are reviewed in connection with selected analytic strategies, such as cross-section/time-series design, multilevel analysis, cost effectiveness analysis, and health impact assessment. Methodological connections between practice-based performance assessment for management and population-based health outcomes assessment for policy are addressed. | PRE: HPAM 820 |
| HPAM 822 | 3 | Public Health Economics | The broad literature on health economics helps improve the understanding of issues related to public health and its influence in the decision-making process of cost-effective interventions for the overall population health. The emphasis of this class is on acquiring a set of devices from | N/A |

| | | | the economic theory and a framework within which to organize empirical analysis to inform health and public health policy. Topics will include the analysis of the overall health market, and in particular the analysis of the demand for health, health care and insurance, the supply of health care and insurance, the 29 market structure of the health care sector, and, finally, the positive and normative aspects of performance of the health care sector. | |
|-------------|-------|---|--|------------------------------------|
| HPAM 823 | 3 | Health Policy Analysis Methods | This course is designed to expand and deepen the analytic repertoire of students with respect to (1) the analysis of problems or issues that face health policy-makers; (2) the analysis of alternative solutions so those problems and (3) the evaluation of selected solutions (including doing nothing). The course uses research and analytic methods drawn from epidemiology, decision sciences, political science, sociology, social psychology and economics. It emphases how methods developed within these disciplines can be applied to policy analysis in public health and health care. | PRE OR CO: HPAM 821 |
| HPAM 895 | 0.5-6 | Topics in Health Policy and Management | Courses on current topics in health policy and management | N/A |
| HPAM 695 | 0.5-6 | Topics in Health Policy and Management | Courses on current topics in health policy and management | N/A |
| PUBH 697 | 0.5-6 | Independent Study in Public Health | Independent study in public health | PRE: Departmental permission |
| PUBH 897 | 0.5-6 | Independent Study in Public Health | Independent study in public health | PRE: Departmental permission |

| PUBH 601 | 0 | Foundations of Public Health Knowledge | This course covers the foundational knowledge of the profession and science of public health and factors related to human health. Students must pass this course by the end of their first semester | N/A |
|-------------|---|--|---|-----|
| PUBH 610 | 3 | Public Health Leadership and Management | This core course introduces students to the basic structures of the U.S. health care delivery and the public health service systems. It provides an overview of the local, state and federal regulatory authorities as well as general budgetary principles appropriate for those systems. The course covers the policymaking process, including policy implementation and modification. The course also discusses negotiation, mediation and advocacy skills. Further, the central role of evidence and ethics in public health policy process and decision-making will be reviewed. Key principles of public leadership, governance and management are infused throughout the course. | N/A |
| PUBH 611 | 3 | Health Equity, Communication, and Advocacy | This course analyzes the mechanisms and social processes by which social determinants of health create patterns of health and disease and produce inequalities in health among populations. It examines how race, class, power, wealth, structural bias, racism, and sexism distribute social inequities and undermine health. Students explore strategies for mitigating adverse social influences on health. They also develop skills in incorporation of cultural humility, engaging diverse groups in public health | N/A |

| | | | activities, creating partnerships and collaboratives with relevant constituencies; participating effectively in inter-professional teams; and, identifying appropriate communication strategies for different audiences. Ultimately, students will be able communicate, in writing and verbally, key public health concepts and strategies for different audiences and advocate for political, social and/or economic policies and programs intended to improve health and reduce health inequalities. | |
|-------------|---|--|---|-----|
| PUBH 612 | 3 | Designing and Evaluating Public Health Interventions | This course covers the key theoretical concepts, methods, and approaches to the design, implementation and evaluation of community-based health-related programs, policies and other types of interventions. Theoretical and practical approaches to engaging and working with partners from diverse sectors (eg, CBO providers and advocates, municipal agencies, health care institutions, state government, and others) are emphasized. Key steps in the process will be covered including initial establishment of clear research questions, project goals and objectives to appropriate study design, components of project implementation and evaluation. | N/A |
| PUBH 613 | 3 | Designs, Concepts, and Methods in Public Health Research | The course introduces students to both quantitative and qualitative research methods, principles, theory and measures commonly used in public health; to understand the different study designs, their strengths and limitations as well as their | N/A |

| | | | threats to validity and causal inferences; to develop research questions and hypotheses as well as to identify the data collection methods appropriate for such research questions. In addition, the course provides students with an overview of systems science thinking and systems models that promote understanding of the complexity of various public health issues. | |
|-------------|---|---|--|------------------------|
| PUBH 614 | | Quantitative and Qualitative Data Analysis Methods in Public Health Research | The course provides students with the tools to identify quantitative and qualitative methods and the appropriate software and programming to analyze and interpret data analysis results for use on public health, policy and practice applications. | PRE OR CO: PUBH 613 |
| PUBH 643 | 3 | Adolescent Health | Course explores the public health issues facing adolescents. Students will gain a broader understanding of adolescents through an examination of systems and contexts that can impact their health, development and well-being. Group problem solving strategies will be utilized to develop youth interventions based on knowledge gleaned from evidence-based prevention practice and from community members and organizations working with youth in NYC. Open to all MPH students except EOHS, and serves and as elective for all students in MRSCH concentration. | N/A |
| PUBH 645 | 3 | Health Literacy | A silent killer maneuvers just below the surface of almost all the health issues that will lead to disease and death in the 21st century. The silent killer is low health literacy. At least half of | N/A |

| | | | over a lifetime to seek out, comprehend, evaluate, and use health information and concepts so that they can make informed choices, reduce health risks, and their increase quality of life. There is very little capacity for people to live healthier and more equitable lives without improving health literacy. From type 2 Diabetes and obesity, to emerging infectious diseases and radiation poisoning, this course will give students a solid foundation in health literacy using real world cases focusing on research, public health communication campaigns, and social media's new role in shaping public health literacy. | |
|-------------|---|--|---|-----|
| PUBH 646 | 3 | Healthy Urban Aging: Economic & Policy Issues | Population aging has been named one of the major public health challenges we face in the 21st century by the CDC. This course examines key social, economic, and policy issues at the intersection of the changing demographics of aging, urbanization, public health. The disciplines of gerontology, public health, urban planning, and economics are beginning to communicate, and interdisciplinary exchange among those fields is growing. The course is designed to increase our knowledge of aging as it relates to urban public health in two basic areas: (1) the economic implications of demographic changes in the population, both nationally and globally; and (2) the policy | N/A |

the adults in the US have low health literacy, making it one of the most critical threats to public health. Health literacy refers to the wide range of skills, and competencies people develop

| | | | implications of multilevel interactions of the elderly with neighborhood environments, the health care system and community-based organizations. How municipal and national public health policies respond to the challenges of healthy urban aging will have a critical impact on health care costs and quality of life for all. | |
|-------------|---|---|--|-----|
| PUBH 647 | 3 | Interdisciplinary Perspectives on Corporations, Health and Democracy, 1900-present | This course will examine the changing impact of corporate business and political practices on health since 1900 in the US and globally. Using scholarship from history, economics, political science and public health, students will analyze how various industries including automobile, firearms, food, alcohol and tobacco and pharmaceutical contribute to patterns of health and disease. The course focuses on the role of business practices in chronic diseases and injuries, two leading causes of premature death and preventable illness in the 21st century, and will consider the varying public health responses to corporations, from partnerships to regulation , social responsibility initiatives and activist campaigns. Open to graduate students in public health, sociology, social work, history. No prerequisites. | N/A |
| PUBH 648 | 3 | Media: Impact & Advocacy for Public Health | This course will help students communicate messages to stakeholders including the public, understand how to use media as an organizing tool, and how stakeholders use the media to impact public policy and perception. Students will | N/A |

| | | | learn to use the elements of effective messaging, explore the role of data and evidence in messaging, develop a media strategy for a public health issue, and understand the difference among social marketing, media advocacy, and using media as part of an organizing strategy. | |
|-------------|---|--|---|-----|
| PUBH 649 | 3 | Producing a Public Health Documentary | This graduate class will be a collaborative workshop that brings together Hunter College students from Public Health and Integrated Media Arts to use media for community organizing, development and education aimed at exposing inequities and improving the quality of health care and/or improving the social determinants of health and well-being. This is a production course. Students will produce a short piece to use for community organizing, development and education. | N/A |
| PUBH 840 | 3 | Maternal, Child, Reproductive and Sexual Health in Context | A critical overview of public health issues, approaches and concerns in the area of Maternal, Child, Reproductive and Sexual Health. Topics will include the medicalization of maternity care and infancy/childhood; the consequences of 'risk' as a dominant ideology for Maternal, Child, Reproductive and Sexual Health care; issues in reproductive justice, with particular attention to race and class, and the historic and contemporary influence of eugenics in public health; the history of midwifery and global trends in midwifery care; and the role of public health interventions in infant care; | N/A |

| | | | sexual health and gender identity | |
|-------------|---|---|---|--|
| PUBH 841 | 3 | Maternal, Child, Reproductive and Sexual Health: A Life Course Perspective | Provides a theoretical framework as to how life course exposures affect vulnerability to disease, with an emphasis on the roles of maternal, child, reproductive and sexual health. This course also considers how intra- and inter-generational influences may be relevant to disparities in health. Readings will address empirical patterns, prevailing theories and controversies regarding life course influences, as well as addressing interventions or policies that may be applied to improve population health. | PRE: PUBH 840 |
| PUBH 642 | 3 | Social Marketing | Social marketing is the application of communication and influence strategies to generate behavior and attitude changes around issues of public concern. In many respects, social marketing principles share similarities with traditional commercial marketing, and in many respects there are important differences. This course will provide an introduction to the concepts and theories of social marketing for public health, and will explore those areas of commonality and difference. Students will analyze real examples of social marketing campaigns, and will design a campaign around a real local or global public health issue. | N/A |
| PUBH 644 | 3 | Global Maternal & Child Health | The focus of this course is on the global issues in the maternal and child health field with particular emphasis on the health of children and their mothers in developing | PRE: 18 credits including a minimum of 3 public health core courses |

| | | | countries. Open to 2nd year+ MPH students (18+ earned credits) and serves elective to MRSCH concentration. | |
|-------------|---|--|---|---|
| PUBH 650 | 3 | Qualitative Research Methods in Public Health | Provides students with a foundation in qualitative research methods, with a focus on their application to public health practice. Will cover qualitative research design, data collection, analysis, writing for publication, and dissemination of findings. Students will specify a qualitative research question of their interest, develop an appropriate design, conduct primary data collection and analysis, and write a research report. | PRE: (BIOS 610 or BIOS 611) and (EPID 610 or EPID 611) or departmental permission |
| PUBH 651 | 3 | Sexual Health Promotion | This course will focus on specifically applying health promotion principles to sexual health. Topics covered will include sexuality frameworks and priority populations, examination of sexual health data, and planning and evaluating sexual health promotion interventions and messages. Some understanding of health promotion/evaluation is expected. | N/A |
| PUBH 696 | 3 | Supervised Fieldwork | Students carry out 180 hours of supervised field work that is intended to bridge academic preparation and public health practice. Knowledge and skills from the core MPH and specialization courses are applied in a public health agency, community organization or other setting relevant to the student's | PRE: Completion of at least 18 credits toward the MPH or MS degree, including PUBH 614 OR (BIOS 610 or BIOS 611) & (EPID 610 or |

| | | | academic background, specialization and career expectations. This is accomplished under the supervision and guidance of an experienced preceptor. Field-based hours are implemented with classroom and individual meetings along with online communication. Aside from deliverables required by the preceptor, the student develops a reflection paper, a self-evaluation and a capstone proposal. | EPID 611) and two courses in the student's area of specialization; and departmental permission |
|-------------|-------|-------------------------|--|---|
| PUBH 695 | 0.5-6 | Topics in Public Health | Courses on current topics in public health | N/A |
| PUBH 698 | 3 | Capstone Project | This course consists of a structured seminar aimed at allowing students to apply experiences gained during their graduate program and synthesize that knowledge and experience in the form of a major writing project. It is expected that students use a combination of synthesized evidence, theoretical models, and empirical research to answer a public health research question or practice problem using interdisciplinary perspectives. | PRE: Departmental permission; completion of at least 33 credits of coursework toward the MPH or MS degree, which must include Supervised Fieldwork (MPH students only), all core coursework required for the degree, and at least 3 concentration courses |
| PUBH 801 | 3 | Epidemiologic Methods I | A rigorous introduction to the design and conduct of epidemiologic studies, including causal inference, measurement, major study designs, threats to validity, such as confounding and selection bias, and their application to public health issues. The class includes | N/A |

| | | | lectures on research methods, hands-on data analysis exercises and discussions about determining causation through epidemiological research. | |
|-------------|---|---|---|-----|
| PUBH 802 | 3 | Applied Biostatistics I | Topics include: simple and multiple linear regression, logistic regression, model building techniques, including assessing for multi-collinearity, effect measure modification, non-linearity and model fit statistics, and their use to answers questions of risk stratification and causal inference. Focus on practical applications, utilizing statistical software. | N/A |
| PUBH 803 | 3 | Public Health Perspectives on Science | This course will compare and contrast different traditions concerning the nature of science; examine how these theories relate to the history and development of public health. The course discussions will emphasize the implications of the application of different scientific perspectives to public health practice today in the context of urban, social, health equity, cultural, economic and political influences on public health policies and actions, as well as the school's mission and values. | N/A |
| PUBH 804 | 3 | Qualitative Research Methods with Application to Urban Health | This course will introduce students to approaches in designing and conducting qualitative research in topics of relevance to public health. It is intended to provide doctoral students with a foundation in the various qualitative data collection and analysis methods, focusing on their application to public health | N/A |

| | | | practice and research. It will cover elements of qualitative research design, data collection, analysis, and writing for publication. This will be integrated with the main assignment in which students develop a proposal for a qualitative research project tailored to address a specific public health research question. | |
|-------------|---|---|---|------------------------|
| PUBH 811 | 3 | Quantitative Research Methods with Applications to Urban Health | This course will introduce students to intermediate level approaches and applications in conducting quantitative research in urban public health. It follows introductory biostatistics and epidemiology courses. Course objectives include understanding the assumptions, application, and interpretation of generalized linear regression models, including linear, logistic, Poisson, and proportional hazards models; understanding standard methods for making inferences on model parameters, including Wald testing and ratio testing; and being able to fit generalized linear regression models and diagnose the appropriateness of models using standard statistical software. Particular attention will be made to choosing and defining the right outcome(s), given specific research questions and available data; defining appropriate comparison groups; and understanding the assumptions of each model in order to make appropriate choices and analytic decisions for different types of data and research questions common to | PRE OR CO: EPID 820 |

| | | | urban health research. Labs will allow students to practice these new skills. The final examination will include a project in which students develop and carry out an analysis of an urban health research question using a publically accessible dataset. | |
|-------------|---|---|---|----------------------------------|
| PUBH 812 | 3 | Interdisciplinary Approaches to Urban Health Research | This course prepares students to investigate causes and solutions to complex urban health problems by bringing together concepts, theories and methods from a variety of disciplines that contribute to our understanding of urban health. It also focuses on research that contributes to reducing health disparities and promoting well-being in urban communities. | PRE: PUBH 810 |
| PUBH 814 | 3 | Leadership & Organizational Change Seminar | The Public Health Leadership Seminar introduces students to theories and models of leadership and organizational change and helps students to analyze their own strengths and weaknesses as leaders. Using a case study approach, students analyze successful and unsuccessful examples of public health leadership and organizational change. | PRE: PUBH 810 and PUBH 812 |
| PUBH 815 | 3 | Advanced Research Seminar I | Students develop specific research questions pertaining to potential areas of interest for their doctoral dissertations and prepare a proposal that specifies a research question, a public health rationale for the study and an appropriate research design and methods. Students will be expected to complete a literature review and design a study, which may later lead to a dissertation proposal. | PRE: PUBH 810 and PUBH 812 |

| PUBH 816 | 3 | Advanced Research Seminar II | Guides advanced students in the completion of their dissertation proposal and, if needed, Institutional Review Board (IRB) application for dissertation research. Faculty assist students to refine the research design, to fully develop appropriate research methods and analytic strategies and to provide protection for human subjects in their dissertation research. In order to take PUBH 891 Research Seminar II, students need to have defended the Second Exam or have permission of the instructor and have the Second Exam defense scheduled within the first two weeks of the semester. Students must successfully defend the Second Exam within the first two weeks of the semester in order to remain in the course. | PRE: All other coursework, successful defense of the second exam, and departmental permission |
|-------------|-------|---------------------------------|--|--|
| PUBH 895 | 0.5-6 | Topics in Public Health | Courses on current topics in public health | N/A |
| PUBH 896 | 3 | Practicum Project | The DPH Practicum Project is a planned, supervised and evaluated experience that allows students to apply the knowledge and skills that they have acquired through learning experiences in a practice setting. The DPH Practicum Project requires 180 practicum hours that can be completed in a range of organizations across New York City or elsewhere. Students must document how the 180 practicum hours are spent. The student must complete a detailed learning plan, a summary report (that includes objectives), a self-evaluation, and a final report. It is the belief of the DPH Program and the CUNY School | PRE: PUBH 810 and PUBH 812 and departmental permission |

| | | | of Public Health that there is always a new topical, methodological, or positional approach that will allow students to gain new experience or skills or benefit from the additional practical experience. Therefore, the Practicum Project requirement cannot be waived, as even students with extensive experience in public health practice and leadership can benefit from applied public health experiences that they have not yet encountered in their careers. | |
|-------------|---|--------------------------|--|---|
| PUBH 898 | 0 | Dissertation Seminar | This is a non-credit required course that students must take every semester they are working on the dissertation and registered for PUBH 900. The dissertation seminar meets up to four times a semester and serves as a workshop in which students attend Public Health Grand Rounds, present and discuss their dissertation research, and review aspects of each other's work (peer review). The student must be registered for this course number in the same or preceding semester the student deposits the dissertation. After the student is advanced to candidacy, this course number will appear as audit on the transcript. | PRE: All coursework and exams, and departmental permission; CO: PUBH 900 |
| PUBH 900 | 0 | Dissertation Supervision | Students pursue doctoral research leading to the required dissertation under the supervision of their dissertation sponsor. Doctoral faculty provide supervision on research design, data management and analysis, presentation and interpretation of findings. The student must be registered for | PRE: All coursework and exams and departmental permission; CO: PUBH 898 |

| | | | this course number in the same or preceding semester the student deposits the dissertation. After the student is advanced to candidacy, this course number will appear as audit on the transcript. | |
|-------------|-------|------------------------|--|-----|
| PUBH 999 | 0.5-6 | Public Health Elective | Public health elective | N/A |