Public Health Sciences

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Administration:
Dean of the School: Wayne H. Giles
Director of Graduate Studies: Linda Forst

Program Codes:
20FS1634MS (Biostatistics MS)
20FS1634PHD (Biostatistics PhD)
20FS1635MS (Community Health Sciences MS)
20FS1635PHD (Community Health Sciences PhD)
20FS1636MS (Environmental and Occupational Health Sciences MS)
20FS1636PHD (Environmental and Occupational Health Sciences PhD)
20FS1637MS (Epidemiology MS)
20FS1637PHD (Epidemiology PhD)
20FS1638MS (Health Policy and Administration MS)
2PFS4021MSU (Health Policy and Administration - Public Health Informatics MS online)
20FS1638PHD (Health Policy and Administration PhD)

The School of Public Health offers work leading to the Master of Science and Doctor of Philosophy degrees in Public Health, Master of Science in Clinical and Translational Science, Master of Healthcare Administration, and Clinician Executive Master of Healthcare Administration. The school also participates in the Medical Scientist Training Program with the College of Medicine leading to a joint MD/PhD degree. Consult the Master of Science in Clinical and Translational Science section for information on the MS CTS and the MS CTS joint degree programs. Consult the Master of Healthcare Administration section for information on the MHA and CEMHA programs. Master of Science and Doctor of Philosophy students may apply into one of six primary concentrations. Secondary concentrations are also available as noted in parenthesis:

1. Biostatistics
2. Community Health Sciences
3. Environmental and Occupational Health Sciences (secondary concentrations: Industrial Hygiene: MS students; Occupational and Environmental Epidemiology: MS and PhD students; Occupational Safety: MS students)
4. Epidemiology (secondary concentrations: Cancer Epidemiology: MS and PhD students; Occupational and Environmental Epidemiology: MS and PhD students)
5. Health Analytics
6. Health Policy and Administration (secondary concentration: Public Health Informatics: online MS students only)

Other secondary concentrations include Global Health, which is offered by the School of Public Health and available to all on-site MS students, and interdepartmental concentrations in Gender and Women's Studies, Survey Research Methodology, Violence Studies, and Women's Health, which are available to some MS and PhD students.

The School of Public Health also offers programs leading to the Master of Public Health and Doctor of Public Health, and participates with other academic units in offering the MBA/MPH, MD/MPH, DVM/MPH, and MSW/MPH joint degree programs; a coordinated JD/MPH with IIT Kent College of Law and a coordinated DC/MPH with National University of Health Sciences. These professional degree programs are not part of the Graduate College.

• Admission to the Concentration in Community Health Sciences in the MS is suspended until further notice.

Admission and Degree Requirements

• MS in Public Health
• MPH/MA in Anthropology
• PhD in Public Health
• MPH/MS in Nursing - Please note: The MPH/MS in Nursing has been suspended effective Fall 2014. Contact the department for more information.

Biostatistics

3. Environmental and Occupational Health Sciences (secondary concentrations: Industrial Hygiene: MS students; Occupational and Environmental Epidemiology: MS and PhD students; Occupational Safety: MS students)
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BSTT 426. Health Data Analytics Using Python Programming. 3 hours.
Covers methodologies of online data collection by Python Programming.
Topics include: introduction to Python, Information retrieval Techniques, Retrieving and analyzing information from medical data sources, IBM Bluemix. Course Information: Extensive computer use required. Prerequisite(s): No prerequisites except that some very basic understanding of programming in SAS or R or some other programming language is needed along with basic analytical knowledge. Motivation to learn programming concepts is key. Recommended Background: IPHS 402 or EPID 406 or BSTT 494.

BSTT 494. Introductory Special Topics in Biostatistics. 1-4 hours.
Special topics in biostatistics. Content varies. Course Information: May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

BSTT 505. Logistic Regression and Survival Analysis. 2 hours.
Interpretation of logistic regression and survival analysis models. Running logistic and proportional hazards regression models and constructing life-tables using SAS. Course Information: Previously listed as BSTT 402. Prerequisite(s): BSTT 400 and BSTT 401.

BSTT 506. Design of Clinical Trials. 3 hours.
Rationale for clinical trials, blinding, ethical issues, methods of randomization, crossover trials, power and sample size calculations, data management, protocol deviation, data analysis, interim analysis. Course Information: Previously listed as BSTT 430. Prerequisite(s): BSTT 400 and BSTT 401.

BSTT 507. Sampling and Estimation Methods Applied to Public Health. 3 hours.
The purpose of this course is to provide a comprehensive overview of current methods and issues in survey sample design and associated estimation procedures. Course Information: Previously listed as BSTT 440. Credit is not given for BSTT 507 if the student has credit in STAT 431. Restriction applies only to certification for students pursuing the Interdepartmental Graduate Concentration in Survey Methodology. Prerequisite(s): BSTT 401 or BSTT 502 or consent of the instructor.

BSTT 521. Applied Multivariate Analysis. 3 hours.
Analysis of vector of responses; MANOVA, data reduction methods; introduction to cluster analysis, discriminant analysis, and structural equation models. Course Information: Prerequisite(s): BSTT 537 and consent of the instructor.

BSTT 523. Biostatistics Methods I. 4 hours.
Foundations for and introduction to statistical inference, including one- and two-sample problems; regression analysis, including multiple regression and indicator variables. Course Information: Previously listed as BSTT 502. Prerequisite(s): College calculus, including multivariable calculus, concurrent registration in BSTT 524, and consent of the instructor.

BSTT 524. Biostatistics Laboratory. 2 hours.
Use of spreadsheets for statistical investigations; use of statistical software; matrix theory, including methods relevant in biostatistical analysis. Course Information: Previously listed as BSTT 503. Prerequisite(s): Concurrent registration in BSTT 523 and consent of the instructor.

BSTT 525. Biostatistics Methods II. 4 hours.
Analysis of variance and multiple comparisons; model building and diagnostics; generalized linear models; logistic and Poisson regression; introduction to repeated measures and mixed models. Course Information: Previously listed as BSTT 504. Prerequisite(s): Grade of B or better in BSTT 523 and Grade of B or better in BSTT 524, or consent of the instructor.

BSTT 527. Statistical Learning in Health Analytics. 3 hours.
Covers multivariate statistical methods such as LASSO, ElasticNet, Decision Trees etc, and machine learning methods Bagging, random Forest, Boosting etc in context of statistical learning in PH applications. Course Information: Extensive computer use required. Prerequisite(s): IPHS 402 and BSTT 505; or BSTT 523 and BSTT 525. Recommended Background: IPHS 402 or EPID 406 or BSTT 494.

BSTT 528. Machine Learning in Health Analytics. 3 hours.
Covers several advanced statistical and machine learning methods including graphical models, natural language processing, neural nets, hierarchical modeling, annealing, deep belief networks. Course Information: Extensive computer use required. Prerequisite(s): BSTT 526 and BSTT 527.

BSTT 529. Health Analytics Investigations. 2 hours.
This is a main competency measure of MS in Public Health with Health Analytics concentration. Course Information: Satisfactory/Unsatisfactory grading only. Extensive computer use required. Prerequisite(s): BSTT 526 and BSTT 527 and BSTT 528; or consent of the instructor.

BSTT 531. Advanced Biostatistical Consulting. 2 hours.
Introduction and overview of biostatistical consulting. Potential topics include: study design and sample size calculation, statistical power calculation, interim analysis, and critical evaluation of existing literature. Course Information: Extensive computer use required. Prerequisite(s): BSTT 526.

BSTT 532. Advanced Biostatistical Methods. 3 hours.
Application and theory of models for longitudinal data analysis for both continuous and categorical response data, including use of statistical software for these methods. Course Information: Previously listed as BSTT 531. Prerequisite(s): Grade of B or better in BSTT 513 and Grade of B or better in BSTT 525, or consent of the instructor.

BSTT 533. Advanced Biostatistical Methods II. 3 hours.
Application and theory of models for longitudinal data analysis for both continuous and categorical response data, including use of statistical software for these methods. Course Information: Previously listed as BSTT 532. Prerequisite(s): Grade of B or better in BSTT 513 and Grade of B or better in BSTT 525, or consent of the instructor.

BSTT 534. Advanced Biostatistical Methods III. 3 hours.
Application and theory of models for longitudinal data analysis for both continuous and categorical response data, including use of statistical software for these methods. Course Information: Previously listed as BSTT 533. Prerequisite(s): Grade of B or better in BSTT 513 and Grade of B or better in BSTT 525, or consent of the instructor.

BSTT 535. Categorical Data Analysis. 3 hours.
Logistic and proportional hazards regression models; parametric models. Course Information: Extensive computer use required. Prerequisite(s): BSTT 526 and BSTT 527 and BSTT 528; or consent of the instructor.

BSTT 536. Survival Analysis. 3 hours.
Contingency tables and their tests, measures of association, stratified analysis, logistic regression, generalized linear model. Poisson regression, log-linear model, matched data, marginal homogeneity, ordinal data. Course Information: Previously listed as BSTT 511. Prerequisite(s): Grade of B or better in BSTT 525; and STAT 411, or consent of the instructor.

BSTT 537. Longitudinal Data Analysis. 4 hours.
Analysis and theory of models for longitudinal data analysis for both continuous and categorical response data, including use of statistical software for these methods. Course Information: Previously listed as BSTT 513. Prerequisite(s): Grade of B or better in BSTT 513 and Grade of B or better in BSTT 525, or consent of the instructor.

BSTT 538. Biostatistical Consulting. 2 hours.
Discussion of techniques required for successful biostatistical consultation; effective communication, problem formulation, data analysis, oral and written reports, supervised consulting experience. Course Information: Previously listed as BSTT 514. Prerequisite(s): Grade of B or better in BSTT 525 and consent of the instructor. Restricted to students enrolled in the biostatistics major.
BSTT 550. Biostatistical Investigations. 4 hours.
Analysis of several large data sets that will require integration of numerous biostatistical tools; written summarization and discussion of results. Course Information: Previously listed as BSTT 522. Prerequisite(s): Grade of B or better in BSTT 535 and Grade of B or better in BSTT 536 and Grade of B or better in BSTT 537 and Grade of B or better in BSTT 538 and Grade of B or better or concurrent registration in BSTT 521.

BSTT 560. Large Sample Theory. 2 hours.
Deriving and applying large sample statistical theories. The primary focus will be in limit theorems and their applications in biostatistical problems. Course Information: Meets eight weeks of the semester. Previously listed as BSTT 534. Prerequisite(s): Open only to PhD degree students; or consent of the instructor. Adequate training at the level of intermediate mathematical statistics. Masters degree in biostatistics or mathematics.

BSTT 561. Advanced Statistical Inference. 3 hours.
An in-depth consideration of some important ideas of statistical inference including large-sample theory, estimation and testing. Specific topics to be covered include asymptotic theory, parameter estimation methods and hypothesis testing. Some computer use in class. Course Information: Previously listed as BSTT 531. Prerequisite(s): Open only to Ph.D. degree students; and consent of the instructor. Recommended background: MS degree in Biostatistics or the equivalent.

BSTT 562. Linear Models. 4 hours.
Generalized inverse matrices; distributions for quadratic forms; estimability and testable hypotheses; constrained linear model; applications to regression, ANOVA, ANCOVA models; variance component models. Course Information: Previously listed as BSTT 533. Prerequisite(s): Open only to Ph.D. degree students; or consent of the instructor. Recommended background: MS degree in Biostatistics or the equivalent.

BSTT 563. Generalized Linear Models. 4 hours.
Teaches students the components of generalized linear models and their extensions. Course Information: Previously listed as BSTT 541. Prerequisite(s): BSTT 561 and concurrent registration in or prior completion of BSTT 560. Open only to PhD degree students; or consent of the instructor. Adequate training at level of intermediate mathematical statistics. Masters degree in biostatistics, mathematical statistics or mathematics.

BSTT 564. Missing Data. 4 hours.
Students will learn the statistical methods used for analyzing data with missing values. Course Information: Previously listed as BSTT 542. Prerequisite(s): BSTT 561 and concurrent registration in or prior completion of BSTT 560. Open only to PhD degree students; or consent of the instructor. Adequate training at level of intermediate mathematical statistics. Masters degree in biostatistics, mathematical statistics or mathematics.

BSTT 565. Computational Statistics. 4 hours.
Developing a broad and thorough working knowledge of modern statistical computing and computational statistics on a practical, conceptual, philosophical and mathematical level. Course Information: Previously listed as BSTT 543. Extensive computer use required. Prerequisite(s): Concurrent registration in or prior completion of BSTT 560. Open only to Ph.D. degree students; or consent of the instructor. Adequate training at level of intermediate mathematical statistics. Masters degree in biostatistics, mathematical statistics or mathematics.

BSTT 566. Bayesian Methods. 4 hours.
Developing a broad and thorough working knowledge of Bayesian applications on a practical, conceptual, philosophical and mathematical level. Course Information: Previously listed as BSTT 544. Prerequisite(s): Concurrent registration in or prior completion of BSTT 560. Open only to Ph.D. degree students; or consent of the instructor. Adequate training at level of intermediate mathematical statistics. Masters degree in biostatistics, mathematical statistics or mathematics. Class Schedule Information: Extensive computer use required.

BSTT 567. Advanced Survival Analysis. 4 hours.
Methods of analysis for multivariate survival data, including transition models and shared frailty models. Theory behind existing methodology is covered as well as implementation. Course Information: Prerequisite(s): Grade of B or better or concurrent registration in BSTT 556; and consent of the instructor. Recommended background: Intended for students in the Biostatistics PhD program.

BSTT 568. Programming and Simulation in R. 2 hours.
Applications in R on a practical, conceptual, philosophical and mathematical level. The focus is on simulation and computation, not on data analysis. Course Information: Extensive computer use required. Prerequisite(s): BSTT 400; or both BSTT 523 and BSTT 524; and graduate or professional standing; or consent of the instructor.

BSTT 594. Special Topics in Biostatistics. 1-4 hours.
Advanced special topics. Content varies. Course Information: May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

BSTT 595. Biostatistics Research Seminar. 1 hour.
Current developments in theory and application of biostatistics and epidemiology with presentations by faculty and visiting scientists. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated.

Community Health Sciences Courses

CHSC 411. Nutrition for Public Health Professionals. 3 hours.
Foundation course to introduce nutrition principles and their application to public health populations and problems. Course Information: Prerequisite(s): Graduate or professional standing; or approval of the department.

CHSC 421. Community Health 1: Assessing, Promoting and Improving Community Health. 4 hours.
Provides an introduction to theory and methods for community health assessment, promotion, and improvement. Course Information: Credit is not given for CHSC 421 if the student has credit in CHSC 431 or CHSC 480. Field work required. Prerequisite(s): Credit or concurrent registration in IPHS 401 and credit or concurrent registration in IPHS 402. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Practice.

CHSC 422. Community Health 2: Evidence-Informed Community Health Interventions. 4 hours.
Provides an introduction to quantitative, qualitative and mixed research methods which are applied in planning, implementing, and evaluating evidence-informed community health interventions and policies. Course Information: Credit is not given for CHSC 422 if the student has credit for 433 or CHSC 446. Field work required. Prerequisite(s): CHSC 421 and Credit or concurrent registration in IPHS 403. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Practice.
CHSC 423. Community Health 3: Professional Development for Public Health Practice. 4 hours.
Emphasizes critical thinking, communication and professional development skills for public health practice and prepares students to complete an integrative individual capstone project. Course Information: Prerequisite(s): CHSC 421 and CHSC 422.

CHSC 430. Public Health Policy and Advocacy. 3 hours.
Frameworks and tools for understanding, developing and analyzing public health policy issues and processes. Course Information: Credit is not given for CHSC 430 if the student has credit for HPA 432. Prerequisite(s): IPHS 401; and graduate standing; or approval of the department. MPH and Certificate students in Community Health Sciences will have priority in registration.

CHSC 433. Public Health Planning and Evaluation. 3 hours.
Planning, implementation and evaluation of community health programs, including proposal development and evaluation and considerations for community/consumer involvement throughout the process. Course Information: Prerequisite(s): Credit or concurrent registration in BSTT 400 and Credit or concurrent registration in CHSC 431 and Credit or concurrent registration in CHSC 480; and graduate or professional standing; or approval of the department. MPH and Certificate students in Community Health Sciences will have priority in registration.

CHSC 434. Introduction to Qualitative Methods in Public Health. 3 hours.
Introduction to major methods and techniques used in qualitative research (observation, participant observation, in-depth interviews, focus groups); includes field and in-class exercises, and introduces computer-assisted qualitative data analysis. Course Information: Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 446. Research Methods in Community Health. 3 hours.
Principles and techniques for scientific investigation of problems in public health research and practice. Course Information: Prerequisite(s): CHSC 421 and CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 447. Survey Planning and Design. 3 hours.
Theory and applications of sample survey planning and design for conducting research in health sciences and related fields. Addresses three major topics: survey design and planning, sampling, and data collection procedures. Course Information: Same as PA 447. Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 460. Public Health Emergency Preparedness and Response. 3 hours.
Provides an overview of and introduction to public health emergency preparedness concepts and practice. Course Information: Same as EOHS 406. Prerequisite(s): Graduate or professional standing.

Focuses on analytic skills and assessment tools used in public health emergency preparedness and response activities.

CHSC 462. Public Health Emergency Preparedness and Response Management. 4 hours.
Focuses on the management of public health emergency preparedness and response activities.

CHSC 464. Survey of Developmental Disabilities. 3 hours.
Survey of the developmental disabilities field, including basic definitions, history of DD services, relevant public policies and legislation, service delivery systems, and research. Course Information: Same as DHD 464. Prerequisite(s): Graduate standing or consent of the instructor.

CHSC 485. Communications, Mass Media and Public Health. 3 hours.
Examines the development, theoretical basis, and applications of mass media strategies in public health. Course Information: Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 494. Special Topics in Community Health Sciences. 1-4 hours.
Study of topics in maternal and child health, gerontology, behavioral science of health and illness, international health, community health and public health practice. Course Information: May be repeated. Students may register in more than one section per term. Topics vary by semester. Prerequisite(s): Consent of the instructor. Restricted to graduate or professional standing, or consent of the instructor.

CHSC 510. MCH Inequities and Responses I. 4 hours.
Using an ecological and life-course perspective, this course addresses womenâ€™s, pregnant/postpartum personsâ€™, and fetal/infant well-being; the systems, services, interventions, and policies to address the needs of these populations are examined. Course Information: Prerequisite(s): Graduate or professional standing; or approval of the department. Recommended background: Enrollment in the MPH or other graduate or professional program at UIC.

CHSC 511. Maternal and Child Health Inequities and Responses Part II. 4 hours.
Provides an in-depth review and analysis of protective and risk factors, health inequities, and interventions for children, adolescents, including children and youth with special health care needs (CYSHCN), and their families. Course Information: Prerequisite(s): CHSC 510 and CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department. Recommended background: Enrollment in the Master of Public Health or other graduate program.

CHSC 512. Translating Evidence for MCH Practice. 3 hours.
Using a life span approach within an ecological framework, examines evidence and its translation in maternal and child health (MCH) in terms of underlying theories, program and policy implementation, evaluation, and advocacy. Course Information: Prerequisite(s): Graduate or professional standing; or consent of the instructor. Recommended Background: CHSC 510 and CHSC 511 and CHSC 543.

CHSC 518. The Epidemiology of Pediatric Diseases. 3 hours.
Provides students with experience in pediatric epi through review of seminal studies and available child health data. Condition-specific lectures include discussions of study design and methodological considerations specific to studying children. Course Information: Same as EPID 518. Extensive computer use required. Prerequisite(s): EPID 404 and EPID 406 and BSTT 401; and graduate or professional standing; or consent of the instructor. Recommended background: EPID 501.

CHSC 524. Health and Aging. 3 hours.
Examines aging at individual and population levels from public health and life course perspectives, and provides an overview of formal and informal care systems for older adults in the US, taking global perspectives. Course Information: Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.
CHSC 526. Family Perspectives on Disability. 3 hours.
Examines trends, theories and research methods, policies, and family centered intervention approaches for families of persons with disabilities. Course Information: Same as DHD 526. Prerequisite(s): Consent of the instructor.

CHSC 527. Critical Issues in Long Term Care Policy. 3 hours.
Examines the policy process and policy implications affecting the organization, financing, delivery, and utilization of long-term care services. Course Information: Prerequisite(s): CHSC 421 and CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 528. Societal Analysis of Aging, Health and the Life Course. 3 hours.
Analysis of health, aging and health care issues from life course perspectives, including the application of concepts, theories and methods from both sociology and public health. Course Information: Same as SOC 528. Prerequisite(s): Graduate or professional standing; or approval of the department.

CHSC 534. Management and Analysis of Qualitative Data. 3 hours.
Emphasizes conceptual and technical skills for organizing and analyzing qualitative (textual) data from focus groups, in-depth interviews and other sources, using specialized text-analysis computer software. Course Information: Extensive computer use required. Fieldwork required. Prerequisite(s): CHSC 434; and graduate or professional standing; or approval of the department.

CHSC 543. MCH Policy and Advocacy. 3 hours.
Examines the social, economic and political dynamics which influence the development and implementation of maternal and child health (MCH) policy and US health policy in general. Course Information: Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 544. Public Health Approaches with Adolescents and Young Adults. 3 hours.
Health and social development of the adolescent and young adult populations and special subgroups (e.g. parenting, homeless) are reviewed from a critical pedagogy and public health science perspective. Course Information: Same as SOCW 546. Prerequisite(s): CHSC 421 and Credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department. Recommended background: Research, policy and/or practice and interest in adolescence and youth and in community development and intervention studies; ethnic/minority studies; education; health and social/human service professions.

CHSC 545. Reproductive and Perinatal Health. 3 hours.
Examines the epidemiology of key reproductive and perinatal health outcomes and cutting edge research issues. Course Information: Same as EPID 545. Prerequisite(s): IPHS 402; and graduate or professional standing; or approval of the department.

CHSC 547. Public Health Approaches to Maternal and Child Nutrition. 2 hours.
Advanced seminar course integrating roles and applications of nutrition for maternal and child populations. Course Information: Prerequisite(s): CHSC 511; and graduate or professional standing; or consent of the instructor.

CHSC 548. Readings in Reproductive and Perinatal Epidemiology. 3 hours.
Advanced seminar in reproductive/perinatal epidemiology with particular emphasis on methodological issues. Course Information: Same as EPID 548. Prerequisite(s): CHSC 511 and EPID 402 and EPID 404; and graduate or professional standing; or approval of the department. Recommended background: Maternal and child health and epidemiology.

CHSC 549. Advanced Applied Methods in MCH Epidemiology. 3 hours.
Gives conceptual and technical understanding of statistical and epidemiological methods, builds skills/proficiency in applying these. Attention is given to data handling tasks and to statistical/epidemiologic strategies for analysis and presentation. Course Information: Same as EPID 549. Prerequisite(s): EPID 402 or EPID 404; and BSTT 401 and EPID 406; or consent of the instructor. Recommended background: Credit or concurrent registration in EPID 501.

CHSC 550. Advanced Theories and Topics in Community Health Sciences. 3 hours.
This is a required course in the CHS doctoral program. The course critically examines theories and topics central to research and practice in community health sciences. Course Information: Prerequisite(s): Open only to Ph.D. degree students; or approval of the department.

CHSC 551. Advanced Research Methods for Community Health Sciences. 3 hours.
Examines advanced methods for conducting quantitative, qualitative, and mixed methods research in the area of community health, including study design, sampling, measurement, and report writing. Course Information: Prerequisite(s): CHSC 550. Open only to Ph.D. degree students; or approval of the department.

CHSC 552. Advanced Analytic Methods for Community Health Sciences. 3 hours.
Examines advanced methods for conducting quantitative and qualitative research in the area of community health, including research question-driven data analysis and report writing. Course Information: Prerequisite(s): CHSC 550 and CHSC 551. Open only to Ph.D. degree students; or approval of the department.

CHSC 553. Family Planning: Policies and Practices. 2 hours.
Overview and analysis of family planning concepts, including contraceptive and abortion methods, and the policies that affect their implementation. Course Information: Prerequisite(s): CHSC 511 and BSTT 400; and graduate or professional standing; or consent of the instructor.

CHSC 554. International Women's Health: Current and Emerging Issues. 3 hours.
Examines current and emerging women's health issues globally with an emphasis on studying social and cultural factors affecting women's physical and psychosocial health. Course Information: Prerequisite(s): Graduate or professional standing; or approval of the department.

Examines trends, theories and research methods, policies, and family centered intervention approaches for families of persons with disabilities. Course Information: Same as DHD 526. Prerequisite(s): Consent of the instructor.

CHSC 556. Community Integration in Developmental Disabilities. 3 hours.
Historical and contemporary issues pertaining to the empowerment and integration of persons with developmental disabilities into community settings. Course Information: Same as DHD 564.
CHSC 567. Queer Public Health: Multidisciplinary Perspectives on Sexual Minorities™ Health. 3 hours.
Examines the health of sexual minorities—lesbian, gay, bisexual, transgender, and queer (LGBTQ) populations, including psycho-social, political, and health system forces that shape the health experience and needs of this population. Course Information: Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 577. Survey Questionnaire Design. 3 hours.
Concepts and strategies for developing survey questionnaires for various modes of survey data collection. Course Information: Same as PA 577. Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 584. Community Organizing for Health. 3 hours.
Focuses on facilitating community organizing processes in public health practice including theories, field work tools, feminist and international perspectives. Course Information: Field work required. Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 586. Health Behavior Interventions. 3 hours.
Examines advanced concepts and strategies for the development, implementation, and evaluation of health promotion interventions designed to change health behaviors and includes a focus on use of emerging technologies. Course Information: Prerequisite(s): CHSC 421 and credit or concurrent registration in CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 587. Theories of Health Behavior. 3 hours.
An advanced course in theories of health behavior with an emphasis on integrative applications of health behavior theories to specific populations, settings, and areas of health. Course Information: Prerequisite(s): CHSC 421 and CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 588. Research Synthesis and Meta-Analysis. 3 hours.
Examines recent developments in research synthesis in the behavioral, social, and medical sciences. Course Information: Prerequisite(s): CHSC 421 and CHSC 422; and graduate or professional standing; or approval of the department.

CHSC 593. Doctoral Laboratory in Community Health Sciences Research Development. 1 hour.
Addresses the research development process in accord with the research trajectory of doctoral students, facilitating the development of skills needed for success in the preliminary examination, dissertation proposal, and dissertation defense. Course Information: Prerequisite(s): Open only to Ph.D. degree students; and approval of the department.

CHSC 594. Advanced Special Topics in Community Health Sciences. 1-4 hours.
Advanced study of topics in community health, including maternal and child health, gerontology, behavioral science of health and illness, international health, community health, and public health practice. Course Information: May be repeated. Students may register in more than one section per term. Topics vary by semester. Prerequisite(s): Graduate or professional standing; or approval of the department. Recommended background: Advanced placement in graduate program.

CHSC 595. Seminar in Community Health Sciences. 1-3 hours.
Seminar course addressing contemporary issues in community health sciences research and approaches to professional development. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Topics vary by seminar. Prerequisite(s): Graduate or professional standing; or approval of the department. Recommended background: Advanced placement in graduate program.

Environmental and Occupational Health Sciences Courses

EOHS 400. Principles of Environmental Health Sciences. 3 hours.
Environmental influences on health: population, food, energy; community hygiene and injury control; solid/hazardous wastes, air and water pollution, radiation; industrial hygiene and occupational health. Course Information: Prerequisite(s): Enrollment restricted to public health students; other graduate, professional and advanced undergraduate students admitted by consent as space permits. To obtain consent, see the SPH registrar.

EOHS 401. Ethics and Justice in Environmental and Occupational Health. 2 hours.
Introduction to ethical principles relevant to environmental and occupational health and application of these principles to analyze and interpret environmental and occupational health problems and advocate for social and environmental justice.

EOHS 402. Systems Approach in Environmental and Occupational Health. 4 hours.
Introduces and applies systems approaches to anticipate, assess and solve environmental and occupational health problems. Course Information: Recommended background: EOHS 401 and IPHS 401.

EOHS 405. Environmental Calculations. 2 hours.
Problem solving techniques as applied to environmental and occupational health: dimensional analysis, mass and energy balances, trial and error solutions, numerical and graphical techniques. Course Information: Recommended background: Mathematics through calculus, college physics and chemistry.

Provides an overview of and introduction to public health emergency preparedness concepts and practice. Course Information: Same as EOHS 406. Prerequisite(s): Graduate or professional standing.

EOHS 408. Biological, Chemical, Explosives, and Nuclear Weapons as Public Health Threats. 3 hours.
Preparation, understanding of threats, and rescue & response issues pertaining to potential terrorist incidents from a public health perspective. Course Information: Same as EPID 408. Prerequisite(s): Graduate or professional standing; or consent of the instructor. Recommended background: EOHS 400 and EPID 410.

EOHS 411. Water Quality Management. 4 hours.
Water pollution; historical and current developments in problems and solutions: characterization of pollutants, regulatory framework, risk assessment, standards, modeling, water purification, public health concerns. Course Information: Prerequisite(s): Taught online. Consent of the instructor.
EOHS 418. Water Quality Analysis in Public Health. 2 hours.
Basic instrumentation and procedures related to measurement and surveillance of health-related water quality parameters and associated regulations. Course Information: Prerequisite(s): Credit or concurrent registration in EOHS 401 and credit or concurrent registration in EOHS 402; or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Laboratory and one Lecture.

EOHS 421. Occupational Health and Safety Practice. 2 hours.
An overview of the historical background, basic principles, practical tools and strategies for recognizing, evaluating and controlling chemical, biological and physical agents in the workplace. Course Information: Prerequisite(s): EOHS 400 or consent of the instructor.

EOHS 424. Evaluation and Control of Radiation Exposures. 1 hour.
Introduces students to the principles of radiation, exposure and health outcomes, and appropriate control strategies. Course Information: Recommended background: EOHS 401 and EOHS 402 and EOHS 421 and EOHS 425.

EOHS 425. Evaluation and Control of Physical Agents. 2 hours.
Theory and methodology in assessing and controlling exposure to physical agents (noise, thermal hazards, barometric hazards and vibration) in the occupational environment. Course Information: Recommended background: Credit or concurrent registration in EOHS 401 and EOHS 402.

EOHS 426. Evaluation and Control of Airborne Contaminants. 4 hours.
Measurement and modeling methods are used to characterize exposures to airborne contaminants and control strategies. Class Information: To be properly registered, students must enroll in one Lecture-Discussion and one Laboratory.

EOHS 427. Evaluation and Control of the Psychosocial Work Environment. 2 hours.
Theory and methodology in assessing and controlling psychosocial stressors in the occupational environment.

EOHS 428. Industrial Hygiene Laboratory I. 2 hours.
Detailed methods and experiments for measuring chemical, biological, and physical agents; and methods for evaluating the effectiveness of control measures. Course Information: Prerequisite(s): EOHS 400 and EOHS 405 and EOHS 421, or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Laboratory-Discussion and one Lecture.

EOHS 432. Air Quality Assessment and Management. 4 hours.
Scientific theory and methods to measure and model air quality for the purpose of managing the protection of the environment and the health of the public. Course Information: Credit is not given for EOHS 432 if the student has credit in EOHS 431 or EOHS 438. Prerequisite(s): EOHS 405; or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Laboratory.

EOHS 436. GIS for Environmental and Public Health Professionals. 4 hours.
Aims to promote a critical understanding of the basic practices and techniques associated with GIS applications in the environmental and public health areas. Course Information: Same as HPA 436. Online course. Prerequisite(s): Students outside of EOHS must seek consent of the instructor. Corequisites: EOHS 475 / HPA 480. Recommended background: Computer skills (knowledge of Excel is a minimum) and a strong quantitative background. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Practice.

EOHS 440. Chemistry for Environmental Professionals. 3 hours.
Introductory atmospheric chemistry, aspects of air pollution, chemistry related to natural water and water treatment; priority organic pollutants and heavy metals. Course Information: Same as CME 411. Prerequisite(s): One year of college chemistry.

EOHS 441. Ergonomics and Human Factors. 3 or 4 hours.
The study of principles and techniques associated with ergonomic problems. Topics include human information input and processing, human output and control, and ergonomic considerations in safety. Course Information: Same as IE 441. 3 undergraduate hours; 4 graduate hours. Prerequisite(s): Credit or concurrent registration in IE 342 or consent of the instructor.

EOHS 455. Environmental and Occupational Toxicology. 3 hours.
General and applied toxicology as it relates to environmental and occupational exposures to hazardous agents. Emphasis on basic principles, specific types of toxicity, and major classes of toxic agents. Course Information: Prerequisite(s): CHEM 232 and CHEM 234 and BIOS 100 or the equivalent courses and senior standing or above or consent of the instructor.

EOHS 460. Safety Engineering. 3 or 4 hours.
Human protection systems; accident and emergency handling; manufacturing and service hazard systems. Course Information: Same as IE 461. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): IE 342 or consent of the instructor.

EOHS 461. Environmental Public Health Practice. 3 hours.
Taught primarily from a field perspective. Despite student’s background and career pursuit, the knowledge acquired from this course will provide some value to student’s career and personal life. Course Information: Prerequisite(s): Completion of the MPH Integrated Core or consent of the instructor.

EOHS 463. Safety Management Systems. 2 hours.
Introduction to practical aspects of initiating a safety program in a moderately sized production plant. Course Information: Prerequisite(s): Consent of the instructor.

EOHS 472. Management of Solid and Hazardous Wastes. 3 hours.
Management of solid and hazardous waste, including radioactive waste: landfills, incineration, recycling, composting, source reduction, groundwater and air pollution impacts, control, regulations, siting, health impacts. Course Information: Same as CME 423, and GEOG 444.

EOHS 475. Health Related Database Design and Analysis. 4 hours.
Introduces students to the design and analysis of health related relational and spatial databases. Course Information: Same as HPA 480. Extensive computer use required. Taught online only. Prerequisite(s): Consent of the instructor. Recommended Background: Strong quantitative background recommended.
EOHS 480. Environmental and Occupational Health Policy. 3 hours.
Introduction to the framework for policymaking in the realm of occupational and environmental health. Focus is on the role of economics, legal/regulatory processes, and ethical issues. Cross-cultural and international differences will be explored. Course Information: Prerequisite(s): Graduate or professional standing; or consent of the instructor.

EOHS 494. Special Topics in Environmental Health. 1-4 hours.
Environmental/occupational topics of current importance to public health: pollution, industrial hygiene, and related topics. Variable course contents arranged to supplement the existing curriculum. Course Information: May be repeated. Students may register in more than one section per term. Undergraduate students with advanced standing may register with consent of the instructor. Undergraduate students with advanced standing may register with consent of the instructor. Prerequisite(s): Consent of the instructor.

EOHS 495. Environmental/Occupational Health Seminar. 1 hour.
Discussions of current environmental health and occupational health topics, with presentations by students, faculty members and visiting scientists.

EOHS 501. Exposure Assessment Strategies. 3 hours.
Statistical, mathematical and conceptual methods for the assessment of individual and population exposures to occupational and environmental stressors. Course Information: Extensive computer use required. Prerequisite(s): IPHS 402 or BSTT 400 or IPHS 404; and IPHS 405.

EOHS 502. Environment, Toxicology, and Disease. 4 hours.
Covers the mechanisms and pathways by which hazards in the workplace and ambient environment cause illness and injury. Fundamentals of: a) toxicology and pathophysiology; b) detection; c) prevention; and d) current research will be the focus. Course Information: Recommended background: EOHS 401 and EOHS 402.

EOHS 503. Occupational Safety. 2 hours.
Introduces students to occupational safety risks and control strategies for eliminating or managing these risks. Course Information: Prerequisite(s): EOHS 401 and EOHS 402 and EOHS 421. Recommended Background: EOHS 425 and EOHS 504.

EOHS 504. Occupational Ergonomics and Biomechanics. 1 hour.
Problem-based study of the principles of occupational ergonomics, exposure and health outcomes, and appropriate control strategies. Course Information: Recommended Background: EOHS 401 and EOHS 402 and EOHS 421 and EOHS 425.

Focuses on response and management skills for public health and healthcare emergency operations with a focus on the assessment tools, concepts, strategies and methodologies used emergency preparedness and response activities. Prerequisite(s): EOHS 406.

EOHS 511. Current Challenges in Water and Health. 2 hours.
Focuses on emerging and re-emerging waterborne threats to public health locally and globally, and new approaches to addressing these threats. Course Information: Prerequisite(s): EOHS 401 and EOHS 402 and EOHS 411; or EOHS 418 or EOHS 553.

EOHS 512. Advanced Water Quality Management Topics. 4 hours.
Water quality management course examining drinking water quality and contaminant discharge topics. Risk assessment methodologies are applied for deriving optimal decisions. Course Information: Extensive computer use required. Prerequisite(s): EOHS 411 or consent of the instructor.

EOHS 521. Aerosol Science and Technology. 3 hours.
Advanced technical skills and theory of aerosol physics required for characterizing aerosol behavior, fate and transport, and measurement considerations in occupational/environmental settings. Course Information: Prerequisite(s): EOHS 421 and EOHS 428; or consent of the instructor. Recommended background: Two semesters of college-level physics.

EOHS 529. Applied Industrial Hygiene and Safety. 2 hours.
Application of methods and best practices in assessing and controlling health and safety hazards in the occupational environment. Course Information: 2 hours. Prerequisite(s): EOHS 405 and EOHS 421 and EOHS 428; and consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Discussion and one Practice.

EOHS 530. Current Topics in Occupational and Environmental Epidemiology. 2 hours.
Reviews the literature on health effects of environmental and occupational exposures and integrates our current knowledge with relevant policy issues. Course Information: Same as EPID 530. Meets eight weeks of the semester. Prerequisite(s): EPID 403; or consent of the instructor.

EOHS 532. Air Quality Management II. 2 hours.
Air quality management: Integration of diverse aspects. Data interpretation; standards setting; policy implementation; equipment design; hazardous spill modeling; indoor air pollution; case studies. Course Information: Same as CME 526. Prerequisite(s): EOHS 431 or CME 419.

EOHS 535. Applied Methods in Occupational Epidemiology. 2 hours.
Provides students with knowledge of the study designs, measures, and experience in applying statistical methods commonly used in occupational epidemiology. Includes didactic lectures and case studies. Course Information: Same as EPID 535. Extensive computer use required. Prerequisite(s): Credit or concurrent registration in EPID 404 and EPID 406; and graduate or professional standing; or consent of the instructor. Recommended background: EOHS 400.

EOHS 536. Applied Methods in Environmental Epidemiology. 2 hours.
Provides students with experience in environmental epidemiology methodology through review of literature; discussion of study design and analysis; and analysis of existing data from the National Health and Nutrition Examination Survey. Course Information: Same as EPID 536. Extensive computer use required. Prerequisite(s): Credit or concurrent registration in EPID 404 and EPID 406; and graduate or professional standing; or consent of the instructor. Recommended background: Credit or concurrent registration in EPID 400.

EOHS 542. Water Chemistry. 4 hours.
Chemical equilibria and kinetic principles as applied to processes occurring in natural and engineered water systems. Course Information: Same as CME 524. Prerequisite(s): EOHS 440 or CME 411.

EOHS 543. Environmental Organic Chemistry. 4 hours.
EOHS 551. Occupational and Environmental Disease. 3 hours.
In this course students will learn about diseases that arise due in part to physical, chemical, and biological hazards in the workplace and the general environment. Course Information: Prerequisite(s): EOHS 400; and EPID 403; or consent of the instructor.

EOHS 553. Global Environmental Health. 2 hours.
Examines the major current issues in occupational and environmental health and their policy solutions. Course Information: Prerequisite(s): IPHS 401 and IPHS 402 and IPHS 403; or IPHS 401 and IPHS 403 and IPHS 404 and IPHS 405; or consent of the instructor. Recommended background: EOHS 411 and EOHS 418.

EOHS 554. Occupational and Environmental Epidemiology. 2 hours.
Methods and issues of environmental epidemiology: outbreak, cluster analysis, cross-sectional, case-control, cohort, ecological, and time series designs; contemporary issues: cancer and reproductive hazards. Course Information: Same as EPID 554. Prerequisite(s): EPID 401 and BSTT 401 and EOHS 400; or consent of the instructor.

EOHS 555. Advanced Topics in Toxicology. 3 hours.
An in-depth consideration of biotransformation, toxicokinetic modeling, biomarkers, and chemical carcinogenesis. The course is based on articles from the primary literature. Molecular through physiological level effects are considered. Course Information: Prerequisite(s): Grade of B or better in EOHS 455; or consent of the instructor.

EOHS 556. Risk Assessment in Environmental and Occupational Health. 3 hours.
Advanced skills associated with performing environmental and occupational health risk assessments. Covers the four steps of risk assessment in detail. Course Information: Prerequisite(s): EOHS 405; and BSTT 401; and EPID 400 or EPID 403; or consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Lecture and one Discussion.

EOHS 563. Occupational Safety and Health Management Systems. 3 hours.
Advanced theory and best practices in the design, implementation, administration, and evaluation of occupational safety and health management systems. Course Information: Prerequisite(s): EOHS 421; or consent of the instructor.

EOHS 564. Geographic Information System Application in Public Health. 3 hours.
Advanced level GIS course to promote critical understanding of the major practices associated with GIS in the many applications areas found in public health. Course Information: Same as HPA 564. Extensive computer use required. This is an on-line course. Prerequisite(s): HPA 465 or HPA 436 or EOHS 436; and consent of the instructor.

EOHS 565. Datamining Applications in Public Health. 3 hours.
Presents the key public health information system sources, describes the process of datamining and introduces the student to a sample of datamining techniques. Course Information: Same as HPA 565. Extensive computer use required. Prerequisite(s): BSTT 400.

EOHS 571. Injury Epidemiology and Prevention. 3 hours.
Covers general principles of injury epidemiology and intervention research and will engage students in development and application of preventive activities in workplaces and in the community. Course Information: Same as EPID 571. Prerequisite(s): Grade of B or better in EPID 400 or Grade of B or better in EPID 403; and graduate or professional standing; or consent of the instructor. Recommended background: Grade of B or better in EOHS 400.

EOHS 572. Environmental Risk Assessment and Management. 4 hours.
Risk assessment from a public health, quantitative and environmental risk management perspective.

EOHS 580. Seminar in Environmental and Occupational Health Policy. 2 hours.
Current topics in environmental and occupational health policy. Course Information: Prerequisite(s): EOHS 480; and graduate or professional standing; or consent of the instructor. Recommended background: Prior policy course.

EOHS 594. Advanced Special Topics in Environmental Health. 1-4 hours.
Environmental/occupational topics of current importance to public health: pollution, industrial hygiene, and related topics. Variable course contents arranged to supplement the existing curriculum. Course Information: Prerequisite(s): Consent of the instructor.

EOHS 595. PhD Seminar in EOHS. 1 or 2 hour.
Students will develop advanced professional and research skills to enable their transition to independent research scientists. Course Information: May be repeated.

EOHS 597. Advanced Laboratory Projects in Environmental Health. 1-4 hours.
Application and integration of sampling and measurement techniques for characterization of inside and ambient environments. Individuals or groups supervised by EOHS faculty members. Course Information: Prerequisite(s): Consent of the instructor.

Epidemiology Courses

EPID 400. Principles of Epidemiology. 3 hours.
Introduction to descriptive and analytic epidemiology, determinants of health and disease in populations, and application of epidemiologic methods to disease control; includes use of basic epidemiologic software. Course Information: Prerequisite(s): Credit or concurrent registration in BSTT 400 or consent of the instructor. Enrollment restricted to public health students; other graduate, professional, and advanced undergraduate students admitted by consent as space permits. To obtain consent, see the SPH registrar.

EPID 402. Health Policy for Epidemiologists and Biostatisticians. 1 hour.
Epidemiological data and biostatistics provide the evidence to support the development and justification of policies. Public health policy interventions, factors influencing political and social environments and the evaluation of policy-making will b Course Information: Same as BSTT 402.

EPID 403. Introduction to Epidemiology: Principles and Methods. 3 hours.
Introduction to descriptive and analytic epidemiology, and determinants of health and disease in populations. Measures of occurrence, association and statistical testing will be addressed, along with study designs, bias and confounding. Course Information: Prerequisite(s): Credit or concurrent registration in BSTT 400 and graduate or professional standing; or consent of the instructor.
EPID 404. Intermediate Epidemiologic Methods. 4 hours.
Introduction to multivariable methods in Epidemiology, including stratified analysis and regression modeling. Students will use statistical software to analyze data from epidemiologic studies. Course Information: Prerequisite(s): EPID 403 and EPID 406; and credit or concurrent registration in BSTT 401; and graduate or professional standing; or consent of the instructor.

EPID 406. Epidemiologic Computing. 3 hours.
Hands on course for students using SAS for epidemiologic analysis. Addresses practical issues in statistical programming for epidemiology students. Course Information: Extensive computer use required. Prerequisite(s): Credit or concurrent registration in BSTT 400 and Credit or concurrent registration in EPID 403; or Credit or concurrent registration in BSTT 400 and Credit or concurrent registration in EPID 400; or consent of the instructor.

EPID 409. The Epidemiology of HIV/AIDS. 2 hours.
Review of the HIV/AIDS pandemic and the global response to it focusing on patterns of transmission, risk factors and prevention/ intervention. Course Information: Prerequisite(s): EPID 400 or consent of the instructor.

EPID 410. Epidemiology of Infectious Diseases. 2 hours.
Epidemiology of selected infectious diseases, including incidence, prevalence and control of disease. Epidemic investigation is emphasized. Course Information: Prerequisite(s): EPID 400 or concurrent registration in EPID 403; or credit or concurrent registration in EPID 400; or consent of the instructor.

EPID 411. Epidemiology of Chronic Diseases. 3 hours.
Selected topics in chronic diseases with critical analysis of current epidemiologic literature. Course Information: Prerequisite(s): EPID 400 or consent of the instructor.

EPID 412. Introduction to Psychosocial Epidemiology. 2 hours.
Reviews landmark studies of psychosocial and psychiatric disorders in U.S. communities; evaluates research methodology, case definition, identification, and empirical findings. Course Information: Prerequisite(s): EPID 400 or consent of instructor.

EPID 428. Epidemiology of Violence. 2 hours.
Reviews public health aspects of violence-related mortality and morbidity, examines existing data bases and conceptual frameworks focusing on etiology, epidemiology, surveillance and prevention. Course Information: Prerequisite(s): EPID 400 or consent of the instructor.

EPID 471. Population. 3 or 4 hours.
The measurement and study of major trends and differentials in fertility, mortality, migration, growth, and compositional characteristics of the population of the United States and other nations. Course Information: Same as SOC 471. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): 6 hours of upper-division sociology, including SOC 201, or consent of the instructor.

EPID 494. Introductory Special Topics in Epidemiology. 1-4 hours.
Special topics in substantive areas of Epidemiology (including infectious disease, chronic disease, environmental/occupational, social). Course content will vary with each offering. Course Information: May be repeated. Students may register in more than one section per term. Prerequisite(s): EPID 400 or EPID 403 or consent of instructor; and graduate or professional standing.

EPID 500. Applied Methods for the Analysis of Epidemiologic Data. 4 hours.
Students will learn how to apply, interpret and report the findings from quantitative analyses of various types of epidemiologic data, including case-control, cohort, longitudinal and meta-analysis. Course Information: Extensive computer use required. Prerequisite(s): EPID 403 and BSTT 400; or IPHS 402; or IPHS 404 and IPHS 405; or consent of the instructor Additional course requirements: EPID 404, EPID 406, BSTT 401, and BSTT 505.

EPID 501. Advanced Quantitative Methods in Epidemiology. 4 hours.
The main objective of this course is for students to learn how to quantitatively analyze an epidemiologic dataset and interpret findings in the context of theoretical causal models. Course Information: Prerequisite(s): EPID 403 and EPID 404; and BSTT 401 and BSTT 505; and consent of the instructor.

EPID 509. Current Topics in HIV/AIDS Research. 3 hours.
Designed to be a collaboration among advanced students in the Graduate College and the instructor to explore, critique and analyze in depth selected topics in current research and practice around HIV/AIDS prevention. Course Information: Prerequisite(s): Grade of B or better in EPID 403 or grade of B or better in EPID 409; or consent of the instructor.

EPID 510. Advanced Epidemiology of Infectious Diseases. 2 hours.
Controversies regarding the etiology, transmission and prevention of selected infectious diseases. Literature reviews and study designs developed by students are a prominent part of course. Course Information: Prerequisite(s): EPID 410 or consent of instructor.

EPID 512. Molecular Epidemiology and Biomarkers of Disease. 3 hours.
Major theoretical concepts and practical issues involved in research involving molecular biomarkers in human populations, emphasizing examples from the cancer research literature. Course Information: Same as PATH 512. Prerequisite(s): Consent of the instructor. Recommended background: Some biology or medical background is recommended for epidemiology students taking this course.

EPID 513. Epidemiology of Aging. 2 hours.
Current methodologic and public health issues in the epidemiology of aging will be explored. Course Information: Prerequisite(s): EPID 401 or EPID 411; and consent of the instructor.

EPID 515. Cancer Epidemiology. 3 hours.
Critical review of topics and issues relevant to cancer epidemiology, to promote synthesis of current knowledge and awareness of research issues. Course Information: Prerequisite(s): EPID 401 and EPID 411; or consent of the instructor.

EPID 516. Advanced Cancer Epidemiology. 2 hours.
Critical review of the epidemiology of selected cancer sites to promote synthesis of knowledge, awareness of methodologic issues, and stimulate future research. Course Information: Prerequisite(s): EPID 501 and EPID 515; or consent of the instructor. Recommended background: EPID 520.
EPID 517. Epidemiology of Cardiovascular Diseases. 2 hours.
Epidemiology and risk factors of cardiovascular diseases. Course Information: Prerequisite(s): EPID 411 or consent of instructor.

EPID 518. The Epidemiology of Pediatric Diseases. 3 hours.
Provides students with experience in pediatric epi through review of seminal studies and available child health data. Condition-specific lectures include discussions of study design and methodological considerations specific to studying children. Course Information: Same as CHSC 518. Extensive computer use required. Prerequisite(s): EPID 404 and EPID 406 and BSTT 401; and graduate or professional standing; or consent of the instructor. Recommended background: EPID 501.

EPID 519. Research Protocol and Grant Development. 1 hour.
A review of funding options and examples of developing fundable research proposals. Course Information: Satisfactory/Unsatisfactory grading only. Prerequisite(s): EPID 400.

EPID 520. Genetics in Epidemiology. 2 hours.
Topics in genetic/molecular epidemiology, including genetics, population genetics, molecular biology, molecular genetics. Familiarizes students with laboratory/statistical concepts and applications in epidemiological studies. Course Information: Prerequisite(s): EPID 401 or consent of the instructor.

EPID 526. Pharmacoepidemiology. 3 hours.
Provides an introduction to pharmacoepidemiology and key concepts and principles that are unique to the study of medications in large populations. Course Information: Same as PSOP 526. Previously listed as PSOP 426. Extensive computer use required. Taught online. A computer with sufficient memory and Internet access is required. Prerequisite(s): EPID 400 or EPID 403 or consent of the instructor.

EPID 529. Epidemiology of Sexually Transmitted Infections. 3 hours.
Students in this class will examine the epidemiology of sexually transmitted infections (STIs), the etiology of the specific diseases, and how these factors are relevant to their control. Course Information: Prerequisite(s): Credit or concurrent registration in EPID 404 and graduate or professional standing; or consent of the instructor.

EPID 530. Current Topics in Occupational and Environmental Epidemiology. 2 hours.
Reviews the literature on health effects of environmental and occupational exposures and integrates our current knowledge with relevant policy issues. Course Information: Same as EOH 530. Meets eight weeks of the semester. Prerequisite(s): EPID 403; or consent of the instructor.

EPID 535. Applied Methods in Occupational Epidemiology. 2 hours.
Provides students with knowledge of the study designs, measures, and experience in applying statistical methods commonly used in occupational epidemiology. Includes didactic lectures and case studies. Course Information: Same as EOH 535. Extensive computer use required. Prerequisite(s): Credit or concurrent registration in EPID 404 and EPID 406 and BSTT 401; and graduate or professional standing; or consent of the instructor. Recommended background: EOH 400.

EPID 536. Applied Methods in Environmental Epidemiology. 2 hours.
Provides students with experience in environmental epidemiology methodology through review of literature; discussion of study design and analysis; and analysis of existing data from the National Health and Nutrition Examination Survey. Course Information: Same as EOH 536. Extensive computer use required. Prerequisite(s): Credit or concurrent registration in EPID 404 and EPID 406 and Credit or concurrent registration in BSTT 401; and graduate or professional standing; or consent of the instructor. Recommended background: Credit or concurrent registration in EOH 400.

EPID 545. Reproductive and Perinatal Health. 3 hours.
Examines the epidemiology of key reproductive and perinatal health outcomes and cutting edge research issues. Course Information: Same as CHSC 545. Prerequisite(s): IPHS 402; and graduate or professional standing; or approval of the department.

EPID 548. Readings in Reproductive and Perinatal Epidemiology. 3 hours.
Advanced seminar in reproductive/perinatal epidemiology with particular emphasis on methodological issues. Course Information: Same as CHSC 548. Prerequisite(s): CHSC 511 and EPID 402 and EPID 404; and graduate or professional standing; or approval of the department. Recommended background: Maternal and child health and epidemiology.

EPID 549. Advanced Applied Methods in MCH Epidemiology. 3 hours.
Gives conceptual and technical understanding of statistical and epidemiological methods, builds skills/proficiency in applying these. Attention is given to data handling tasks and to statistical/epidemiologic strategies for analysis and presentation. Course Information: Same as CHSC 549. Prerequisite(s): EPID 402 or EPID 404; and BSTT 401 and EPID 406; or consent of the instructor. Recommended background: Credit or concurrent registration in EPID 501.

EPID 550. Public Health Surveillance. 3 hours.
Examines the fundamental public health activity known as surveillance from several angles including history, design, illustrative examples, evaluation, data analysis, and communication of findings. Course Information: Meets eight weeks of the semester. Prerequisite(s): EPID 403.

EPID 554. Occupational and Environmental Epidemiology. 2 hours.
Methods and issues of environmental epidemiology: outbreak, clusteranalysis, cross-sectional, case-control, cohort, ecological, and time series designs; contemporary issues: cancer and reproductive hazards. Course Information: Same as EOH 554. Prerequisite(s): EPID 401 and BSTT 401 and EOH 400; or consent of the instructor.

EPID 555. Outbreak Investigation and Field Epidemiology. 3 hours.
Emphasize practical issues and decisions that arise during outbreak investigations and will try to prepare the student for participating in and leading outbreak investigations. Course Information: Meets eight weeks of the semester. Prerequisite(s): EPID 403; or consent of the instructor.

EPID 571. Injury Epidemiology and Prevention. 3 hours.
Covers general principles of injury epidemiology and intervention research and will engage students in development and application of preventive activities in workplaces and in the community. Course Information: Same as EOH 571. Prerequisite(s): Grade of B or better in EPID 400 or Grade of B or better in EPID 403; and graduate or professional standing; or consent of the instructor. Recommended background: Grade of B or better in EOH 400.
Health Policy and Administration Courses

HPA 403. U.S. Health Care System. 3 hours.
Overview of the U.S. healthcare system, including its evolution, utilization patterns, providers - human, institutional and organizational - financing, regulating, evaluating, and reforming.

HPA 404. Ethical Issues in Healthcare Policy and Management. 3 hours.
Designed to provide students with an overview of some of the most debated and difficult ethical issues that arise in the healthcare industry. Course Information: This will be a blended course. Combined synchronous online delivery and on site classroom delivery. Prerequisite(s): Approval of the department.

HPA 405. Leadership in Public Health Practice. 3 hours.
Utilizing public health core functions, this course explores leadership style and practice through case studies and techniques which enhance leadership development. Course Information: Same as CHSC 405. Prerequisite(s): Graduate or professional standing; or approval of the department.

Aims to provide a foundational body of knowledge on the ideas that can help homeland security professionals think and act critically and strategically. Course Information: Extensive computer use required. This is an online course. Prerequisite(s): Graduate or professional standing; or consent of the instructor.

Focuses on decision support systems to facilitate the analysis and identification of optimum remedial risk management alternatives and resilience planning. Course Information: Extensive computer use required.

HPA 410. Health Organizational Leadership. 3 hours.
Examines the roles, responsibilities, and impact of leaders of organizations in the health industry. Critical structures and techniques of effective organizational leaders are taught.

HPA 412. Comparative Health Systems: Global Perspective. 3 hours.
International health care systems will be analyzed from the perspective of their operational, policy and local health delivery systems. A comparative analysis of these global health systems will then be made to the health care system within the US. Prerequisite(s): HPA 410.

HPA 415. Introduction to Public Health Policy. 3 hours.
Provides an overview of all aspects of the public health policymaking process at the federal level with understanding, examples, and applications of topics at the state and local levels. Course Information: Credit is not given for HPA 415 if the student has credit in HPA 430. Prerequisite(s): Approval of the Department.

HPA 417. Quality Management in Health Services. 3 hours.
Surveys development of quality management and theoretical basics and diverse perspectives of quality management and regulation. Presents relevant research and management methodologies.

HPA 419. Public Health Foundations. 3 hours.
Students will be introduced to key public health concepts, the history of public health and how the core areas of public health can be integrated to promote health at population level. Prerequisite(s): BSTT 400.

HPA 420. US Health Care System for Public Health Practitioners. 3 hours.
Introduces students to characteristics of the U.S. health care systems; healthcare organizations, financing, and delivery of services. Course Information: Credit is not given for HPA 420 if student has credit in HPA 403. Prerequisite(s): Approval of the Department.

Develops the core human resources competencies needed to effectively manage and lead healthcare delivery organizations. Examines general human resources topics, applied within the healthcare delivery setting.

HPA 429. Introduction to Health Services Research. 2 hours.
Introduction to health services research using classic studies and current trends which examine access, cost, quality, and organization of health care. Course Information: Prerequisite(s): HPA 400.

HPA 430. Introduction to Health Policy. 3 hours.
Explores the multiple influences on public health policy, such as politics and cultural and societal norms, and the impact that policy has had on population health. Course Information: Prerequisite(s): Graduate or professional standing; and approval of the department. Credit will not be given for HPA 430 if student has credit in HPA 415.

HPA 431. Public Health Law and Ethics. 3 hours.
Provides a dynamic approach to learning about public health law, the relationship between law and the public's health, and will examine the ethical underpinnings and context of public health practice. Course Information: Prerequisite(s): HPA 415; and approval of the department.

HPA 432. Public Health Advocacy. 3 hours.
Designed to provide prospective public health policy professionals strategies for collecting, analyzing, assimilating and delivering pertinent health policy information to policy makers, stakeholders, and other interested parties. Course Information: Credit is not given for HPA 432 if the student has credit for CHSC 430. Prerequisite(s): Approval of the Department. Recommended background: HPA 415.

HPA 434. Healthcare Law and Ethics. 3 hours.
Designed to provide a general understanding of the laws and regulations that impact the healthcare industry, the most frequent legal issues which face healthcare executives today and how to recognize legal risks in daily operations. Course Information: Prerequisite(s): Approval of the Department.
HPA 436. GIS for Environmental and Public Health Professionals. 4 hours.
Aims to promote a critical understanding of the basic practices and techniques associated with GIS applications in the environmental and public health areas. Course Information: Same as EOHS 436. Online course. Prerequisite(s): Students outside of EOHS must seek consent of the instructor. Corequisites: EOHS 475 / HPA 480. Recommended background: Computer skills (knowledge of Excel is a minimum) and a strong quantitative background. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Practice.

HPA 437. Health Policy and Politics. 3 hours.
Health policy including economic implications is analyzed, applied, and evaluated from a comprehensive understanding of the state of the US healthcare system. Course Information: This is a blended course. Combined synchronous online delivery and on site classroom delivery. Prerequisite(s): Approval of the department.

HPA 440. Healthcare Data Analytics. 3 hours.
Introduces administrative healthcare data sources, methods to describe and visualize data, and statistical concepts to analyze healthcare issues, with applications using Excel software. Course Information: Prerequisite(s): Approval of the Department.

HPA 444. Strategic Planning and Budgeting/Finance. 3 hours.
Provides a systematic understanding of strategic planning, budgeting, and financial management of public health organizations. Contemporary theories and principles are used to develop, implement, and evaluate organizational strategy. Course Information: Prerequisite(s): IPHS 403; and approval of the department.

HPA 445. Organizational Leadership in Public Health. 3 hours.
Examines classic and contemporary leadership theory and practice as applied to the diverse organizational, systems and community settings in which public health leaders function. Course Information: Extensive computer use required. This is an online course. Prerequisite(s): HPA 400.

HPA 446. Public Health Resource Management: Methods, Ethics and Policy. 3 hours.
Equips students to analyze, evaluate and address the relationships among budgets, resources, forces of change, and organizational and professional values as they pertain to managerial choices and decisions. Course Information: Extensive computer use required. This is an online course. Prerequisite(s): HPA 400.

HPA 450. Public Health Informatics Certificate Integrative Paper. 0 hours.
Student will develop an integrative paper that will synthesize and apply the knowledge acquired from the program to address a public health informatics problem. Course Information: Satisfactory/Unsatisfactory grading only. Extensive computer use required. Prerequisite(s): HPA 465 and HPA 481 and HPA 563 and HPA 564 and HPA 565. Students must register for the integrative paper during the last semester of enrollment in the campus certificate program.

HPA 451. Health Care Finance I. 3 hours.
Examines practical aspects of finance in health care and recent developments in financial management of health care organizations, and applications of financial management techniques to specific problems facing health care managers. Course Information: Prerequisite(s): Graduate or professional standing and approval of the department.

HPA 455. Geographic Information Systems Integrative Project. 2 hours.
The integrative project aims to demonstrate a comprehensive mastery of the course materials, database theories, and GIS techniques by pursuing a project resembling those encountered by public health. Course Information: Extensive computer use required. Taught Online. Satisfactory/Unsatisfactory grading only. Prerequisite(s): Consent of the instructor.

HPA 458. Managerial Epidemiology. 3 hours.
Applies principles and tools of epidemiology, explore distribution and determinants of disease, and synthesize this knowledge with the management of health service organizations, hospitals, health care plans and physicians practices. Course Information: Prerequisite(s): Approval of the department.

HPA 459. Introduction to Health Inequities in the United States. 3 hours.
Introduction to the origins, evolution and debates surrounding "disparities" in health. Through readings, discussions and lectures participants will be exposed to debates about health inequities in the US and how they might be eliminated. Course Information: Extensive computer use required. Prerequisite(s): Graduate or professional standing; and consent of the instructor. Students in the Health Disparities Research Certificate will be given first priority for the online section of this course.

HPA 460. Introduction to the Economics of Health and Healthcare. 3 hours.
Examines health, the health care sector, and healthy policy issues using economic theoretical frameworks and empirical evidence. Course Information: Credit is not given for HPA 460 if the student has credit in HPA 463. Prerequisite(s): Approval of the Department.

HPA 461. Information and Decision Support Systems for Healthcare Administration. 3 hours.
Introduces students to the role of information systems in healthcare and public health practices, the use of information systems for management control; information systems project evaluation, information technology personnel.

HPA 462. Quantitative Methods in Health Disparities Research. 4 hours.
Students will learn concepts and quantitative research methods in US health disparities with a focus on local Chicago data. Course Information: Extensive computer use required. Prerequisite(s): At least one graduate level course in biostatistics or equivalent experience and graduate or professional standing or consent of the instructor. Students in the Health Disparities Research Certificate will be given first priority for the online section of this course. Recommended background: Knowledge of a statistical program. Priority will be given to students enrolled in the Health Disparities Research Certificate Program.

HPA 463. Managerial Health Economics. 3 hours.
Uses managerial economics to study health care system: demand for medical services; role of health insurance; productivity/cost measurement; labor markets and competition. Course Information: Prerequisite(s): HPA 400 or consent of the instructor.
HPA 464. Sociocultural Dimensions of Health Disparities Research. 3 hours.
Addresses a range of measurement issues and additional concepts that are important when conceptualizing, planning, and conducting health disparities research. Course Information: Extensive computer use required. Prerequisite(s): Graduate or professional standing; and consent of the instructor. Students in the Health Disparities Research Campus Certificate will be given first priority for the online section of this course. Recommended background: HPA 459.

HPA 465. Health Information and Decision Support Systems. 4 hours.
Introduction to computer assisted management information and decision systems in health organizations: analysis and design of databases; data and information flow; reports; and uses microcomputers. This is an online course.

HPA 466. Critical Infrastructure Protection and Allocation of Assets Planning. 4 hours.
Aims to cover complex intergovernmental and public-private sector critical infrastructure protection frameworks; vulnerability/risk analysis and management techniques; assets (resources) allocation planning tools; and crisis management. Course Information: Extensive computer use required. This is an online course. Prerequisite(s): HPA 407; and approval of the department.

HPA 469. Evidence Based Policy Development and Implementation: Health Disparity Case Studies. 3 hours.
This case study based course focuses on the development, implementation and evaluation of health policy that aims to reduce health disparities in the US. Emphasizes systematic public policy approaches to address health disparity issues. Course Information: Extensive computer use required. Prerequisite(s): Graduate or professional standing; and consent of the instructor. Prerequisite(s): HPA 472; and graduate or professional standing; and approval of the department.

HPA 470. Quantitative Methods for Healthcare Managers. 3 hours.
Provides an understanding of how to use data analytics and other quantitative methods to facilitate healthcare decision making. Course Information: Prerequisite(s): BSTT 400; and approval of the department.

HPA 472. Clinical Research Methods I. 4 hours.
Introduces experimental and quasi-experimental study designs and descriptive statistics. Course Information: Online course. Extensive computer use required. Prerequisite(s): Graduate or professional standing; and approval of the department.

HPA 473. Clinical Research Methods II. 4 hours.
Introduces OLS multivariate regression models, its assumptions, interpretation of outputs and departures, and surveys more advanced multivariate regression models. Course Information: Online course. Extensive computer use required. Prerequisite(s): HPA 472; and graduate or professional standing; and approval of the department.

HPA 475. Contexts for Clinical Research. 3 hours.
Provides an overview of the healthcare system, epidemiological and research subject protections contexts for clinical research. Course Information: Online course. Extensive computer use required. Prerequisite(s): Graduate or professional standing; and approval of the department.

HPA 477. Data Collection and Management for Clinical Research. 3 hours.
Provides basic statistical computing and data management concepts, an overview of qualitative research techniques, and a survey of survey design from sampling strategies to data collection, item and measure development and survey analysis. Course Information: Online course. Extensive computer use required. Prerequisite(s): HPA 472; and graduate or professional standing; and approval of the department.

HPA 479. Evaluating Clinical Interventions. 3 hours.
Introduces the major approaches used to evaluate clinical interventions. Course Information: Online course. Extensive computer use required. Prerequisite(s): HPA 472; and graduate or professional standing; and approval of the department.

HPA 480. Health Related Database Design and Analysis. 4 hours.
Introduces students to the design and analysis of health related relational and spatial databases. Course Information: Same as EOHS 475. Extensive computer use required. Taught online only. Prerequisite(s): Consent of the instructor. Recommended Background: Strong quantitative background recommended.

HPA 481. Development of Public Health Surveillance Information Systems. 3 hours.
Examination of the process and methods of designing and evaluating public health information surveillance systems. Course Information: Extensive computer use required. Prerequisite(s): HPA 465.

HPA 483. Management of Communication Systems for Public Health Informatics Applications. 4 hours.
Focuses on the examination and management of current information communication systems and their applications in public health informatics. Course Information: Extensive computer use required. This is an online course. Prerequisite(s): HPA 465.

HPA 485. Legal and Ethical Issues in Public Health Informatics. 3 hours.
Examination of the legal and ethical issues involved in the use of health related information in public health. Course Information: Extensive computer use required. This is an online course. Prerequisite(s): HPA 465.

HPA 486. Survey of Public Health Information Systems. 4 hours.
Focuses on survey of various public health information systems with respect to their functionalities, planning, design, development, sustainability, interoperability, and management. Course Information: Extensive computer use required. This is a online course. Prerequisite(s): HPA 465; and consent of the instructor.

HPA 487. Public Health Informatics Methods. 3 hours.
Course summarizes the three major methodological approaches for accessing and managing health information: Web-based information systems, data mining, and geographic information systems (GIS). Course Information: Extensive computer use required. This is an online course. Prerequisite(s): HPA 465; and consent of the instructor.

HPA 488. Public Health Information Systems Evaluation and Project Management. 3 hours.
Introduces students to the fundamental principles of information systems project evaluation and project management, with specific references to public health practice. Course Information: Extensive computer use required. This is an online course. Prerequisite(s): HPA 465; and consent of the instructor.
HPA 490. Topics in Healthcare Leadership. 1 hour.
Provides students with a series of explorations of various leadership specialty areas within the delivery of healthcare. The specific demands and skill of each will be covered. Course Information: May be repeated to a maximum of 2 hours. Prerequisite(s): Approval of the Department.

HPA 491. Professional Development. 1 hour.
Students will be taught the professional skills and develop the emotional intelligence necessary to work effectively in a team-based business environment.

HPA 494. Introductory Special Topics in Health Policy and Administration. 1-4 hours.
Introductory topics in health administration, policy analysis, health care financing, cost-effectiveness evaluation. Topics vary by semesters.

HPA 495. MHA Preceptorship. 1-3 hours.
Preceptor-guided field experience in health administration designed to promote critical thinking and problem solving skills, and application of management knowledge and skills in a practice setting. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated to a maximum of 6 hours. Prerequisite(s): Graduate or professional standing and approval of the department.

HPA 496. MHA Capstone I. 1 or 3 hour.
Creates a structured process for students to successfully complete their capstone and to produce a high quality, professional analysis of a capstone issue that is delivered in the form of a capstone paper and presentation. Course Information: Prerequisite(s): Graduate or professional standing and approval of the department.

HPA 497. Integrative Project in Emergency Management. 4 hours.
Independent investigation that draws upon the professional experience and knowledge synthesis of the student. Students investigate a topic/problem in their field and write an article. Course Information: Satisfactory/Unsatisfactory grading only. Extensive computer use required. This is an online course. Prerequisite(s): Consent of the instructor.

HPA 498. MHA Capstone II. 1 hour.
The MHA capstone process, structured over two courses and two semesters, creates and structured pathway for students to successfully complete their capstone that is delivered in the form of a capstone paper and presentation. Course Information: HPA 496; and graduate or professional standing; and approval of the department.

HPA 499. Introduction to Research Design for Public Health Practitioners. 1 hour.
Introduces students to data collection techniques for qualitative and quantitative research. Data gathering and analysis are central methods for conducting research to inform policy. Course Information: Prerequisite(s): Approval of the Department.

HPA 505. Strategic Planning and Marketing in Healthcare. 3 hours.
Introduces the principles, methods and concepts of two primary aspects of strategic management as they relate to healthcare organizations 1) Strategic Planning and 2) Marketing. Course Information: Prerequisite(s): HPA 403 and HPA 451 and HPA 410; and approval of the department.

HPA 509. Physician Relations: Practice and Leadership. 3 hours.
Physician Relations is intended to provide an overview of the changing role of physicians in our healthcare system and how to effectively work with them in a leadership capacity. Course Information: Credit is not given for HPA 509 if students are enrolled in Public Health. Prerequisite(s): HPA 403 and HPA 410; and approval of the department.

HPA 511. Organization Theory Applied to Health Programs. 3 hours.
Classical and modern organization theories applied to health programs. Includes organization structure and goals, management functions and processes, and managerial controls and evaluation. Course Information: Prerequisite(s): HPA 400 or consent of the instructor.

HPA 512. Ethics in Clinical Research. 1 hour.
Survey of key ethical issues involved in conducting research with human subjects, including informed consent, confidentiality, access and equity. Course Information: Same as MHPE 512. Extensive computer use required. Requires completion of an online course in human subjects research, to be supplemented by classroom discussion of the topics raised in that course and others. Prerequisite(s): Approval of the department. Students must be enrolled in the Master of Science in Public Health program.

HPA 516. Health Personnel Management. 3 hours.
Health personnel policies and programs, human resources requirements, recruitment, development, performance appraisal, salary and wage administration, and management/labor relations in the health industry. Course Information: Prerequisite(s): HPA 400 and consent of the instructor.

Examines empirical methods used in health policy research and focuses on econometric theory and the sensible application of econometric methods to important topics in health and healthcare research. Course Information: Prerequisite(s): Graduate or professional standing; and approval of the department.

HPA 522. Empirical Methods for Health Research II. 3 hours.
Graduate level quantitative research methods course. Utilizes social science research methods with an emphasis on experimental and quasi-experimental research designs in the study of methodologically sound public health research investigations. Course Information: Prerequisite(s): HPA 521; and graduate or professional standing; and approval of the department.

HPA 525. Population Based Healthcare Services Planning. 3 hours.
Examines the roles that health care delivery organizations can play, and methodologies used, in developing programs specific to the needs of the community they serve. Course Information: Prerequisite(s): HPA 403 and HPA 410 and HPA 495.

HPA 526. Leadership and Diversity in Clinical Research. 2 hours.
Graduate level course designed to provide researchers with the leadership and team science skills and knowledge needed to conduct culturally competent and sensitive research and to effectively consider and engage communities in research. Course Information: Taught online. Prerequisite(s): Approval of the department.

HPA 527. Critical Issues in Long Term Care Policy. 3 hours.
Examines the policy process and policy implications affecting the organization, financing, delivery, and utilization of long-term care services. Course Information: Same as CHSC 527. Prerequisite(s): Credit or concurrent registration in CHSC 400 and Credit or concurrent registration in CHSC 425; and graduate or professional standing; or consent of the instructor.

HPA 534. Research Design and Grant Writing. 2 hours.
Introduction to the skills necessary to plan a research project and write a research grant proposal using a systematic approach. Course Information: Same as MHPE 534. Previously listed as MHPE 431. Prerequisite(s): Graduate or professional standing; and approval of the department.
HPA 535. Translating Research into Practice. 3 hours.
Current theory and practical reality related to the adoption and use of new scientific findings in patient care. The influence of research on public policy. Course Information: Same as MHPE 535. Extensive computer use required. Prerequisite(s): Graduate or professional standing; and approval of the department.

HPA 541. Strategic Management of Healthcare Organizations. 3 hours.
Introduction to strategic analysis for healthcare organizations. Topics include: Health care competition, entrepreneurship, technology and innovation, multi-constituent environment, and human resources. Course Information: Previously listed as HPA 441. Prerequisite(s): HPA 551; graduate standing and approval of the department.

HPA 546. EMHA Capstone. 3 hours.
The EMHA Capstone is the EMHA program's major integrative experience based on a significant project in a healthcare organization. Course Information: Prerequisite(s): Approval of the Department.

HPA 551. Marketing Health Programs. 3 hours.
Concepts of marketing as a management tool; application of marketing to health care: the marketing process, marketing resources, and strategies for accomplishing marketing objectives. Course Information: Prerequisite(s): HPA 400 or MKTG 563 or consent of the instructor.

HPA 552. Healthcare Finance II. 3 hours.
Builds on the topics introduced in HPA 451. Specific emphasis will be placed on understanding project risk assessment, capital investments, debt, equity and lease financing and developing a long range strategic plan. Course Information: Previously listed as HPA 452. Prerequisite(s): HPA 451 and ACTG 510.

HPA 556. U.S. Mental Health Policy. 2 hours.
Public policies which have supported the U.S. mental health service system from 1946 to the present. Theory, development, and evaluation of mental health policy in the US. Course Information: Prerequisite(s): HPA 400 and HPA 430 and either EPID 400 or BSTT 400.

HPA 563. Web-Based Public Health Information Systems. 4 hours.
Examination of web based applications in public health practice and factors in the design of web based public health education and database systems. This is an on-line course. Course Information: Prerequisite(s): HPA 465; and consent of the instructor. Unless otherwise permitted, limited to students in the public health informatics track of HPA.

HPA 564. Geographic Information System Application in Public Health. 3 hours.
Advanced level GIS course to promote critical understanding of the major practices associated with GIS in the many applications areas found in public health. Course Information: Same as HPA 564. Extensive computer use required. This is an on-line course. Prerequisite(s): HPA 465 or HPA 436 or EOHS 436; and consent of the instructor.

HPA 565. Datamining Applications in Public Health. 3 hours.
Presents the key public health information system sources, describes the process of datamining and introduces the student to a sample of datamining techniques. Course Information: Same as EOHS 565. Extensive computer use required. Prerequisite(s): BSTT 400.

HPA 567. Public Health Policy Analysis. 3 hours.
Enables students to conduct an in-depth, evidence-based public health policy analysis within an economic and public policy frame. Focus will be on public health policy analyses conducted by government and non-government organizations. Course Information: Previously listed as HPA 467. Credit is not given for HPA 567 if the student has credit in HPA 467. Prerequisite(s): HPA 415; and approval of the department. Recommended background: HPA 460.

HPA 569. Risk Visualization and Management Techniques in Homeland Security Sciences. 4 hours.
Focuses on the examination of risk visualization techniques applied for managing and mitigating natural hazards, environmental, and homeland security threats. Course Information: Extensive computer use required. Prerequisite(s): HPA 436; or HPA 408; and approval of the department. Recommended background: A strong quantitative background and knowledge of the ArcGIS platform.

HPA 573. Principles of Economic Evaluations of Health Care Interventions. 3 hours.
Principles, models and practical methods for the economic evaluation of health care services with an emphasis on pharmaceutical care. Course Information: Same as PSOP 573. Extensive computer use required. Course offered online, in person, or via distance education. Prerequisite(s): Consent of the instructor.

HPA 575. Strategic Planning for Disaster Resilience. 4 hours.
Focuses on formulating disaster resilience strategic plans for entities in the private and public sectors. Course Information: Extensive computer use required. Prerequisite(s): HPA 407; and approval of the department. Recommended background: Basic emergency management and/or continuity planning knowledge.

HPA 576. Disaster Response and Recovery Operations. 4 hours.
Focuses on the frameworks and methods for designing, developing, implementing, and evaluating programs and cost effective plans for disaster response and recovery operations in the public and private sectors. Course Information: Extensive computer use required. Prerequisite(s): HPA 407; and approval of the department.

HPA 590. Grant Writing. 1 hour.
Students will learn how to write a grant application through the guidance of a mentoring committee. They will formulate a research proposal which will be presented to a panel of researchers who will critique the proposed study.

HPA 591. Grant Writing for New Investigators. 3 hours.
Fosters grant writing skills, and helps students learn the mechanics of an NIH grant application, particularly K awards, and how to peer review applications. Course Information: Prerequisite(s): Consent of the instructor. MS in Clinical and Translational Science students are expected to have completed the required coursework for the program and to have made significant progress in their research project.

HPA 592. Spatial Data Analysis and Visualization. 4 hours.
Application of spatial analysis techniques to visualize patterns, distributions, relationships of public health related data emphasizing their advantages and limitations. Course Information: Prerequisite(s): Credit or concurrent registration in HPA 564; or consent of the instructor. Recommended background: basic statistics and ordinary least squares regression.
HPA 593. Social Vulnerability Analysis. 4 hours.
Study of advanced level social vulnerability analysis techniques and their application for the protection of communities. Course Information: Extensive computer use required. Taught online. Prerequisite(s): Approval of the Department. Recommended background: Introductory GIS and quantitative skills.

HPA 594. Advanced Special Topics in Health Policy and Administration. 1-4 hours.
Advanced topics in health administration, policy analysis, health care financing, cost-effectiveness evaluation. Topics vary by semester. Course Information: Prerequisite(s): Consent of the instructor.

Interscience Public Health Sciences Courses

IPHS 401. Determinants of Population Health. 4 hours.
Introduces students to where one is born, lives, learns, plays, works and ages influences overall health and health outcomes.

IPHS 402. Analytic and Research Methods in Public Health. 6 hours.
Introduces students to the analytic and research methods used to carry out the core functions of evidence-based public health.

IPHS 403. Public Health Systems, Management and Community Epidemiology. 4 hours.
Introduces problem and case-based pedagogy in public health systems and practice, including community health intervention planning and evaluation, and organizational planning and management.

Introduces students to the analytic and research methods used to carry out the core functions of evidence-based public health. Course Information: Corequisite(s): Requires concurrent registration in IPHS 401 or consent of the instructor.

IPHS 405. Analytic and Research Methods in Population Health Part II. 3 hours.
Introduces students to the analytic and research methods used to carry out the core functions of evidence-based public health. Course Information: Prerequisite(s): IPHS 404.

IPHS 409. Global Public Health Challenges. 3 hours.
An ecological approach to public health to provide a broad overview of current health problems around the world, with an emphasis on low income countries.

IPHS 410. Global Public Health Solutions. 3 hours.
Utilizes readings and case studies of successful health interventions in the developing world to orient students to the field of global public health. Course Information: Prerequisite(s): Graduate standing.

IPHS 415. Foundations in Anthropology and Global Health I. 3 or 4 hours.
Explores the field of cultural medical anthropology and provides a theoretical foundation allowing for understanding and exploration of anthropology's role in international health. Course Information: Same as ANTH 415. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of B or better in ANTH 216; and junior standing or above; or consent of the instructor.

IPHS 416. Foundations in Anthropology and Global Health II. 3 or 4 hours.
Provides an evolutionary and biocultural approach to human biology, physiology, health and disease. Course Information: Same as ANTH 416. 3 undergraduate hours. 4 graduate hours. Prerequisite(s): Grade of B or better in ANTH 232; and junior standing or above; or consent of the instructor.

IPHS 420. Interprofessional Education. 0 hours.
This experience focuses on the principles in working with professions outside the discipline of public health. Course Information: Satisfactory/ Unsatisfactory grading only. Prerequisite(s): Completion of a minimum of 10 hours of SPH credit. Recommended Background: IPHS 401 and IPHS 402; and IPHS 404. Concurrent registration of IPHS 403.

IPHS 430. Epidemics of Injustice. 2 hours.
Developed through a collaboration between members of Radical Public Health and faculty who were brought together by a sense of urgency to address ongoing threats to democracy, social justice, and the public's health.

IPHS 440. Implementation Sci Research. 4 hours.
Explores the rapidly evolving topic of dissemination and implementation research and practice. Topics include theories, frameworks and models, research methods and designs, intervention adoption, fidelity, adaptation and sustainability. Course Information: Extensive computer use required. Recommended background: Prior graduate-level introductory health care or social science research course.

IPHS 494. Introductory Special Topics - Interdepartmental. 1-4 hours.
Introductory special topics in public health. Course content will vary from semester to semester. Course Information: May be repeated. Students may register in more than one section per term.

IPHS 500. Population Health Seminar for Students in Health Sciences. 2 hours.
Focuses on analyzing the application of population health principles and practices to individuals' health and healthcare; conversely, students will generalize the practice of health care for individual patients to populations.

Intended to build organizational and systems leadership skills for public health professionals who are expected to be in leadership positions at the highest levels within the public health system. Course Information: Enrollment is restricted to students in the DrPH program; other students may register with consent of the instructor.

Application of strategic management as a leadership tool to drive change and foster innovation within public health organizations and public health systems. Course Information: Prerequisite(s): IPHS 501. Enrollment is restricted to students in the DrPH program; other students may register with consent of the instructor.

IPHS 503. DrPH Integrative Methods Seminar I. 3 hours.
Explores principles of research study design which integrate analytic methods for public health analysis to solve problems and conduct practice based research. Methods include epidemiology, needs assessment, and evaluation. Course Information: Prerequisite(s): IPHS 502 and EPID 403 and BSTT 401; or consent of the instructor. Enrollment is restricted to students in the DrPH program; other students may register with consent of the instructor.
IPHS 505. DrPH Integrative Methods Seminar II. 3 hours.
Alternative research designs featuring case study methods, action research, and systems analysis, for problem-solving and to support evidence-based public health practice research. Course Information: Prerequisite(s): IPHS 503. Enrollment is restricted to students in the DrPH program; other students may register with consent of the instructor.

IPHS 510. Leadership in Public Health Policy Development. 3 hours.
Policy development or policy planning is a leadership activity and part of the DrPH competency framework. This course covers the policy process and role of policy analysis in policy development from a leadership perspective. Course Information: Prerequisite(s): IPHS 501. Enrollment is restricted to students in the DrPH program; other students may register with consent of the instructor.

IPHS 511. Personal Leadership Development. 3 hours.
Examines the personal dimensions of leadership and is intended to give students a basis for understanding their leadership styles, those of others, and to further professional leadership development. Course Information: Prerequisite(s): IPHS 501. Recommended Background: Senior level management experience in the government or non-profit sector. Enrollment is restricted to students in the DrPH program; other students may register with consent of the instructor.

IPHS 512. Public Health Leadership Tools. 3 hours.
Covers some of the most commonly used and practical leadership process management tools from both a theoretical and applied perspective. Course Information: Prerequisite(s): IPHS 501. Recommended Background: Senior level management experience in the government or non-profit sector. Enrollment is restricted to students in the DrPH program; other students may register with consent of the instructor.

IPHS 513. Data Analysis: Applications and Methods for Public Health Leaders. 3 hours.
Emphasizes the MS Excel skills needed by public health decision-makers to understand, use and interpret information extracted from data sets without the need for special statistical software. Course Information: Extensive computer use required. Students are required to have access to MS Excel (version 2010 or later) and a high-speed Internet connection. Taught as a distance-learning elective in a synchronous format. Prerequisite(s): Open only to students in the Doctor of Public Health program or with consent of the instructor. Class Schedule Information: To be properly registered, students must enroll in one Lecture-Discussion and one Discussion.

IPHS 514. Quantitative Methods for Leadership in Public Health Practice. 3 hours.
Covers the application of quantitative methods useful in leadership situations to address adaptive challenges, foster change, drive policy and contribute to the evidence base of public health practice. Course Information: Extensive computer use required. Prerequisite(s): IPHS 501 and EPID 403; and consent of the instructor.

IPHS 516. Anthropology and Global Health Integrative Seminar. 4 hours.
Critical examination of global health issues from social science and public health perspectives. Includes consideration of cultural underpinnings, geo-political influences, design of appropriate and effective interventions, and policy formation. Course Information: Same as ANTH 516. Prerequisite(s): Graduate or professional standing; and consent of the instructor.

IPHS 520. Foundations of Public Health. 3 hours.
Provides a broad introduction to foundational areas of PH, including an overview of PH history, ethics, health disparities, global health, health promotion, environmental health and biological, genetic, social and behavioral determinants.

IPHS 590. Practical Training in Public Health Sciences. 1-3 hours.
Practical training in public health within industry, governmental agency, or other relevant entity for Master of Science and Doctor of Philosophy students. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Prerequisite(s): Completion of the first year of the program; and approval of the department. International students must obtain permission from the Office of International Services to register for this course.

IPHS 591. Readings in Anthropology and Global Health. 1-8 hours.
Student along with his/her advisor will develop a series of readings focused on a specific topic of interest to the student. Course Information: Same as ANTH 591. May be repeated up to 1 time(s). Prerequisite(s): Consent of the instructor.

Research and methods class combined with practical fieldwork in Anthropology and Global Health. Course Information: Same as ANTH 592. May be repeated to a maximum of 8 hours. Field work required. Prerequisite(s): Consent of the instructor.

IPHS 593. Special Topics in Anthropology and Global Health. 4 hours.
Special topics in Anthropology and Global Health. Course Information: Same as ANTH 593. May be repeated if topics vary. Prerequisite(s): Graduate or professional standing; and consent of the instructor.

IPHS 594. Advanced Special Topics - Interdepartmental. 1-4 hours.
Advanced special topics in public health. Course content will vary from semester to semester. Course Information: May be repeated. Students may register in more than one section per term.

IPHS 595. Seminar in Interdisciplinary Public Health Sciences. 1-3 hours.
Analysis of current research in public health. Course content will vary from semester to semester. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

IPHS 596. Independent Study in Public Health. 1-4 hours.
Selected aspects of specific public health problems; independents study under close supervision of faculty. Course Information: May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of instructor who has supervised at least one course in the area of the independent study.

IPHS 598. Research in Public Health Sciences - M.S. 0-16 hours.
Individual research in public health directed by a faculty member. Directed toward the thesis requirements for the Master of Science degree. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.

IPHS 599. Research in Public Health Sciences - Ph.D. 0-16 hours.
Individual research in public health directed by a faculty member. Directed toward the dissertation for the Doctor of Philosophy degree. Course Information: Satisfactory/Unsatisfactory grading only. May be repeated. Students may register in more than one section per term. Prerequisite(s): Consent of the instructor.