IU Richard M. Fairbanks School of Public Health

Welcome to the IU Richard M. Fairbanks School of Public Health!

The IU Richard M. Fairbanks School of Public Health offers the following programs*:

Degree Programs

- Doctor of Philosophy (Ph.D.) in Biostatistics
- Doctor of Philosophy (Ph.D.) in Epidemiology
- Doctor of Philosophy (Ph.D.) in Health Policy and Management
- Master of Health Administration (M.H.A.)
- Master of Public Health (M.P.H.)
- Master of Science in Biostatistics (M.S.)
- Bachelor of Science in Health Services Management (B.S.H.S.M.)
- Bachelor of Science in Public Health (B.S.P.H.)
  - B.S.P.H. Major in Community Health
  - B.S.P.H. Major in Environmental Health Science

Certificate Programs

- Graduate Certificate in Health Policy
- Graduate Certificate in Health Services Management
- Graduate Certificate in Public Health
- Undergraduate Health Administration Certificate
- Undergraduate Population Health Science Certificate

Minors

- Ph.D. Minor in Biostatistics
- Ph.D. Minor in Environmental Health Science
- Ph.D. Minor in Epidemiology
- Ph.D. Minor in Health Policy and Management
- Ph.D. Minor in Public Health
- Ph.D. Minor in Social and Behavioral Sciences
- Undergraduate Environmental Health Science Minor
- Undergraduate Health Systems Administration Minor

*Additional Programs may have been added since the last publication of this Bulletin. For the most up-to-date program information on degree programs in the Fairbanks School of Public Health, please visit our school's website at pbhealth.iupui.edu.

Updated November 2014

Department Overview

The Fairbanks School of Public Health is dedicated to the pursuit of health for all people. Health is defined as the capacity to develop full human potential, not simply the absence of disease. In promoting the health of communities, we emphasize the prevention of disease and injury and recognize the interconnectedness of the physical environment and ecosystem to the health of the community. We strive to ensure that the interests of the public are represented in health policies and practices and supports activities that promote this comprehensive view.

The School is committed to the principles of equality, shared decision-making, and a focus on the social, biological and environmental determinants of health which are central tenets of healthy communities and social justice. We embrace collaborative and participatory activities as a means of working collectively with other institutions and organizations in the community, across the state, nationally and internationally to ensure healthy communities and populations, a prerequisite for social justice.

While the traditional regulatory, legal and legislative functions of public health remain as important as ever today, public health is dynamic and must respond in innovative ways to emerging challenges to world health.

The IU Richard M. Fairbanks School of Public Health is proud to be fully accredited by the Council on Education for Public Health (CEPH). Our academic programs focus on public health and health care administration and include undergraduate and graduate degrees. Our 120-credit Bachelor of Science in Health Services Management (BSHSM) and Bachelor of Science in Public Health (BSPH) offer strong foundations, and two majors (Community Health and Environmental Health) are available in the BSPH degree. The 45-credit Master of Public Health (MPH) degree offers concentrations in the five core areas of public health: Biostatistics, Environmental Health Science, Epidemiology, Health Policy and Management, and Social and Behavioral Sciences. The 51-credit Master of Health Administration (MHA) degree is fully accredited by the Council on the Accreditation of Healthcare Management Education (CAHME). The 42-credit Master of Science (MS) degree in Biostatistics provides highly focused training in statistical theory and biostatistical methods, with an emphasis on their application in a broad array of health sciences. The 90-credit Doctor of Philosophy (PhD) degrees are available in Health Policy and Management, Epidemiology and Biostatistics.

We invite you to join us as we prepare future leaders, discover best practices, and implement innovative approaches to building a healthier world.

Mission, Vision, and Values

Mission:
The mission of the Indiana University Richard M. Fairbanks School of Public Health at IUPUI is to cultivate innovative, interdisciplinary, community engaged education, research and service and prepare leaders in public health and health care.

Vision:
The Indiana University Richard M. Fairbanks School of Public Health at IUPUI is a leader in improving the health of the people of Indiana, the nation and the world.

Values:
The faculty, staff, and students of the Indiana University Richard M. Fairbanks School of Public Health at IUPUI strive to incorporate the following core values into all aspects of research, education, and service.

- Collaborative
- Committed to Social Justice

- Environmentally Conscious
- Culturally Competent
- Equitable
- Innovative
- Respectful
- Sensitive to Diversity

Updated January 2014

Graduate Courses

PBHL-A 519 Environmental Science in Public Health (3 cr.) The primary focus of this course will be on pathogenic agents (biological, chemical, and physical) in the environment and their impact on morbidity and mortality of human populations. We will study several types of common and emerging pathogens from anthropogenic and natural sources and how they cause illness and/or injury. Particular attention will be given to the mode of transmission, route of exposure, and acute and chronic diseases or injuries caused by these environmental agents. During the class we will also investigate the strategies, technologies and laws/ policies that are used to prevent, control, or eliminate environmental hazards.

PBHL-A 602 Internship in Environmental Health Science (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/ her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-A 609 Air Pollution and Health (3 cr.)
This course provides an overview and foundation in the science and management of air quality, with a focus on health impacts and strategies to reduce these impacts. Course topics include the scientific technical aspects of air pollution through the study of the characteristics of the atmosphere and atmospheric pollutants, effects of meteorology on air pollution, urban air pollution, visibility, smog, acid deposition, stratospheric ozone depletion, global warming and indoor air pollution.

PBHL-A 620 Environmental Health Policy Analysis (3 cr.)
This course provides students with a focus on the policy-making process and the many variables that comprise the dynamic framework for environmental policy formulation. The course explores the roles of politics, economics, science, health, values and ethics in setting policy through a consideration of key historical and contemporary issues.

PBHL-A 621 Solid and Hazardous Waste Management (3 cr.)
This course provides students with a technical foundation in areas of solid and hazardous waste management that can be applied to the examination of policy options. Topics include characterization of the waste stream, regulations, health and environmental risks, liability issues, management techniques, and treatment and disposal options.

PBHL-A 623 Environmental Management Systems: ISO 14001 Based (3 cr.)
This course provides students with the knowledge and skills to establish or improve an environmental management system that is compatible with ISO (International Organization for Standardization) 14001, an international, voluntary standard that is emerging as a best-management practice for environment.

PBHL-A 628 Public Health Sanitation (3 cr.)
This course will examine the various hazards that cause food borne illness as well as the risk factors that are known to contribute to these diseases. Topics include etiological agents for common and emerging food borne diseases; basic concepts of food science and technology; food safety principles and practices that are recommended by the Food and Drug Administration's *Food* Code.

PBHL-A 633 Occupational Health and Safety for Public Health Professionals (3 cr.)
This course provides a survey of technical and regulatory aspects of protecting the health and safety of workers. Topics include basic toxicology; skin, eye, and respiratory hazards; measuring hazardous atmospheres; ventilation systems; fire and explosion hazards; emergency response; occupational hearing loss; radiation; prevention of accidents; cumulative trauma; and personal protective equipment.

PBHL-A 640 Public Health Applications of GIS (3 cr.)
Using ArcGIS Desktop software, this course aims to familiarize students with applications of Geographic Information Systems (GIS) in the context of public health. Public Health cases will be used to explain and teach principles, methods, and techniques. Topics include creating layer packages in ArcMap, health data visualization, map design, health data downloading, geocoding tabular data, and spatial analysis and spatial joins. Downloading, processing and visualization of satellite data on environmental parameters that are traditionally determinants of public health will be covered at the end of the course. The course will provide practical experience to students through exercises and a final project.

PBHL-A 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of

work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-A 660 Chemistry for Environmental Health Professionals (3 cr.)
Chemistry for Environmental Health Professionals provides a review of chemistry fundamentals and application of fundamentals to environmental health issues. Our focus is on the organic and inorganic chemistry of topics including hazardous materials and wastes; industrial processes, toxicology, and sustainability; water and water pollution and treatment; the atmosphere and air pollution; soil; and other related topics.

PBHL-A 661 Environmental Toxicology (3 cr.) P: PBHL-A609
This course examines the extent and significance of toxic agents in the environment. It covers risk assessment of potential adverse health effect resulting from human exposure to toxic environmental agents. It also provides a background for understanding mechanistic and biologic specific processes of environmental agents.

PBHL-A 661 Environmental Toxicology (3 cr.)
This class will give students a solid introduction to toxicology and the ways in which environmental exposures can contribute to human disease. The course will also introduce the regulatory settings in which environmental toxicology is key.

PBHL-A 662 Environmental Health Risk Assessment (3 cr.)
Environmental Risk Assessment is the basis for making decisions related to ecology and human health. This course will examine the basic principles and methods of conducting ecological and human health risk assessments and how risk is managed and communicated to the public. Applications emphasizing real cases will be used to illustrate the interdisciplinary process and products of risk assessment, as well as the regulatory use of the information.

PBHL-A 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-A 670 Topics in Public Health: Water Quality Management (3 cr.)
Water quality and management of water and wastewater are critical issues for the sustenance of every society and public health. A rational approach to deal with these issues requires understanding of basic principles about water and the surrounding ecosystem that both provides this resource and receives the waste from its use and misuse. This course is designed to teach public health students the fundamentals of water quality and treatment of water, wastewater and solid waste along with associated aspects of the water cycle, ecosystems, water resources and regulations. Although this is mostly a descriptive course with no lab component, few sessions will take place in a lab to reinforce some key concepts with lab experiments.

PBHL-A 700 Environmental Health Continuous Enrollment (1 cr.)
P: A703 PBHL- A700 Environmental Health Continuous Enrollment in a one-credit course designed for MPH students who previously registered for A703 Environmental Health Concentration Project and are working on their Final Concentration Project until project grade has been assigned

PBHL-A 703 Environmental Science Concentration Final Project (3 cr.) P: MPH Core; Public Health Internship.
Provides students the opportunity to synthesize and integrate knowledge acquired through coursework and the public health internship. Student projects will include components of environmental science analysis, research, and application

PBHL-B 530 Statistical Methods in Bioinformatics (3 cr.) P: Students are assumed to have completed a graduate level statistics courses (such as STAT 51200 & STAT 51900) and are familiar with the basic concepts of statistical inference. Students who are uncertain about their levels of preparation are encouraged to contact the instructor.
B530 is a graduate level course designed for students in biostatistics, statistics, bioinformatics, and other related areas. The course covers a broad range of statistical methods used in many areas of bioinformatics research, including sequence alignment, genome sequencing and gene finding, gene expression microarray analysis, transcriptional regulation and sequence motif finding, comparative genomics, and proteomics. This course is designed to train student's skills in data analyses and communications through real life bioinformatics projects. The courses primary audiences include are graduate students in biostatistics, bioinformatics, and researchers from pharmaceutical industry.

PBHL-B 551 Biostatistics for Public Health I (3 cr.)
This course introduces the basic principles and methods of data analysis in public health biostatistics. Emphasis is placed on public health examples as they relate to concepts such as sampling, study design, descriptive statistics, probability, statistical distributions, estimation, hypothesis testing, chi-square tests, t-tests, analysis of variance, linear regression and correlation.

PBHL-B 551 Biostatistics for Public Health I (3 cr.)
P: One semester of undergraduate mathematics
This course introduces the basic principles and methods of data analysis in public health biostatistics. Emphasis is placed on public health examples as they relate to concepts such as sampling, study design, descriptive statistics, probability, statistical distributions, estimation, hypothesis testing, chi-square tests, t-tests, analysis of variance, linear regression and correlation. An introduction to SAS statistical software is now a part of this course.

PBHL-B 552 Fundamentals of Data Management (3 cr.)
This course teaches concepts related to research data planning, collection, storage, processing, and

dissemination. The curriculum includes theoretical guidelines and practical tools for conducting public health research. Hands-on training with real-world examples and problem-solving exercises in SAS will be used to ensure that students are comfortable with all concepts.

PBHL-B 561 Introduction to Biostatistics I (3 cr.)
P: One year undergraduate mathematics is required. Working knowledge on linear algebra and elementary calculus is expected. Students with insufficient mathematics preparation are expected to remedy the deficiency on their own.
B561 is an introductory level biostatistics course designed for healthcare professionals. This course will cover the topics on data presentation techniques, describing data with numerical summary measures, probability and probability distributions, sampling distributions, statistical inferences from small and large samples, analysis of categorical data, analysis of variance, correlation and simple linear regression analysis.

PBHL-B 562 Biostatistics for Public Health II (3 cr.)
P: B551 or B561
P: B551 or B561 or One semester of graduate level Biostatistics

This course introduces the advanced principles and methods of data analysis in public health biostatistics. Emphasis is placed on public health examples as they relate to concepts such as: Multiple regression, analysis of variance and covariance, logistic regression, nonparametric statistics, survival analysis, epidemiology statistics, and repeated measures analysis.

PBHL-B 571 Linear Models in Public Health (4 cr.)
P: B551 or equivalent
This is a first course into two multivariate statistical procedures, the Analysis of Variance (ANOVA) and Regression with special focus in problems related to the Public Health sciences. This is an introductory course that will expose students to these methods, and consolidate their understanding of statistical inference (estimation and testing of statistical hypotheses) in the context of the two procedures. The course will be taught in two sessions, a lecture, where the relevant theory and methods will be presented, and a practicum or laboratory session, involving hands-on analysis of real-life problems using the SAS statistical software package.

PBHL-B 572 Biostatistics Method II: Categorical Data Analysis (4 cr.) P: B562, or B571, or Equivalent
This course covers applied statistical methods for the analysis of categorical data with special emphasis on data collected from epidemiologic studies and general biomedical studies. The topics delivered in this course will focus on methods of categorical analysis commonly used in practice of the health sciences. The course will cover two areas: the relevant statistical theory and methods; and analysis of real-life problems using the SAS statistical software package.

PBHL-B 573 BIOSTATISTICS METHOD III: APPLIED SURVIVAL DATA ANALYSIS (4 cr.) P: Students must have taken one course in basic statistics and another course in linear regression models. Students must have prior knowledge of SAS for completion of homework.
The statistical methods covered in this course focus on "time to event" data, where the event can be response to treatment, relapse of disease, or death. Topics covered in this course include estimations of survival function and regression models for survival data. Specifically, this course covers the central functions of survival analysis: the hazard, survival, and cumulative hazard functions, nonparametric estimation of survival functions using life-table method and the Kaplan-Meier method, and comparison of survival distributions using the log-rank and other tests. In addition, we will discuss regression models for survival outcomes with emphasis on the Cox proportional hazards model. Alternative models such as the accelerated failure time model and use of parametric distributions (exponential, Weibull) will also be considered. Class material will include presentation of statistical methods for estimation and testing, along with current software (SAS) for implementing analyses of survival data. Applications to real data will be emphasized.

PBHL-B 574 Biostat Method IV: Applied Longitudinal Data Analysis (3 cr.)
P: STAT512 & STAT525 This course covers modern methods for the analysis of repeated measures, correlated outcomes and longitudinal data, including the unbalanced and incomplete data frequently encountered in biomedical research. Topics include an introduction to the analysis of correlated data, repeated measures analysis of variance (ANOVA), random-effects and growth-curve models, generalized linear models for correlated data, including generalized estimating equations (GEE), and generalized linear mixed models (GLMMs).

Class presentations and homework assignments will focus on data analysis in SAS using PROC GLM, PROC MIXED, PROC GENMOD, and PROC NLMIXED. Also, an introduction to fitting linear mixed models in **R** using fucntions *lme()* and *gls()* from the *library(nlme)* will be given.

PBHL-B 581 Biostatistical Computing (3 cr.)
This course introduces the necessary SAS skills for general data preparation, description, visualization, and some advanced skills. After successfully finishing this course, you will be able to perform at entry-level graduate research assistant positions and be prepared for biostatistical method courses. Data steps and the following procedures will be covered: IMPORT, SORT, PRINT, FORMAT, TABULATE, REPORT, MEANS, UNIVARIATE, FREQ, CORR, SQL, GPLOT, SGPLOT, SGPANEL, NPAR1WAY, POWER. Additionally, SAS macro, ODS and IML will also be introduced.

PBHL-B 582 Introduction to Clinical Trials (3 cr.)
P:Analysis of variance and regression (G652 or equivalent). A working knowledge of biostatistics is assumed and general familiarity with clinical trials will be helpful.
This is a standard course that prepares Biostatisticians for support of clinical trial projects. The course will cover fundamental aspects of the appropriate design and conduct of medical experiments involving human subjects (clinical research/trials) including ethics, design, sample size calculation, randomization, monitoring, data collection, analysis and reporting of the results.

PBHL-B 583 Applied Multivariate Analysis (3 cr.)
P: B551 and B561. This is an introductory multivariate statistics course. This course is applied and is intended for non-statisticians, for example, masters or PhD students in behavioral, psychological, educational or medical sciences, or other health care professionals. Students are expected to have taken two previous courses in statistics (introductory and intermediate) covering up through t-test, ANOVA, ANCOVA and linear regression. The overall objective of the course is to introduce the most commonly used multivariate statistical techniques with emphasis on applications to real data which will be analyzed with SPSS. The emphasis will be on concepts, assumptions, applications, and hands-on interpretation of SPSS results. Formulas or matrix algebra will not be emphasized.

PBHL-B 584 Biostatistics Practicum (3 cr.)
Statistical data analysis and study design is an art in practice. When and how to apply different statistical models and the interpretation of data analysis results is heavily driven by experience. This course is designed to develop students' skills in study design, data analyses, and oral and written communication through multiple real-life projects. The projects will cover designs and data analyses of observational studies and experimental studies. Practical issues in study design and data analysis include but are not limited to sample size and power estimation, interpretation of p-values, phase I to IV trial designs, case-control, case-cohort, retrospective/ prospective study designs; ANOVA, ANCOVA, survival analysis, main effect/interaction, multiple comparisons, diagnostic tests, statistical modeling, and data analysis reporting, including both written and oral presentations.

The most important feature of the course is the intended training in the practice of biostatistics in collaborative environments. The course is part of the Biostatistics PhD curriculum.

Course material will be covered by lectures and interactive exercises that include the instructors role playing as statistically naïve investigators. Knowledge gained will be reinforced by short homework assignments and projects that require presentations.

PBHL-B 585 Analysis and Interpretation of Observational Studies (3 cr.) P: This course is designed for students in the PhD program in Epidemiology. Advanced students in the Master of Public Health degree program, Epidemiology concentration may register for this course with the permission of the professor. P: PBHL-E 715 Design and Implementation of Observational Studies. This course examines fundamental aspects of analyzing data generated by observational epidemiology studies. The focus is on developing a solid understanding of contemporary analytical techniques to increase the validity of the study and control for possible confounding factors and biases.

PBHL-B 586 Technical Writing and Scientific Reporting (3 cr.)
Biostatistics is an applied field that requires effective written communication. This one credit hour course is designed to help graduate students developing the necessary writing skills to produce clearly written and well-structured scientific reports. A specific goal of the course is to train PhD-level students on the dissertation writing and scientific publication.

The course will focus on the general principles of good writing, structures of various types of scientific papers, and techniques and styles that are unique to the field of biostatistics. It also discusses frequently encountered issues in statistical publication and peer review.

The class meets once a week. In addition to the instructor's lectures, the class will analyze and discuss the merits and deficiencies of different writing samples. Regular homework assignments will be given so that students can practice what they learned in the class.

This is not an English language course.

PBHL-B 587 Nonlinear Mixed Models (3 cr.)
Prerequisites: Students are assumed to have completed an undergraduate level statistics course and are familiar with the basic concepts of statistical inference. Students who are uncertain about their levels of preparation are encouraged to contact the instructors

Nonlinear mixed models are heavily utilized in drug development. Population pharmacokinetics/ pharmacodynamics models are the most important applications. Because this topic has a heavy interdisciplinary flavor, it requires a mixed content that has pharmacology background, statistical theory, and computational implementations. The course's primary audiences include graduate students in biostatistics, pharmacology, bioinformatics and researchers from pharmaceutical industry.

The most important feature of the course is the intended balance among pharmacology background, statistical theory and software implementation. At the end of this course, we expect that the students can understand the pharmacokinetic models, fit the nonlinear mixed model through the required software package, conduct the diagnosis of model fitting, perform hypothesis tests, and provide interpretation of the data. The course is part of the Biostatistics PhD curriculum.

PBHL-B 602 Internship in Biostatistics (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/ her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-B 612 Modern Statistical Learning Methods (3 cr.)
The goal of this course is to introduce some advanced regres- sion techniques to students in the Biostatistics PhD program. The prerequisite in- cludes calculus, linear

algebra, linear models, mixed models and generalized linear models.

PBHL-B 616 Advanced Statistical Computing (3 cr.)
This course will cover selected computational techniques useful in advanced statistical applications and statistical research. Topics to be covered include methods for solving linear equations, numerical optimization, numerical integration, Expectation-Maximization (EM) algorithm, Monte Carlo method, Bayesian methods, bootstrap methods and stochastic search algorithms.

Upon completion of the course, students are expected to understand the appropriate statistical computational approaches to discovery in data analysis, of statistical inference, and for development of statistical theory and methods. Students are expected to implement research and computational ideas using R.

PBHL-B 626 Advanced Likelihood Theory (3 cr.) P: Stat 519 and Stat 528, or Equivalent
This course covers theoretical foundation of statistical inference with focus on likelihood theory and its application on biomedical studies. It provides a good preparation for advanced biostatistics courses such as Advanced GLM, Advanced Longitudinal Data Analysis, and Advanced Survival Analysis.

PBHL-B 627 Statistics in Pharmaceutical Research (3 cr.) P: Analysis of variance and regression (B652 or equivalent). A working knowledge of biostatistics is assumed and general familiarity with clinical trials will be helpful. It is also helpful (but not critical) that some advanced concepts, such as the analysis of survival data, are familiar to the students.
This is a standard course that prepares Biostatisticians for support of clinical trial projects. The course will cover fundamental aspects of the appropriate design and conduct of medical experiments involving human subjects (clinical research/trials) including ethics, design, sample size calculation, randomization, monitoring, data collection, analysis and reporting of the results.

There will be three homework projects assigned with about four weeks allowed for completion of each, plus two tests and a final exam. The relative weights of these in the final grade are given below.

PBHL-B 636 Advanced Survival Analysis (3 cr.)
P: Stat 528 & Stat 536 This course will discuss the counting process approach to the analysis of censored failure time data. From this prospective, we will revisit many of the standard statistical methods in survival analysis, including the Nelson-Aalen estimator of the cumulative hazard function, the Kaplan-Meier estimator of the survivor function, the weighted logrank statistics, the Cox proportional hazards regression model, and the accelerated failure time model. Counting process based martingale theory will be introduced to facilitate the derivation. Extension of Cox proportional hazards model will be introduced too.

PBHL-B 644 Applied Generalized Linear Models and Longitudinal Data Analysis (3 cr.) P: S tudents registering for this course are expected to have completed #Linear Models in Public Health# or its equivalents with a B or better grade.
This is an introductory statistical method course on generalized linear models and longitudinal data analysis for students in various public health disciplines. The course focuses on the basic concepts and implementation of four extensions to classical linear regression models: (1) generalized linear models (including logistic and log-linear regression); (2) mixed effects models; (3) generalized linear mixed models; and (4) population average models based on generalized estimating equations (GEE).

PBHL-B 646 Advanced Generalized Linear Models (3 cr.)
Prerequisites: Students taking this course should have formal training in *applied linear and generalized linear models*. In addition, they should have a basic understanding of the theory of *probability, statistical estimation and inference*. *Students who are not adequately prepared in aforementioned areas are expected to make up for the deficiency on their own*.

This course presents the fundamental ideas of generalized linear models (GLM). It also discusses practical implementation of GLM through real-life applications.

Discussion will start from the classical theory of linear models, followed by important special cases of GLM, the unified GLM theory, and then the more recent model extensions. Although it is not designed to be a data analysis course, it will present the practical motivations and considerations behind the development of GLM.

PBHL-B 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-B 652 Introduction to Biostatistics II (3 cr.)
P: G651 or equivalent
B652 is an advanced biostatistics course designed for students with an interest in the health sciences. Students are expected to have completed at least one semester course of basic biostatistics. Knowledge of probability and probability distributions, concepts of estimation and hypothesis testing are assumed. Topics covered in this course include multiple linear regression, analysis of covariance, logistic regression, and survival analyses. Upon completion of the course, students are expected to understand the appropriate statistical models for various outcomes and be able to interpret results using statistical techniques covered in this course. Students are also

expected to conduct simple analyses using SPSS on personal computers

PBHL-B 656 Advanced Longitudinal Data Analysis (3 cr.) P: PBHL B574 and familiarity with concepts and theory of statistical inference. Students who are uncertain about their level of preparation are encouraged to contact the instructor.
This course covers the theory of classical and modern approaches to the analysis of clustered data, repeated measures, and longitudinal data. Topics include random effects and growth curve models, generalized estimating equations, statistical analysis of repeated categorical outcomes, and estimation with missing data. The class also discusses computational issues including EM algorithm, quasi-likelihood methods and Bayesian methods for both traditional and new methodologies. This course belongs to the advanced portion of the Biostatistics Ph.D. curriculum.

PBHL-B 662 Design and Analysis of Medical Experiments (3 cr.) P: G652, P652, B641 or equivalent
This is a course into the application of experimental design to biomedical experiments, such as randomization, blocking, factorial designs and stratification. The course addresses both clinical and pre-clinical investigation as well as design of experiments to evaluate medical devices, which will likely be encountered by biomedical researchers. It is addressed to second-year graduate students in biostatistics or epidemiology with a solid understanding of analysis of variance, regression and working knowledge of survial analysis.The course will be taught in two sessions, a lecture, where the relevant theory and methods will be presented, and a practicum or laboratory session, involving hands-on analysis of real-life problems using the SAS statistical software package.

PBHL-B 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-B 687 Nonlinear Mixed Models (3 cr.) P:Students are assumed to have completed an undergraduate level statistics course and are familiar with the basic concepts of statistical inference. Students who are uncertain about their levels of preparation are encouraged to contact the instructors.
Nonlinear mixed models are heavily utilized in drug development. Population pharmacokinetics/ pharmacodynamics models are the most important applications. Because this topic has a heavy interdisciplinary flavor, it requires a mixed content that has pharmacology background, statistical theory, and computational implementations. The course's primary audiences include graduate students in biostatistics, pharmacology, bioinformatics and researchers from pharmaceutical industry.

The most important feature of the course is the intended balance among pharmacology background, statistical theory and software implementation. At the end of this course, we expect that the students can understand the pharmacokinetic models, fit the nonlinear mixed model through the required software package, conduct the diagnosis of model fitting, perform hypothesis tests, and provide interpretation of the data. The course is part of the Biostatistics PhD curriculum.

PBHL-B 688 Theory of Statistical Genetics (3 cr.)
This course is designed to provide solid training in statistical theory used in genetic analyses.

PBHL-B 698 Topics in Biostatical Methods (1-3 cr.)
Directed study and reports for students who wish to undertake individual reading and study on approved topics.

PBHL-B 700 Biostatistics Continuous Enrollment (1 cr.) P: PBHL-B 701 PBHL- B700 Environmental Health Continuous Enrollment in a one-credit course designed for MPH students who previously registered for B701 Biostatistics Concentration Project and are working on their Final Concentration Project until project grade has been assigned.

PBHL-B 800 Biostatistics Doctoral Dissertation Research (1-8 cr.)
The dissertation will be written on an original topic of biostatistics research and presented as one of the final requirements for the PhD degree. The dissertation must be an original contribution to knowledge and of high scholarly merit. The candidate's research must reveal critical ability and powers of imagination and synthesis. The dissertation is written under the supervision of the Dissertation Committee Chair with input from the other members of the Dissertation Committee. The data used by the student may involve analysis of primary or secondary data

PBHL-E 517 Fundamentals of Epidemiology (3 cr.)
This course will introduce students to basic epidemiologic concepts including determinants of health and patterns of disease in populations, population health descriptive techniques, use of health indicators and secondary data sources. Students will gain an understanding of the role of Epidemiology in developing prevention strategies and policy. Among the topics to be covered are measures of mortality and morbidity, design and analysis of observational studies, community health assessment and program evaluation.

PBHL-E 601 Advanced Epidemiology (3 cr.) P: E517 & B551 (or concurrently enrolled). This course provides students with an in-depth understanding of advanced epidemiologic concepts introduced in other courses as well as a fundamental understanding of epidemiologic techniques not covered in other classes. Topics included will represent cutting edge techniques, philosophical issues and insights to appropriately conduct and interpret the findings of epidemiological studies. Students will gain an understanding of these concepts and issues through discussions with expert epidemiologists and hands-on exercises.

PBHL-E 602 Epidemiology Public Health Internship (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct

projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-E 606 Grant Writing: From Befuddlement to Brilliance (3 cr.)
Students will learn each component of a successful proposal for research or community projects by a Federal or private agency. Current funding opportunities from these agencies will be used as templates for preparation and review of proposals. Skills needed to review proposals also will be taught.

PBHL-E 609 Infections Disease Epidemiology (3 cr.)
P: E517. This course is designed to provide a basic overview of the infectious disease process, including disease agents, transmission routes, immunity and public health significance. The course introduces principles of infectious disease epidemiology, including outbreak investigation and surveillance, using case studies as examples. Concepts on globalization of disease, microbial ecology, and disease eradication also are discussed.

PBHL-E 610 Chronic Disease Epidemiology (3 cr.)
P: E517 This course examines chronic health conditions from epidemiological perspectives. Concepts include distribution, determinants; diagnosis; measures of severity; treatment modalities; surveillance measures; survival and prognosis; and quality of care measures. Research methods prevention strategies and screening tests are presented. Clinical expert's present diagnosis and treatment methods.

PBHL-E 618 Cancer Epidemiology (3 cr.) P: E517 This course is an overview of cancer epidemiology, focusing on key concepts, etiologic research, applications to public health practice and major epidemiologic methods. This course is designed for students who have an interest in epidemiology.

PBHL-E 619 Health Economics for Public Health Professionals (3 cr.) This is an introductory microeconomics course with applications to the public health and health care systems. The course objectives are that the students develop an appreciation of economic theories and principles, exacting assumptions thereof, and how these theories and principles apply to the public health and health care markets, particularly how price drives resource allocation in addition to signaling value, substitution and technological innovation. Students will also be introduced to skills need to measure and interpret economic values and relationships including the interpretation of quantitative data analysis. We will examine how economic incentives affect the different actors in the health (care) system. The fundamental models of economic and organizational behaviors will be extended to describe the behaviors of the different health care players and the health (care) system as each tries to maximize utility and profits (or min costs), respectively, under different financial, regulatory and technological constraints. Most importantly, students will be able to explore the limits to markets and rationality, and develop an appreciation for how a variety of checks and balances-more so that unbridled competition-contribute to efficient and equitable functioning of and outcomes in a market.

PBHL-E 629 Introduction to Genetic Molecular Epidemiology (3 cr.) P: PBHL-E 517 & PBHL-B 551
Epidemiologic concepts, including human genetics, concepts and methodology used in genetic epidemiology. Students will gain an understanding of the role of Genetic Epidemiology in designing and interpreting studies to determine genetic roles in common diseases. Among the topics to be covered are introduction to human genetics, introduction to the field of genetic epidemiology, study designs used in genetic epidemiology, and issues in study design and analysis.

PBHL-E 635 Foundations in Public Health Informatics (3 cr.)
This course will introduce the application of Informatics in the Public Health field. The course will include a brief review of core public health functions, describe the current policies defining the use of informatics in public health, and outline the history of the application of informatics principles in both public health and clinical health systems.

PBHL-E 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-E 651 Public Health Surveillance (3 cr.)
This course will focus on the recognized value of Public Health Surveillance as well as the development and utility of Surveillance Systems. Included are the historical development of surveillance systems, data sources, informatics of surveillance, data management, and evaluation of surveillance systems. In addition, descriptive epidemiology techniques, identification of outbreaks and community needs. Trend analysis based on the data collected from the surveillance system will be covered, along with related ethical and legal issues. The course discusses how surveillance is conducted in low to middle income countries and the future of public health surveillance.

PBHL-E 655 Historical Evolution of Epidemiology (3 cr.) P: E517. The course will explore the historical developments and public health responses to human disease morbidity and mortality, and their importance and influence on the role of public health in modern society. Readings and discussion will examine in detail, the evolutionary change in the epidemiologic response of a Varity of disease of national and international importance.

PBHL-E 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-E 675 Fundamentals Injury Epidemiology (3 cr.) P: This course is designed for students in the Master of Health Administration and the Master of Public Health degree programs. Students not in one of these two programs must have the permission of the instructor to enroll. All students must have at least a Bachelor#s Degree.
Injury is the leading cause of death for individuals between the ages of 1 and 44 years. This course will introduce students to basic epidemiologic concepts of injury, both intentional and unintentional. We will discuss the burden of injury and its effect on public health, patterns of injury in populations, the use of descriptive techniques, and secondary data sources. Students will gain an understanding of the role of Injury Epidemiology in developing prevention strategies and policy. Among the topics to be covered are measures of mortality and morbidity, design and analysis of observational studies, community health assessment and program evaluation.

PBHL-E 700 Epidemiology Continuous Enrollment (1 cr.) P: PBHL-E 704 Environmental Health Continuous Enrollment in a one-credit course designed for MPH students who previously registered for E704 Epidemiology Concentration Project and are working on their Final Concentration Project until project grade has been assigned.

PBHL-E 704 Public Health Epidemiology Concentration Project (3 cr.) P: MPH Core; Public Health Internship. Students synthesize and integrate knowledge acquired through course work and the public health internship by conducting an epidemiological study. Satisfactory projects include epidemiological research that involves protocol development, data collection and analysis and presentation of an oral presentation and written report.

PBHL-E 710 Advanced Public Health Survey Research (3 cr.)
This course provides an intensive focus on the formative phases of health survey research. Topics covered will include sampling methodologies, questionnaire development, testing, revision and administration, interviewing, coding procedures, as well as topical discussions related to research ethics and real world challenges of research. Active learning will be emphasized through several field based exercises, as well as a research proposal based on students' own research interests.

PBHL-E 715 Design and Implementation of Observational Studies (3 cr.) P: E517 and Research Methods
This course examines fundamental aspects of designing and implementing observational epidemiology studies. The focus is on developing strategies to increase the validity of the study results by using techniques to control for possible confounding factors and biases. Topics include sampling methods, sensitivity, data weighting, standardization, selection of cases and controls, matching, data collection and project management.

PBHL-E 730 Molecular and Genetic Epidemiology (3 cr.) P: E517
P: E517 This course presents fundamental concepts and methods in molecular and genetic epidemiology, and explains different study designs commonly used in genetic epidemiology to identify the genetic basis of common, complex disease. Students will learn about available common molecular and genetic measures, various elements of study design, including definition of study population, phenotype definition, and choice of analytic methods. We will briefly discuss linkage analysis and then focus on association tests. Additional topics will be discussed including interactions with environmental factors, ethnical issues and genetic testing.

PBHL-E 731 Design and Analysis of Genetic Association Studies (3 cr.) P: B562, E601 & E730
This course introduces the conceptual and practical tools needed for population-based genetic association studies among unrelated subjects. Lectures and selected readings present key issues (such as linkage disequilibrium, "tagging SNPs," haplotypes, population stratification and epistasis) and appropriate statistical methods. Students will be required to present selected papers in class. Students will gain hands-on experience with a range of analytic tools and software packages as part of a class project which gives them the opportunity to design and analyze an association study. This project will require students to work on real-world problems such as marker selection, potential multiple comparisons issues due to multiple markers and multiple outcomes, and missing data.

PBHL-E 750 Doctoral Topics in Public Health (3 cr.)
Courses offered under this course number would include PhD courses on topics expected to be offered only once, such as those taught by visiting faculty, and those that are newly developed and have not yet been assigned a specific course number. The course will focus on a specific topic or technique related to the field of Public Health. The material to be studied will be determined by the instructor with input from the PhD faculty.

PBHL-E 751 Doctoral Readings in Epidemiology (1-3 cr.)
This course is designed to expose a PhD student to published material on a specific topic or technique related to their field of study in Epidemiology. The material to be studied will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement

PBHL-E 752 Doctoral Research in Epidemiology (1-3 cr.)
This course is designed to allow PhD students the opportunity to explore research questions by collecting data or using existing data related to their field of study in Epidemiology. The study topic will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop the study protocol, obtain IRB approval if necessary, obtain the data and collect the planned data analysis. The time frame for completion and the nature of the study product will be determined by the PhD student, faculty member and advisor. Generally the product will be a manuscript for submission to an appropriate journal. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-E 765 Nutritional Epidemiology (3 cr.) P: E517 and B551
This course provides students with an overview of fundamental concepts and methods of nutritional epidemiology and the current state of knowledge on well-studied associations between diet and chronic diseases. Emphasis will be placed on the design, implementation, analysis, and interpretation of nutritional epidemiologic studies

PBHL-E 775 Doctoral Research Seminar in Epidemiology (1 cr.)
This course is designed to expose PhD students to a wide range of specific research topics and issues in Public Health. The seminar topics will be chosen by the Director of the PhD program with input from other faculty members. The PhD students are expected to attend each seminar session, read assigned material, and participate in the seminar discussions. The PhD students may be asked to present their research projects during the seminar to obtain feedback and recommendations from the faculty and other students.

PBHL-E 780 Pharmacoepidemiology (3 cr.) P: E517
This is a graduate level introductory pharmacoepidemiology course. Students will learn how principles of modern epidemiologic methods are used to evaluate the safety, effectiveness, and utilization patterns of medical products (drugs, vaccines, and medical devices) in human populations, with a focus on observational studies. Related topics, including therapeutic risk management, data sources and ethical principles will be discussed. Advanced methodology, such as that utilized to address confounding by indication and misclassification will be introduced.

PBHL-E 795 Cardiovascular Epidemiology (3 cr.)
P: E517 and E601
An advanced graduate course that discusses the topics related to the epidemiology and prevention of cardiovascular diseases. The purpose is to give students an overview of the major cardiovascular diseases and their risk factors. To develop critical thinking skills related to the key issues that epidemiologists consider.

PBHL-E 800 Epidemiology Doctoral Dissertation Research (1-8 cr.)
The dissertation will be written on an original topic of epidemiology research and presented as one of the final requirements for the PhD degree. The dissertation must be an original contribution to knowledge and of high scholarly merit. The candidate's research must reveal critical ability and powers of imagination and synthesis. The dissertation is written under the supervision of the Dissertation Committee Chair with input from the other members of the Dissertation Committee. The data used by the student may involve analysis of primary or secondary data.

PBHL-H 501 U.S. Health Care Systems and Health Policy (3 cr.) This course explores the U.S. health care system, policy development, and ethical challenges. It examines the structure, components, organization and financing of the U.S. health care system. The policy process at national, state and local levels will be analyzed using legislation and related activities.

PBHL-H 507 Management of Individual and Group Behavior (3 cr.) This course provides a conceptual framework for understanding behavior in the work environment by introducing concepts concerning effective management of people in organizations. Key theories and concepts in the field of organizational behavior will be introduced. The focus of this course is at the micro level of analysis, addressing topics such as individual theories of motivation, job design, and diversity issues; management of work teams; group decision making; managing conflict; and leadership, influence, and power issues.

PBHL-H 508 Managing Health Care Accounting Information for Decision-Making (3 cr.) P: PHBL- H200 or BUS - A201. Provides a user-oriented understanding of how accounting information should be utilized, focusing on balance sheet and income statement and cash flow analysis, budgeting, cost analysis, and responsibility accounting.

PBHL-H 509 Financial Management Principles of Health Care (3 cr.) P: PBHL-H 508. Provides knowledge of corporate finance practice in health care organizations. Establishes an understanding of the basic elements of financial theory used to address service expansion or contraction, capital investment issues, developing business plans and working capital management.

PBHL-H 514 Health Economics (3 cr.) P: 3 credit hours of undergraduate economics. Examines the principles and application of economic analysis in the health field and the economist's approach to health care issues. Provides insights offered by economic analysis of specific health issues and problems.

PBHL-H 515 Seminar in Health Policy: Special Topics (3 cr.) Exploration of health policy topics from economic, financial, sociological, political, and psychological perspectives. Analytical paradigms are applied to organizational or macro-policy making issues that vary in response to changing environments. May be repeated once with advisor's approval.

PBHL-H 516 Health Services Delivery and the Law (3 cr.) Medical-legal concepts related to hospitals and other health services organizations. Course provides an

in-depth understanding of the law and the legal processes affecting the health services system. Presentation of the elements of administrative and agency processes, torts, contracts, facilities, physicians, patients, and personnel.

PBHL-H 518 Statistical Methods for Health Services (3 cr.) P: 3 credit hours of 300-level undergraduate statistics. Study of the quantitative techniques commonly used to examine health-related data. Includes univariate, bivariate, and multivariate techniques. Emphasis is on using statistical techniques to make policy and administrative decisions in a health services setting. Students use standard computer software to analyze data.

PBHL-H 521 Management Science for Health Services Administration (3 cr.) Focus is on management science methods, as applied to health sciences administration. Includes treatment of decision theory, constrained optimization, and probability simulation.

PBHL-H 523 Health Services Human Resource Management (3 cr.)
This course provides the knowledge and skills needed to understand the application of personnel and labor relations techniques to the health services sectors, with particular emphasis on human resources management, employees' benefit programs, and labor relations as applied to the health services delivery organization.

PBHL-H 602 Internship in Health Policy and Management (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-H 606 Health Services Quality Improvement and Risk Management (3 cr.) Critically examines the concepts, strategies, and techniques related to the improvement of the quality of health service delivery. Addresses the increasing need to enhance productivity given the impact of external and other factors on the workplace. Principles and application of risk management concepts and techniques, including insurance, are emphasized.

PBHL-H 611 Policy Design, Implementation and Management (3 cr.) This course will examine the reasons for this in terms of the politics of health and the implications for the future of health policy in the United States. Further, health policy topics from economic, financial, sociological, political and psychological perspectives will be covered. Analytical paradigms are applied to organizational or macro-policy making issues. Topics vary by semester according to current policy challenges faced at the federal level.

PBHL-H 612 Marketing for Health Services Delivery (3 cr.) This course focuses on the marketing problems and strategies of health care organizations. Subjects include the nature of health care services, organizing for health service delivery, managing health services demand, tailoring customer mix, and managing supply in health care services.

PBHL-H 613 Public Health and Emergency Preparedness (3 cr.) This graduate elective course is designed to familiarize learners with emergency preparedness concepts due to natural and man-made disasters. The course will also review biological agents used for terrorism in the past, and agents the Centers for Disease Control consider most likely to be used at present. The content will be delivered via, seminar discussion, web based activities, CDs addressing bioterrorism, resources for infection control and key resources for further exploration. Other student opportunities include readings from past great works depicting responses to naturally occurring infectious disease or contemporary responses to disasters and terrorism/bioterrorism. Public health responses to emergency preparedness at local, state and federal levels will also be discussed.

PBHL-H 615 Health Care Outcomes and Decision Making (3 cr.) Application of health outcomes measures in decision-making and evaluation in various health service settings. Includes designing and implementing evaluation plans of health and social programs. Emphasis on evaluation strategies, measurement of health outcomes, and management decision-making.

PBHL-H 616 Strategic Planning for Health Services Organizations (3 cr.) This courses aims to develop the student's knowledge and ability in strategic management in health services organizations. Based on an introduction to the general process model of strategic management, the course will engage in detailed discussions of a series of topics in strategic management. These topics include the identification of the organization's mission, vision, and values, the analysis of the external and internal environment of the organization, the identification of strategic challenges and opportunities, the development of strategies, the evaluation of strategies, the communication of strategies, and the development and evaluation of an action plan. The course emphasizes the unique strategic challenges facing health services organizations and their leadership, and aims to develop accordingly the student's ability to identify, analyze and address these challenges. The course utilizes real-world cases to facilitate the understanding of basic course content. The conceptual model of strategic management will be illustrated through the analysis of selected health care cases. The student will also be required to independently analyze a strategic case most relevant to their field of work or study applying the conceptual strategic planning process.

PBHL-H 620 Patient-Reported Health Outcomes (3 cr.)
P: B551 & E517
This web-based course is evidence-based and focused on health outcomes research in contemporary health care. The different types of health outcomes assessment tools and their application in determining patient health status, changes in health status, and the effectiveness of health care interventions will be addressed. The course will focus on generic and specific health related outcomes

assessment tools, looking at such issues as disease specific outcomes and patient satisfaction.

PBHL-H 623 Health Care Applications of Strategic Management (3 cr.) This last course of the series in the capstone sequence is designed to assist students in synthesizing and summarizing all of the previous course work. Emphasis is on “real-world” case situations and requires active participation by the students. Case studies chosen reflect current management issues in health services administration.

PBHL-H 624 Developing Strategic Capability (3 cr.) This course explores management roles in health care. Application of strategic management theories, concepts and principles and an understanding of managerial roles in organizations are emphasized. Managerial process, management theories, leadership, organizational design, and strategic management are examined.

PBHL-H 628 Health Care Information Systems (3 cr.) A study of the terminology, technology, and application of information systems in various health care settings. Topics include the gathering, organization, storage, and retrieval of complex data banks, as well as assessment of health service data needs and considerations in developing information systems. Includes many computer-based exercises.

PBHL-H 632 History of Public Health (3 cr.) This course surveys the history of public health from antiquity to the late twentieth century with the aim of providing students with an understanding of how history may inform present day challenges regarding the health of populations, including emerging infectious diseases; climate change; dislocation of populations from conflicts and natural disasters; malnutrition; and chronic diseases in aging populations. Using a chronological and thematic approach to history, students will learn of the origins, natural histories, and important determinants of the structure and function of modern systems of public health in the United States. The course will explore the complex interactions within populations of disease, science, social and cultural norms, moral/ethical values, economic and legal precepts, health professionals, institutions, and government in shaping the rate of adoption and diffusion of public health systems. The course will use a readings/discussion format with limited didactic teaching and an emphasis on active learning. Each week students will read 4-7 papers and be prepared to discuss them in class. Important goals of the course are to stimulate interest in the history of public health, learn about the methods and tools used in historical research, and promote critical thinking.

PBHL-H 644 Health Impact Assessment (3 cr.) The goal of this course is to introduce students to the theoretical and practical aspects of health impact assessment (HIA) as a methodological tool in public health. HIA utilizes a variety of qualitative and quantitative methods and tools, designed to assess the potential health effects of a public policy, program, project, or initiative. While HIA is still an emerging practice in the United States, in Europe, Canada, and other areas of the world, the assessment of the public health impact of public decisions have been performed regularly to support policy decisions and promote conditions required for optimal health.

During the first part of the semester, students will learn the necessary steps to conduct an HIA, review national and international case studies, and discuss how findings may or may not impact policy making. During the second half of the course, students will work in teams with a local or state health department to examine the potential health impact of policy proposals in Indiana.

PBHL-H 650 Readings in Public Health (1-3 cr.) This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student’s concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-H 657 Application of Cost-Effectiveness Analysis in Public Health (3 cr.) Cost-effectiveness analysis is widely used in evaluating the performance of public health programs and policies. In this course, students will learn to frame the conceptual model, to collect and synthesize data regarding "cost" and "effectiveness", to perform a cost-effectiveness analysis, and to form recommendations based on the analysis. Meta-analysis and various survey/interview techniques will be introduced as essential tools for data collection in cost-effectiveness analyses. Learning will be facilitated by numerous examples of the application of this popular method. Health Policy and Management students have option of taking this course in place of H509.

PBHL-H 658 Methods of Health Policy and Program Evaluation (3 cr.) The broad topic for this course is health program evaluation. Topics we will cover during the semester include: evaluation standards and ethics; program theory; evaluation design; problems that arise in evaluation and how to address them; working with and communicating to stakeholders. A theme that will be addressed throughout the class is the intersection of program evaluation and politics, and we will be focusing specifically on the intersection between program evaluation and public policy at the end of the semester. We will also take some time at the end of the semester to discuss implementation science, a topic that is closely related to program evaluation. More often than not, evaluation is a complex process where researchers cannot implement strict controls in their designs. Therefore, my primary goal for this class is that you will gain an understanding of the issues affecting program evaluation in real-world contexts and how to address limitations that are imposed by factors that cannot be controlled for (e.g., resources, time, politics, ethical issues, logistics).

PBHL-H 659 The Tobacco Pandemic (3 cr.) This course focuses on U.S. and global Tobacco Control, including the health and economic burdens of tobacco use as well as evidence-based approaches to prevention and management. Students will explore how human use of the plant Nicotiana tobacum with its potent alkaloid, nicotine, evolved into the largest human made pandemic in world history. The nature, prevalence, and trends of tobacco addiction, tobacco-related diseases, and their treatment will be addressed, as well as the centuries long "tobacco wars," pitting the tobacco industry's effective marketing of their products against the often fragmented, underfunded, and ineffectual government and anti-tobacco forces. Students will review the rise, over the past 50 years, of effective science and evidence-based tobacco control policy in the U.S.: U.S. Surgeons General Reports; CDC Best Practices for Comprehensive Tobacco Control Programs; U.S. PHS Clinical Practice Guidelines: Treating Tobacco Use and Dependence, and related sources. The future of Tobacco Control, including various scenarios for the "end game" of tobacco use in modern societies will be addressed, in light of recent major legal, political, and economic changes in the landscape of Tobacco Control in the U.S and globally.

PBHL-H 670 Topics in Public Health: Public Health Ethics (3 cr.) P: PBHL-H 705 This course is an introduction to the role of ethics in population health-related programs, policymaking, professions and research. Because public health interventions focus on communities, as contrasted with individuals, they raise distinct and significant ethical questions from those raised in health services delivery (commonly addressed in fields such as medical ethics, bioethics and clinical ethics). A central question is: How should the rights of individuals be balanced against the protection or improvement of the health of the public? Through examination of current, historic and potential cases -- including infectious disease outbreaks and bioterrorism threats, community health impact assessments, soda portion restrictions, and international public health research and programs -- students will increase their understanding of the ethical and human rights concerns in public health. Students also will learn how to analyze local, national and international public health policies and programs using numerous ethics-based frameworks, and will be more empowered to be critical contributors to the development, delivery and assessment of ethically sound public health interventions in their professional careers.

PBHL-H 682 Global Perspectives of Health Policy and Health Systems (3 cr.)
This 3 hour course is designed to expand students' perspectives on global health care through the in-depth study of health care and health systems that are distinct from the U.S. health care system. Students also will learn how health policy and management research apply the comparative method in the study of health systems and health policy. Finally, students will explore health policy as a global challenge through a systematic discussion of international health policymaking and responses to health problems requiring global or regional nation-level cooperation.

PBHL-H 700 Health Policy and Management Continuous Enrollment (1 cr.) P: P: H705 PBHL- H700 Health Policy and Management Continuous Enrollment in a one-credit course designed for MPH students who previously registered for H705 Health Policy and Management Concentration Project and are working on their Final Concentration Project until project grade has been assigned.

PBHL-H 702 Internship in Health Services Management (3 cr.) Requires the equivalent of a minimum of 3 credit hours of on-site experience under the supervision of a qualified preceptor and program faculty. Grading is on an S/F basis.

PBHL-H 705 Public Health Policy and Management Concentration Project (3 cr.) P: MPH Core; Public Health Internship. Provides students the opportunity to synthesize and integrate knowledge acquired through coursework and the public health internship. Student projects will include components of health policy analysis or management research and application.

PBHL-H 711 Capstone Experience for Health Policy and Management (3 cr.) P: H602: Please contact Sarah Johnson shm@indiana.edu for authorization to register. This course will provide students with a culminating experience aimed at integrating their learning throughout the MPH program. Students will determine their proficiency in public health through the development of an ePortfolio, and engaging in professional

development through various activities and presentations to prepare them for professional life.

PBHL-H 735 Research in Health Administration (3-6 cr.) P: consent of instructor. Field research conducted under the direction of a faculty member. Designed for advanced students and those who have elected not to take a residency. Grading is on an S/F basis.

PBHL-H 746 Comparative Effectiveness Research Methods (3 cr.) P: E517 and B551
This course introduces the range of methods and associated political and ethical issues related to comparative effectiveness research in health and medicine, with a particular focus on developing quantitative skills to the design, review and analysis of clinical trials (e.g. drugs, devices, clinical or behavioral strategies). Students will learn quantitative methodologies that can be utilized to synthesize a range of evidence regarding the benefits and harms of available choices for care, and will explore the potential and limitations of comparative effectiveness findings for policy and health care decision making.

PBHL-H 751 Doctoral Readings in Health Policy and Management (1-3 cr.)
This course is designed to expose a PhD student to published material on a specific topic or technique related to their field of study in Health Policy and Management. The material to be studied will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of

the material studied in a literature review format. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-H 752 Doctoral Readings in Health Policy and Management (1-3 cr.)
This course is designed to allow PhD students the opportunity to explore research questions by collecting data or using existing data related to their field of study in Health Policy and Management. The study topic will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop the study protocol, obtain IRB approval if necessary, obtain the data and collect the planned data analysis. The time frame for completion and the nature of the study product will be determined by the PhD student, faculty member and advisor. Generally the product will be a manuscript for submission to an appropriate journal. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-H 775 Doctoral Research Seminar in Health Policy and Management (1-3 cr.)
This course is designed to expose PhD students to a wide range of specific research topics and issues in Public Health. The seminar topics will be chosen by the Director of the PhD program with input from other faculty members. The PhD students are expected to attend each seminar session, read assigned material, and participate in the seminar discussions. The PhD students may be asked to present their research projects during the seminar to obtain feedback and recommendations from the faculty and other students.

PBHL-H 775 Doctoral Readings in Health Policy and Management (1-3 cr.)
This course is designed to expose a PhD student to published material on a specific topic or technique related to their field of study in Health Policy and Management. The material to be studied will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-P 650 Readings in Public Health (3 cr.)
This course is designed to expose the student to different readings in public health. The course will allow the student to apply skills learned in the public health core courses by collecting data and applying techniques. The student will be required to read critically published papers and identify research topics.

PBHL-P 670 Topics in Public Health (3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-R 515 Sociology of Health and Illness (3 cr.)
This course will acquaint students with the theoretical and empirical foundations of the sociology of health and illness, as well as exposing him/her to the important theoretical and empirical research done by sociologists of health and illness . R515 uses sociological perspectives and sociological research techniques to investigate the social and behavioral phenomena associated with health, disease, and health care. The field deals with quite a broad range of topics, including (but not limited to): social influences on the distribution of disease, the influence of inequality on health, the impact of culture on symptom recognition and help seeking, the relation of medicine to institutions of social control, the distinctive characteristics of medicine as a type of work, cost containment issues, the impact of economic factors on the distribution and organization of health care, the implications an aging population has for the provision of health care in the United States, and a consideration of the ethical issues raised by modern biomedicine, etc.

PBHL-S 500 Social and Behavioral Science in Public Health (3 cr.) This course is designed to introduce students to the philosophies and principles that provide the foundation for health promotion and disease prevention with an emphasis on population-based public health approaches. Students will explore topics that promote a broader and better understanding of determinants of health; the multiple factors contributing to health and illness behaviors; fundamentals, theories and principles that shed light on health and illness behaviors; and philosophies, principles and strategies that facilitate improvements in population health and the elimination of health disparities. Students will be introduced to the important complementary relationships between and comingled effects of the determinants of health with an emphasis on the social determinants of health. Students will be presented with new approaches to improve, by not only focusing on individual capacities and capabilities to address their diseases and/or ailments, but also, most importantly perhaps, focus on the conditions and contexts in which individuals have the liberty and limits to make choices that influence health and illness behaviors in many different ways.

PBHL-S 510 Introduction to Research Methods in Public Health (3 cr.)
This course examines fundamental research methods used in the field of public health. The focus is on understanding how community and clinical data are collected in scientifically valid methods and how study results are fairly interpreted. Students will learn how to critique published research to identify the strengths and limitations of the designs and approaches used, along with possible confounding factors and biases. Topics include components of research studies, including: justification for a research project, development of research questions,

research designs (qualitative, quantitative), selection of participants, sampling methods, project management, and data for analysis. Methods used to complete and interpret community-based needs assessments and program evaluation will be included.

PBHL-S 602 Internship in Social and Behavioral Science (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-S 610 Booms, Busts, Shapes and Shifts: Why Population Matters to Public Health (3 cr.)
Whether you realize it or not, demographic processes are constantly influencing your life. What do I mean by demographic processes? I mean patterns of childbearing (fertility), death (mortality), and the geographic movement of human beings (migration), both in this country and around the globe. Demography, also called Population Studies, is the study of human populations in terms of their size, composition, distribution, and the causes and consequences of changes in these three characteristics. Demography is a fascinating topic because it deals with many questions you may find personally relevant: nearly all of the major events in your life have demographic implications. Furthermore, demographic forces play a large role in shaping entire populations' health and wellbeing. Understanding these forces can help to answer some of the most interesting and important questions facing public health practitioners today, such as: How many disability-free years can people expect to live? How is urbanization related to a society's causes of mortality? Does immigration place strain on health care systems?

PBHL-S 614 Program Planning in Public Health (3 cr.)
This course will provide students with a systematic approach to program planning and evaluation of health programs. Students will apply program planning, implementation and evaluation theory to develop an evidence-based health promotion program that addresses a public health issue of personal interest.

PBHL-S 615 Culture and Qualitative Methods (3 cr.)
This course provides learning opportunities for public health graduate students to develop an understanding of culture and of how qualitative methods can be used to develop a sensitivity to and an understanding of cultural practices. Such cultural sensitivities and competencies are basic to effective program planning, implementation, service delivery, and program evaluation. This class will provide important knowledge and opportunities related to public health practice in a community setting comprised of a multicultural population with differing health beliefs, values, behaviors and health care needs. By the end of the semester, the student will be able to define and distinguish the concepts of culture and traditions, acculturation and enculturation, traditionalism and modernism and will be able to begin to identify how to build on cultural practices to develop interventions aimed at influencing health behaviors. Further, the student will have active experience in conducting qualitative research in a community setting, including skills in conducting windshield surveys, participant observations, key informant interviews, and focus groups.

PBHL-S 620 Stress and Population Health: A Biopsychosocial Exploration (3 cr.)
This course will examine stress holistically, i.e. from a biological/physiological, psychological and sociological perspective. You will learn how stress is manifested psychologically as well as in the systems of the body. You will also examine stress from a community/population perspective. Finally, the effects of stress on the body will be examined through examples from its role as a cause of and contributor to major illnesses.

PBHL-S 622 Coaching for Health Behavior Change (3 cr.)
This course is designed to teach students how to coach individuals and groups attempting to improve their health behaviors. Theory, evidence-based practices, and different types of communication and interviewing styles will be explored through hands-on activities. Students will practice the learned techniques throughout the semester and will be able to apply these techniques upon completion of the course. Health educators, health educator trainers, health care providers, and others interested in guiding behavior change will benefit from this course.

PBHL-S 625 Applied Public Health Campaigns and Social Marketing Strategies (3 cr.) Effectively communicating public health messages can be a challenge. From advertising a program to promoting behavior change, there are many social marketing strategies and tools that yield positive results. This course will offer students practical opportunities to apply these strategies and tools in the development and evaluation of public health campaigns. Case studies, guest speakers, and hands-on experiences will be incorporated in this class.

PBHL-S 631 Maternal, Child, and Family Health (3 cr.)
Overview of Maternal Child health with emphasis on conditions and issues effecting reproductive, childhood, and women's wellbeing. Includes classroom lecture, discussion, and student presentations.

PBHL-S 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature

review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-S 658 Methods for Research on Social and Behavioral Dimensions of Public Health (3 cr.) This course will train students in basic research methods used by social and behavioral scientists in the public health arena. Through lectures, labs, individual and group activities, students will learn how to read empirical research and evaluate its quality in order to become good consumers of existing research. Students will also learn to produce quality research through an understanding of theoretical foundations, research design and the basics of measurement theory.

PBHL-S 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-S 672 International Perspectives on Health and Housing (3 cr.)
This international service-learning course is designed for students who are interested in developing an in-depth understanding of the relationship between health and housing outside of the U.S. This course will provide students with an opportunity to learn and work with individuals, families and communities struggling to overcome poverty to improve well-being in Argentina through a collaborative project with Habitat for Humanity, International. This course combines didactic learning related to the social determinants of health with a short term international service experience with Habitat for Humanity that will not only explore the complex social and geopolitical factors associated with health and housing, but will provide firsthand experience in an international setting. The course will require travel to participate in a 8-10 day service learning experience within an Argentinian community where community development efforts are underway to improve the health and well being of communities impacted by poverty.

PBHL-S 700 Social and Behavioral Health Science Continuous Enrollment (1 cr.) P: S702
PBHL- S700 Social and Behavioral Health Science Continuous Enrollment in a one-credit course designed for MPH students who previously registered for B701 Biostatistics Concentration Project and are working on their Final Concentration Project until project grade has been assign.

PBHL-S 702 Public Health Social and Behavioral Science Concentration Project (3 cr.) P: MPH Core; Public Health Internship. Provides students the opportunity to synthesize and integrate knowledge through course work and the public health internship. Student projects will include components of behavioral health sciences research and application.

PBHL-S 711 Capstone Experience in Social and Behavioral Sciences in Public Health (3 cr.) P: S602: Please contact Sarah Johnson shm@indiana.edu for authorization to register.
This course will provide students with a culminating experience aimed at integrating their learning throughout the MPH program. Through the accomplishment of the learning objectives, students will have the opportunity to practice public health through the resolution of public health problems; determine their proficiency in public health through the development of an ePortfolio, and engage in professional development through various activities and presentations to prepare them for professional life.

PBHL-S 725 Preparing for Academia in Public Health (1 cr.)
This 1.0 credit seminar course will prepare advanced graduate students for the roles and responsibilities they may assume as faculty members. Course content will include an overview of the higher education culture and faculty expectations for teaching, research and service.

Courses

The abbreviation "P" refers to course prerequisites and "R" to recommended prerequisite courses. Prerequisites can be waived by the instructor of the course. The number of hours of credit is indicated in parentheses following the course title. Courses are listed inthree groups: environmental health science, health services management, and public health.

Graduate Courses

PBHL-E 619 Health Economics for Public Health Professionals (3 cr.) This is an introductory microeconomics course with applications to the public health and health care systems. The course objectives are that the students develop an appreciation of economic theories and principles, exacting assumptions thereof, and how these theories and principles apply to the public health and health care markets, particularly how price drives resource allocation in addition to signaling value, substitution and technological innovation. Students will also be introduced to skills need to measure and interpret economic values and relationships including the interpretation of quantitative data analysis. We will examine how economic incentives affect the different actors in the health (care) system. The fundamental models of economic and organizational behaviors will be extended to describe the behaviors of the different health care players and the health (care) system as each tries to maximize utility and profits (or min costs), respectively, under different financial, regulatory and technological constraints. Most importantly, students will be able to explore the limits to markets and rationality, and develop an appreciation for how a variety of checks and balances-more so that unbridled competition-contribute to efficient and equitable functioning of and outcomes in a market.

PBHL-R 515 Sociology of Health and Illness (3 cr.)
This course will acquaint students with the theoretical and empirical foundations of the sociology of health and illness, as well as exposing him/her to the important theoretical and empirical research done by sociologists of health and illness . R515 uses sociological perspectives and sociological research techniques to investigate the social and behavioral phenomena associated with health, disease, and health care. The field deals with quite a

broad range of topics, including (but not limited to): social influences on the distribution of disease, the influence of inequality on health, the impact of culture on symptom recognition and help seeking, the relation of medicine to institutions of social control, the distinctive characteristics of medicine as a type of work, cost containment issues, the impact of economic factors on the distribution and organization of health care, the implications an aging population has for the provision of health care in the United States, and a consideration of the ethical issues raised by modern biomedicine, etc.

PBHL-S 658 Methods for Research on Social and Behavioral Dimensions of Public Health (3 cr.) This course will train students in basic research methods used by social and behavioral scientists in the public health arena. Through lectures, labs, individual and group activities, students will learn how to read empirical research and evaluate its quality in order to become good consumers of existing research. Students will also learn to produce quality research through an understanding of theoretical foundations, research design and the basics of measurement theory.

PBHL-B 551 Biostatistics for Public Health I (3 cr.)
This course introduces the basic principles and methods of data analysis in public health biostatistics. Emphasis is placed on public health examples as they relate to concepts such as sampling, study design, descriptive statistics, probability, statistical distributions, estimation, hypothesis testing, chi-square tests, t-tests, analysis of variance, linear regression and correlation.

PBHL-A 621 Solid and Hazardous Waste Management (3 cr.)
This course provides students with a technical foundation in areas of solid and hazardous waste management that can be applied to the examination of policy options. Topics include characterization of the waste stream, regulations, health and environmental risks, liability issues, management techniques, and treatment and disposal options.

PBHL-H 775 Doctoral Readings in Health Policy and Management (1-3 cr.)
This course is designed to expose a PhD student to published material on a specific topic or technique related to their field of study in Health Policy and Management. The material to be studied will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-B 644 Applied Generalized Linear Models and Longitudinal Data Analysis (3 cr.) P: S tudents registering for this course are expected to have completed #Linear Models in Public Health# or its equivalents with a B or better grade.
This is an introductory statistical method course on generalized linear models and longitudinal data analysis for students in various public health disciplines. The course focuses on the basic concepts and implementation of four extensions to classical linear regression models: (1) generalized linear models (including logistic and log-linear regression); (2) mixed effects models; (3) generalized linear mixed models; and (4) population average models based on generalized estimating equations (GEE).

PBHL-B 662 Design and Analysis of Medical Experiments (3 cr.) P: G652, P652, B641 or equivalent
This is a course into the application of experimental design to biomedical experiments, such as randomization, blocking, factorial designs and stratification. The course addresses both clinical and pre-clinical investigation as well as design of experiments to evaluate medical devices, which will likely be encountered by biomedical researchers. It is addressed to second-year graduate students in biostatistics or epidemiology with a solid understanding of analysis of variance, regression and working knowledge of survial analysis.The course will be taught in two sessions, a lecture, where the relevant theory and methods will be presented, and a practicum or laboratory session, involving hands-on analysis of real-life problems using the SAS statistical software package.

PBHL-B 652 Introduction to Biostatistics II (3 cr.)
P: G651 or equivalent
B652 is an advanced biostatistics course designed for students with an interest in the health sciences. Students are expected to have completed at least one semester course of basic biostatistics. Knowledge of probability and probability distributions, concepts of estimation and hypothesis testing are assumed. Topics covered in this course include multiple linear regression, analysis of covariance, logistic regression, and survival analyses. Upon completion of the course, students are expected to understand the appropriate statistical models for various outcomes and be able to interpret results using statistical techniques covered in this course. Students are also expected to conduct simple analyses using SPSS on personal computers

PBHL-B 530 Statistical Methods in Bioinformatics (3 cr.) P: Students are assumed to have completed a graduate level statistics courses (such as STAT 51200 & STAT 51900) and are familiar with the basic concepts of statistical inference. Students who are uncertain about their levels of preparation are encouraged to contact the instructor.
B530 is a graduate level course designed for students in biostatistics, statistics, bioinformatics, and other related areas. The course covers a broad range of statistical methods used in many areas of bioinformatics research, including sequence alignment, genome sequencing and gene finding, gene expression microarray analysis, transcriptional regulation and sequence motif finding, comparative genomics, and proteomics. This course is designed to train student's skills in data analyses and communications through real life bioinformatics projects. The courses primary audiences include are graduate

students in biostatistics, bioinformatics, and researchers from pharmaceutical industry.

PBHL-A 661 Environmental Toxicology (3 cr.)
This class will give students a solid introduction to toxicology and the ways in which environmental exposures can contribute to human disease. The course will also introduce the regulatory settings in which environmental toxicology is key.

PBHL-B 587 Nonlinear Mixed Models (3 cr.)
Prerequisites: Students are assumed to have completed an undergraduate level statistics course and are familiar with the basic concepts of statistical inference. Students who are uncertain about their levels of preparation are encouraged to contact the instructors

Nonlinear mixed models are heavily utilized in drug development. Population pharmacokinetics/ pharmacodynamics models are the most important applications. Because this topic has a heavy interdisciplinary flavor, it requires a mixed content that has pharmacology background, statistical theory, and computational implementations. The course's primary audiences include graduate students in biostatistics, pharmacology, bioinformatics and researchers from pharmaceutical industry.

The most important feature of the course is the intended balance among pharmacology background, statistical theory and software implementation. At the end of this course, we expect that the students can understand the pharmacokinetic models, fit the nonlinear mixed model through the required software package, conduct the diagnosis of model fitting, perform hypothesis tests, and provide interpretation of the data. The course is part of the Biostatistics PhD curriculum.

PBHL-B 688 Theory of Statistical Genetics (3 cr.)
This course is designed to provide solid training in statistical theory used in genetic analyses.

PBHL-B 687 Nonlinear Mixed Models (3 cr.) P:Students are assumed to have completed an undergraduate level statistics course and are familiar with the basic concepts of statistical inference. Students who are uncertain about their levels of preparation are encouraged to contact the instructors.
Nonlinear mixed models are heavily utilized in drug development. Population pharmacokinetics/ pharmacodynamics models are the most important applications. Because this topic has a heavy interdisciplinary flavor, it requires a mixed content that has pharmacology background, statistical theory, and computational implementations. The course's primary audiences include graduate students in biostatistics, pharmacology, bioinformatics and researchers from pharmaceutical industry.

The most important feature of the course is the intended balance among pharmacology background, statistical theory and software implementation. At the end of this course, we expect that the students can understand the pharmacokinetic models, fit the nonlinear mixed model through the required software package, conduct the diagnosis of model fitting, perform hypothesis tests, and provide interpretation of the data. The course is part of the Biostatistics PhD curriculum.

PBHL-S 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-A 660 Chemistry for Environmental Health Professionals (3 cr.)
Chemistry for Environmental Health Professionals provides a review of chemistry fundamentals and application of fundamentals to environmental health issues. Our focus is on the organic and inorganic chemistry of topics including hazardous materials and wastes; industrial processes, toxicology, and sustainability; water and water pollution and treatment; the atmosphere and air pollution; soil; and other related topics.

PBHL-B 627 Statistics in Pharmaceutical Research (3 cr.) P: Analysis of variance and regression (B652 or equivalent). A working knowledge of biostatistics is assumed and general familiarity with clinical trials will be helpful. It is also helpful (but not critical) that some advanced concepts, such as the analysis of survival data, are familiar to the students.
This is a standard course that prepares Biostatisticians for support of clinical trial projects. The course will cover fundamental aspects of the appropriate design and conduct of medical experiments involving human subjects (clinical research/trials) including ethics, design, sample size calculation, randomization, monitoring, data collection, analysis and reporting of the results.

There will be three homework projects assigned with about four weeks allowed for completion of each, plus two tests and a final exam. The relative weights of these in the final grade are given below.

PBHL-A 670 Topics in Public Health: Water Quality Management (3 cr.)
Water quality and management of water and wastewater are critical issues for the sustenance of every society and public health. A rational approach to deal with these issues requires understanding of basic principles about water and the surrounding ecosystem that both provides this resource and receives the waste from its use and misuse. This course is designed to teach public health students the fundamentals of water quality and treatment of water, wastewater and solid waste along with associated aspects of the water cycle, ecosystems, water resources and regulations. Although this is mostly a descriptive course with no lab component, few sessions

will take place in a lab to reinforce some key concepts with lab experiments.

PBHL-E 715 Design and Implementation of Observational Studies (3 cr.) P: E517 and Research Methods
This course examines fundamental aspects of designing and implementing observational epidemiology studies. The focus is on developing strategies to increase the validity of the study results by using techniques to control for possible confounding factors and biases. Topics include sampling methods, sensitivity, data weighting, standardization, selection of cases and controls, matching, data collection and project management.

PBHL-H 507 Management of Individual and Group Behavior (3 cr.) This course provides a conceptual framework for understanding behavior in the work environment by introducing concepts concerning effective management of people in organizations. Key theories and concepts in the field of organizational behavior will be introduced. The focus of this course is at the micro level of analysis, addressing topics such as individual theories of motivation, job design, and diversity issues; management of work teams; group decision making; managing conflict; and leadership, influence, and power issues.

PBHL-H 508 Managing Health Care Accounting Information for Decision-Making (3 cr.) P: PHBL- H200 or BUS - A201. Provides a user-oriented understanding of how accounting information should be utilized, focusing on balance sheet and income statement and cash flow analysis, budgeting, cost analysis, and responsibility accounting.

PBHL-S 500 Social and Behavioral Science in Public Health (3 cr.) This course is designed to introduce students to the philosophies and principles that provide the foundation for health promotion and disease prevention with an emphasis on population-based public health approaches. Students will explore topics that promote a broader and better understanding of determinants of health; the multiple factors contributing to health and illness behaviors; fundamentals, theories and principles that shed light on health and illness behaviors; and philosophies, principles and strategies that facilitate improvements in population health and the elimination of health disparities. Students will be introduced to the important complementary relationships between and comingled effects of the determinants of health with an emphasis on the social determinants of health. Students will be presented with new approaches to improve, by not only focusing on individual capacities and capabilities to address their diseases and/or ailments, but also, most importantly perhaps, focus on the conditions and contexts in which individuals have the liberty and limits to make choices that influence health and illness behaviors in many different ways.

PBHL-H 509 Financial Management Principles of Health Care (3 cr.) P: PBHL-H 508. Provides knowledge of corporate finance practice in health care organizations. Establishes an understanding of the basic elements of financial theory used to address service expansion or contraction, capital investment issues, developing business plans and working capital management.

PBHL-H 501 U.S. Health Care Systems and Health Policy (3 cr.) This course explores the U.S. health care system, policy development, and ethical challenges. It examines the structure, components, organization and financing of the U.S. health care system. The policy process at national, state and local levels will be analyzed using legislation and related activities.

PBHL-H 514 Health Economics (3 cr.) P: 3 credit hours of undergraduate economics. Examines the principles and application of economic analysis in the health field and the economist's approach to health care issues. Provides insights offered by economic analysis of specific health issues and problems.

PBHL-E 517 Fundamentals of Epidemiology (3 cr.) This course will introduce students to basic epidemiologic concepts including determinants of health and patterns of disease in populations, population health descriptive techniques, use of health indicators and secondary data sources. Students will gain an understanding of the role of Epidemiology in developing prevention strategies and policy. Among the topics to be covered are measures of mortality and morbidity, design and analysis of observational studies, community health assessment and program evaluation.

PBHL-H 515 Seminar in Health Policy: Special Topics (3 cr.) Exploration of health policy topics from economic, financial, sociological, political, and psychological perspectives. Analytical paradigms are applied to organizational or macro-policy making issues that vary in response to changing environments. May be repeated once with advisor's approval.

PBHL-A 519 Environmental Science in Public Health (3 cr.) The primary focus of this course will be on pathogenic agents (biological, chemical, and physical) in the environment and their impact on morbidity and mortality of human populations. We will study several types of common and emerging pathogens from anthropogenic and natural sources and how they cause illness and/or injury. Particular attention will be given to the mode of transmission, route of exposure, and acute and chronic diseases or injuries caused by these environmental agents. During the class we will also investigate the strategies, technologies and laws/ policies that are used to prevent, control, or eliminate environmental hazards.

PBHL-H 516 Health Services Delivery and the Law (3 cr.) Medical-legal concepts related to hospitals and other health services organizations. Course provides an in-depth understanding of the law and the legal processes affecting the health services system. Presentation of the elements of administrative and agency processes, torts, contracts, facilities, physicians, patients, and personnel.

PBHL-H 518 Statistical Methods for Health Services (3 cr.) P: 3 credit hours of 300-level undergraduate statistics. Study of the quantitative techniques commonly used to examine health-related data. Includes univariate, bivariate, and multivariate techniques. Emphasis is on using statistical techniques to make policy and administrative decisions in a health services setting. Students use standard computer software to analyze data.

PBHL-H 521 Management Science for Health Services Administration (3 cr.) Focus is on management science

methods, as applied to health sciences administration. Includes treatment of decision theory, constrained optimization, and probability simulation.

PBHL-E 601 Advanced Epidemiology (3 cr.) P: E517 & B551 (or concurrently enrolled). This course provides students with an in-depth understanding of advanced epidemiologic concepts introduced in other courses as well as a fundamental understanding of epidemiologic techniques not covered in other classes. Topics included will represent cutting edge techniques, philosophical issues and insights to appropriately conduct and interpret the findings of epidemiological studies. Students will gain an understanding of these concepts and issues through discussions with expert epidemiologists and hands-on exercises.

PBHL-A 602 Internship in Environmental Health Science (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-E 609 Infections Disease Epidemiology (3 cr.) P: E517. This course is designed to provide a basic overview of the infectious disease process, including disease agents, transmission routes, immunity and public health significance. The course introduces principles of infectious disease epidemiology, including outbreak investigation and surveillance, using case studies as examples. Concepts on globalization of disease, microbial ecology, and disease eradication also are discussed.

PBHL-H 606 Health Services Quality Improvement and Risk Management (3 cr.) Critically examines the concepts, strategies, and techniques related to the improvement of the quality of health service delivery. Addresses the increasing need to enhance productivity given the impact of external and other factors on the workplace. Principles and application of risk management concepts and techniques, including insurance, are emphasized.

PBHL-E 610 Chronic Disease Epidemiology (3 cr.) P: E517 This course examines chronic health conditions from epidemiological perspectives. Concepts include distribution, determinants; diagnosis; measures of severity; treatment modalities; surveillance measures; survival and prognosis; and quality of care measures. Research methods prevention strategies and screening tests are presented. Clinical expert's present diagnosis and treatment methods.

PBHL-H 612 Marketing for Health Services Delivery (3 cr.) This course focuses on the marketing problems and strategies of health care organizations. Subjects include the nature of health care services, organizing for health service delivery, managing health services demand, tailoring customer mix, and managing supply in health care services.

PBHL-H 611 Policy Design, Implementation and Management (3 cr.) This course will examine the reasons for this in terms of the politics of health and the implications for the future of health policy in the United States. Further, health policy topics from economic, financial, sociological, political and psychological perspectives will be covered. Analytical paradigms are applied to organizational or macro-policy making issues. Topics vary by semester according to current policy challenges faced at the federal level.

PBHL-H 615 Health Care Outcomes and Decision Making (3 cr.) Application of health outcomes measures in decision-making and evaluation in various health service settings. Includes designing and implementing evaluation plans of health and social programs. Emphasis on evaluation strategies, measurement of health outcomes, and management decision-making.

PBHL-H 623 Health Care Applications of Strategic Management (3 cr.) This last course of the series in the capstone sequence is designed to assist students in synthesizing and summarizing all of the previous course work. Emphasis is on "real-world" case situations and requires active participation by the students. Case studies chosen reflect current management issues in health services administration.

PBHL-H 613 Public Health and Emergency Preparedness (3 cr.) This graduate elective course is designed to familiarize learners with emergency preparedness concepts due to natural and man-made disasters. The course will also review biological agents used for terrorism in the past, and agents the Centers for Disease Control consider most likely to be used at present. The content will be delivered via, seminar discussion, web based activities, CDs addressing bioterrorism, resources for infection control and key resources for further exploration. Other student opportunities include readings from past great works depicting responses to naturally occurring infectious disease or contemporary responses to disasters and terrorism/bioterrorism. Public health responses to emergency preparedness at local, state and federal levels will also be discussed.

PBHL-H 616 Strategic Planning for Health Services Organizations (3 cr.) This courses aims to develop the student's knowledge and ability in strategic management in health services organizations. Based on an introduction to the general process model of strategic management, the course will engage in detailed discussions of a series of topics in strategic management. These topics include the identification of the organization's mission, vision, and values, the analysis of the external and internal environment of the organization, the identification of strategic challenges and opportunities, the development of strategies, the evaluation of strategies, the communication of strategies, and the development and evaluation of an action plan. The course emphasizes the unique strategic challenges facing health services organizations and their leadership, and aims to develop accordingly the student's ability to identify, analyze and address these challenges. The course utilizes real-world cases to facilitate the understanding of basic course content. The conceptual

model of strategic management will be illustrated through the analysis of selected health care cases. The student will also be required to independently analyze a strategic case most relevant to their field of work or study applying the conceptual strategic planning process.

PBHL-H 628 Health Care Information Systems (3 cr.) A study of the terminology, technology, and application of information systems in various health care settings. Topics include the gathering, organization, storage, and retrieval of complex data banks, as well as assessment of health service data needs and considerations in developing information systems. Includes many computer-based exercises.

PBHL-E 618 Cancer Epidemiology (3 cr.) P: E517 This course is an overview of cancer epidemiology, focusing on key concepts, etiologic research, applications to public health practice and major epidemiologic methods. This course is designed for students who have an interest in epidemiology.

PBHL-S 631 Maternal, Child, and Family Health (3 cr.) Overview of Maternal Child health with emphasis on conditions and issues effecting reproductive, childhood, and women's wellbeing. Includes classroom lecture, discussion, and student presentations.

PBHL-H 702 Internship in Health Services Management (3 cr.) Requires the equivalent of a minimum of 3 credit hours of on-site experience under the supervision of a qualified preceptor and program faculty. Grading is on an S/F basis.

PBHL-H 632 History of Public Health (3 cr.) This course surveys the history of public health from antiquity to the late twentieth century with the aim of providing students with an understanding of how history may inform present day challenges regarding the health of populations, including emerging infectious diseases; climate change; dislocation of populations from conflicts and natural disasters; malnutrition; and chronic diseases in aging populations. Using a chronological and thematic approach to history, students will learn of the origins, natural histories, and important determinants of the structure and function of modern systems of public health in the United States. The course will explore the complex interactions within populations of disease, science, social and cultural norms, moral/ethical values, economic and legal precepts, health professionals, institutions, and government in shaping the rate of adoption and diffusion of public health systems. The course will use a readings/discussion format with limited didactic teaching and an emphasis on active learning. Each week students will read 4-7 papers and be prepared to discuss them in class. Important goals of the course are to stimulate interest in the history of public health, learn about the methods and tools used in historical research, and promote critical thinking.

PBHL-H 735 Research in Health Administration (3-6 cr.) P: consent of instructor. Field research conducted under the direction of a faculty member. Designed for advanced students and those who have elected not to take a residency. Grading is on an S/F basis.

PBHL-P 650 Readings in Public Health (3 cr.) This course is designed to expose the student to different readings in public health. The course will allow the student to apply skills learned in the public health core courses by collecting data and applying techniques. The student will be required to read critically published papers and identify research topics.

PBHL-A 633 Occupational Health and Safety for Public Health Professionals (3 cr.) This course provides a survey of technical and regulatory aspects of protecting the health and safety of workers. Topics include basic toxicology; skin, eye, and respiratory hazards; measuring hazardous atmospheres; ventilation systems; fire and explosion hazards; emergency response; occupational hearing loss; radiation; prevention of accidents; cumulative trauma; and personal protective equipment.

PBHL-B 562 Biostatistics for Public Health II (3 cr.) P: B551 or B561
P: B551 or B561 or One semester of graduate level Biostatistics

This course introduces the advanced principles and methods of data analysis in public health biostatistics. Emphasis is placed on public health examples as they relate to concepts such as: Multiple regression, analysis of variance and covariance, logistic regression, nonparametric statistics, survival analysis, epidemiology statistics, and repeated measures analysis.

PBHL-E 655 Historical Evolution of Epidemiology (3 cr.) P: E517. The course will explore the historical developments and public health responses to human disease morbidity and mortality, and their importance and influence on the role of public health in modern society. Readings and discussion will examine in detail, the evolutionary change in the epidemiologic response of a Varity of disease of national and international importance.

PBHL-H 657 Application of Cost-Effectiveness Analysis in Public Health (3 cr.) Cost-effectiveness analysis is widely used in evaluating the performance of public health programs and policies. In this course, students will learn to frame the conceptual model, to collect and synthesize data regarding "cost" and "effectiveness", to perform a cost-effectiveness analysis, and to form recommendations based on the analysis. Meta-analysis and various survey/interview techniques will be introduced as essential tools for data collection in cost-effectiveness analyses. Learning will be facilitated by numerous examples of the application of this popular method. Health Policy and Management students have option of taking this course in place of H509.

PBHL-H 659 The Tobacco Pandemic (3 cr.) This course focuses on U.S. and global Tobacco Control, including the health and economic burdens of tobacco use as well as evidence-based approaches to prevention and management. Students will explore how human use of the plant Nicotiana tobacum with its potent alkaloid, nicotine, evolved into the largest human made pandemic in world history. The nature, prevalence, and trends of tobacco addiction, tobacco-related diseases, and their treatment will be addressed, as well as the centuries long "tobacco wars," pitting the tobacco industry's effective marketing of their products against the often fragmented, underfunded, and ineffectual government and anti-tobacco forces. Students will review the rise, over the past 50

years, of effective science and evidence-based tobacco control policy in the U.S.: U.S. Surgeons General Reports; CDC Best Practices for Comprehensive Tobacco Control Programs; U.S. PHS Clinical Practice Guidelines: Treating Tobacco Use and Dependence, and related sources. The future of Tobacco Control, including various scenarios for the "end game" of tobacco use in modern societies will be addressed, in light of recent major legal, political, and economic changes in the landscape of Tobacco Control in the U.S and globally.

PBHL-S 702 Public Health Social and Behavioral Science Concentration Project (3 cr.) P: MPH Core; Public Health Internship. Provides students the opportunity to synthesize and integrate knowledge through course work and the public health internship. Student projects will include components of behavioral health sciences research and application.

PBHL-E 704 Public Health Epidemiology Concentration Project (3 cr.) P: MPH Core; Public Health Internship. Students synthesize and integrate knowledge acquired through course work and the public health internship by conducting an epidemiological study. Satisfactory projects include epidemiological research that involves protocol development, data collection and analysis and presentation of an oral presentation and written report.

PBHL-H 705 Public Health Policy and Management Concentration Project (3 cr.) P: MPH Core; Public Health Internship. Provides students the opportunity to synthesize and integrate knowledge acquired through coursework and the public health internship. Student projects will include components of health policy analysis or management research and application.

PBHL-A 609 Air Pollution and Health (3 cr.)
This course provides an overview and foundation in the science and management of air quality, with a focus on health impacts and strategies to reduce these impacts. Course topics include the scientific technical aspects of air pollution through the study of the characteristics of the atmosphere and atmospheric pollutants, effects of meteorology on air pollution, urban air pollution, visibility, smog, acid deposition, stratospheric ozone depletion, global warming and indoor air pollution.

PBHL-A 661 Environmental Toxicology (3 cr.) P: PBHL-A609
This course examines the extent and significance of toxic agents in the environment. It covers risk assessment of potential adverse health effect resulting from human exposure to toxic environmental agents. It also provides a background for understanding mechanistic and biologic specific processes of environmental agents.

PBHL-A 623 Environmental Management Systems: ISO 14001 Based (3 cr.)
This course provides students with the knowledge and skills to establish or improve an environmental management system that is compatible with ISO (International Organization for Standardization) 14001, an international, voluntary standard that is emerging as a best-management practice for environment.

PBHL-A 620 Environmental Health Policy Analysis (3 cr.)
This course provides students with a focus on the policy-making process and the many variables that comprise the dynamic framework for environmental policy formulation. The course explores the roles of politics, economics, science, health, values and ethics in setting policy through a consideration of key historical and contemporary issues.

PBHL-A 628 Public Health Sanitation (3 cr.)
This course will examine the various hazards that cause food borne illness as well as the risk factors that are known to contribute to these diseases. Topics include etiological agents for common and emerging food borne diseases; basic concepts of food science and technology; food safety principles and practices that are recommended by the Food and Drug Administration's *Food* Code.

PBHL-A 703 Environmental Science Concentration Final Project (3 cr.) P: MPH Core; Public Health Internship.
Provides students the opportunity to synthesize and integrate knowledge acquired through coursework and the public health internship. Student projects will include components of environmental science analysis, research, and application

PBHL-H 523 Health Services Human Resource Management (3 cr.)
This course provides the knowledge and skills needed to understand the application of personnel and labor relations techniques to the health services sectors, with particular emphasis on human resources management, employees' benefit programs, and labor relations as applied to the health services delivery organization.

PBHL-H 624 Developing Strategic Capability (3 cr.)
This course explores management roles in health care. Application of strategic management theories, concepts and principles and an understanding of managerial roles in organizations are emphasized. Managerial process, management theories, leadership, organizational design, and strategic management are examined.

PBHL-B 583 Applied Multivariate Analysis (3 cr.)
P: B551 and B561. This is an introductory multivariate statistics course. This course is applied and is intended for non-statisticians, for example, masters or PhD students in behavioral, psychological, educational or medical sciences, or other health care professionals. Students are expected to have taken two previous courses in statistics (introductory and intermediate) covering up through t-test, ANOVA, ANCOVA and linear regression. The overall objective of the course is to introduce the most commonly used multivariate statistical techniques with emphasis on applications to real data which will be analyzed with SPSS. The emphasis will be on concepts, assumptions, applications, and hands-on interpretation of SPSS results. Formulas or matrix algebra will not be emphasized.

PBHL-S 614 Program Planning in Public Health (3 cr.)
This course will provide students with a systematic approach to program planning and evaluation of health programs. Students will apply program planning, implementation and evaluation theory to develop an

evidence-based health promotion program that addresses a public health issue of personal interest.

PBHL-P 670 Topics in Public Health (3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-B 571 Linear Models in Public Health (4 cr.)
P: B551 or equivalent
This is a first course into two multivariate statistical procedures, the Analysis of Variance (ANOVA) and Regression with special focus in problems related to the Public Health sciences. This is an introductory course that will expose students to these methods, and consolidate their understanding of statistical inference (estimation and testing of statistical hypotheses) in the context of the two procedures. The course will be taught in two sessions, a lecture, where the relevant theory and methods will be presented, and a practicum or laboratory session, involving hands-on analysis of real-life problems using the SAS statistical software package.

PBHL-B 573 BIOSTATISTICS METHOD III: APPLIED SURVIVAL DATA ANALYSIS (4 cr.) P: Students must have taken one course in basic statistics and another course in linear regression models. Students must have prior knowledge of SAS for completion of homework. The statistical methods covered in this course focus on “time to event” data, where the event can be response to treatment, relapse of disease, or death. Topics covered in this course include estimations of survival function and regression models for survival data. Specifically, this course covers the central functions of survival analysis: the hazard, survival, and cumulative hazard functions, nonparametric estimation of survival functions using life-table method and the Kaplan-Meier method, and comparison of survival distributions using the log-rank and other tests. In addition, we will discuss regression models for survival outcomes with emphasis on the Cox proportional hazards model. Alternative models such as the accelerated failure time model and use of parametric distributions (exponential, Weibull) will also be considered. Class material will include presentation of statistical methods for estimation and testing, along with current software (SAS) for implementing analyses of survival data. Applications to real data will be emphasized.

PBHL-B 585 Analysis and Interpretation of Observational Studies (3 cr.) P: This course is designed for students in the PhD program in Epidemiology. Advanced students in the Master of Public Health degree program, Epidemiology concentration may register for this course with the permission of the professor. P: PBHL-E 715 Design and Implementation of Observational Studies. This course examines fundamental aspects of analyzing data generated by observational epidemiology studies. The focus is on developing a solid understanding of contemporary analytical techniques to increase the validity of the study and control for possible confounding factors and biases.

PBHL-E 730 Molecular and Genetic Epidemiology (3 cr.) P: E517
P: E517 This course presents fundamental concepts and methods in molecular and genetic epidemiology, and explains different study designs commonly used in genetic epidemiology to identify the genetic basis of common, complex disease. Students will learn about available common molecular and genetic measures, various elements of study design, including definition of study population, phenotype definition, and choice of analytic methods. We will briefly discuss linkage analysis and then focus on association tests. Additional topics will be discussed including interactions with environmental factors, ethnical issues and genetic testing.

PBHL-E 731 Design and Analysis of Genetic Association Studies (3 cr.) P: B562, E601 & E730
This course introduces the conceptual and practical tools needed for population-based genetic association studies among unrelated subjects. Lectures and selected readings present key issues (such as linkage disequilibrium, "tagging SNPs," haplotypes, population stratification and epistasis) and appropriate statistical methods. Students will be required to present selected papers in class. Students will gain hands-on experience with a range of analytic tools and software packages as part of a class project which gives them the opportunity to design and analyze an association study. This project will require students to work on real-world problems such as marker selection, potential multiple comparisons issues due to multiple markers and multiple outcomes, and missing data.

PBHL-E 765 Nutritional Epidemiology (3 cr.) P: E517 and B551
This course provides students with an overview of fundamental concepts and methods of nutritional epidemiology and the current state of knowledge on well-studied associations between diet and chronic diseases. Emphasis will be placed on the design, implementation, analysis, and interpretation of nutritional epidemiologic studies

PBHL-E 780 Pharmacoepidemiology (3 cr.) P: E517
This is a graduate level introductory pharmacoepidemiology course. Students will learn how principles of modern epidemiologic methods are used to evaluate the safety, effectiveness, and utilization patterns of medical products (drugs, vaccines, and medical devices) in human populations, with a focus on observational studies. Related topics, including therapeutic risk management, data sources and ethical principles will be discussed. Advanced methodology, such as that utilized to address confounding by indication and misclassification will be introduced.

PBHL-B 561 Introduction to Biostatistics I (3 cr.)
P: One year undergraduate mathematics is required. Working knowledge on linear algebra and elementary calculus is expected. Students with insufficient mathematics preparation are expected to remedy the deficiency on their own.
B561 is an introductory level biostatistics course designed for healthcare professionals. This course will cover the topics on data presentation techniques, describing data

with numerical summary measures, probability and probability distributions, sampling distributions, statistical inferences from small and large samples, analysis of categorical data, analysis of variance, correlation and simple linear regression analysis.

PBHL-H 746 Comparative Effectiveness Research Methods (3 cr.) P: E517 and B551
This course introduces the range of methods and associated political and ethical issues related to comparative effectiveness research in health and medicine, with a particular focus on developing quantitative skills to the design, review and analysis of clinical trials (e.g. drugs, devices, clinical or behavioral strategies). Students will learn quantitative methodologies that can be utilized to synthesize a range of evidence regarding the benefits and harms of available choices for care, and will explore the potential and limitations of comparative effectiveness findings for policy and health care decision making.

PBHL-S 615 Culture and Qualitative Methods (3 cr.)
This course provides learning opportunities for public health graduate students to develop an understanding of culture and of how qualitative methods can be used to develop a sensitivity to and an understanding of cultural practices. Such cultural sensitivities and competencies are basic to effective program planning, implementation, service delivery, and program evaluation. This class will provide important knowledge and opportunities related to public health practice in a community setting comprised of a multicultural population with differing health beliefs, values, behaviors and health care needs. By the end of the semester, the student will be able to define and distinguish the concepts of culture and traditions, acculturation and enculturation, traditionalism and modernism and will be able to begin to identify how to build on cultural practices to develop interventions aimed at influencing health behaviors. Further, the student will have active experience in conducting qualitative research in a community setting, including skills in conducting windshield surveys, participant observations, key informant interviews, and focus groups.

PBHL-H 644 Health Impact Assessment (3 cr.)
The goal of this course is to introduce students to the theoretical and practical aspects of health impact assessment (HIA) as a methodological tool in public health. HIA utilizes a variety of qualitative and quantitative methods and tools, designed to assess the potential health effects of a public policy, program, project, or initiative. While HIA is still an emerging practice in the United States, in Europe, Canada, and other areas of the world, the assessment of the public health impact of public decisions have been performed regularly to support policy decisions and promote conditions required for optimal health.

During the first part of the semester, students will learn the necessary steps to conduct an HIA, review national and international case studies, and discuss how findings may or may not impact policy making. During the second half of the course, students will work in teams with a local or state health department to examine the potential health impact of policy proposals in Indiana.

PBHL-E 710 Advanced Public Health Survey Research (3 cr.)
This course provides an intensive focus on the formative phases of health survey research. Topics covered will include sampling methodologies, questionnaire development, testing, revision and administration, interviewing, coding procedures, as well as topical discussions related to research ethics and real world challenges of research. Active learning will be emphasized through several field based exercises, as well as a research proposal based on students' own research interests.

PBHL-S 625 Applied Public Health Campaigns and Social Marketing Strategies (3 cr.) Effectively communicating public health messages can be a challenge. From advertising a program to promoting behavior change, there are many social marketing strategies and tools that yield positive results. This course will offer students practical opportunities to apply these strategies and tools in the development and evaluation of public health campaigns. Case studies, guest speakers, and hands-on experiences will be incorporated in this class.

PBHL-E 795 Cardiovascular Epidemiology (3 cr.)
P: E517 and E601
An advanced graduate course that discusses the topics related to the epidemiology and prevention of cardiovascular diseases. The purpose is to give students an overview of the major cardiovascular diseases and their risk factors. To develop critical thinking skills related to the key issues that epidemiologists consider.

PBHL-H 682 Global Perspectives of Health Policy and Health Systems (3 cr.)
This 3 hour course is designed to expand students' perspectives on global health care through the in-depth study of health care and health systems that are distinct from the U.S. health care system. Students also will learn how health policy and management research apply the comparative method in the study of health systems and health policy. Finally, students will explore health policy as a global challenge through a systematic discussion of international health policymaking and responses to health problems requiring global or regional nation-level cooperation.

PBHL-H 775 Doctoral Research Seminar in Health Policy and Management (1-3 cr.)
This course is designed to expose PhD students to a wide range of specific research topics and issues in Public Health. The seminar topics will be chosen by the Director of the PhD program with input from other faculty members. The PhD students are expected to attend each seminar session, read assigned material, and participate in the seminar discussions. The PhD students may be asked to present their research projects during the seminar to obtain feedback and recommendations from the faculty and other students.

PBHL-E 750 Doctoral Topics in Public Health (3 cr.)
Courses offered under this course number would include PhD courses on topics expected to be offered only once, such as those taught by visiting faculty, and those that are newly developed and have not yet been assigned

a specific course number. The course will focus on a specific topic or technique related to the field of Public Health. The material to be studied will be determined by the instructor with input from the PhD faculty.

PBHL-E 751 Doctoral Readings in Epidemiology (1-3 cr.)
This course is designed to expose a PhD student to published material on a specific topic or technique related to their field of study in Epidemiology. The material to be studied will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement

PBHL-E 752 Doctoral Research in Epidemiology (1-3 cr.)
This course is designed to allow PhD students the opportunity to explore research questions by collecting data or using existing data related to their field of study in Epidemiology. The study topic will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop the study protocol, obtain IRB approval if necessary, obtain the data and collect the planned data analysis. The time frame for completion and the nature of the study product will be determined by the PhD student, faculty member and advisor. Generally the product will be a manuscript for submission to an appropriate journal. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-E 775 Doctoral Research Seminar in Epidemiology (1 cr.)
This course is designed to expose PhD students to a wide range of specific research topics and issues in Public Health. The seminar topics will be chosen by the Director of the PhD program with input from other faculty members. The PhD students are expected to attend each seminar session, read assigned material, and participate in the seminar discussions. The PhD students may be asked to present their research projects during the seminar to obtain feedback and recommendations from the faculty and other students.

PBHL-A 640 Public Health Applications of GIS (3 cr.)
Using ArcGIS Desktop software, this course aims to familiarize students with applications of Geographic Information Systems (GIS) in the context of public health. Public Health cases will be used to explain and teach principles, methods, and techniques. Topics include creating layer packages in ArcMap, health data visualization, map design, health data downloading, geocoding tabular data, and spatial analysis and spatial joins. Downloading, processing and visualization of satellite data on environmental parameters that are traditionally determinants of public health will be covered at the end of the course. The course will provide practical experience to students through exercises and a final project.

PBHL-A 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-A 662 Environmental Health Risk Assessment (3 cr.)
Environmental Risk Assessment is the basis for making decisions related to ecology and human health. This course will examine the basic principles and methods of conducting ecological and human health risk assessments and how risk is managed and communicated to the public. Applications emphasizing real cases will be used to illustrate the interdisciplinary process and products of risk assessment, as well as the regulatory use of the information.

PBHL-A 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-A 700 Environmental Health Continuous Enrollment (1 cr.)
P: A703 PBHL- A700 Environmental Health Continuous Enrollment in a one-credit course designed for MPH students who previously registered for A703 Environmental Health Concentration Project and are working on their Final Concentration Project until project grade has been assigned

PBHL-B 584 Biostatistics Practicum (3 cr.)
Statistical data analysis and study design is an art in practice. When and how to apply different statistical models and the interpretation of data analysis results is heavily driven by experience. This course is designed to develop students' skills in study design, data analyses, and oral and written communication through multiple real-life projects. The projects will cover designs and data analyses of observational studies and experimental studies. Practical issues in study design and data analysis include but are not limited to sample size and power estimation, interpretation of p-values, phase I to IV trial designs, case-control, case-cohort, retrospective/

prospective study designs; ANOVA, ANCOVA, survival analysis, main effect/interaction, multiple comparisons, diagnostic tests, statistical modeling, and data analysis reporting, including both written and oral presentations.

The most important feature of the course is the intended training in the practice of biostatistics in collaborative environments. The course is part of the Biostatistics PhD curriculum.

Course material will be covered by lectures and interactive exercises that include the instructors role playing as statistically naïve investigators. Knowledge gained will be reinforced by short homework assignments and projects that require presentations.

PBHL-B 616 Advanced Statistical Computing (3 cr.)
This course will cover selected computational techniques useful in advanced statistical applications and statistical research. Topics to be covered include methods for solving linear equations, numerical optimization, numerical integration, Expectation-Maximization (EM) algorithm, Monte Carlo method, Bayesian methods, bootstrap methods and stochastic search algorithms.

Upon completion of the course, students are expected to understand the appropriate statistical computational approaches to discovery in data analysis, of statistical inference, and for development of statistical theory and methods. Students are expected to implement research and computational ideas using R.

PBHL-B 636 Advanced Survival Analysis (3 cr.)
P: Stat 528 & Stat 536 This course will discuss the counting process approach to the analysis of censored failure time data. From this prospective, we will revisit many of the standard statistical methods in survival analysis, including the Nelson-Aalen estimator of the cumulative hazard function, the Kaplan-Meier estimator of the survivor function, the weighted logrank statistics, the Cox proportional hazards regression model, and the accelerated failure time model. Counting process based martingale theory will be introduced to facilitate the derivation. Extension of Cox proportional hazards model will be introduced too.

PBHL-B 582 Introduction to Clinical Trials (3 cr.)
P:Analysis of variance and regression (G652 or equivalent). A working knowledge of biostatistics is assumed and general familiarity with clinical trials will be helpful.
This is a standard course that prepares Biostatisticians for support of clinical trial projects. The course will cover fundamental aspects of the appropriate design and conduct of medical experiments involving human subjects (clinical research/trials) including ethics, design, sample size calculation, randomization, monitoring, data collection, analysis and reporting of the results.

PBHL-B 574 Biostat Method IV: Applied Longitudinal Data Analysis (3 cr.)
P: STAT512 & STAT525 This course covers modern methods for the analysis of repeated measures, correlated outcomes and longitudinal data, including the unbalanced and incomplete data frequently encountered in biomedical research. Topics include an introduction to the analysis of correlated data, repeated measures analysis of variance (ANOVA), random-effects and growth-curve models, generalized linear models for correlated data, including generalized estimating equations (GEE), and generalized linear mixed models (GLMMs).

Class presentations and homework assignments will focus on data analysis in SAS using PROC GLM, PROC MIXED, PROC GENMOD, and PROC NLMIXED. Also, an introduction to fitting linear mixed models in **R** using fucntions *lme()* and *gls()* from the *library(nlme)* will be given.

PBHL-B 551 Biostatistics for Public Health I (3 cr.)
P: One semester of undergraduate mathematics
This course introduces the basic principles and methods of data analysis in public health biostatistics. Emphasis is placed on public health examples as they relate to concepts such as sampling, study design, descriptive statistics, probability, statistical distributions, estimation, hypothesis testing, chi-square tests, t-tests, analysis of variance, linear regression and correlation. An introduction to SAS statistical software is now a part of this course.

PBHL-B 698 Topics in Biostatical Methods (1-3 cr.)
Directed study and reports for students who wish to undertake individual reading and study on approved topics.

PBHL-B 646 Advanced Generalized Linear Models (3 cr.)
Prerequisites: Students taking this course should have formal training in *applied linear and generalized linear models*. In addition, they should have a basic understanding of the theory of *probability, statistical estimation and inference*. *Students who are not adequately prepared in aforementioned areas are expected to make up for the deficiency on their own*.

This course presents the fundamental ideas of generalized linear models (GLM). It also discusses practical implementation of GLM through real-life applications.

Discussion will start from the classical theory of linear models, followed by important special cases of GLM, the unified GLM theory, and then the more recent model extensions. Although it is not designed to be a data analysis course, it will present the practical motivations and considerations behind the development of GLM.

PBHL-B 612 Modern Statistical Learning Methods (3 cr.)
The goal of this course is to introduce some advanced regres- sion techniques to students in the Biostatistics PhD program. The prerequisite in- cludes calculus, linear algebra, linear models, mixed models and generalized linear models.

PBHL-B 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy

to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-B 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-B 700 Biostatistics Continuous Enrollment (1 cr.) P: PBHL-B 701 PBHL- B700 Environmental Health Continuous Enrollment in a one-credit course designed for MPH students who previously registered for B701 Biostatistics Concentration Project and are working on their Final Concentration Project until project grade has been assigned.

PBHL-E 629 Introduction to Genetic Molecular Epidemiology (3 cr.) P: PBHL-E 517 & PBHL-B 551 Epidemiologic concepts, including human genetics, concepts and methodology used in genetic epidemiology. Students will gain an understanding of the role of Genetic Epidemiology in designing and interpreting studies to determine genetic roles in common diseases. Among the topics to be covered are introduction to human genetics, introduction to the field of genetic epidemiology, study designs used in genetic epidemiology, and issues in study design and analysis.

PBHL-E 606 Grant Writing: From Befuddlement to Brilliance (3 cr.)
Students will learn each component of a successful proposal for research or community projects by a Federal or private agency. Current funding opportunities from these agencies will be used as templates for preparation and review of proposals. Skills needed to review proposals also will be taught.

PBHL-E 635 Foundations in Public Health Informatics (3 cr.)
This course will introduce the application of Informatics in the Public Health field. The course will include a brief review of core public health functions, describe the current policies defining the use of informatics in public health, and outline the history of the application of informatics principles in both public health and clinical health systems.

PBHL-E 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-E 651 Public Health Surveillance (3 cr.)
This course will focus on the recognized value of Public Health Surveillance as well as the development and utility of Surveillance Systems. Included are the historical development of surveillance systems, data sources, informatics of surveillance, data management, and evaluation of surveillance systems. In addition, descriptive epidemiology techniques, identification of outbreaks and community needs. Trend analysis based on the data collected from the surveillance system will be covered, along with related ethical and legal issues. The course discusses how surveillance is conducted in low to middle income countries and the future of public health surveillance.

PBHL-E 700 Epidemiology Continuous Enrollment (1 cr.) P: PBHL-E 704 Environmental Health Continuous Enrollment in a one-credit course designed for MPH students who previously registered for E704 Epidemiology Concentration Project and are working on their Final Concentration Project until project grade has been assigned.

PBHL-E 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-E 800 Epidemiology Doctoral Dissertation Research (1-8 cr.)
The dissertation will be written on an original topic of epidemiology research and presented as one of the final requirements for the PhD degree. The dissertation must be an original contribution to knowledge and of high scholarly merit. The candidate's research must reveal critical ability and powers of imagination and synthesis. The dissertation is written under the supervision of the Dissertation Committee Chair with input from the other members of the Dissertation Committee. The data used by the student may involve analysis of primary or secondary data.

PBHL-H 620 Patient-Reported Health Outcomes (3 cr.)
P: B551 & E517
This web-based course is evidence-based and focused on health outcomes research in contemporary health care. The different types of health outcomes assessment tools and their application in determining patient health status, changes in health status, and the effectiveness of health care interventions will be addressed. The course will focus on generic and specific health related outcomes assessment tools, looking at such issues as disease specific outcomes and patient satisfaction.

PBHL-H 650 Readings in Public Health (1-3 cr.)
This course is designed to expose the student to published material on a specific topic or technique in the field of Public Health. The material to be studied will be determined primarily by the student under the

direction of a faculty member with input from the student's concentration advisor. The student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The student and faculty member will complete a written agreement, which outlines the scope of work for the semester. This agreement will also be signed by the concentration advisor.

PBHL-H 658 Methods of Health Policy and Program Evaluation (3 cr.)
The broad topic for this course is health program evaluation. Topics we will cover during the semester include: evaluation standards and ethics; program theory; evaluation design; problems that arise in evaluation and how to address them; working with and communicating to stakeholders. A theme that will be addressed throughout the class is the intersection of program evaluation and politics, and we will be focusing specifically on the intersection between program evaluation and public policy at the end of the semester. We will also take some time at the end of the semester to discuss implementation science, a topic that is closely related to program evaluation. More often than not, evaluation is a complex process where researchers cannot implement strict controls in their designs. Therefore, my primary goal for this class is that you will gain an understanding of the issues affecting program evaluation in real-world contexts and how to address limitations that are imposed by factors that cannot be controlled for (e.g., resources, time, politics, ethical issues, logistics).

PBHL-H 670 Topics in Public Health: Public Health Ethics (3 cr.) P: PBHL-H 705 This course is an introduction to the role of ethics in population health-related programs, policymaking, professions and research. Because public health interventions focus on communities, as contrasted with individuals, they raise distinct and significant ethical questions from those raised in health services delivery (commonly addressed in fields such as medical ethics, bioethics and clinical ethics). A central question is: How should the rights of individuals be balanced against the protection or improvement of the health of the public? Through examination of current, historic and potential cases -- including infectious disease outbreaks and bioterrorism threats, community health impact assessments, soda portion restrictions, and international public health research and programs -- students will increase their understanding of the ethical and human rights concerns in public health. Students also will learn how to analyze local, national and international public health policies and programs using numerous ethics-based frameworks, and will be more empowered to be critical contributors to the development, delivery and assessment of ethically sound public health interventions in their professional careers.

PBHL-H 700 Health Policy and Management Continuous Enrollment (1 cr.) P: P: H705
PBHL- H700 Health Policy and Management Continuous Enrollment in a one-credit course designed for MPH students who previously registered for H705 Health Policy and Management Concentration Project and are working on their Final Concentration Project until project grade has been assigned.

PBHL-H 751 Doctoral Readings in Health Policy and Management (1-3 cr.)
This course is designed to expose a PhD student to published material on a specific topic or technique related to their field of study in Health Policy and Management. The material to be studied will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop a strategy to identify the material to study, plan a time frame for completion of the study and to determine the nature of the study product. Generally the product will be a summary and interpretation of the material studied in a literature review format. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-H 752 Doctoral Readings in Health Policy and Management (1-3 cr.)
This course is designed to allow PhD students the opportunity to explore research questions by collecting data or using existing data related to their field of study in Health Policy and Management. The study topic will be determined primarily by the PhD student under the direction of a faculty member with input from the student's concentration advisor. The PhD student is expected to work closely with the faculty member to develop the study protocol, obtain IRB approval if necessary, obtain the data and collect the planned data analysis. The time frame for completion and the nature of the study product will be determined by the PhD student, faculty member and advisor. Generally the product will be a manuscript for submission to an appropriate journal. The PhD student and faculty member will complete a written agreement, which outlines the scope of work for the semester. The concentration advisor will also sign this agreement.

PBHL-S 510 Introduction to Research Methods in Public Health (3 cr.)
This course examines fundamental research methods used in the field of public health. The focus is on understanding how community and clinical data are collected in scientifically valid methods and how study results are fairly interpreted. Students will learn how to critique published research to identify the strengths and limitations of the designs and approaches used, along with possible confounding factors and biases. Topics include components of research studies, including: justification for a research project, development of research questions, research designs (qualitative, quantitative), selection of participants, sampling methods, project management, and data for analysis. Methods used to complete and interpret community-based needs assessments and program evaluation will be included.

PBHL-S 620 Stress and Population Health: A Biopsychosocial Exploration (3 cr.)
This course will examine stress holistically, i.e. from a biological/physiological, psychological and sociological perspective. You will learn how stress is manifested

psychologically as well as in the systems of the body. You will also examine stress from a community/population perspective. Finally, the effects of stress on the body will be examined through examples from its role as a cause of and contributor to major illnesses.

PBHL-S 622 Coaching for Health Behavior Change (3 cr.)
This course is designed to teach students how to coach individuals and groups attempting to improve their health behaviors. Theory, evidence-based practices, and different types of communication and interviewing styles will be explored through hands-on activities. Students will practice the learned techniques throughout the semester and will be able to apply these techniques upon completion of the course. Health educators, health educator trainers, health care providers, and others interested in guiding behavior change will benefit from this course.

PBHL-S 670 Topics in Public Health (1-3 cr.)
This course has a variable title and can be offered for variable credits. Similar to topics courses offered in other IUPUI programs, this course offers an introduction to a variety of public health topics and current issues will be covered in this course.

PBHL-S 672 International Perspectives on Health and Housing (3 cr.)
This international service-learning course is designed for students who are interested in developing an in-depth understanding of the relationship between health and housing outside of the U.S. This course will provide students with an opportunity to learn and work with individuals, families and communities struggling to overcome poverty to improve well-being in Argentina through a collaborative project with Habitat for Humanity, International. This course combines didactic learning related to the social determinants of health with a short term international service experience with Habitat for Humanity that will not only explore the complex social and geopolitical factors associated with health and housing, but will provide firsthand experience in an international setting. The course will require travel to participate in a 8-10 day service learning experience within an Argentinian community where community development efforts are underway to improve the health and well being of communities impacted by poverty.

PBHL-S 700 Social and Behavioral Health Science Continuous Enrollment (1 cr.) P: S702
PBHL- S700 Social and Behavioral Health Science Continuous Enrollment in a one-credit course designed for MPH students who previously registered for B701 Biostatistics Concentration Project and are working on their Final Concentration Project until project grade has been assign.

PBHL-S 725 Preparing for Academia in Public Health (1 cr.)
This 1.0 credit seminar course will prepare advanced graduate students for the roles and responsibilities they may assume as faculty members. Course content will include an overview of the higher education culture and faculty expectations for teaching, research and service.

PBHL-B 602 Internship in Biostatistics (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-B 552 Fundamentals of Data Management (3 cr.)
This course teaches concepts related to research data planning, collection, storage, processing, and dissemination. The curriculum includes theoretical guidelines and practical tools for conducting public health research. Hands-on training with real-world examples and problem-solving exercises in SAS will be used to ensure that students are comfortable with all concepts.

PBHL-B 572 Biostatistics Method II: Categorical Data Analysis (4 cr.) P: B562, or B571, or Equivalent
This course covers applied statistical methods for the analysis of categorical data with special emphasis on data collected from epidemiologic studies and general biomedical studies. The topics delivered in this course will focus on methods of categorical analysis commonly used in practice of the health sciences. The course will cover two areas: the relevant statistical theory and methods; and analysis of real-life problems using the SAS statistical software package.

PBHL-B 581 Biostatistical Computing (3 cr.)
This course introduces the necessary SAS skills for general data preparation, description, visualization, and some advanced skills. After successfully finishing this course, you will be able to perform at entry-level graduate research assistant positions and be prepared for biostatistical method courses. Data steps and the following procedures will be covered: IMPORT, SORT, PRINT, FORMAT, TABULATE, REPORT, MEANS, UNIVARIATE, FREQ, CORR, SQL, GPLOT, SGPLOT, SGPANEL, NPAR1WAY, POWER. Additionally, SAS macro, ODS and IML will also be introduced.

PBHL-B 586 Technical Writing and Scientific Reporting (3 cr.)
Biostatistics is an applied field that requires effective written communication. This one credit hour course is designed to help graduate students developing the necessary writing skills to produce clearly written and well-structured scientific reports. A specific goal of the course is to train PhD-level students on the dissertation writing and scientific publication.

The course will focus on the general principles of good writing, structures of various types of scientific papers, and techniques and styles that are unique to the field of

biostatistics. It also discusses frequently encountered issues in statistical publication and peer review.

The class meets once a week. In addition to the instructor's lectures, the class will analyze and discuss the merits and deficiencies of different writing samples. Regular homework assignments will be given so that students can practice what they learned in the class.

This is not an English language course.

PBHL-B 626 Advanced Likelihood Theory (3 cr.) P: Stat 519 and Stat 528, or Equivalent
This course covers theoretical foundation of statistical inference with focus on likelihood theory and its application on biomedical studies. It provides a good preparation for advanced biostatistics courses such as Advanced GLM, Advanced Longitudinal Data Analysis, and Advanced Survival Analysis.

PBHL-B 656 Advanced Longitudinal Data Analysis (3 cr.) P: PBHL B574 and familiarity with concepts and theory of statistical inference. Students who are uncertain about their level of preparation are encouraged to contact the instructor.
This course covers the theory of classical and modern approaches to the analysis of clustered data, repeated measures, and longitudinal data. Topics include random effects and growth curve models, generalized estimating equations, statistical analysis of repeated categorical outcomes, and estimation with missing data. The class also discusses computational issues including EM algorithm, quasi-likelihood methods and Bayesian methods for both traditional and new methodologies. This course belongs to the advanced portion of the Biostatistics Ph.D. curriculum.

PBHL-B 800 Biostatistics Doctoral Dissertation Research (1-8 cr.)
The dissertation will be written on an original topic of biostatistics research and presented as one of the final requirements for the PhD degree. The dissertation must be an original contribution to knowledge and of high scholarly merit. The candidate's research must reveal critical ability and powers of imagination and synthesis. The dissertation is written under the supervision of the Dissertation Committee Chair with input from the other members of the Dissertation Committee. The data used by the student may involve analysis of primary or secondary data

PBHL-E 602 Epidemiology Public Health Internship (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-E 675 Fundamentals Injury Epidemiology (3 cr.) P: This course is designed for students in the Master of Health Administration and the Master of Public Health degree programs. Students not in one of these two programs must have the permission of the instructor to enroll. All students must have at least a Bachelor#s Degree.
Injury is the leading cause of death for individuals between the ages of 1 and 44 years. This course will introduce students to basic epidemiologic concepts of injury, both intentional and unintentional. We will discuss the burden of injury and its effect on public health, patterns of injury in populations, the use of descriptive techniques, and secondary data sources. Students will gain an understanding of the role of Injury Epidemiology in developing prevention strategies and policy. Among the topics to be covered are measures of mortality and morbidity, design and analysis of observational studies, community health assessment and program evaluation.

PBHL-H 711 Capstone Experience for Health Policy and Management (3 cr.) P: H602: Please contact Sarah Johnson shm@indiana.edu for authorization to register.
This course will provide students with a culminating experience aimed at integrating their learning throughout the MPH program. Students will determine their proficiency in public health through the development of an ePortfolio, and engaging in professional

development through various activities and presentations to prepare them for professional life.

PBHL-H 602 Internship in Health Policy and Management (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty advisor and an academically and professionally qualified preceptor in the agency.

PBHL-S 602 Internship in Social and Behavioral Science (3 cr.) P: MPH Core Curriculum (5 courses); Consent of Faculty Advisor
This course integrates public health theory and practice in a practice setting. Students have the opportunity to apply concepts from core and concentration courses, conduct projects, and interact with a range of health professionals in the designated setting. Linked to the student's chosen concentration, this work experience exposes the student to new issues and new ways to solve problems and offers the student an opportunity to gain work experience in his/her concentration major and, at the same time, provides valuable job skills. The student works both with a faculty

advisor and an academically and professionally qualified preceptor in the agency.

PBHL-S 610 Booms, Busts, Shapes and Shifts: Why Population Matters to Public Health (3 cr.)
Whether you realize it or not, demographic processes are constantly influencing your life. What do I mean by demographic processes? I mean patterns of childbearing (fertility), death (mortality), and the geographic movement of human beings (migration), both in this country and around the globe. Demography, also called Population Studies, is the study of human populations in terms of their size, composition, distribution, and the causes and consequences of changes in these three characteristics. Demography is a fascinating topic because it deals with many questions you may find personally relevant: nearly all of the major events in your life have demographic implications. Furthermore, demographic forces play a large role in shaping entire populations' health and wellbeing. Understanding these forces can help to answer some of the most interesting and important questions facing public health practitioners today, such as: How many disability-free years can people expect to live? How is urbanization related to a society's causes of mortality? Does immigration place strain on health care systems?

PBHL-S 711 Capstone Experience in Social and Behavioral Sciences in Public Health (3 cr.) P: S602: Please contact Sarah Johnson shm@indiana.edu for authorization to register.
This course will provide students with a culminating experience aimed at integrating their learning throughout the MPH program. Through the accomplishment of the learning objectives, students will have the opportunity to practice public health through the resolution of public health problems; determine their proficiency in public health through the development of an ePortfolio, and engage in professional development through various activities and presentations to prepare them for professional life.

Undergraduate Courses

PBHL-A 367 Environmental Science and Health Practicum (2 cr.) P: PBHL-A316 The Enviornmental Science and Health Practicum will consist of a personal career-planning component coupled with a weekly field visit to environmental science and health-related organizations in central Indiana. Students must perform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-H 455 Topics in Public Health (1-3 cr.) Extensive discussion of selected topics in public health. The topic may change from semester to semester, based on resource availability and student demand. May be repeated for credit.

PBHL-H 367 Health Services Management Practicum (2 cr.) P: PBHL-H320 and Junior Standing The Health Services Management Practicum will consist of a personal career-planning component coupled with weekly field visits to health-related organizations in central Indiana. Students must preform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-H 367 Health Services Management Practicum (2 cr.) P: PBHL-H320 and Junior Standing The Health Services Management Practicum will consist of a personal career-planning component coupled with weekly field visits to health-related organizations in central Indiana. Students must perform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-A 326 Mathematics in the Environmental Health Sciences (3 cr.)
A326 will present an overview of the basic mathematical skills and level of understanding necessary to generate or use environmental data across a broad range of entry level positions in the environmental health sciences. The course will focus on direct and practical application of the mathematics commonly used in the environmental health field today. Numerous problems, data sets, and examples will be utilized. Specific areas of study will be the major disciplines of water flow measurement in both closed and open systems, groundwater systems, biodegradation, contaminant measurement, quality assurance and related statistics, soil systems and predictive air, soil and water models. The course will present practical applications of some common environmental models, their theoretical basis, inputs, limitations, sensitivities of the various inputs and governing assumptions used to operate the model.

PBHL-P 100 Plagues and Pandemics (3 cr.) Welcome to the IU Richard M. Fairbanks School of Public Health at IUPUI's First Year Seminar! This First Year Seminar is a learning community in that the students, staff, and faculty all work together to make a meaningful course experience. We will cultivate our class as a community connected to IUPUI, Indianapolis and the world. In addition, we will explore the field of public health through an examination of plagues and pandemics. From cholera to HIV, we'll look at how these diseases have shaped health care, epidemiology, environmental health, emergency preparedness, health policies and laws, and individual human behaviors. This will give you a head-start on choosing academic and career paths in public health, health administration, and other health professions.

PBHL-H 120 Contemporary Health Issues (1-3 cr.) An examination of current public health, environmental health, and health service delivery issues in the U.S. Topics include the organization and costs of health systems, access to care, and the interrelationships between risk factors and health; also, environmental challenges facing our society and their impact on health.

PBHL-H 320 Health Systems Administration (3 cr.)
An overview of the U.S. health care delivery system. It examines the organization, function, and role of the system; current system problems; and alternative systems or solutions.

PBHL-H 352 Health Finance and Budgeting (3 cr.)
P: BUS-A 200 or BUS-A 201. A study of the financial management of health care facilities based on generally accepted business principles. Accounting and managerial control of cash, accounts receivable, inventory control, budgeting, and cost control, as well as accounting and evaluation of short- and long-term debt will be examined.

PBHL-H 353 Advanced Health Finance and Budgeting (3 cr.) P: H352. This course builds upon H352 Health Finance and Budgeting as well as examines the uses of contractual language and obligations. It uses a series of

case studies to apply techniques and principles taught in PBHL-H 352.

PBHL-H 354 Health Care Economics (3 cr.) This course applies economics to the study of administrative and policy issues in the health care sector. Economic concepts are used to explain the system of health care financing and the organization of health care delivery in the U.S. The economic evaluation of health care programs is also discussed.

PBHL-H 365 Health Services Practicum (3 cr.) P: PBHL-H320; junior standing The Health Services Practicum will consist of a personal career-planning component coupled with weekly field visits to health care agencies in central Indiana. Students must perform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-H 401 Strategic Planning for Health Care Organizations (3 cr.) This course examines strategic planning techniques as they apply to health care organizations. Students will develop and defend a comprehensive strategic plan for a case facility. One half of the course will be conducted in a workshop format.

PBHL-H 411 Chronic Long-Term Care Administration (3 cr.) Administering programs across the continuum of care including nursing homes, hospice, home health, and assisted living; Medicare and Medicaid financing; quality improvement; care management; and needs of special populations, particularly, vulnerable elders.

PBHL-A 316 Environmental Health Science (3 cr.) A study of human interaction with the environment and potential impacts of environmental agents on health and safety. Hazards from natural sources and human activities that contaminate our air, land, water, food, homes, neighborhoods, and workplaces are examined. Environmental control activities, including pollution control technology and policy, are also examined.

PBHL-H 420 Health Policy (3 cr.) P: H320. This course will focus on current health policy issues within the context of the U.S. health care system. The course will familiarize students with the political environment of public policy, introduce major health care policy perspectives, and apply those analytical models to a series of health policy issues.

PBHL-H 441 Legal Aspects of Health Care Administration (3 cr.) An overview of the liability and legal responsibility, as well as legal recourse, that health care facilities may exercise. This course will discuss policies and standards relating to health facility administration. Also included is a discussion of financial aspects unique to the hospital/health care facility environment, such as third-party payments and federal assistance.

PBHL-A 322 Principles of Epidemiology (3 cr.) A basic overview of epidemiologic methodology and techniques. Both communicable and chronic disease risk factors will be discussed, along with data acquisition, analysis techniques, and current published epidemiological studies.

PBHL-A 416 Environmental Health Policy (3 cr.) Study of professional requirements and duties of the environmental health functions within health agencies; consideration of applicable laws and standards in each environmental health function; environmental health program planning, evaluation, implementation, and personnel responsibilities.

PBHL-H 472 Applied Health Care Administration (3 cr.) P: PBHL-H320 and Senior Standing. This course is a study of the complexities of multi-institutional arrangements and integrated services in the U.S. health care industry. The focus is on applying management skills to, and making comparisons of, the current driving forces among health care delivery system components.

PBHL-A 428 Food Science and Sanitation (3 cr.) Basic concepts of food technology with emphasis on methods and procedures in food processing to minimize contamination and to prevent food-related illness. Federal, state, and local food laws and inspection procedures will be examined.

PBHL-A 433 Industrial Hygiene (3 cr.) Survey of the technical and regulatory aspects of protecting the health and safety of workers. Topics include basic toxicology; skin, eye, and respiratory hazards; measuring hazardous atmospheres; ventilation systems; fire and explosion hazards; emergency response; occupational hearing loss; radiation; prevention of accidents; cumulative trauma; and personal protective equipment.

PBHL-A 459 Environmental Science and Health Data Analysis (3 cr.) P: PBHL-A316; SPEA0-K300; 1 semester of chemistry. Provides students with an understanding of basic principles needed to perform sampling and analysis of field and laboratory environmental data. Topics include properties of chemical and biological constituents, detection limits, calibration, quality control, precision accuracy, and statistical analysis.

PBHL-A 466 Public Health Field Experience (1-3 cr.) Supervised advanced training in professional and technical functions in public health; guided student activity and performance in professional public health functions. Individualized programs may be arranged to suit students' areas of concentration.

PBHL-H 474 Health Administration Ethics Seminar (3 cr.) P: PBHL-H320 and Senior Standing. This course examines healthcare ethical decision making challenges from managerial perspective and explores broader policy issues associated with ethical problems in healthcare institutions. It provides an overview of general theories of ethical decision-making and through case studies, debates and research examines ethical challenges in everyday managerial activities.

PBHL-H 432 Health Care Marketing (3 cr.) A practical study of marketing in health care institutions, health service organizations, and health insurers. A basic foundation in marketing principles, new methods in marketing products and services, and inexpensive marketing techniques will be examined.

PBHL-A 460 Environmental Science and Health Data Analysis (3 cr.) P: PBHL-A459. Basic physical, chemical, and biological examinations and standards for potable water quality, wastewater treatment determinations, and stream pollution control. Basic physical, chemical, and biological (ergonometric) examinations used in industrial hygiene and air pollution control. Instruction in basic laboratory skills and techniques for performing these examinations.

PBHL-A 380 Environmental Health Science Internship (3 cr.) P: Permission of Instructor. Open to interested students upon approval of the faculty. Students are placed with governmental agencies or private and not-for-profit organizations or governmental units for assignment to a defined task relevant to their educational interests in environmental health science. Tasks may involve staff work or research. May be repeated for credit. Course is graded S/F (Satisfactory/Fail).

PBHL-E 210 Zombie Apocalypse and Doomsday Infections (3 cr.)
The focus is infectious diseases, the possibility of a zombie infection. We will discuss infections that have changed the course of history. Included topics are: disease transmission, outbreak investigations, control measures, assessment, and field investigations. Case studies on respiratory infections, diarrheal diseases, emerging infectious diseases, HIV/Aids, Tuberculosis, STDs, and hepatitis.

PBHL-A 410 Introduction to Environmental Toxicology (3 cr.) Study of toxic mechanisms, pathology, and disease development resulting from exposure to biological and chemical agents in the environment.

PBHL-A 451 Air Pollution in the Community (3 cr.) A survey course covering the chemistry, transport, and fate of air pollutants related to current issues of air quality, such as photochemical smog, ozone depletion, particulate matter, and indoor air quality. Topics include the types, sources, health and environmental effects, measurement, evaluation, control, regulation, and modeling of air pollution concentrations.

PBHL-H 380 Health Services Management Internship (1-6 cr.) P: Permission of Instructor. Open to interested students upon approval of the faculty. Students are placed with governmental agencies or private and not-for-profit and organizations for assignment to a defined task relevant to their educational interests in health services management. Tasks may involve staff work or research. May be repeated for credit. Course is graded S/F (Satisfactory/Fail).

PBHL-H 373 Human Resources for Healthcare (3 cr.)
This course introduces students to the concepts and techniques related to the human resources management and training practices within healthcare organizations. We will examine and analyze various human resource issues unique to the health care industry.

PBHL-H 375 Management of Health Service Organizations (3 cr.)
This course explores the discipline of management and its major components relating to health service organizations. This course will provide students with a foundation of basic fundamentals, principles and techniques of management which have particular relevance and application in healthcare. Students will learn about management theory and its practical application in healthcare in fundamental areas such as planning, organizing, leading, and controlling. Other key elements of management such as communication, decision making, delegation, participatory management, leadership style, managing staff, teamwork, and change and innovation will be explored. Successful completion of this course will help provide students with a general foundation of knowledge about management and its application in health service organizations.

Instructional methods used will include lectures, interactive discussions, readings, in-class exercises and individual and group homework assignments using a wide range of management terms, concepts, fundamentals, theories, methods, techniques, and practices used in managing health service organizations. Special emphasis will be given to the role and application of leadership in the management of a diverse healthcare workforce, in a variety of health service settings. This course is designed to help create a foundation of knowledge and understanding of management that students will use in other courses in the public health undergraduate programs.

PBHL-A 100 Topics in Public Health: Armed Conflict, Natural Disasters & Human Health (3 cr.) This course explores the environmental public health concerns facing refugee populations from armed conflict, natural disasters, and other forced migration. Examines the response from local and international organizations, the effects of inadequate resources, and future solutions to improve refugee health.

PBHL-A 424 Environmental Health Science Technology: Managing Water and Wastes (3 cr.)
P: PBHL-A316; MATH 153. Technology approach to preventing the transmission of disease among humans through water and wastes. Course focuses on drinking water treatment and distribution, water quality and pollution, wastewater treatment, storm water management, municipal solid waste, and hazardous waste management.

PBHL-B 300 Introduction to Biostatistics (3 cr.)
P: MATH-M118
This is an introductory survey of statistical reasoning and analysis. Additionally, students should have a working knowledge of personal computers and the Windows operating environment

PBHL-S 315 Community Health (3 cr.)
This course provides learning opportunities for public health undergraduate students to develop an understanding of factors that distinguish personal health – individual actions that affect the health of an individual and those close to him or her -- from community health, which refers to the health status of a defined group of people and the actions, policies, structures, and conditions that promote, protect and preserve the health of communities.

PBHL-S 340 Cultural Competency in the Promotion of Health (3 cr.)
This course will prepare students to conduct health related work in a multicultural environment where health and health care have varied meanings.

PBHL-S 372 International Perspectives on Health and Housing (3 cr.)
This international service-learning course is designed for students who are interested in developing an in-depth understanding of the relationship between health and housing outside of the U.S. This course will provide students with an opportunity to learn and work with

individuals, families and communities struggling to overcome poverty to improve well-being in Argentina through a collaborative project with Habitat for Humanity, International. This course combines didactic learning related to the social determinants of health with a short term international service experience with Habitat for Humanity that will not only explore the complex social and geopolitical factors associated with health and housing, but will provide firsthand experience in an international setting. The course will require travel to participate in a 8-10 day service learning experience within an Argentinian community where community development efforts are underway to improve the health and well being of communities impacted by poverty.

PBHL-S 422 Coaching for Health and Wellness (3 cr.)
This course is designed to teach students how to coach individuals and groups attempting to improve their health behaviors. Theory, evidence-based practices, and different types of communication and interviewing styles will be explored through hands-on activities. Students will practice the learned techniques throughout the semester and will be able to apply these techniques upon completion of the course. Students planning to become health educators, health care providers, and others interested in guiding behavior change will benefit from this course.

PBHL-H 200 Health Care Accounting (3 cr.)
Course will provide students with a foundation in health care accounting from long-term care to acute care. The topics covered will include balancing sheet or statement of financial position, income statement or statement of revenue and expenses, journals, ledgers, trial balances and discrimination of formatting financial statements between acute care and long-term care organizations.

PBHL-S 425 A Public Health Journey through the Social Determinants of Health (3 cr.)
This course is designed to introduce students to an ecological perspective of health, going beyond biology and individual factors to investigate the influence on health of the social systems in which individuals live, work, and play. The factors we will explore in this course, often referred to as the "social determinants of health" include education, income, housing, employment, neighborhood environments, discrimination, social and community networks, culture, healthcare, and others. We will review evidence supporting the biological mechanisms by which social influences have physiologic consequences expressed as disease. We will explore the complex interplay of factors that shape health throughout life. Students will gain an understanding of the cumulative effect of social advantage or disadvantage on health over one's lifetime, and how these social systems contribute to well-established patterns of health inequities. The ethical concept of social justice and its relationship to health inequities will be integrated in the course.

PBHL-S 330 Theories of Health Behavior Change (3 cr.)
This course will explore the theories of health behavior change that are used to develop health interventions for individuals and communities. Students will learn different theories, how to put them into practice, and how useful and practical they are for various populations.

PBHL-S 499 Capstone Experience: BSPH in Community Health (3 cr.)
PREREQUISITE

Students must be in their final year of the BSPH Program and have their advisor's permission to enroll in the Capstone Experience. Students must have a minimum undergraduate GPA of 2.5 to enroll in the Capstone Experience.

This course integrates public health theory and practice in an applied practice setting. The capstone experience is tailored to students' expected post-baccalaureate goals. A variety of public health experiences are available, including an internship, a service-learning project, a portfolio project, a research paper, and an honors thesis.

PBHL-S 120 Introduction to Community Health (3 cr.) This undergraduate course will expose students to a variety of public health careers. Students will hear from public health professionals who hold a variety of positions in epidemiology, environmental and occupational health, social and behavioral sciences, public health preparedness, biostatistics, maternal-child-family health, chronic and infectious disease prevention, and health policy and management. Professionals from the private and public sectors will introduce students to the many careers in public health and to the various roles and functions of public health professionals. The course will focus on careers at all levels of education; bachelor's degree, master's degree and doctoral degree levels.

PBHL-H 330 Global Public Health (3 cr.)
All public health is global in today's world. This course will explore the key global public health issues that face countries in the world with higher, middle, and lower income resources. The health policy issues that affect public health outcomes in various political, cultural, and economic environments will be analyzed. New, innovative solutions to global public health problems will also be discussed.

PBHL-H 315 High-Risk Health Behavior and Harm Reduction (3 cr.)
Some individuals and groups are more likely to engage in high-risk health behaviors than others, which is costly to them and society. This class will focus on health risk related to sexual behavior, drug use, and homelessness.

PBHL-P 200 Computer Applications in Health Administration (1-3 cr.)
This course provides an overview of standard business applications, such as Microsoft Office Suite (2010) that are routinely used in healthcare environment. An emphasis will be on applied knowledge of Word, Excel, Outlook and PPT. This course also offers guidelines on appropriate business behaviors in any healthcare setting.

PBHL-P 300 Organizational Behavior & Human Resources for Healthcare (1-3 cr.)
This course introduces disciplines of organizational behavior and human resources management (HRM)

and their application to the management of healthcare organizations. The course examines how to effectively manage individuals, teams and systems in the dynamic legal, social, and economic healthcare environment.

PBHL-P 300 Health Information Technology Management and Policy (1-3 cr.)
This course will familiarize students with current issues associated with health information technology (IT) and their impact on the U.S. healthcare system. Health IT applications are playing an increasingly important role in assuring high quality care and have the potential to transform the nature of healthcare delivery. This course will review the evidence on the impact of Health IT from the perspectives of hospitals, physicians, patients, payers, and society.

PBHL-P 100 Topics in Public Health: Sex in America (1-3 cr.)
In this course, we will explore sex in contemporary American society. In recent decades, sexual behavior and sexuality have emerged as critical public health policy concerns. Whether it is the emergence and dramatic spread of sexually transmitted diseases, high rates of sex-related violence, the increasing visibility of sexual minorities, or the changing nature of sexual relationships, everyone seems to be talking about sex. Sexual expression is an essential and powerful dimension of the human experience, but most Americans struggle to fully understand and appreciate their personal sexual feelings and navigate our “hyper-sexual” society.

PBHL-H 345 Operations Management and Quality Improvement in Healthcare (3 cr.) This course provides an overview of the halthcare operations managment (OM), with emphasis on quality improvement. You will apply OM principles to develop more effective operational processes, mitigate risks, and improve quality. Discussions, case studies and assignments will focus on strategies and techniques of quality improvement processes, project managment and others.

PBHL-S 305 Careers in Public Health (3 cr.)
This undergraduate course will expose students to a variety of public health careers. Students will hear from public health professionals who hold a variety of positions in epidemiology, environmental and occupational health, social and behavioral sciences, public health preparedness, biostatistics, maternal-child-family health, chronic and infectious disease prevention, and health policy and management. Professionals from the private and public sectors will introduce students to the many careers in public health and to the various roles and functions of public health professionals. The course will focus on careers at all levels of education; bachelor’s degree, master’s degree and doctoral degree levels.

PBHL-S 399 Introduction to Research Methods in Public (3 cr.)
This course examines fundamental research methods used in the field of public health. The focus is on understanding how community and clinical data are collected in scientifically valid methods and how study results are fairly interpreted. Students will learn how to critique published research to identify the strengths and limitations of the designs and approaches used, along with possible confounding factors and biases. The topics include the following components of research studies: justification for a research project, development of research questions, research designs (qualitative, quantitative), selection of participants, sampling methods, project management, and data for analysis. Methods used to complete and interpret community-based needs assessments and program evaluation will be included.

PBHL-S 404 Topic in Public Health: Applied Health Promotion (3 cr.)
This course provides students with understanding, application, and practice of key methods in community health promotion including health communication, health education, health policy, and community mobilization strategies. Application of theory and implementation of methods at individual and community levels are addressed.

PBHL-S 410 Booms, Busts, Shapes and Shifts: Why Population Matters to Public Health (3 cr.)
This course provides you with a basic introduction to the discipline of population studies, in terms of how its main theories, concepts, and measures can be used by public health practitioners and scholars. Emphasis is placed on contemporary population issues and their origins, although important past developments will also be examined. Online and in-class content will frequently reference both more developed countries (MDCs) and less developed countries (LDCs).

The course will also help you to become an informed consumer of demographic information. Toward that end, you will engage in a semester-long project in which you will learn how to access demographic data, calculate demographic measures, interpret these measures, and evaluate their usefulness. This project will provide you with practical experience using demographic techniques, which can be applied to careers in business, marketing, government, and human services. Demography is one of the more quantitative sub-fields of social science, but please don’t let this scare you. Students with basic math skills (addition, subtraction, multiplication, and division) should have no trouble. You will work on calculations online with access to web-based resources, and you may work on your online assignments in groups, if you wish. I ask that you try to bring a calculator to class each day that we meet in person (in case review is needed).

PBHL-S 105 Public Health in Film and Media (3 cr.)
This undergraduate course will expose students to a variety of public health issues portrayed in film and media. A series of selected films and documentaries, and readings, relevant to public health will be viewed, critically analyzed by students, and discussed in class. The films and readings span a wide variety of public health topics.

PBHL-S 320 This Stress is Killing Me: Stress and Its Effects on You (3 cr.)
This course will teach you all about stress and its effect on your body and mind. You will learn the biology of stress, factors that protect you from stress or make you more vulnerable to it and the experience of stress in various settings, such as work, family and community. You will learn ideas about how to manage stress in your own life

and be asked to create a plan to help better manage the stress that is in your life.

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Instructional methods will include lectures (in-class and/or online), interactive discussions, readings, exercises and individual and/or group assignments. This course is designed to help create a foundation of knowledge and understanding of substance abuse, utilizing public health concepts, tools, and strategies that will also be useful to students in other public health undergraduate and graduate courses.

PBHL-P 300 Chasing Disease: Field Epidemiology (3 cr.)
Describing the application of epidemiology in unexpected conditions in a population. This course, through the use of case studies, will explore the world of disease outbreaks and the field response. Preventing disease spread, discovery of etiology, and causal factors by using the prescribed steps of public health field epidemiology.

PBHL-P 200 Navigating the Maze to Healthy Living (3 cr.)
This course provides students with knowledge and understanding of factors influencing personal health, health behaviors, health promotion, and disease prevention. The course emphasizes lifestyle and personal decision making as a consumer of health and health care services.

PBHL-S 202 Peer Health Education and Leadership (3 cr.)
Peer Health Education and Leadership will consist of classroom and online components. Students will be engaged with in-classroom workshops facilitated by the Office of Health and Wellness Promotion staff and campus partners, focused on content education and skills training. Students will also learn, discuss, and reflect with their peers in an online environment, building a foundational understanding of health and wellness topics and aspects of leadership development

Undergraduate Courses

The abbreviation "P" refers to course prerequisites and "R" to recommended prerequisite courses. Prerequisites can be waived by the instructor of the course. The number of hours of credit is indicated in parentheses following the course title. Courses are listed in three groups: environmental health science, health services management, and public health.

PBHL-A 367 Environmental Science and Health Practicum (2 cr.) P: PBHL-A316 The Enviornmental Science and Health Practicum will consist of a personal career-planning component coupled with a weekly field visit to environmental science and health-related organizations in central Indiana. Students must perform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-H 455 Topics in Public Health (1-3 cr.) Extensive discussion of selected topics in public health. The topic may change from semester to semester, based on resource availability and student demand. May be repeated for credit.

PBHL-H 367 Health Services Management Practicum (2 cr.) P: PBHL-H320 and Junior Standing The Health Services Management Practicum will consist of a personal career-planning component coupled with weekly field visits to health-related organizations in central Indiana. Students must preform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-H 367 Health Services Management Practicum (2 cr.) P: PBHL-H320 and Junior Standing The Health Services Management Practicum will consist of a personal career-planning component coupled with weekly field visits to health-related organizations in central Indiana. Students must perform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-A 326 Mathematics in the Environmental Health Sciences (3 cr.)
A326 will present an overview of the basic mathematical skills and level of understanding necessary to generate or use environmental data across a broad range of entry level positions in the environmental health sciences. The course will focus on direct and practical application of the mathematics commonly used in the environmental health field today. Numerous problems, data sets, and examples will be utilized. Specific areas of study will be the major disciplines of water flow measurement in both closed and open systems, groundwater systems, biodegradation, contaminant measurement, quality assurance and related statistics, soil systems and predictive air, soil and water models. The course will present practical applications of some common environmental models, their theoretical basis, inputs, limitations, sensitivities of the various inputs and governing assumptions used to operate the model.

PBHL-P 100 Plagues and Pandemics (3 cr.) Welcome to the IU Richard M. Fairbanks School of Public Health at IUPUI's First Year Seminar! This First Year Seminar is a learning community in that the students, staff, and faculty all work together to make a meaningful course experience. We will cultivate our class as a community connected to IUPUI, Indianapolis and the world. In addition, we will explore the field of public health through an examination of plagues and pandemics. From cholera to HIV, we'll look at how these diseases have shaped health care, epidemiology, environmental health, emergency preparedness, health policies and laws, and individual human behaviors. This will give you a head-start on choosing academic and career paths in public health, health administration, and other health professions.

PBHL-H 120 Contemporary Health Issues (1-3 cr.) An examination of current public health, environmental health, and health service delivery issues in the U.S. Topics include the organization and costs of health systems,

access to care, and the interrelationships between risk factors and health; also, environmental challenges facing our society and their impact on health.

PBHL-H 320 Health Systems Administration (3 cr.) An overview of the U.S. health care delivery system. It examines the organization, function, and role of the system; current system problems; and alternative systems or solutions.

PBHL-H 352 Health Finance and Budgeting (3 cr.) P: BUS-A 200 or BUS-A 201. A study of the financial management of health care facilities based on generally accepted business principles. Accounting and managerial control of cash, accounts receivable, inventory control, budgeting, and cost control, as well as accounting and evaluation of short- and long-term debt will be examined.

PBHL-H 353 Advanced Health Finance and Budgeting (3 cr.) P: H352. This course builds upon H352 Health Finance and Budgeting as well as examines the uses of contractual language and obligations. It uses a series of case studies to apply techniques and principles taught in PBHL-H 352.

PBHL-H 354 Health Care Economics (3 cr.) This course applies economics to the study of administrative and policy issues in the health care sector. Economic concepts are used to explain the system of health care financing and the organization of health care delivery in the U.S. The economic evaluation of health care programs is also discussed.

PBHL-H 365 Health Services Practicum (3 cr.) P: PBHL-H320; junior standing The Health Services Practicum will consist of a personal career-planning component coupled with weekly field visits to health care agencies in central Indiana. Students must perform satisfactorily in both parts of the practicum to receive a passing grade.

PBHL-H 401 Strategic Planning for Health Care Organizations (3 cr.) This course examines strategic planning techniques as they apply to health care organizations. Students will develop and defend a comprehensive strategic plan for a case facility. One half of the course will be conducted in a workshop format.

PBHL-H 411 Chronic Long-Term Care Administration (3 cr.) Administering programs across the continuum of care including nursing homes, hospice, home health, and assisted living; Medicare and Medicaid financing; quality improvement; care management; and needs of special populations, particularly, vulnerable elders.

PBHL-A 316 Environmental Health Science (3 cr.) A study of human interaction with the environment and potential impacts of environmental agents on health and safety. Hazards from natural sources and human activities that contaminate our air, land, water, food, homes, neighborhoods, and workplaces are examined. Environmental control activities, including pollution control technology and policy, are also examined.

PBHL-H 420 Health Policy (3 cr.) P: H320. This course will focus on current health policy issues within the context of the U.S. health care system. The course will familiarize students with the political environment of public policy, introduce major health care policy perspectives, and apply those analytical models to a series of health policy issues.

PBHL-H 441 Legal Aspects of Health Care Administration (3 cr.) An overview of the liability and legal responsibility, as well as legal recourse, that health care facilities may exercise. This course will discuss policies and standards relating to health facility administration. Also included is a discussion of financial aspects unique to the hospital/health care facility environment, such as third-party payments and federal assistance.

PBHL-A 322 Principles of Epidemiology (3 cr.) A basic overview of epidemiologic methodology and techniques. Both communicable and chronic disease risk factors will be discussed, along with data acquisition, analysis techniques, and current published epidemiological studies.

PBHL-A 416 Environmental Health Policy (3 cr.) Study of professional requirements and duties of the environmental health functions within health agencies; consideration of applicable laws and standards in each environmental health function; environmental health program planning, evaluation, implementation, and personnel responsibilities.

PBHL-H 472 Applied Health Care Administration (3 cr.) P: PBHL-H320 and Senior Standing. This course is a study of the complexities of multi-institutional arrangements and integrated services in the U.S. health care industry. The focus is on applying management skills to, and making comparisons of, the current driving forces among health care delivery system components.

PBHL-A 428 Food Science and Sanitation (3 cr.) Basic concepts of food technology with emphasis on methods and procedures in food processing to minimize contamination and to prevent food-related illness. Federal, state, and local food laws and inspection procedures will be examined.

PBHL-A 433 Industrial Hygiene (3 cr.) Survey of the technical and regulatory aspects of protecting the health and safety of workers. Topics include basic toxicology; skin, eye, and respiratory hazards; measuring hazardous atmospheres; ventilation systems; fire and explosion hazards; emergency response; occupational hearing loss; radiation; prevention of accidents; cumulative trauma; and personal protective equipment.

PBHL-A 459 Environmental Science and Health Data Analysis (3 cr.) P: PBHL-A316; SPEA0-K300; 1 semester of chemistry. Provides students with an understanding of basic principles needed to perform sampling and analysis of field and laboratory environmental data. Topics include properties of chemical and biological constituents, detection limits, calibration, quality control, precision accuracy, and statistical analysis.

PBHL-A 466 Public Health Field Experience (1-3 cr.) Supervised advanced training in professional and technical functions in public health; guided student activity and performance in professional public health functions. Individualized programs may be arranged to suit students' areas of concentration.

PBHL-H 474 Health Administration Ethics Seminar (3 cr.) P: PBHL-H320 and Senior Standing. This course examines healthcare ethical decision making challenges

from managerial perspective and explores broader policy issues associated with ethical problems in healthcare institutions. It provides an overview of general theories of ethical decision-making and through case studies, debates and research examines ethical challenges in everyday managerial activities.

PBHL-H 432 Health Care Marketing (3 cr.) A practical study of marketing in health care institutions, health service organizations, and health insurers. A basic foundation in marketing principles, new methods in marketing products and services, and inexpensive marketing techniques will be examined.

PBHL-A 460 Environmental Science and Health Data Analysis (3 cr.) P: PBHL-A459. Basic physical, chemical, and biological examinations and standards for potable water quality, wastewater treatment determinations, and stream pollution control. Basic physical, chemical, and biological (ergonometric) examinations used in industrial hygiene and air pollution control. Instruction in basic laboratory skills and techniques for performing these examinations.

PBHL-A 380 Environmental Health Science Internship (3 cr.) P: Permission of Instructor. Open to interested students upon approval of the faculty. Students are placed with governmental agencies or private and not-for-profit organizations or governmental units for assignment to a defined task relevant to their educational interests in environmental health science. Tasks may involve staff work or research. May be repeated for credit. Course is graded S/F (Satisfactory/Fail).

PBHL-E 210 Zombie Apocalypse and Doomsday Infections (3 cr.)
The focus is infectious diseases, the possibility of a zombie infection. We will discuss infections that have changed the course of history. Included topics are: disease transmission, outbreak investigations, control measures, assessment, and field investigations. Case studies on respiratory infections, diarrheal diseases, emerging infectious diseases, HIV/Aids, Tuberculosis, STDs, and hepatitis.

PBHL-A 410 Introduction to Environmental Toxicology (3 cr.) Study of toxic mechanisms, pathology, and disease development resulting from exposure to biological and chemical agents in the environment.

PBHL-A 451 Air Pollution in the Community (3 cr.) A survey course covering the chemistry, transport, and fate of air pollutants related to current issues of air quality, such as photochemical smog, ozone depletion, particulate matter, and indoor air quality. Topics include the types, sources, health and environmental effects, measurement, evaluation, control, regulation, and modeling of air pollution concentrations.

PBHL-H 380 Health Services Management Internship (1-6 cr.) P: Permission of Instructor. Open to interested students upon approval of the faculty. Students are placed with governmental agencies or private and not-for-profit and organizations for assignment to a defined task relevant to their educational interests in health services management. Tasks may involve staff work or research. May be repeated for credit. Course is graded S/F (Satisfactory/Fail).

PBHL-H 373 Human Resources for Healthcare (3 cr.)
This course introduces students to the concepts and techniques related to the human resources management and training practices within healthcare organizations. We will examine and analyze various human resource issues unique to the health care industry.

PBHL-H 375 Management of Health Service Organizations (3 cr.)
This course explores the discipline of management and its major components relating to health service organizations. This course will provide students with a foundation of basic fundamentals, principles and techniques of management which have particular relevance and application in healthcare. Students will learn about management theory and its practical application in healthcare in fundamental areas such as planning, organizing, leading, and controlling. Other key elements of management such as communication, decision making, delegation, participatory management, leadership style, managing staff, teamwork, and change and innovation will be explored. Successful completion of this course will help provide students with a general foundation of knowledge about management and its application in health service organizations.

Instructional methods used will include lectures, interactive discussions, readings, in-class exercises and individual and group homework assignments using a wide range of management terms, concepts, fundamentals, theories, methods, techniques, and practices used in managing health service organizations. Special emphasis will be given to the role and application of leadership in the management of a diverse healthcare workforce, in a variety of health service settings. This course is designed to help create a foundation of knowledge and understanding of management that students will use in other courses in the public health undergraduate programs.

PBHL-A 100 Topics in Public Health: Armed Conflict, Natural Disasters & Human Health (3 cr.) This course explores the environmental public health concerns facing refugee populations from armed conflict, natural disasters, and other forced migration. Examines the response from local and international organizations, the effects of inadequate resources, and future solutions to improve refugee health.

PBHL-A 424 Environmental Health Science Technology: Managing Water and Wastes (3 cr.)
P: PBHL-A316; MATH 153. Technology approach to preventing the transmission of disease among humans through water and wastes. Course focuses on drinking water treatment and distribution, water quality and pollution, wastewater treatment, storm water management, municipal solid waste, and hazardous waste management.

PBHL-B 300 Introduction to Biostatistics (3 cr.)
P: MATH-M118
This is an introductory survey of statistical reasoning and analysis. Additionally, students should have a working knowledge of personal computers and the Windows operating environment

PBHL-S 315 Community Health (3 cr.)

This course provides learning opportunities for public health undergraduate students to develop an understanding of factors that distinguish personal health – individual actions that affect the health of an individual and those close to him or her -- from community health, which refers to the health status of a defined group of people and the actions, policies, structures, and conditions that promote, protect and preserve the health of communities.

PBHL-S 340 Cultural Competency in the Promotion of Health (3 cr.)
This course will prepare students to conduct health related work in a multicultural environment where health and health care have varied meanings.

PBHL-S 372 International Perspectives on Health and Housing (3 cr.)
This international service-learning course is designed for students who are interested in developing an in-depth understanding of the relationship between health and housing outside of the U.S. This course will provide students with an opportunity to learn and work with individuals, families and communities struggling to overcome poverty to improve well-being in Argentina through a collaborative project with Habitat for Humanity, International. This course combines didactic learning related to the social determinants of health with a short term international service experience with Habitat for Humanity that will not only explore the complex social and geopolitical factors associated with health and housing, but will provide firsthand experience in an international setting. The course will require travel to participate in a 8-10 day service learning experience within an Argentinian community where community development efforts are underway to improve the health and well being of communities impacted by poverty.

PBHL-S 422 Coaching for Health and Wellness (3 cr.)
This course is designed to teach students how to coach individuals and groups attempting to improve their health behaviors. Theory, evidence-based practices, and different types of communication and interviewing styles will be explored through hands-on activities. Students will practice the learned techniques throughout the semester and will be able to apply these techniques upon completion of the course. Students planning to become health educators, health care providers, and others interested in guiding behavior change will benefit from this course.

PBHL-H 200 Health Care Accounting (3 cr.)
Course will provide students with a foundation in health care accounting from long-term care to acute care. The topics covered will include balancing sheet or statement of financial position, income statement or statement of revenue and expenses, journals, ledgers, trial balances and discrimination of formatting financial statements between acute care and long-term care organizations.

PBHL-S 425 A Public Health Journey through the Social Determinants of Health (3 cr.)
This course is designed to introduce students to an ecological perspective of health, going beyond biology and individual factors to investigate the influence on health of the social systems in which individuals live, work, and play. The factors we will explore in this course, often referred to as the “social determinants of health” include education, income, housing, employment, neighborhood environments, discrimination, social and community networks, culture, healthcare, and others. We will review evidence supporting the biological mechanisms by which social influences have physiologic consequences expressed as disease. We will explore the complex interplay of factors that shape health throughout life. Students will gain an understanding of the cumulative effect of social advantage or disadvantage on health over one’s lifetime, and how these social systems contribute to well-established patterns of health inequities. The ethical concept of social justice and its relationship to health inequities will be integrated in the course.

PBHL-S 330 Theories of Health Behavior Change (3 cr.)
This course will explore the theories of health behavior change that are used to develop health interventions for individuals and communities. Students will learn different theories, how to put them into practice, and how useful and practical they are for various populations.

PBHL-S 499 Capstone Experience: BSPH in Community Health (3 cr.)
PREREQUISITE

Students must be in their final year of the BSPH Program and have their advisor’s permission to enroll in the Capstone Experience. Students must have a minimum undergraduate GPA of 2.5 to enroll in the Capstone Experience.

This course integrates public health theory and practice in an applied practice setting. The capstone experience is tailored to students’ expected post-baccalaureate goals. A variety of public health experiences are available, including an internship, a service-learning project, a portfolio project, a research paper, and an honors thesis.

PBHL-S 120 Introduction to Community Health (3 cr.) This undergraduate course will expose students to a variety of public health careers. Students will hear from public health professionals who hold a variety of positions in epidemiology, environmental and occupational health, social and behavioral sciences, public health preparedness, biostatistics, maternal-child-family health, chronic and infectious disease prevention, and health policy and management. Professionals from the private and public sectors will introduce students to the many careers in public health and to the various roles and functions of public health professionals. The course will focus on careers at all levels of education; bachelor’s degree, master’s degree and doctoral degree levels.

PBHL-H 330 Global Public Health (3 cr.)
All public health is global in today's world. This course will explore the key global public health issues that face countries in the world with higher, middle, and lower income resources. The health policy issues that affect public health outcomes in various political, cultural, and economic environments will be analyzed. New, innovative

solutions to global public health problems will also be discussed.

PBHL-H 315 High-Risk Health Behavior and Harm Reduction (3 cr.)
Some individuals and groups are more likely to engage in high-risk health behaviors than others, which is costly to them and society. This class will focus on health risk related to sexual behavior, drug use, and homelessness.

PBHL-P 200 Computer Applications in Health Administration (1-3 cr.)
This course provides an overview of standard business applications, such as Microsoft Office Suite (2010) that are routinely used in healthcare environment. An emphasis will be on applied knowledge of Word, Excel, Outlook and PPT. This course also offers guidelines on appropriate business behaviors in any healthcare setting.

PBHL-P 300 Organizational Behavior & Human Resources for Healthcare (1-3 cr.)
This course introduces disciplines of organizational behavior and human resources management (HRM) and their application to the management of healthcare organizations. The course examines how to effectively manage individuals, teams and systems in the dynamic legal, social, and economic healthcare environment.

PBHL-P 300 Health Information Technology Management and Policy (1-3 cr.)
This course will familiarize students with current issues associated with health information technology (IT) and their impact on the U.S. healthcare system. Health IT applications are playing an increasingly important role in assuring high quality care and have the potential to transform the nature of healthcare delivery. This course will review the evidence on the impact of Health IT from the perspectives of hospitals, physicians, patients, payers, and society.

PBHL-P 100 Topics in Public Health: Sex in America (1-3 cr.)
In this course, we will explore sex in contemporary American society. In recent decades, sexual behavior and sexuality have emerged as critical public health policy concerns. Whether it is the emergence and dramatic spread of sexually transmitted diseases, high rates of sex-related violence, the increasing visibility of sexual minorities, or the changing nature of sexual relationships, everyone seems to be talking about sex. Sexual expression is an essential and powerful dimension of the human experience, but most Americans struggle to fully understand and appreciate their personal sexual feelings and navigate our “hyper-sexual” society.

PBHL-H 345 Operations Management and Quality Improvement in Healthcare (3 cr.) This course provides an overview of the halthcare operations managment (OM), with emphasis on quality improvement. You will apply OM principles to develop more effective operational processes, mitigate risks, and improve quality. Discussions, case studies and assignments will focus on strategies and techniques of quality improvement processes, project managment and others.

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please don't let this scare you. Students with basic math skills (addition, subtraction, multiplication, and division) should have no trouble. You will work on calculations online with access to web-based resources, and you may work on your online assignments in groups, if you wish. I ask that you try to bring a calculator to class each day that we meet in person (in case review is needed).

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Admissions

Effective January 1, 2012, students who transfer into the undergraduate Richard M. Fairbacnks School of Public Health programs with college credit, must have completed at least 12 credit hours at IUPUI and have at least a 2.5 cumulative and term GPA to be admitted. To remain in good standing, students must also maintain a cumulative grade point average of 2.5.

Students can be admitted to the School of Public Health through direct admission or as transfer students within the IU systems or from other institutions.

Students admitted to the School of Public Health are required to attend the Undergraduate Orientation, which is scheduled during the early part of the fall and spring semesters. The orientation provides students with an opportunity to become acquainted with the undergraduate teaching faculty and staff, and orients students to the School of Public Health's policies and procedures to ensure a successful transition to the School.

Direct and Dual Admission
The School of Public Health has a special program to admit freshman students simultaneously to the School of Public Health and to the University College. To be eligible for this dual admission, applicants must meet the general university and campus requirements for admission, have a minimum combined Scholastic Aptitude Test (SAT) math and critical reading test score of 1000 or ACT of 21 and have a 3.0 high school grade point average.

Students who do not qualify for dual admission at Indianapolis, or who choose not to apply for freshman-level direct entry may be admitted to the School of Public Health after they have completed 12 credit hours with 2.5 or better cumulative and semester grade point averages.

Undergraduate External and Intercampus Transfer

Admission External Transfer
Students transferring from other institutions will receive direct admission to the School of Public Health, provided students have completed 12 hours of coursework at IUPUI and earned cumulative and semester (last semester at previous institution) grade point averages of 2.5 or better.

Intercampus Transfer
Permanent intercampus transfer students transferring from any campus of Indiana University will receive direct admission to the School of Public Health, provided students have completed 12 hours, have earned

cumulative and semester (last semester at previous institution) grade point averages of 2.5 or better.

Undergraduate Probationary Admission
Applicants who do not meet the undergraduate admission requirements are not eligible for admission until they have met the admission requirements. Applicants who do not meet the School of Health's admission requirements may seek admission to University College.

For the most current Undergradate admission requirements for the Fairbanks School of Public Health, please visit our school's website at: Richard M. Fairbanks School of Public Health - Undergraduate Programs.

Last Updated: March 2016.

Certificate in Public Health (18 credit hours)

The Undergraduate certificate in Public Health (18 credit hours) includes two areas of concentration: **Health Administration** and **Population Health Science**. The certificate is designed to provide students in these emphasis areas with an overview of each area followed by more focused study in areas basic to each field.

The Health Administration option is designed for students interested in learning more about the administrative functions of public health or healthcare organizations. Completing the Certificate in Public Health-Health Administration will help prepare graduates new to these fields for entry-level work in such organizations as well as provide additional skills to current public health professionals interested in career development.

The Population Health Science option is designed for students interested in learning more about the core areas of study in Public Health related to Population Health and integration of those concepts with various areas of discipline in healthcare and public health delivery systems. Completing the Certificate in Public Health-Population Health Science will help prepare graduates new to these fields for entry-level work in such organizations as well as provide additional skills to current public health professionals interested in career development.

For the most current information on Undergraduate Certificates in the Fairbanks School of Public Health, please visit our schools website at Richard M. Fairbanks School of Public Health - Undergraduate Certificates.

Resources

Student Consumer Information About this Program

Updated March 2016

Degree Programs

The Fairbanks School of Public Health currently offers two Bachelor of Science degrees, a Bachelor of Science in Public Health with concentrations in Community Health or Environmental Health Science and a Bachelor of Science in Health Services Management. For the most current information on Fairbanks School of Public Health Undergraduate Degree programs, please visit our school's website at: pbhealth.iupui.edu.

Bachelor of Science in Public Health

The Bachelor of Science in Public Health (B.S.P.H.) degree combines coursework in communications, mathematics, the basic sciences (biology, chemistry, physics) and public health with an emphasis on protecting human health and the quality of the built and natural environment from environmental hazards through pollution prevention and control. Employment areas include indoor and outdoor pollution, water supply and wastewater treatment, solid and hazardous waste, workplace health and safety, general environmental health, childhood lead poisoning and asthma control, environmental health education, environmental toxicology and microbiology, sustainability, housing safety and vector control, food safety and defense, hazardous materials, homeland security, and others.

The BSPH major in Community Health will prepare students to provide health education, promote healthy lifestyles and healthy choices, prevent diseases, and enhance quality of life in communities. Students will obtain a foundation in understanding the social determinants of health, distribution of health and illness in diverse populations, and the disease risks among human populations. The Community Health major focuses on interdisciplinary efforts to address the physical, social, behavioral, mental, and environmental health concerns of communities and population at risk for disease and injury. Graduates will plan and evaluate health services in communities. They will coordinate the community efforts of government agencies and private organizations.

Degree Map for Community Health

Beginning in the Fall of 2013, Degree maps were finalized for the 2012-2014 Bulletin years. Click Community Health to find the Degree map. Please refer to the Degree Map website for future updates.

The B.S.P.H. major in Environmental Health Science features an interdisciplinary curriculum that integrates the environmental and health sciences with management and public policy. You will be trained to address pressing environmental health problems and will be prepared for an impact career or for graduate study in public health or the traditional sciences. The environmental health science major also meets the core science requirements for pre-professionals in medicine and is an attractive option for other pre-professional students.

Degree Map for Environmental Health Sciences

Beginning in the Fall of 2013, Degree maps were finalized for the 2012-2014 Bulletin years. Click Environmental Health Sciences to find the Degree map. Please refer to the Degree Map website for future updates.

Bachelor of Science in Health Systems Management

The Bachelor of Science in Health Systems Management combines coursework in general education (communications, liberal arts, science, and quantitative methods), health care policy, finance and management to prepare students for positions in the health care arena in nonclinical work. The health care arena includes acute care, physician practice, and long-term care, insurance companies, and government. Positions are available in government and the private and not-for-profit sectors. Available positions include office manager, billing agent,

project coordinator, HR recruiting specialist, marketing manager, claims adjudicator, clinical liaison, customer service representative, admissions staff, marketing specialist, and others.

Degree Map for Health Services Management

Beginning in the Fall of 2013, Degree maps were finalized for the 2012-2014 Bulletin years. Click Health Services Management to find the Degree map. Please refer to the Degree Map website for future updates.

Last Updated:April 2016.

General Degree Requirements

Bachelor of Science in Public Health - Environmental Health Science Major
Students must satisfactorily complete a minimum of 120 credit hours. A minimum 106 credit hours of required courses are listed for this curriculum. Specific degree requirments can be found on our school's website at: Richard M. Fairbanks School of Public Health - B.SP.H. in Environmental Health Science.

Bachelor of Science in Public Health - Community Health Major
A total of 120 credits are required to complete the BSPH in Community Health. Specific degree requirements can be fournd on our school's website at: Richard M. Fairbanks School of Public Health - B.S.P.H. in Community Health.

Bachelor of Science in Health Services Management
The BSHSM degree consists of a minimum of 44 credit hours of general education requirements, 51 credit hours of coursework in the major, and electives to total 120 credit hours. Specific degree requirements can be found on our school's website at: Richard M. Fairbanks School of Public Health - B.S.P.H. in Health Services.

Last Updated: April 2016.

Bachelor of Science in Health Services Management Learning Outcomes

A student who is awarded the Bachelor of Science in Health Services Management should be able to anticipate, recognize, evaluate, and solve problems in health services organizations using knowledge, tools, and skills appropriate to entry- and mid-level health services management positions. At the completion of the degree program, a student should demonstrate the following learning outcomes:

1. Communicate effectively with diverse stakeholders, including public health and health care professionals, individually and in group settings using verbal, written, and electronic modes of communication.

2. Use statistical and other quantitative analysis tools and techniques to understand issues and problems in health care organizations and systems.

3. Use basic financial tools, principles and practices to review and analyze financial performance of organizations and implement controls as required.

4. Apply human resource best practices for management of human capital in an organization.

5. Use marketing concepts and skills to analyze markets, develop marketing plans, and measure the impact of marketing activities to raise awareness and increase growth of the organization's market share.

6. Participate in developing and implementing plans and policies to improve the delivery of health services.

7. Work individually and within a team-setting by applying organizational knowledge and leadership skills.

8. Recognize and demonstrate sensitivity to diverse points of view.

9. Seek principled solutions to health services delivery issues.

For the most current information on Undergraduate Student Learning Outcomes in the Fairbanks School of Public Health, please visit our school's website at: pbhealth@iupui.edu.

Updated January 2014

Bachelor of Science in Public Health - Community Health Science Major Student Learning Outcomes

The BSPH major in Community Health will prepare students to provide health education, promote healthy lifestyles and healthy choices, prevent diseases, and enhance quality of life in communities. This major provides students with a foundation in understanding the social determinants of health and prepares graduates for program planning and evaluation of community health interventions.

1. Assess individual and community needs for health education.

2. Plan health education strategies, interventions, and programs.

3. Implement health education strategies, interventions, and programs.

4. Conduct evaluation and research related to health education.

5. Administer health education strategies, interventions, and programs.

6. Serve as a health education resource person.

7. Communicate and advocate for health and health education.

For the most current information on Undergraduate Student Learning Outcomes in the Fairbanks School of Public Health, please visit our school's website at pbhealth.iupui.edu.

Updated January 2014

Bachelor of Science in Public Health - Environmental Health Science Major Student Learning Outcomes

A student who majors in Environmental Health Science should be able to anticipate, recognize, evaluate, and solve problems in environmental science and health using knowledge, tools, and skills appropriate to entry-level environmental science and health positions. At the completion of the degree program, a student should demonstrate the following learning outcomes:

1. Communicate effectively with diverse stakeholders individually and in group settings using verbal, written, and electronic modes of communication.

2. Use statistical and other quantitative analysis tools and techniques to understand issues and problems in environmental science and health.

3. Anticipate, recognize, evaluate, and solve environmental science and health problems by applying scientific and technical knowledge and principles.

4. Monitor a community's environmental health status using epidemiological tools, laboratory techniques, and field methods appropriate to individual issues.

5. Participate in developing and implementing plans and policies to improve environmental health using scientific and technical knowledge.

6. Work individually and within a team-setting by applying organizational knowledge and leadership skills.

7. Recognize and demonstrate sensitivity to diverse points of view.

8. Seek principled solutions to environmental problems.

For the most current information on Undergraduate Student Learning Outcomes in the Fairbanks School of Public Health, please visit our school's website at: pbhealth@iupui.edu.

Updated January 2014

Certificates and Minors

Concentration in Population Health Sciences
Upon completion of this Certificate Concentration, students will be able to:

- Describe the scientific foundation of the field of public health
- Distinguish the characteristics of a population-based health problem
- Recognize common linkages and relationships among multiple factors affecting health
- Analyze and evaluate key policy, political, social, ethical, financing and managerial challenges that confront the current health care system
- Recognize the biological (e.g., physical and psychological) and cultural factors that influence resilience and vulnerability, and resistance to certain disease

Concentration in Health Administration

Upon completion of this Certificate Concentration, students will be able to:

- Discuss the structure and organization of the U.S. health care system and its components, including financing
- Recognize various ways of leading and managing health delivery systems
- Analyze and evaluate key policy, political, social, ethical, financing and managerial challenges that confront the current health care system
- Analyze the complex and dynamic externaland specific environments in which health care functions and evaluate ideas for health care administration strategy, policy and management

Minor in Environmental Health Science
A student who earns the Minor in Environmental Health Science will demonstrate the following learning outcomes:

- Describe the ways humans can have a negative impact on their environment.
- Identify contaminants and common sources of these contaminants that pollute the air, land, and water, and built environment.
- Explain ways humans are exposed to environmental pollution and the adverse effects it can have on health and safety.
- Explain the approaches that are used to assess the scope and extent of risk associated with environmental/occupational hazards.
- Describe the techniques that are used to eliminate or control hazards that can cause harm to human health and the environment**.**

Student Learning Outcomes

A student who is awarded a degree or certificate from the IU Fairbanks School of Public Health will demonstrate the IUPUI Principles of Undergraduate Learning (PULs), which were initially approved in 1998 and revised in 2007 by the faculty.

The PULs, which underpin an IUPUI students general education and permeate education in the major, tell our students and other stakeholders what an IUPUI undergraduate will know and be able to do upon graduation. The PULs provide the overarching learning outcomes for each students education at IUPUI, and these, in turn, are linked to the learning outcomes for each degree program and for courses in each degree program.

Bachelor of Science

- Health Services Management
- Public Health (Community Health Major)
- Public Health (Environmental Health Science Major)

Certificates and Minors

- Health Administration Certificate
- Population Health Science Certificate
- Environmental Health Science Minor

For the most current information on Undergraduate Student Learning Outcomes in the Fairbanks School of Public Health, please visit our school's website at: pbhealth.iupui.edu.

Updated April 2016

Accreditation

The B.S.P.H Environmental Health Science major is accredited by the National Health Science Protection and Accreditation Council.

Undergraduate Programs

General Information

The Fairbanks School of Public Health offers undergraduate degrees, certificates, and minors.

Bachelor of Science Degrees

- Bachelor of Science in Public Health, Community Health major
- Bachelor of Science in Public Health, Environmental Health Science major
  (accredited by the National Environmental Health Science and Protection Accreditation Council)
- Bachelor of Science in Health Services Management (B.S.H.S.M.)

Certificates

- Health Administration
- Population Health Science

Minors

- Health Systems Administration
- Environmental Health Science

For more information on Undergraduate degree programs in the Fairbanks School of Public Health, please visit our school's website at: Richard M. Fairbanks School of Public Health - Undergraduate Programs.

Updated March 2016

Minors

The Fairbanks School of Public Health minors include:

- Environmental Health Science Minor
- Health Systems Administration Minor

Environmental Health Science Minor (15 credit hours)
Provides focused study in selected aspects of current thinking and research on the nature, causes, and solutions of environmental problems as they affect human health and the environment. Requires an overview course in environmental health science plus four courses form a list that includes toxicology, water and wastes, air pollution, policy, food science, workplace health and safety, data analysis, and techniques in environmental health.

Health Systems Administration Minor (15 credit hours)
Provides focused study in selected aspects of current thinking and research on the administration of health systems. Requires a course in health administration plus four courses from a list that includes health care finance and budgeting, economics, policy, marketing, legal issues, management care, and planning.

For the most information on Undergraduate minors in the Fairbanks School of Public Health, please visit our school's website at: Richard M. Fairbanks School of Public Health.

Last Updated April 2016

Admissions

For the most current information on Admission requirements for Ph.D. Programs in the Fairbanks School of Public Health, please visit our school's website at: .

- Ph.D. in Biostatistics
- Ph.D. in Epidemiology
- Ph.D. in Health Policy and Management

For the most current information on Admission requirements for Master's Programs in the Fairbanks School of Public Health, please visit our school's website at: .

- Master of Health Administration (M.H.A.)
- Master of Public Health (M.P.H.)
- Master of Science in Biostatistics (M.S.)

For the most current information on Admission requirements for Graduate Certificates in the Fairbanks School of Public Health, please visit our school's website at: .

- Health Policy
- Health Systems Management
- Public Health

Updated January 2014

Degree Programs

Ph.D. Programs

- Ph.D. in Biostatistics
- Ph.D. in Epidemiology
- Ph.D. in Health Policy and Management

Master's Programs

- Master of Health Administration (M.H.A.)
- Master of Public Health (M.P.H.)
  Concentration Areas:
  - Biostatistics
  - Environmental Health
  - Epidemiology
  - Health Policy and Management
  - Social and Behavioral Sciences
- Master of Science in Biostatistics

Joint Degrees

- M.D./M.P.H.
- D.D.S./M.P.H.
- M.S.W./M.P.H.
- M.H.A./M.P.H.
- M.A. in Bioethics/M.P.H.
- J.D./M.P.H.
- J.D./M.H.A.
- M.B.A./M.H.A.
- M.P.H/M.H.A.

Graduate Certificates

- Health Policy

- Health Services Management
- Public Health

For the most current information on Graduate Degree programs in the Fairbanks School of Public Health, please visit our school's website at: pbhealth.iupui.edu.

Last Updated: November, 2014.

Master of Health Administration

The graduate program in health administration is offered by Indiana University School of Medicine's Department of Public Health. Recognized for its outstanding faculty, professional integration, and strong business ethics, the Indianapolis program reflects the exciting frontiers of the contemporary health care industry.

This advanced program attracts professionals and students interested in a variety of leadership opportunities in hospitals, managed care, ambulatory care, and voluntary health agencies. Opportunities also exist in consulting firms, corporate health programs, insurance, government, and other regulatory agencies. The program is fully accredited by the Commission on Accreditation of Healthcare Management Education and is a member of the Association of University Programs in Health Administration.

Approximately one-third of the students in the program have professional backgrounds; the remaining two-thirds come directly from undergraduate programs. In the classroom, this mix creates a dynamic environment of fresh perspectives and practical experience. The versatile faculty teach a rigorous interdisciplinary curriculum interwoven with current research and events. The M.H.A. program requires 51 graduate semester credit hours.

A summer internship between the first and second year of study is an excellent opportunity to learn from a health industry leader. The internship offers students valuable experience in the health care field and is an excellent opportunity to blend academic preparation with hands-on experience. Positions are available throughout the United States.

As an option, students may choose an administrative residency, a 10-12 month paid residency that can assist in the transition from classroom to workplace through intensive exposure to a selected management career. It blends academic preparation with administrative practice. Students with little health administration experience may find the residencies beneficial. Residents are selected through competitive application processes.

A mentorship program utilizing local M.H.A. alumni and friends of the school gives students the opportunity to meet a variety of practicing health care professionals. Mentors are available in all segments of the health care field and range from recent graduates to corporate officers and senior public officials.

Our students are successfully competing for national administrative fellowships after graduation. Fellowships have been awarded to M.H.A. program graduates from institutions that include Good Samaritan Health System in Nebraska; Winston Fellowship and Washington Hospital Group in Washington, D.C.; Baylor Medical Center in Houston; Cleveland Clinics in Cleveland; and the American College of Healthcare Executives in Chicago. Most fellowships provide a two-year paid administrative experience.

Admissions

In addition to the general requirements for admission to graduate study in Indiana University School of Medicine's Department of Public Health, the following requirements generally must be met for admission to the Graduate Program in Health Administration:

1. Applicants must possess an undergraduate degree from an accredited institution and have a minimum overall undergraduate grade point average (GPA) of 3.0 (B) on a 4.0 scale. Applicants with a minimum GPA of 3.0 during the last half of their undergraduate education are shown preference, however a 3.0 GPA does not guarantee admission.
2. Applicants must complete at least 3 credit hours each of undergraduate courses in introductory accounting, microeconomics, and statistics at an accredited institution with a minimum grade of C in each course. Students who have not completed these courses but who meet all other requirements may be accepted with deficiencies. These students are not usually permitted to enroll in the classes that require these courses as prerequisites until the deficiencies are removed.
3. Applicants must take the Graduate Record Examination (GRE) and achieve a composite score of at least 1,000 total in the quantitative and verbal sections or a GMAT total score of at least a 500. Note that achieving these scores does not guarantee admission. An applicant with a GRE score lower than 500 in any section may be required to participate in special academic counseling and evaluation prior to any admission decision. Additional course work may be required, and admission as a provisional student may be stipulated. Applicants who have been awarded an advanced degree may petition the admissions committee for waiver of the GRE requirement.

Mid-Career Credit Option

The Graduate Admissions Committee of the Indiana University School of Medicine's Department of Public Health may grant up to a maximum of 12 credit hours toward the *MHA* degree for students who have had **significant professional level work experience** in management and policy development. "Professional" level work is that requiring extensive education or specialized training (e.g., at least an undergraduate degree) and gives substantial control over the manner in which it is done to the person performing it.

Credit will be granted for work experience gained before the student completes *36* credit hours of course work in the MHA program.

The following guidelines will be used by the Admissions Committee to award these credits:

1. To receive **THREE** (3) credit hours, a student must have had one to three year's professional experience in policy development or management with a health care organization in any of the following areas:
    1. Directing programs

2. Preparing budgets
3. Making decisions on organizational or staff development
4. Analyzing, developing and evaluating policies
5. Conducting public or legislative relations programs
6. Program planning

2. To receive **SIX** (6) credit hours, a student must have had three to five years of managerial experience in a healthcare organization that includes significant responsibility for at least two of the following:
   1. Directing programs
   2. Preparing budgets
   3. Making decisions on organizational or staff development
   4. Analyzing, developing and evaluating policies
   5. e. Conducting public or legislative relations programs
   6. Program planning

Credit hours will be given in the MHA program only for managerial experience.

3. To receive **NINE** (9) credit hours, a student must have had at least five years of *executive responsibility* in a health care organization for at least four of the following:
   1. Directing programs
   2. Preparing budgets
   3. Making decisions on organizational or staff development
   4. Analyzing, developing and evaluating policies
   5. Conducting public or legislative relations programs
   6. Program planning

This experience must include supervising a significant number of staff, including other supervisors, managers or contract employees. ***Credit hours will be given in the MHA program only for managerial experience***.

4. **TWELVE** (12) credit hours may be awarded by the Admissions Committee *in exceptional circumstances* to students who have had at least ten years of *executive responsibility* for multiple areas *of a health care organization.*

Credit hours will be given in the MHA program only for managerial experience.

Application Process and Policies Students are eligible to apply for Mid-Career credit at the time of application for graduate study or until they have competed *36* hours of course work in the MHA program. Professional experience acquired after the completion of *36* hours of course work in the MHA program will not be considered in awarding Mid-Career credit. Students may be awarded more Mid-Career credit than they can use to fulfill their degree requirements.

Tuition Charge for MCO Credit For every three credit hours of Mid-Career credit awarded, students will be charged for **one** (1) credit hour at the tuition-rate applicable to them.

Degree Requirements (51 credit hours)

A minimum of 51 credit hours, divided between required and elective courses, is required in the Master of Health Administration degree program. The M.H.A. curriculum begins with a foundation of theory and skill-building courses and makes a transition to course work that requires practical application of those skills in a variety of health care settings.

Part-time students must complete at least 6 credit hours each semester to remain in good standing. All students must complete the program's academic requirements within five calendar years of matriculation.

Required courses (45 credit hours):

- PBHL-H 501 U.S. Health Care: Systems, Policies, and Ethical Challenges (3 cr.)
- PBHL-H 502 Developing Strategic Capability in Health Care (3 cr.)
- PBHL-H 507 Management of Individual and Group Behavior (3 cr.)
- PBHL-H 508 Managing Health Care Accounting Information for Decision Making (3 cr.)
- PBHL-H 509 Financial Management Principles of Health Care (3 cr.)
- PBHL-H 514 Health Economics (3 cr.)
- PBHL-H 516 Health Services Delivery and the Law (3 cr.)
- PBHL-H 518 Statistical Methods for Health Services (3 cr.)
- PBHL-H 521 Management Science for Health Services Administration (3 cr.)
- PBHL-H 612 Marketing Health Services Delivery (3 cr.)
- PBHL-H 623 Health Care Applications of Strategic Management (3 cr.)
- PBHL-H626 Health Services Human Resources Management (3 cr.)
- PBHL-H 628 Health Care Information Systems (3 cr.)

One of the following courses:

- PBHL-H 700 Residency (3-6 cr.) **OR**
- PBHL-H 702 Internship in Health Services Management (3 cr.) **OR**
- PBHL-H 735 Research in Health Administration (3-6 cr.)

Electives (6-9 credit hours):

Management Electives:

- PBHL-H 510 Health Services Financial Management (P: H 509) (3 cr.)
- PBHL-H 606 Health Services Quality Improvement and Risk Management (3 cr.)
- SPEA-V 566 Executive Leadership (3 cr.)
- SPEA-V 639 Managing Government Operations (3 cr.)
- SPEA-E 533 Environemental Management Systems: ISO 14001 Based (3 cr.)
- PBHL-H 640 Topics in Health Services Administration (with advisor's approval) (3 cr.)

- PBHL-H 630 Readings in Health Services Administration (3 cr.)
- BUS-X 572 Value Chain in Health Care (3 cr.) (with approval of Kelley School of Business)
- INFO-I 502 Informatics Management (3 cr.) (with approval of School of Informatics)
- INFO-I 530 Seminar in Health Information Applications (3 cr.) (with approval of School of Informatics)
- JOUR-J 528 Public Relations and Research (3 cr.) (P: J 321 or instructor's approval)

Policy Electives:

- PBHL-H 515 Seminar in Health Policy: Special Topics (3 cr.) **OR** PBHL-P 611 Policy Design Implementation and Management (3 cr.)
- PBHL-H 517 Managerial Epidemiology (3 cr.)
- PBHL-H 615 Health Care Outcomes and Decision Making (3 cr.)
- SPEA-V 512 Public Policy Process (3 cr.)
- SPEA-V 541 Benefit-Cost Analysis (3 cr.)
- SPEA-V 562 Public Program Evaluation (3 cr.)
- SPEA-P 525 Geographical Information Systems for Planning (3 cr.)
- SPEA-P 527 Planning Applications of Geographical Information Systems (P: P525) (2 cr.)
- SPEA-H 640 Topics in Health Services Administration (3 cr.)
- SPEA-H 630 Readings in Health Services Administration (3 cr.)
- PHIL-P 547 Foundations of Bioethics (3 cr.)
- SOC-R 515 Sociology of Health and Illness (3 cr.)

Nonprofit electives:

- SPEA-V 521 The Nonprofit and Voluntary Sector (3 cr.)
- SPEA-V 525 Management in the Nonprofit Sector (3 cr.)
- SPEA-V 557 Proposal Development and Grant Administration (3 cr.)
- SPEA-V 558 Fund Development for Nonprofits (3 cr.)
- PBHL-H 640 Topics in Health Services Administration (3 cr.)
- PBHL-H 630 Readings in Health Services Administration (3 cr.)
- ECON-E 514 The Nonprofit Economy and Public Policy (3 cr.)
- BUS-A 508 Accounting for Nonprofit Organizations (3 cr.) (with approval of Kelley School of Business)

Note: Other graduate-level electives may be approved by a faculty advisor.

Course Waivers, Substitutions, and Challenge Examinations

Students may petition the program director to waive or make substitutions for required courses based on completion of satisfactory equivalent course work or by examination (if available). The following guidelines govern the consideration of these types of petitions.

Waivers of Required Courses The requirement for a particular course may be waived if the student furnishes evidence of equivalent graduate course work completed within a reasonable period of time from an accredited institution. It should be noted that credit is not given with a waiver-only an exemption from a particular course; another course is always substituted.

Substitutions As a general rule, the substitution of a course for one that is required in the M.H.A. curriculum is prohibited. On rare occasions, petitions for substitutions may be considered, and students who believe they would benefit from such a procedure should discuss the matter with their advisors.

Challenge Examination Students who believe they possess mastery of the subject matter stipulated in a given required course may request a challenge examination. If, in the opinion of the faculty, the student has demonstrated the requisite knowledge, academic credit for the course is authorized. The university fee structure for the cost of such an examination applies.

Master of Health Administration–Doctor of Jurisprudence (M.H.A.-J.D.)

The Indiana University School of Medicine's Department of Public Health and the School of Law-Indianapolis have established a four-year, full-time program for the combined study of law and health administration. This course of study addresses the need for professionals who understand the legal and administrative frameworks necessary to function successfully as a health lawyer or a health services administrator.

The Master of Health Administration (M.H.A.) and the Doctor of Jurisprudence (J.D.) are awarded when the student meets the degree requirements of both schools. All courses are offered on the Indianapolis campus. Successful completion of this rigorous 127-credit-hour program provides the graduate sufficient depth and breadth in each discipline to be able to function effectively in the swiftly changing health field.

The delivery of health care and health services is the second largest industry in the United States, accounting for almost 14 percent of the gross national product. The importance of health care to our citizens has long been obvious.

What has become more apparent recently, however, is the growing impact of case law, statutes, and regulations on access to and availability of care; on the delivery of health care services; and, increasingly, on decisions relating to the appropriateness of individual treatment. For this reason, the Schools of Law and Indiana University School of Medicine's Department of Public Health have sought jointly to develop a strong academic curriculum to address the educational needs of health lawyers and health service administration executives as they seek to serve the public's needs.

Application and Admission

Applicants must apply for admission to each school and must meet the admission criteria published in each school's bulletin. Normally, applicants should apply to both the School of Law-Indianapolis and the Indiana University School of Medicine's Department of Public Health at the same time. However, a person enrolled in the School of Law may apply for admission to the Graduate Program

in Health Administration up to the end of the second year of law study (approximately 57 credit hours). A student formally enrolled in the study of health administration may seek admission to the School of Law-Indianapolis up to the end of the first year of full-time study leading to the award of the Master of Health Administration (approximately 30 hours of graduate credit).

Academic Standing Grade point averages in the School of Law-Indianapolis and the Indiana University School of Medicine's Department of Public Health are computed separately. To continue in the joint program, the student must meet the academic standards in each school. A student failing in one school but meeting academic standards in the other may complete course work for the degree in the school in which the student is able to meet the academic standards. Such completion must be according to the same conditions (credit hours, internship, etc.) required of regular (noncombination) degree candidates. Students are eligible for honors in each school based on the criteria of each school.

Residency The student customarily completes the first 34 credit hours in the School of Law-Indianapolis. Thereafter, the student divides the remaining course work between the two schools, taking health administration courses and law courses concurrently. Thus, the student has a continuing educational experience in both schools.

Program Requirements (127 credit hours)

M.H.A. Requirements (45 credit hours)

Students must complete 43.5 credit hours distributed among the M.H.A. required core, electives, and a joint research paper.

Required Courses (34.5 credit hours):

- PBHL-H 501 U.S. Health Care: Systems, Policies, and Ethical Challenges (3 cr.)
- PBHL-H 502 Developing Strategic Capability (3 cr.)
- PBHL-H 507 Management of Individual and Group Behavior (3 cr.)
- PBHL-H 508 Managing Health Care Accounting Information for Decision Making (3 cr.)
- PBHL-H 509 Financial Management Principles of Health Care (3 cr.)
- PBHL-H 514 Health Economics (3 cr.)
- PBHL-H 518 Statistical Methods for Health Services (3 cr.)
- PBHL-H 521 Management Science for Health Services Administration (3 cr.)
- PBHL-H 612 Marketing for Health Services Delivery (3 cr.)
- PBHL-H 623 Health Care Applications of Strategic Management (3 cr.)
- PBHL-H 626 Health Services Human Resources Management (3 cr.)
- PBHL-H 628 Health Care Information Systems (3 cr.)

Elective Courses (6 credit hours):

Six credit hours of elective courses, chosen from the following:

- PBHL-H 510 Health Services Financial Management (3 cr.)
- PBHL-H 515 Seminar in Health Policy: Special Topics (3 cr.)
- PBHL-H 517 Managerial Epidemiology (3 cr.)
- PBHL-H 615Health Care Outcomes and Decision Making (3 cr.)
- PBHL-H 630 Readings in Health Services Administration (1-3 cr.)

Joint Research Paper (6 credit hours):

PBHL-H 735 Research in Health Administration is to be completed in the last year of the combined program and jointly supervised by advisors from both schools.

J.D. Requirements (82 credit hours)

Students are required to complete 82 credit hours of law courses and to satisfy all requirements for the Doctor of Jurisprudence degree.

Master of Health Administration–Master of Business Administration (M.H.A.-M.B.A.)

The combined M.H.A.-M.B.A. program enables the student to take a sequence of courses leading to the attainment of both degrees. Successful completion of this 78-credit-hour program provides the graduate student with sufficient depth and breadth in each discipline to function effectively in a health care delivery system that is driven by business principles.

Admissions To participate in the joint program, students must apply to and be accepted into both the Indiana University School of Medicine's Department of Public Health, Master of Health Administration program and the Indianapolis Kelley School of Business Master of Business Administration program.

Academic Standing Grade point averages for the two schools are computed separately. To continue in the joint program, the student must meet the academic standards in each school. Students failing in one school but meeting academic standards in the other school may complete work for the degree in the school in which they are able to meet the standards. Such completion must be upon the same conditions as required of regular (noncombination) degree candidates. Students are eligible for honors in each school based on the criteria of each school.

Program Advisors Once students have been accepted into this joint degree program, they should meet with academic advisors to plan course sequencing. All M.B.A. core courses must be taken as intact modules. Full-time students typically take two M.H.A. and two M.B.A. courses each semester. Part-time students take either two M.H.A. or two M.B.A. courses each semester. Since M.B.A. courses must be taken as a cohort, part-time students will need to sequence all the M.B.A. courses in a block.

Program Requirements (78 credit hours)

The following degree requirements are required of all students admitted to the program.

M.H.A. Requirements (39 credit hours)

Students are required to complete 34.5 credit hours of SPEA courses and to satisfy all requirements for the joint degree.

- PBHL-H 501 U.S. Health Care: Systems, Policies, and Ethical Challenges (3 cr.)
- SPEA-H 502 Developing Strategic Capability in Healthcare (3 cr.)
- PBHL-H 507 Management of Individual and Group Behavior (3 cr.)
- PBHL-H 508 Managing Health Care Accounting Information for Decision Making (3 cr.)
- PBHL-H 509 Financial Management Principles in Healthcare (3 cr.) (P: UG accounting)
- PBHL-H 510 Health Services Financial Management (3 cr.)
- PBHL-H 514 Health Economics (3 cr.)
- PBHL-H 516 Health Services Delivery and the Law (3 cr.)
- PBHL-H 518 Statistical Methods for Health Services (3 cr.)
- PBHL-H 612 Marketing Health Services Delivery (3 cr.)
- PBHL-H 623 Health Care Applications of Strategic Management (3 cr.)
- PBHL-H 627 Seminar in Advanced Health Finance (3 cr.)
- PBHL-H 702 Internship in Health Services Management (3 cr.) **OR**
- PBHL-H 735 Research in Health Administration (3-6 cr.)

M.B.A. Requirements (39 credit hours)

Students are required to complete 39 credit hours of business administration courses and to satisfy all requirements for the joint degree. For specific guidelines, see the Indianapolis Kelley School of Business Graduate Bulletin.

Master of Public Health

The Indiana University MPH Program is a unique program which can be completed on a part-time basis in three years, or on a full-time basis in two years. Most of the required MPH courses are offered in the evening to allow working professionals the opportunity to continue their education. Through case studies, group and individual projects, and internships, students will explore public health problems and issues, learn how to think critically and work in teams. Courses are taught by scholars and practitioners drawn from many disciplines and perspectives.

Application, admission, and degree-granting requirements and regulations of educational programs offered by the Department of Public Health are applied equitably to all individuals, applicants and students regardless of age, gender, race, disability, sexual orientation, religion or national origin.

The MPH Program at IU School of Medicine is fully accredited by the Council on Education for Public Health.

Concentrations

Biostatistics

Biostatistics is the development and application of statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research.

Epidemiology

This concentration will prepare students to integrate the social, biological, environmental and analytic approaches to understanding determinants of health in populations. The principles and methods of epidemiology constitute a foundation essential for policy development related to surveillance activities and prevention strategies. Students will learn how to design and conduct studies, analyze data, and present findings in a variety of formats and for diverse audiences.

Environmental Health

Students enrolled in this concentration learn to anticipate, recognize and assess environmental hazards that affect human health. Students study the impact of biological, physical and chemical factors on the health of communities. Students will acquire the skills necessary to identify susceptibility and intervention factors that lead to disease and/or its prevention.

Health Policy and Management

Students in this concentration will acquire skills in policy process, development and analysis. They will explore in depth current national and state public health issues and make policy recommendations to address those issues. In addition, they will develop strategic capability for managing health services organizations in a policy context.

Social and Behavioral Sciences

This concentration will prepare students to use behavioral science and educational content and research methods in the development, implementation, and evaluation of interventions designed to affect health behaviors in populations. Health assessment and program planning and evaluation are essential in understanding the psychosocial factors associated with health status. Students will learn how to use research, communications, and management tools to solve health problems in various professional settings including clinical, school, work site and community programs.

Master of Science in Biostatistics

The Department of Biostatistics offers an MS in biostatistics to meet the growing local, national, and international demand for data analysis professionals in the pharmaceutical industry, health care delivery, biomedical research and other quantitatively oriented fields. The department features nationally and internationally recognized faculty members who are committed to training students rigorously in both statistical theory and application. Upon completion of the MS in Biostatistics, students are expected to demonstrate competencies in understanding modern statistical theory, developing computing programs for data management and statistical analysis, and effectively communicating statistical principles to a non-quantitative person. Graduating from the program, students may apply for the Ph.D program in Biostatistics offered by the department to further their interests in statistical methodology research with application to biomedical problems.

Doctor of Philosophy in Epidemiology (Ph.D.)

Upon completion of the PhD degree in Epidemiology, graduates will be able to:

- Design investigations of acute and chronic conditions as well as other adverse health outcomes in targeted populations.
- Analyze and evaluate data from epidemiologic investigations and surveillance systems.
- Differentiate special populations by race, ethnicity; culture; societal, educational, and professional backgrounds; age; sex; religion; disability; and sexual orientation.
- Critically evaluate results of epidemiologic studies, including analyses, interpretation and conclusions.
- Use current knowledge of causes of disease to guide epidemiologic practice.
- Prepare written and oral reports and presentations to effectively communicate necessary information to professional audiences, policy makers, and the general public.
- Develop community partnerships to support epidemiologic investigations.
- Prepare proposals for extramural peer-reviewed funding.
- Promote and model ethical conduct in epidemiologic practice.
- Bring epidemiologic perspectives to the development and analysis of public health policies.

Doctor of Philosophy in Health Policy and Management (Ph.D.)

Upon completion of the PhD degree in Health Policy and Management, graduates will be able to:

- Demonstrate in-depth knowledge of the history, structure, and operation of health care systems domestically and internationally.
- Understand and apply bioethical principles and theories and utilize them in research, policy and practice.
- Design and conduct health policy and services research studies.
- Access, manage and utilize administrative and other secondary data sources in research studies.
- Prepare grant applications and manage research projects.
- Analyze and evaluate policies and programs.
- Utilize and report the results of advanced quantitative and qualitative data analysis.
- Interpret and report the findings of original research for scholarly audiences.
- Translate and apply findings from original and existing research in policy and practice.
- Educate and train students and professionals about health policy and management.

Student Learning Outcomes

Graduate Student Learning Outcomes

- Biostatistics (Ph.D.)
- Epidemiology (Ph.D.)
- Health Policy and Management (Ph.D.)
- Master of Health Administration (M.H.A.)
- Master of Public Health (M.P.H.)

For the most current information on Graduate Student Learning Outcomes in the Fairbanks School of Public Health, please visit our school's website at pbhealth.iupui.edu.

Updated January 2014

Master of Health Administration (M.H.A.)

Upon completion of this Master's program, graduates will have acquired competencies in several domains.

1. **Context of healthcare system**
   - Understand how decisions are made within the private, non-profit, and government sectors; understand connections across these sectors
   - Have a broad knowledge of legal and economic contexts for health administration
2. **Leadership/professionalism**
   - Develop verbal and written communication and negotiation skills
   - Understand the principles of effective management leadership
   - Develop skills in relationship/team building
   - Understand unique criteria of ethical standards and values for the profession
   - Understand the process of organizational development and change management
3. **Decision Making (Strategic Management and Operations Management)**
   - Understand the principles of effective recruitment and personnel management
   - Be able to identify the most appropriate business strategies, develop business plans around these strategies, and follow through with effective project management
   - Be sensitive to diversity in the population and its implications for health care delivery
4. **Technical skills**
   - Quantitative
     - Have a basic working knowledge of statistical analysis
     - Be able to measure and assess health status and health risks
     - Evaluate health care process improvements and performance
     - Develop analytic skills for effective decision making, including, economics and management science
   - Financial
     - Have a command of the basic skills of accounting and financial management (e.g., prepare and manage budgets)
     - Understand principles of sound capital investment decisions
   - Information Technology
     - Understand and appreciate how information technology supports business and clinical security and issues
5. **Self-Development**
   - Self-Assessment

- External Measurement

Last Updated: February, 2014.

Master of Public Health (M.P.H.)

Upon completion of this Master's program, graduates will have acquired the competency to:

- Use biostatistical methods to analyze and report public health data.
- Specify approaches to assess, prevent and control environmental and occupational hazards to human health and safety.
- Use epidemiologic methods to collect, study, analyze and report the patterns of disease in human populations for diverse audiences.
- Identify and analyze the components and issues of leadership, including financing and delivery of public health services and systems.
- Apply policy process, development and analysis methods to address current national, state and local public health issues.
- Identify social and behavioral science factors, theories and models and develop, implement and evaluate interventions designed to positively affect health behaviors in populations.
- Collect and disseminate public health data through the use of technology and media.
- Explain how human biology influences health and public health practice.
- Exhibit high standards of personal and organizational integrity, compassion, honesty and respect for all people.
- Use systems methods to analyze the effects of political, social and economic influences on public health systems at the individual, community, state, national and international levels.
- Demonstrate the impact of diversity and culture on public health across discipline areas.
- Demonstrate an understanding of the basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of public health data.

Epidemiology Concentration Competencies

- Understand and apply descriptive epidemiology to assess health status and the burden of disease in populations.
- Understand, apply, and interpret epidemiologic research methods and findings to the practice of public health.
- Demonstrate the ability to identify and use existing sources of epidemiologic data at the local, state, national, and international level.
- Understand the key components of public health surveillance and public health screening programs.
- Develop written and oral presentations based on epidemiologic analyses for both public health professionals and lay audiences.
- Demonstrate a basic level of epidemiologic data management and analysis using software such as SAS.

Environmental Health Science Concentration Competencies

- Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
- Specify current environmental risk assessment methods.
- Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- Explain the general mechanisms of toxicology and eliciting a toxic response to various environmental exposures.
- Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity.

Health Policy and Management Concentration Competencies

- Discuss the policy process for improving the health status of populations.
- Apply principles of strategic planning and organizational development to public health agencies.
- Demonstrate communication and leadership skills required for building community and organizational capacity.
- Apply the principles of budgeting, management and performance evaluation in organizational and community initiatives.

Social and Behavioral Science Concentration Competencies

- In collaboration with others, prioritize individual, organizational, community, and societal concerns and resources for public health programs, policies and interventions.
- Describe steps and procedures for the planning, implementation and evaluation of public health programs, policies and interventions.
- Apply evidence-based approaches in the development, implementation, and evaluation of social and behavioral science interventions in diverse populations.
- Identify basic theories, concepts and models from a range of social and behavioral disciplines that are used in public health research and practice.
- Identify the causes and conditions linked to social and behavioral factors that affect health of individuals and populations.
- Specify multiple targets and levels of intervention for social and behavioral science programs and/or policies.

Biostatistics Concentration Competencies

- Describe basic concepts of probability, random variation and commonly used statistical probability distributions.
- Apply descriptive techniques commonly used to summarize public health data.
- Apply common statistical methods for inference.
- Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.
- Interpret results of statistical analyses found in public health studies.

- Develop written and oral presentations based on statistical analyses for both public health professionals and educated lay audiences.

Doctor of Philosophy in Biostatistics (Ph.D.)

Upon completion of the PhD degree in Biostatistics, graduates will be able to:

- Acquire biostatistical knowledge and interpersonal skills needed to collaborate with health sciences investigators.
- Formulate a health related question in statistical terms including appropriate hypotheses in order to develop appropriate statistical analysis plans.
- Recognize important methodological issues through collaborative research.
- Derive improved methods as solutions to methodologic problems.

Accreditations

The three Ph.D. Programs and the Master in Public Health Program are accredited by the Council on Education for Public Health.

The Master in Health Administration Program is accredited by the Commission on Accreditation of Healthcare Management Education (CAHME).

Certificate Programs

Three graduate certificates are offered by the Fairbanks School of Public Health: Certificate in Public Health, Certificate in Health Policy, and Certificate in Health Systems Management. Certificate programs are flexible and adaptable to the needs of either pre-career or in-service students. Program descriptions, admission requirements and curriculum requirements are available at our school's website: pbhealth.iupui.edu.

Certificate in Public Health

The Graduate Certificate in Public Health is a 15-credit-hour program of study. The certificate program is designed to meet the needs of public health professionals who are seeking the opportunity to continue their education while working. This program consists of evening classes and is available to US citizens and permanent residents.

Certificate in Health Policy
Students in this 17-18 credit hour program complete courses taught by faculty from the Indiana University Schools of Medicine, Law, Nursing, Public and Environmental Affairs, and Liberal Arts.

Certificate in Health Systems Management This 15 credit hour program provides health care professionals with the opportunity to further their understanding of the historical, economic, financial, and strategic aspects of the health care industry.
Updated January 2014

Contact Information

Indiana University

Health Sciences Building (RG) 1050 Wishard Boulevard, Floors 5 & 6 Indianapolis, IN 46202 Phone: (317) 274-3126
Fax: (317) 274-3443
You may also contact the Fairbanks School of Public Health via email at pbhealth@iupui.edu.

Graduate Programs

At the graduate level, students can pursue advanced study in public health through doctoral and master degrees and certificates and minors.

The 90 credit Doctor of Philosophy (Ph.D.) degrees in Biostatistics, Epidemiology, and Health Policy and Management can be completed on a part-time or full-time basis. To learn more about the three Ph.D. programs, visit Richard M. Fairbanks School of Publich Health - Ph.D. programs.

The 45 credit Master of Public Health (M.P.H.) degree offers five concentrations: Biostatistics, Environmental Health Science, Epidemiology, Health Policy and Management and Social and Behavioral Sciences. The M.P.H. program is fully accredited by the Council on Education for Public Health. To learn more about the program, visit Richard M. Fairbanks School of Publich Health - M.P.H. programs.

The 51 credit Master of Health Administration (M.H.A.) degree offers advanced study in health administration. The M.H.A. program is accredited by the Commission on Accreditation of Healthcare Management Education (CAHME). The M.H.A. program is also a member of the Association of University Programs in Health Administration. To learn more about the M.H.A. program, visit Richard M. Fairbanks School of Publich Health - M.H.A programs.

The 42 credit Master of Science in Biostatistics (M.S.) degree prepares students to be data analysis professionals in the pharmaceutical industry, health care delivery, biomedical research and other quantitatively oriented fields.

The following degrees with coordinated curricula are offered on the IUPUI campus:

- M.D./M.P.H.
- D.D.S./M.P.H.
- M.S.W./M.P.H.
- M.H.A./M.P.H.
- M.A. in Bioethics/M.P.H.
- J.D./M.P.H.
- J.D./M.H.A.
- M.B.A./M.H.A.
- M.P.H/M.H.A.

Graduate certificate programs include the Graduate Certificate in Public Health (15 credits), the Graduate Certificate in Health Policy (17-18 credits), and the Graduate Certificate in Health Services Management (15 credits). To learn more about the Graduate Certificate Programs, visit Richard M. Fairbanks School of Publich Health - Graduate Certificate.

The 12 credit minors are available to students currently enrolled in doctoral programs. To learn more about the

doctoral minors available in six different areas, visit Richard M. Fairbanks School of Publich Health - Minors.

Resources

Student Consumer Information About this Program

Faculty

Paul Halverson, DrPH, FACHE Professor and Founding Dean

Emily Ahonen, PhD, MPH	Assistant Professor, Social & Behavioral Sciences Joint appointment with Environmental Health Science
Suzanne Babich, DrPH	Associate Dean for Global Health Professor, Health Policy & Management
Silvia M. Bigatti, PhD	Associate Professor, Social and Behavioral Sciences
Charity Bishop, MA	Lecturer, Department of Social & Behavioral Sciences
Kathryn Coe, PhD	Professor, Social and Behavioral Sciences
Brian Dixon, PhD, MPA	Assistant Professor, Department of Epidemiology
Tom Duszynski, MPH	Lecturer, Department of Epidemiology
Joan Duwve, MD, MPH	Associate Dean for Public Health Practice Clinical Associate Professor, Health Policy & Management
Kali D. Frost, MS, MPA	Research Associate, Environmental Health Science
Paul K. Halverson, DrPH, MHSA	Founding Dean, Richard M. Fairbanks School of Public Health Professor, Health Policy and Management
Jiali Han, PhD	Chair and Professor, Department of Epidemiology Rachel Cecile Efroymson Professor in Cancer Research Co-Director of Cancer Prevention & Control Program, IUSCC
Jaroslaw Harezlak, PhD	Associate Professor, Biostatistics
Christopher A. Harle, PhD	Associate Professor, Department of Health Policy & Management Director, HPM Doctoral Program
Chunyan He, ScD	Associate Professor, Epidemiology
Ann Holmes, PhD	Associate Professor, Health Policy & Management
Sula Hood, PhD	Assistant Professor, Social & Behavioral Sciences
Stephen Jay, MD	Professor Emeritus, Health Policy and Management
Carole Kacius, PhD	Associate Dean of Education and Training Associate Professor, Social & Behavioral Sciences
Barry Katz, PhD	Professor and Chair, Department of Biostatistics
Steven Lacey, PhD	Chair & Associate Professor, Dept. of Environmental Health Science
Paul Lang, MPA	Lecturer, Health Policy & Management Director of Health Administration Programs
Tamara Leech, PhD	Associate Professor, Social & Behavioral Health Sciences
Shanshan Li, PhD	Assistant Professor, Biostatistics
Ziyue Liu, PhD	Assistant Professor, Biostatistics
Ramon Lopez, PhD	Visiting Assistant Research Professor, Environmental Health Science
Olena Mazurenko, MD, PhD	Visiting Assistant Professor, Health Policy & Management
Nir Menachemi, PhD, MPH	Chair and Professor, Department of Health Policy & Management
Max Jacobo Moreno, PhD	Assistant Professor, Environmental Health Science
Hongmei Nan, MD, PhD	Research Associate Professor, Dept. of Epidemiology

	Director, Epidemiology Consultation Core (IUSCC)
Colleen M. O'Brien, JD, MPH	Visiting Clinical Assistant Professor, Health Policy & Management
Shahid Parvez, PhD	Assistant Professor, Environmental Health Science
Bill Pfeifle, EdD, MBA	Visiting Professor, Department of Health Policy and Management
Steven Reed, MHA	Lecturer, Health Policy & Management
Ross D. Silverman, JD, MPH	Professor, Department of Health Policy & Management
	Professor, Public Health Law (secondary appt McKinney School of Law)
Yiqing Song, MD, ScD	Associate Professor, Department of Epidemiology
	Director, Epidemiology Doctoral Program
Lisa Staten, PhD	Chair & Associate Professor, Dept. of Social & Behavioral Sciences
Gregory Steele, DrPH, MPH	Associate Professor, Epidemiology
	Director of Education, Epidemiology
Cynthia Stone, DrPH, RN	Clinical Associate Professor, Health Policy & Management
	Director, Health Policy & Management MPH Program
Nancy Swigonski, MD, MPH	Professor, Health Policy & Management
Joshua Vest, PhD, MPH	Associate Professor, Health Policy & Management
Yi Wang, PhD	Assistant Professor, Environmental Health Science
Dennis P. Watson, PhD	Assistant Professor, Health Policy & Management
	Interim Director, Center for Health Policy
Tess D. Weathers, MPH	Research Associate, Social & Behavioral Sciences
Jennifer Wessel, PhD	Assistant Professor, Epidemiology
John Woods, PhD	Health Policy & Management
Huiping Xu, PhD	Assistant Professor, Biostatistics
Constantin Yiannoutsos, PhD	Professor, Department of Biostatistics
Jianjun Zhang, MD, PhD	Associate Professor, Epidemiology
Ying Zhang, PhD	Professor, Department of Biostatistics
	Director of Education, Biostatistics
Terrell Zollinger, DrPH, MSPH	Professor Emeritus, Department of Epidemiology

Graduate Policies

The academic policies and procedure pertaining to graduate programs in the School of Public Health are available in the student handbooks on the School's Web site at www.pbhealth.iupui.edu/.

Policies and Procedures

The School of Public Health policies and procedures for undergraduate education graduate programs are applicable to all Public Health degrees and students. Questions about policies should be directed to the appropriate program director. Contact information is available at the Fairbanks School of Public Health website at: pbhealth.iupui.edu.

Undergraduate Policies

The following academic policies of the IU Richard M. Fairbanks School of Public Health are applicable to all School of Public Health undergraduate programs.

Policies for Good Academic Standing, Dismissal and Reinstatement

Good Academic Standing

Matriculation Prior to January 1, 2012: Students are in good academic standing when their semester and their cumulative grade point averages are 2.0 or above, and their grade point average in all courses included in the School of Public Health major requirements is at least 2.3. Students must be in good academic standing to graduate.

Matriculation Beginning January 1, 2012: Students are in good academic standing when their semester and their cumulative grade point averages are 2.5 or above. Students must be in good academic standing to graduate.

Probation

Matriculation Prior to January 1, 2012: A student will be placed on academic probation if his/her cumulative or semester grade point average is below 2.0 **or** if his/her Schoolof Public Health major GPA falls below 2.3. In order for the major GPA to be considered, students must have completed 12 or more credit hours in the major. If a student is not making satisfactory progress toward a

degree at the conclusion of the probation semester, the student may be dismissed from the School.

Matriculation Beginning January 1, 2012: A student will be placed on academic probation if his/her cumulative or semester grade point average is below 2.5. If a student is not making satisfactory progress toward a degree at the conclusion of the probation semester, the student may be dismissed from the School.

Critical Probation

Matriculation Prior to January 1, 2012: Under special circumstances, students may be placed on critical probation. If the student is given the opportunity to enroll under critical probation, the Undergraduate Academic Progress Committee will establish strict conditions that must be met before the student will be allowed to register for future classes. Students who fail to return to good standing at the conclusion of critical probation may be dismissed from the academic program.

Matriculation Beginning January 1, 2012: Under special circumstances, students may be placed on critical probation. If the student is given the opportunity to enroll under critical probation, the Undergraduate Academic Progress Committee will establish strict conditions that must be met before the student will be allowed to register for future classes. Students who fail to return to good standing at the conclusion of critical probation may be dismissed from the academic program**.**

Dismissal

Matriculation Prior to January 1, 2012: If in the opinion of the Undergraduate Academic Progress Committee, a student is not making satisfactory progress toward his/her degree, he/she may be dismissed. Dismissed students will have their upcoming semester courses cancelled.

Matriculation Beginning January 1, 2012: If in the opinion of the Undergraduate Academic Progress Committee, a student is not making satisfactory progress toward his/her degree, he/she may be dismissed. Dismissed students will have their upcoming semester courses cancelled.

Reinstatement: Students who have been formally dismissed may appeal their dismissal. Students who have been formally dismissed must apply to the Undergraduate Academic Progress Committee for reinstatement. Students who have been dismissed are not eligible for reinstatement until at least one full regular semester (spring or fall) has passed since the dismissal.

Students petitioning for reinstatement must demonstrate by their petitions that they have prepared themselves to succeed in their studies at IUPUI.

Reinstatement is not automatic and depends on a determination that the student will succeed. This determination is based on a careful review of the student's grades leading up to the dismissal, the students' reinstatement petition, and any other relevant information. Before being reinstated, students may be required to participate in testing, advising, workshop sessions, or other activities designed to enable the student to succeed academically.

Policies for Dean's List, Grading, Grade Replacement, Grade Appeal, Incomplete, Withdrawal, Forgiveness

Dean's List: Students who are enrolled in 6 or more hours of coursework are named to the Dean's List if they have earned a GPA of 3.5 or higher for the fall or spring terms. Courses must be taken for a letter grade; pass/fail credit hours are not counted in the Dean's List determination. The Dean's List is not computed for the summer sessions. Students with a grade of incomplete cannot be named to the Dean's List until the incomplete is removed.

Grading Policies: The School of Public Health follows the official grading system of Indiana University, described in the introductory section of the bulletin.

Grade Replacement: The School of Public Health students who have retaken a course (must be same department and course number) may request to have only the last grade computed in their grade point average. If a student earns the same or a higher grade after repeating a course, only the second grade will be counted in the GPA. Students may replace five grades for a total of 15 credit hours. Replacement does not occur automatically. Students must notify the School of Public Health recorder that the course has been taken a second time and that they wish to use grade replacement for the course.

Grade Appeal: A student may appeal a course grade at the completion of a course to resolve a grade discrepancy or a grade dispute. The appeal must be made within 90 days of the date when the grade was issued. In those rare instances when a student is unable to contact the professor who issued the grade, the student must give a notice of intent to appeal the grade within 90 days of the date when the grade was issued. The appeal should be made to the Director of Undergraduate Education.

Incomplete: A grade of incomplete must be removed within the time specified by the instructor of the course; if not, the grade automatically changes to an F one calendar year after the Incomplete was given.

Withdrawal: Students must formally withdraw from courses in the timeframe allowed by the Registrar's office. This information can be found at the IUPUI Office of the Registrar.

Forgiveness Policy: This policy applies to former IU students pursuing a first undergraduate degree who have been away from the IU system and have not attended any other college or university, including any campus of IU, for the last five years. This policy, which first became available to students returning to IUPUI in the fall of 1996, states that students may apply for forgiveness upon application for admission to a degree-granting unit. If the student has not yet been admitted to a degree-granting unit, the student should submit a notification of intent to petition for academic forgiveness as part of the academic advising process. If the petition is approved, the student starts with a fresh cumulative grade point index, after which all the rules of academic probation and dismissal (for the School of Public Health) will apply. The School of Public Health will evaluate the student's transcript, and all courses taken previously will remain on the permanent record. Only credit hours for courses with grades C or above, P, or S may be counted toward degree completion. After approval, the student must complete a minimum of

32 credit hours on the IUPUI campus in order to meet the graduation residency requirement.

Policies for Student Rights and Responsibilities, Confidentiality, and Academic Integrity

Student Rights and Responsibilities: The School of Public Health fully supports the rights and responsibilities of students as defined in the IUPUI *Code of Student Rights, Responsibilities, and Conduct*. The *Student Code* spells out the expectations for faculty and students, and it provides the framework for the School of Public Health's judicial process, which can be accessed at the School of Public Health website.

A student is entitled to rights in the pursuit of his or her education; freedom from discrimination and harassment; and freedom of association, expression, advocacy, and publication. A student also has the right to contribute to University governance, to receive accommodations for disabilities, and to access records and facilities. In accordance with federal law, student records are confidential and are available to other persons only under specific conditions as outlined in university regulations.

A student is responsible for upholding and following all applicable codes of conduct, including the IUPUI Student Code and course policies on classroom etiquette and disorderly conduct, and for obeying all applicable policies and procedures and all local, state, and federal laws. A student is responsible for facilitating the learning process, attending class regularly, completing class assignments and coming to class prepared. In addition, a student is responsible for planning his or her own academic program, planning class schedules, and for meeting the requirements for his or her degree or certificate programs. Faculty and academic advisors are available to assist students in meeting degree requirements. A student is responsible for maintaining and regularly monitoring his or her university accounts including e-mail and bursar accounts. A student is responsible for using university property and facilities in the pursuit of his or her education, while being mindful of the rights of others to do the same. A student is responsible for upholding and maintaining academic and professional honesty and integrity.

Confidentiality of Student Records: In accordance with Indiana University regulations, student records are confidential and are available to other persons only under specific conditions as outlined in university regulations.

Academic Integrity: Academic integrity is a basic principle of intellectual life that holds students responsible for taking credit only for ideas and efforts that are their own. Academic dishonesty violates that principle and undermines the bonds of trust and cooperation among members of the university community, and it is not tolerated. Academic misconduct includes cheating, fabrication, plagiarism, interference, violation of course rules, and facilitating academic dishonesty. Students are responsible for knowing what behaviors and activities constitute these different forms of academic misconduct. Penalties and procedures that are applicable when academic misconduct or dishonesty occurs are described in the IUPUI *Code of Student Rights, Responsibilities, and Conduct.* More information about the Department of Public Health policy and procedures is available by linking to Academic Integrity.

Sex Offenders Screening Policy for Students/ Applicants: Students and applicants should be aware that criminal convictions may result in ineligibility for participation in certain courses/activities within the School of Public Health. Questions regarding the School's policy on such matters should be addressed to the appropriate program director.

Policies Concerning Degree Requirements

Applicability of Degree, Certificate and Minor Requirements Students may choose to complete either the specific degree, certificate, or minor requirements published in the appropriate bulletin at the time of entry into the university or those in the bulletin current at the time of graduation.

Application for Degree: All students must fill out an application for degree at the School of Public Health records office. This application should be completed by September 10 for a December graduation, or January 10 for a May or August graduation.

Degree Completion: Students are expected to complete the requirements for their undergraduate degree within 10 years of admission to the School of Public Health. Students are allowed to continue beyond this time period only at the discretion of the Director of Undergraduate Education. If a student has not taken classes for three years or more, he/she must satisfy program requirements of the School of Public Health in effect at the time of reactivation. Requests for deviation from requirements listed in the bulletin must be approved in writing by the Director of Undergraduate Education, whose decision is final.

Course Substitution and Course Waiver Requests for course substitutions and course waivers must be made to the faculty advisor.

Degrees Awarded with Distinction The Department of Public Health recognizes outstanding performance by awarding bachelor's and associate degrees with three levels of distinction to students who rank in the upper 10 percent of their Department of Public Health graduating class by major and have completed a minimum of 60 hours at Indiana University for a B.S. The levels of distinction are as follows: highest distinction, 3.90 and above; high distinction, 3.70 through 3.89; distinction, 3.50 through 3.69.

Double-Counting Generally, courses taken to meet a specific degree requirement cannot be double-counted (i.e., used to satisfy any other degree requirement). Students earning a School of Public Health major, minor, or certificate may double-count two courses across any allowable combination of these programs. The following restrictions apply: 1) students are limited to two minors and 2) School of Public Health students may not earn a certificate or minor in the same area as their major.

Grade Point Average Requirement

Matriculation Prior to January 1, 2012. A minimum cumulative GPA of 2.0 is required for the Bachelor of Science degrees. In addition, a School of Public Health major GPA of 2.3 must be maintained in order

to graduate. For students seeking certificates or minors from School of Public Health, the minimum GPA requirement is 2.0 in all applicable course work.

Matriculation Beginning January 1, 2012. A minimum cumulative GPA of 2.5 is required for the Bachelor of Science degrees.

Hours Requirement: Students must successfully complete a minimum of 120 credit hours for most Bachelor of Science degrees. Students may transfer no more than 90 credit hours (60 credits from a junior college) toward a Bachelor of Science degree. Class standing, based on total credit hours that count toward minimum degree requirements, is as follows: senior, 86 or more; junior, 56-85; sophomore, 26-55; freshman, fewer than 26.

Independent Study Credit: With prior approval, a student may take three courses totaling no more than 10 credit hours by **correspondence** through the IU Division of Extended Studies, Independent Study Program. Under no circumstances may a student satisfy a major requirement by correspondence.

Internship Credit: With School of Public Health faculty approval, a student in good standing may earn a maximum of 15 credit hours of elective credit through the Department of Public Health **internship** program. The School of Public Health internship program is described in more detail at the Department of Public Health website.

Other Academic Programs: School of Public Health students may choose to pursue a **minor** or **certificate** from another school or department or within School of Public Health in an area other than their degree or major. Students interested in a minor should contact that department for additional information.

Pass/Fail Credit Deadlines for exercising this option are published on the Registrar's office website (http://www.registrar.iupui.edu) and are strictly enforced.

Matriculation Prior to January 1, 2012. A student in good academic standing may choose to take a maximum of eight elective courses (two per academic year) **Pass/Fail** for a B.S. degree.

Matriculation Beginning January 1, 2012. A student in good academic standing may choose to take a maximum of four elective courses (one per academic year) but not to exceed 12 credit hours total **Pass/Fail** for a B.S. degree.

Requirements for a Second Bachelor's Degree: Students must petition the School of Public Health for approval to work toward a second bachelor's degree. If permission is granted, students are required to take a minimum of 30 credit hours beyond the credits used for the first bachelor's degree and to satisfy all the requirements for the second degree. Generally, the School of Public Health encourages students to work toward a graduate degree or graduate certificate rather than a second bachelor's degree. Petitions should be submitted to the Undergraduate Program Committee.

Honors College and Accelerated Master's Programs

The School of Public Health has two programs for academically talented students. Both programs provide students with an opportunity to earn advanced degrees in an accelerated timeframe.

Honors College Professional Admissions Program (HPS) - The HPS program provides incoming freshman with an opportunity to earn the bachelor's and master's degrees in five years, rather than six years. This option is available for students interested in environmental health or health administration. For more information about admission requirements, contact the IUPUI Honors College at http://honorscollege.iupui.edu/about/.

Accelerated Master's Program (AMP) - The Accelerated Master's Program is a competitive program for outstanding School of Public Health students who are seeking an advanced degree in health administration or environmental health. Participation in this program allows students to fulfill some graduate program requirements as undergraduates, and the graduate courses count for both graduate and undergraduate degree requirements. Students seeking admission to these programs must have at least 60 credit hours in the IU system at the time of admission and a cumulative GPA of 3.5 at the time of admission. For additional information students should contact the program director or academic advisor.

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