2020 GH Approved Skill Based Methods Courses Guide

Our goal as a Department is to strengthen your capacity to be an effective change agent when working in the global public health arena. To this end, we have identified a set of skill-based methods courses that will teach you how to plan, implement, monitor, evaluate, present, or analyze data. Listed below are the courses that have been approved by our faculty as meeting this criterion.

Course	Cr	Sem	Title	Learning Objectives	Area	Trajectory	Notes
GH 502	2	FALL	Intro to Quantitative Data Collection	1.Understand and explain the importance of representative surveys 2.Explain the steps involved in conducting a survey 3.Describe the steps of survey development and how each is important 4.Plan appropriate sampling designs and conduct sample size calculations 5.Recognize appropriate methods for maintaining high data quality 6.Evaluate the quality of a survey and make recommendations for improvements 7.Develop a questionnaire 8.Plan the protocol for a representative survey 9.Develop a budget for primary data collection and analysis 10.Prepare a work plan for primary data collection	Research Methods, Surveys	M&E, Programs, Research	FALL BREAK COURSE - 2nd Students or permission from instructor
GH 503	3	SPRING	Quantitative Data Collection	1.Understand and explain the importance of representative surveys 2.Explain the steps involved in conducting a survey 3.Describe the steps of survey development and how each is important 4.Plan appropriate sampling designs and conduct sample size calculations 5.Recognize appropriate methods for maintaining high data quality 6.Evaluate the quality of a survey and make recommendations for improvements 7.Develop a questionnaire 8.Plan the protocol for a representative survey 9.Develop a budget for primary data collection and analysis 10.Prepare a work plan for primary data collection	Research Methods, Surveys	M&E, Programs, Research	Choice of requirements for the GH methods courses
GH 509	2	SPRING	Translation and Implementation Science	1. Use and interpret evidence to inform/support interventions, policies or programs 2. Learn about tools that help in designing, implementing and evaluating suitable translation projects/programs/research: a. Implementation frameworks b. Implementation research study designs and methods c. Intervention design, adaptation, implementation, and evaluation d. Organizational design, stakeholder engagement, and scalability 3. Analyze real-life case studies of research-based, social entrepreneurial, government-driven, or non-profit organization interventions to understand how knowledge is applied to policies and practice 4. Obtain a multi-disciplinary understanding of health problems, policy issues, and development 5. Understand the interconnectedness of political, economic, cultural, and structural environments and systems into which health interventions are to be introduced and maintained	Research Methods	M&E, Programs, Research	

GH 510	2	SPRING	Epidemiological Methods in Complex Humanitarian Emergencies	1. Determine which epidemiological methods are most appropriate for different phases of complex humanitarian emergencies (CHEs) 2. Appreciate how to rapidly assess the needs of a population following an emergency 3. Understand the fundamental principles of surveillance and become familiar with methods commonly used by field practitioners 4. Design a cross sectional survey for a population in complex humanitarian settings 5. Identify an outbreak of diseases of public health importance and response accordingly 6. Understand how to estimate the population of refugees or IDPs 7. Have a working knowledge of new methods using in complex humanitarian emergencies	Complex Humanitarian Emergencies	Research (Focused Topic)	Spring Break. Pre-requisite GH 512, BIOS 500, EPI 530. CHE certificate core
GH 513	3	SPRING	Community Based Participatory Action Research	1. Identify core principles of CBPAR and other community-based, participatory, and action-oriented approaches to research 2. Apply community-based and participatory strategies to identify, analyze and document a public health issue of concern 3. Apply participatory and action-oriented methods in planning, implementing and evaluating community based public health research and programming 4. Demonstrate group facilitation skills 5. Demonstrate skills in critical reflection regarding the researcher's role in participatory research processes 6. Evaluate ethical considerations involved in participatory methods 7. Demonstrate effective communication, dissemination and presentation skills, specifically how to give and receive constructive feedback and generate public dialogue	CHD	Programs, Research	Choice of requirements for the CHD concentration
GH 514	2	SPRING	Social and Behavioral Change Commuication	1. Describe a range of relevant web-based resources, prominent agencies and projects 2. Demonstrate a critical understanding of the role of an outside "change agent" in a resource-poor and/or post-colonial context 3. Compare health communication approaches, including highly participatory and more vertical, strategic approaches, appropriate to a range of health-related issues in a "developing world" context 4. Apply basic constructs from key behavioral and social change theories 5. Apply a toolbox of methods for use in the planning, development and implementation of health communication programs 6. Recommend channels and media, both traditional and modern, appropriate to audience, resources and program objectives in urban and rural "developing world" contexts 7. Critique existing health communication materials and programs 8. Design a context-specific communication strategy to address an issue of public health importance, incorporating a basic monitoring and evaluation plan	Health issues, from child survival to domestic violence Sexual and Reproductive Health, Health Communications, HIV/AIDS	Programs, Policy	
GH 517/ EPI 517	2	FALL	Case Studies in Infectious Disease Epidemiology	1. Learn how to choose the appropriate methods, such as prevalence surveys, incidence surveys, and environmental microbiologic studies, for obtaining data in specific infectious disease problems 2. Construct from unorganized surveillance data appropriate line listings to describe pertinent data about infection episodes and risk factors for their occurrence 3. Characterize descriptive epidemiologic features (time, place, person), and summarize appropriate measures of risk and association, in infectious disease investigations 4. Describe and use concepts of reservoirs, sources, modes of acquisition and spread, incubation periods,communicability, and vectors in the analysis of infectious disease problems and in the design of measures for their control and prevention 5. Construct simple models of infectious diseases and use these models for predicting results of proposed control measures	Infectious Disease Epidemiology taught by a case study method	Research (Focused Topic)	Pre-requisite/ concurrently:EPI 530 and BIOS 500- Crosslisted with EPI 517

Course	Credits	Term	Title	Learning Objectives			
GH 521	3	FALL	Program Management	1. Apply principles of management theory to management cases and to actual health program settings and programs 2. Judge the value of case learning to the study of management 3. Assess your group participation and leadership profile 4. Apply your group dynamics skills through group exercises and projects 5. Develop budgets 6. Apply the tools of financial management in a nonprofit organization 7. Understand the components of comprehensive human resources management system 8. Apply negotiation and mediation skills to address organizational or community challenges 9. Contrast management challenges in public, nonprofit organizations and for-profit businesses 10. Understand and apply the concepts, principles and tools of quality management 11. Distinguish between program management and project management 12. Apply selected tools of project management	M&E, Programs,	M&E, Programs,	Required course for CHD, 2nd years ONLY.
GH 522	3	SPRING	Qualitative Research Methods	1. Distinguish research paradigms for quantitative and qualitative research 2. Understand theoretical and ethical principles guiding qualitative research 3. Design a rigorous and feasible qualitative research project 4. Design research instruments for different qualitative methods 5. Conduct an in depth interview and a focus group discussion, prepare data transcripts and critique qualitative data collection tools 6. Review qualitative data and synthesize preliminary issues 7. Anticipate challenges in implementing qualitative research in international settings	General Methods. Qualitative Methods	Research Methods Evaluation	Choice of requirements for the GH methods courses
GH 523	3	FALL	Quantitative Data Analysis	1. Develop a hypothesis that is supported by the literature 2. Design a research strategy to quantitatively assess the hypothesis 3. Describe threats to validity in relation to proposed research strategy, and propose solutions to address these threats 4. Identify existing quantitative datasets to address a research questions relating to population health issues 5. Conduct statistical analysis following a research strategy 6. Critically read and interpret peer-reviewed manuscripts and popular press reporting 7. Document results of statistical analysis for an academic audience (peer-reviewed manuscript) 8. Present findings orally for a community audience	General Methods. Quantitative Methods	Research Methods Evaluation	Prerequisites: EPI 530 and BIOS 500. GH 503 strongly recommended.
GH 524	2	SPRING	Health Systems Performance and Health Systems Financing: Methods and Evidence	1. Articulate the relationship between health systems reform and health systems reform 2. Explain 5 methods used by countries to finance health servicesIdentify and appraise the incentives faced by patients, providers and payers in each financing system 3. Assess the performance of health systems with respect to efficiency, effectiveness, equity and stewardship 4. Compare and contrast the performance of health systems in countries at different stages of economic developmentJudge the adequacy and empirical basis for selective policy interventions related to health and economic development 5. Critically analyze the relationship between income and health status across a mix of countries 6. Recognize and critique stated and unstated assumptions in financing methodologies 7. Debate the findings of the World Health Report 2000 and its implications for ranking health systemsAnalyze key policy data sets on national health accounts, debt statistics, poverty data, income and health inequality data	Health Care Financing, Programmatic Work, Community Health, Development	Research, Program (Focused Topic)	Pre-requisite: GH 501

GH 525	3	FALL	Qualitative Data Analysis	1. Understand the theoretical principles of qualitative data analysis 2. Know how to prepare data for analysis, and use the analytic tools of description, comparison, categorizing, conceptualizing and theory development 3. Understand the role of software programs in data analysis and use MAXQDA 4. Apply skills developed in the course to analyze a qualitative data set 5. Develop skills in writing and presenting qualitative research findings 6. Identify how to evaluate qualitative data analysis	General Methods. Qualitative Methods	Research, M&E	Pre-requisite: GH 522.
GH 529	2	FALL	Water and Sanitation in Developing Countries	1. Describe major environmental transmission routes of infectious agents 2. Describe and apply appropriate strategies to prevent and control infectious disease- including vaccines, antimicrobial therapy, behavior changes, and environmental interventions 3. Evaluate effectiveness of interventions to control or prevent infectious disease 4. Recognize, evaluate, and control environmental health hazards 5. Identify environmental health problems in low- and middle-income countries related to water, sanitation, and hygiene 6. Characterize and quantify exposures to microbial and chemical contaminants 7. Evaluate behavioral and socio-economic factors that affect environmental exposure 8. Identify appropriate technologies and interventions for addressing environmental health threats in resource-limited settings 9. Plan community interventions to address environmental hazards 10. Assess community-level water and sanitation access, use, and needs while considering cultural norms 11. Identify appropriate water and sanitation interventions based on community social, economic, and environmental characteristics 12. Describe the process for working with local government, NGOs, and community members to develop local water and sanitation projects 13. Develop and conduct a water quality monitoring project 14. Conduct a process and outcomes evaluation for water and sanitation projects 15. Develop training and educational programs for water, sanitation and hygiene interventions	Environmental Health, Infectious Diseases, Water and Sanitation	Program (Focused Topic)	WASH certificate class
GH 530	2	SPRING	The GEMMA Seminar: Global Elimination of Maternal Mortality from Abortion	1. Characterize the role of unsafe abortion in global maternal mortality 2. Develop a well-informed project that has potential to make significant progress toward GEMMA 3. Clarify personal values on abortion 4. Become an informed advocate for eliminating maternal mortality from abortion	Research Methods, Surveys	Research, Program	
GH 535/ EPI 531	2	SPRING	Field Epidemiology	1. Understand the basic principles of applied epidemiology as practices in the files of investigation of diseases 2. Understand the principles of descriptive epidemiology 3. Appreciate the roles of the laboratory in the investigation 4. Able to develop a hypothesis 5. To know when an analytic epidemiology study should be initiated 6. To be familiar with the evaluation of the control and prevention measures 7. To know when to initiate control and/or prevention measures 8. To be able to confirm the existence of an epidemic 9. To be able to prepare for the initiation of the field investigation 10. To be able to develop a case definition and a case reporting form 11. Collect case data on the form 12. Describe the collected data by time, place and person 13. Identify the agent, method of transmission, and the susceptible host factors 14. Develop an hypothesis or initiate an analytic epidemiological study 15. Determine the appropriate control and/or prevention factor and initiate them	Surveillance and Descriptive Epidemiology	Research, M&E	Pre-requisites:EPI 530 or permission from instructor. Crosslisted with EPI 535

GH 543	2	FALL/ SPRING	Fundamentals of Qualitative Data Analysis	1. Assess the quality of a qualitative data set 2. Define appropriate objectives for a specific analysis project 3. Develop an analysis plan using appropriate analytic tools (e.g. segments, codes, memos, attributes) 4. Apply analytic tools to textual data in individual and team settings 5. Develop descriptive and comparative accounts of project findings 6. Apply these skills using MAXqda10 qualitative data analysis software	Research Methods. Qualitative Methods	Research, M&E	Pre-req: GH522 or equivalent. Short course
GH 544	2	FALL	Field Trials and Intervention Studies	1. Describe the different types of interventions and intervention development process 2. Design a simple field trial: a.Outline trial objectives and primary and secondary endpoints b.Compute sample size and estimate power c.Outline eligibility criteria d.Choose appropriate population e.Develop randomization and masking procedures f.Outline enrollment and follow up procedures 3. Analyze trial data including data for interim analysis 4. Design case report forms and outline a trial data management system 5. Describe regulatory requirements for conducting trials 6. Develop consent forms and informed consent procedures 7. Develop a study oversight plan; including plan for a Data Safety Monitoring Board (DSMB) 8. Write a report of study results per CONSORT guidelines	Methods to community and facility based trials in resource poor settings	Research, M&E	Prerequisite / EPI 530 .
GH 545	3	SPRING	Nutritional Assessment	1. Students will be able to perform and evaluate anthropometric assessment of growth and body composition 2. Students will be able to collect and analyze various diet assessment methods (i.e. food recall and food frequency questionnaire) 3. Students will be able to discuss preparation and storage of various lab specimens 4. Students will be able to assess hematocrit as well as evaluate lab values for various nutrients 5. Students will be able to calculate the magnitude, distribution and trends of nutrition problems in populations by learning how to assess national food intake data 6. Students will learn rigorous nutrition research techniques by learning best practices for various nutrition assessment methods both domestically and internationally	Nutrition Methods, Nutritionist Pro Diet (Diet assessment software)	M&E, Programs, Research	Choice of requirements for the PN concentration
GH 555	2	SPRING	Proposal Development	1. Design research aims and objectives for a new or existing research project or public health program that addresses a specific public health problem using quantitative and/or qualitative evaluation methods 2. Plan data collection, methods, and fieldwork activities for a feasible and credible project 3. Compose a proposal that effectively communicates all major components of the project and follows all directions for the specific proposal	Research Methods, Surveys	M&E, Programs, Research	

GH 560	3	SPRING & FALL	Monitoring and Evaluation of Global Health Programs	1.Understand the basic concepts of program theory of change, including development of a logic model and intervention mapping 2.Develop a logframe that includes SMART indicators, with appropriate means of verification, and relevant assumptions and risks 3.Understand the key role of implementation research & process evaluation in assessing context, program fidelity and compliance 4.Develop a system for results-based monitoring & adequacy evaluation 5.Differentiate the advantages and disadvantages of counterfactual and comparison groups in probability and plausibility impact evaluations 6.Apply randomization, matching, and difference-in-difference, and full coverage evaluation approaches 7.Develop a coherent sampling frame, sampling strategy and calculate an appropriate sample size 8.Understand key concepts of M&E, including data visualization and choosing the right evaluation approach	Programmatic Work, community Metrics, Evaluation research	M&E, Programs, Research	Choice of requirements for the GH methods courses
GH 565	2	SPRING	Developing Monitoring and Evaluation Plans for Public Health	1. Design programs that mobilize community assets for social and behavioral change 2. Manage the resources of organizations working at the community, local, regional or national level in health or development. 3. Assess personal management and leadership styles. 4. Operate in partnership with local, national and international organizations engaged in the health and social sectors 5. Develop systems to monitor progress toward targets, objectives, and goals 6. Evaluate programs and their operational components	Programmatic Work, community Metrics, Evaluation research	M&E, Programs, Research	Spring Break Course
GH 568	3	SPRING ALT YEARS	Community Engaged Food Security	1. Map the underlying and primary determinants of food choices and food access and describe the associations between them 2. Identify public health, nutrition and community development outcomes that are directly and indirectly related to food insecurity and low food access 3. Assess methodologies to monitor and evaluate community food systems, food availability and accessibility 4. Evaluate local, domestic, and international strategies that affect the availability of, access to, and choice for healthy, local, fresh food 5. Apply relevant methods to: a. Assess food insecurity and low food access among marginalized communities in the Atlanta area b. Identify the determinants of access and availability of healthy foods in these populations and/or c. Recommend sustainable and equitable strategies to address food insecurity 6. Engage stakeholders, community partners, and community members in dialogue to characterize access and availability healthy, fresh foods in marginalized and/or food desert communities in metro-Atlanta 7. Engage in dialogue on barriers and facilitators to accessing healthy sustainable foods 8. Identify feasible / effective strategies to improve access to healthy and local foods in the Atlanta area	Nutrition, Community Health	Programs, Research	Class is offered alternatively with GH 567, Food Policy.

						Research	
GH 569	2	FALL	Population Dynamics, International Development and Health	Students will about how issues such as economic growth, environmental change, international politics, and culture interact with population forces such as fertility, aging, mortality, and migration, in ways that affect health and public health practice. The course will provide an introduction to concepts and methods from demography to basic data analysis using Stata. Training will include lectures and structured debates, reading and discussion of published research and policies, and critical research and writing.			
BIOS 501	4	SPRING	Statistical Methods II	1. Addresses estimation and hypothesis testing within the context of the general linear model 2. Examines in depth the analysis of variance, multiple regression, and logistic regression 3. Previews select advanced techniques. BIOS 501 picks up where BIOS 500 leaves off, and provides students who have already mastered fundamental concepts with an opportunity to develop mastery of more advanced techniques and concepts 4. Statistical modeling is used in every aspect of public health, from forecasting models applied to data for policy and management, to modeling relationships between exposures and outcomes while adjusting for confounders in environmental, behavioral and epidemiological studies 5. Students in this course will develop the analytical skills, but also through the midterm project, receive critical training in technical writing and manuscript preparation under game conditions with a real-world dataset 6. Students will be exposed to messy data problems like missing and mismeasured data, non-normal outcomes, data management issues and model selection decisions – all of which are commonplace in public health research settings	Statistical Methods	Research, M&E	Pre-requisite: BIOS 500. Uses SAS. Data analysis beyond simple descriptive statistics and basic T-tests.
BIOS 502	4	FALL	Statistical Methods III	1. Calculate, interpret and present selected descriptive statistics (specifically for longitudinal data) 2. Compute selected inferential statistics (e.g., confidence intervals, hypotheses testing as applied to longitudinal data) 3.Use computer statistical software for both data management and data analyses 4. Assist in the interpretation of study results 6. Communicate the results of the study both orally and in writing 7. Understand and adhere to guidelines of responsible research 8.Issues involved with the analysis of repeated measures data, particularly missing data, are also covered	Statistical Methods	Research	Pre-requisite: BIOS 500 and BIOS 501.
BIOS 522	2	FALL	Survival Analysis	1. Students will understand the basic theoretical concepts underlying survival analysis 2. Students will learn to analyses survival data using the most important statistical techniques, such as the Kaplan Meier method, the logrank test and Cox regression 3. Students will learn to use computer software packages, such as SAS and R, to analyze real-life survival data 4. Students will learn to interpret the results of their analyses and communicate them to researchers from other medical and health-related fields	Statistical Methods	Research	Pre-requisite: BIOS 500 and BIOS 501
BIOS 544	2	FALL	Introduction to R	The goal of the course is to will provide an introduction to R in organizing, analyzing, and visualizing data. Once you've completed this course you'll be able to enter, save, retrieve, summarize, display and analyze data. Learning Objectives: 1. Utilize information technology tools and statistical programming packages in preparing scientific reports 2. Apply descriptive techniques commonly used to summarize public health data	Statistical Methods	Research, M&E	Fall section if for non BIOS students

Course	Credits	Semester	Title	Description	Column 6	Column 7	Pre-requisite
BIOS 550	2	FALL and SPRING	Sampling Applications	BIOS 501 picks up where BIOS 500 leaves off, and provides students who have already mastered fundamental concepts with an opportunity to develop mastery of more advanced techniques and concepts. Statistical modeling is used in every aspect of public health, from forecasting models applied to data for policy and management, to modeling relationships between exposures and outcomes while adjusting for confounders in environmental, behavioral and epidemiological studies.

Students in this course will:
1. Develop the analytical skills, but also through the midterm project, receive critical training in technical writing and manuscript preparation under game conditions with a real-world dataset
2. Be exposed to messy data problems like missing and mismeasured data, non-normal outcomes, data management issues and model selection decisions – all of which are commonplace in public health research settings | Complex sample design | Research, M&E | Pre-requisite: BIOS 500 and BIOS 501. The class shows the analyses up in SUDAAN and SAS. |
| EH 515 | 2 | SPRING | Air Quality in the Urban Environment | 1. Identify the key urban air pollutants based on their physical and chemical properties and their impact on human health and the environment
2. Identify the major sources of urban air pollution, their trends, fate and transport in the atmosphere
3. Perform basic air pollution calculations to estimate ambient concentrations of pollutants
4. Interpret and utilize online databases of air pollution monitoring information
5. Understand the role of meteorological factors and photochemistry in the formation and dispersion of urban air pollution
6. Display familiarity with methods for measuring urban air pollution including direct sampling and modeling techniques
7. Demonstrate knowledge of the role of air pollution exposure assessment in promoting environmental health | Environmental Health, General environmental exposures, Air quality research | Research (Focused Topic) | |
| EH 524 | 2 | FALL | Risk Assessment I | 1. Become familiar with common methods and assumptions used in environmental (human) health risk assessment
2. Examine motivations of various stakeholders involved in risk estimation activities (e.g. government, industry, the press and the concerned public), and how those motivations influence risk perceptions
3. Understand how risk assessment is used by various groups and U.S. agencies, and how that use may change in the future
4. Develop skills in evaluating the uses and limitations of human health risk descriptions and gain experience with methods to characterize the uncertainties | Environmental Health, Risk assessment methods | Research (Focused Topic) | |
| EH 527 | 2 | SPRING | Biomarkers and Environmental Public Health | The study of human susceptibility to environmental toxic chemicals is about to undergo a major transformation as the new knowledge of how toxic chemicals behave in the boy is becoming more readily available. Coupled with the advances Human Genome Project and the ecogenetic research programs, the use of biomarkers will allow us not only to accurately assess the exposures to those toxic chemicals, but to predict the resulting adverse health outcomes as well. This course is designed to introduce the use of biomarkers in environmental public health from qualitative and quantitative perspectives. | Methods in EH. | | |
| EH 530 | 3 | SPRING | Environmental and Occupational Epidemiology | Reviews basic epidemiological principles and presents issues unique to environmental and occupational health, such as healthy worker effect, industry and occupation coding, and job-exposure matrices. Considers the relation of epidemiological evidence to risk assessment. Students review and critique a number of published articles. Meanwhile, policy discussions will emphasize how scientific evidence based on these methods is injected into policy debates. Topics will include issues of scientific consensus, objectivity, uncertainty and the ethics of scientist advocacy. The course will cover the impact of environmental change on the practice of environmental epidemiology; problems and opportunities in using models to project impacts; the necessity of, and strategies for, interdisciplinary work; strategic concerns in emerging areas of public health practice; challenges deriving policy on issues of great importance and cost; the role of health scientists in determining adaptation funding priorities, technology transfers and global treaties; and applied public health tools, including vulnerability assessments and health impact assessments. | | | Pre-requisite: EPI 530 |

Course	Credits	Term	Title	Description / Objectives			
EH 548	2	SPRING	Research Methods for Studies of Water and Health	1. Understand key issues in designing studies of water and health 2. Learn theory behind and how to carry out microbiological assessment of water quality 3. Learn theory behind and how to carry out physiochemical assessment of water quality 4. Learn how to carry out field evaluation of water treatment technologies 5. Learn how to carry out observational studies & observational techniques 6. Learn how to design surveys specific to studies of water & health 7. Learn how to carry out interviews and focus group	Methods in EH. WASH	M&E, Programs, Research (Focused Topic)	GH 529 is a pre-requisite
EHS 747	2	FALL	Advanced Environmental EPI	1. Apply epidemiologic methods learned in previous coursework to real study situations 2. Gain experience reading and understanding scientific journal articles 3. Learn new designs and methods of analysis commonly used in environmental/occupational epidemiology 4. Consider design constraints grappled with by epidemiologists performing studies of environmental/occupational health questions 5. Analyze real data from environmental/occupational epidemiology studies 6. Learn about appropriate interpretation of results of environmental/occupational epidemiology studies 7. Design an epidemiologic study to address an environmental/occupational health question 8. Defend a study proposal before peer reviewers Act as a peer reviewer of environmental/occupational epidemiology study proposals	Applied Epi methods in Environmental and Occupational Health	Research (Focused Topic)	Pre-requisite: EPI 530, BIOS 500, BIOS 501; EPI 534 is also preferred. Crosslisted with EPI 747
EHS 750	3	SPRING	The Environmental Determinants of Infectious Disease	This course takes a global perspective, exploring the diverse environmental phenomena that influence the transmission of infectious diseases. Complex dynamics, feedbacks and spatial flows inherent in the transmission of environmentally driven infectious diseases are examined, focusing on vector-borne diseases, tropical parasites and waterborne pathogens. The epidemiological significance of environmental processes are explored, including weather, climate extremes, hydrology, development projects, and land use change. Anthroponotic and zoonotic diseases of global significance are examined with respect to how environmental factors shape their distributions, intensity, environmental fate, transport, and persistence. The specific epidemiological consequences of climate change, dams, irrigation, agricultural intensification and de/reforestation are emphasized, and analytical tools for their study presented and critiqued, including methods for modeling coupled environmental-epidemiological systems. **Former title: EH 585, Public Health Ecology: The Environmental Determinants of Infectious Disease.**			
EHS 760	2	SPRING	Advanced Risk Assessment	Prerequisite: EH 524. Complements Risk Assessment I (EH 524) by educating and training students in the process of risk assessment, risk model selection, and use of toxicology and environmental informational databases in solution to risk assessment calculations and determinations. Former name: EH 525, Risk Assessment II.			Pre-requisite: EH 524
EPI 533	1	SPRING	Programming in SAS	This is an applied computer course that provides an introduction to the SAS programming environment and instructs students in the techniques needed to enter data into a database and to properly organize and edit data into a final dataset that is ready for epidemiologic analysis. Mastery of SAS programming techniques at the level required to proficiently organize and clean data for the epidemiology thesis project. The class will focus on database manipulation and will not cover statistical testing.	Research (SAS)		

Course	Credits	Semester	Title	Description	Column6	Column7	Prerequisites
EPI 536	2	FALL	Applied Data Analysis	The purpose of this course is to prepare the student for analysis of epidemiologic data from various study designs including crosssectional, case-control, and follow-up studies. The student will have the opportunity to apply the methods taught in the epidemiology methods sequence to actual data sets. After completion of the course, the student will be prepared to do the data analysis for their thesis. The course will use the statistical program, Stata, for all analyses and therefore some time will be spent in learning the fundamentals of Stata. We will analyze multiple data sets and apply epidemiologic and statistical methods such as exact tests for 2x2 tables, stratified analysis, logistic regression, and survival techniques appropriate for epidemiologists. The course will be applied and will emphasize the use of Stata to solve various epidemiologic problems using a wide range of data sets.	EPI methods (STATA)	Research	Pre-requisites: Pre-requisite: EPI 530 and Bios 500
EPI 538	2	SPRING	Advanced EPI Methods I	Topics covered: 1. Basic Measures 2. Basic Models & Causation 3. Cohort Study Design 4. Case-control study 5. Design, and Interpretation 6. Confounding 7. Selection Bias 8. Misclassification - Understand the concepts and associated theory for the topics covered	EPI methods	Research, M&E	Pre-requisite:EPI 530, 534; BIOS 500, 501(EPI 534 and BIOS 501 may be taken concurrently), Calculus
EPI 539	3	SPRING	Epidemiologic Concepts & Analysis	1.Understand the importance of causal frameworks in epidemiology 2.Recognize the major threats to validity of epidemiologic studies 3.Apply methods to mitigate and correct for biases in epidemiologic studies 4.Understand the concept of interaction and analyze data to assess its presence 5.Use different study designs to address relevant epidemiologic questions 6.Understand evaluations of precision 7.Use logistic regression for bivariate and multivariate analyses	EPI methods	Research	Prerequisites: EPI 530 and BIOS 500. Concurrent enrollment in BIOS 501 is preferred, but not required.
EPI 565	2	SPRING	Data Sources and Methods in MCH	1. List basic surveillance techniques applicable to MCH and FP programs:vital statistics (data collection procedures, evaluation, analysis); selected CDC and/or state surveillance systems (eg.gbirth defects,injury,child abuse);selected CDC surveys including state sampling frames: e. g. Children with Special Health Care Needs (CSHCN), Child Health Survey, BRFS, YRBS, PRAMS, PNNS, PedNSS; those without state sampling frames: NSFG,US Mexico Border Survey, and state surveys, e.g. Georgia Womens Health Survey, etc) 2. Use Perinatal Periods of Risk to help develop a strategy to lower infant mortality 3. Calculate specialized indices such as the Kotelchuck index of adequacy of prenatal care 4. Define and use deterministic and probabilistic record linkage methods 5. Describe the CDC recommended approach to analysis of cluster of public health events 6. List and describe the 12 recommendations for action at state and federal level to support enhanced MCH epidemiology functioning	Maternal Child Health; General applied EPI methods. Applicable to record linkage	Research (Focused Topic)	Pre-requisite: EPI 530 and BIOS 500 as well as experience with SAS or EPI Info
EPI 590R	1	Fall Break	R Bootcamp	This 2-day short course provides students with a basic introduction to the open source statistical computing software R. By focusing on basic R syntax, data operations (importing data, manipulating data, exportinig data, summarizing data) and graph functions.	EPI methods	Research, M&E	

Course	Credits	Term	Title	Description			
EPI 591L	2	FALL	Methods in Nutrition Epidemiology	This course provides an overview of methods for estimating dietary intakes including 24-hour dietary recalls, food records, brief dietary instruments (screeners) and food frequency questionnaires in various formats (e.g. self and interview-administered in person, via the telephone and internet-based approaches). Issues related to the collection, processing, analysis and manipulation of dietary data in relation to foods, dietary patterns, nutrients, and dietary supplements and for specific research designs and special populations will also be addressed. The assessment, monitoring, and evaluation of diet quality are critical components of public health programs including the Supplemental Food Program for Women Infants and Children (WIC), the Supplemental Nutrition Assistance Program Education (SNAP-Ed), the Expanded Food and Nutrition Education Program (EFNEP) and the Child and Adult Care Food Program (CACFP).	Nutrition Methods	M&E, Programs, Research	Choice of requirements for the PN concentration
EPI 591S	2	FALL	Social Epidemiology	Upon completion of the course students should understand fundamental principles of social epidemiology, including the: •Influence of social factors on health and disease in human populations •Application of theory to social epidemiology topics •Measurement variables and considerations of key social influences •Application of epidemiologic methods learned in previous coursework to social epidemiology •Application of epidemiologic principles related to social epidemiology, both from a U.S. and international perspective	EPI Methods		
EPI 750	3	SPRING	Analysis of Longitudinal Data in EPI Research	1. Longitudinal data Matrix algebra for modeling /2. Linear models for longitudinal data 3. Proc MIXED /4. Applications of procMIXED/5. Generalized Linear Models and quasi-likelihood methods 6. General Estimating Equations (GEE) Methods/7. Robust Variance Estimators; ALR approach 8. GLIMMIX and its SAS macro; NLMIXED/9. Hierarchical modeling/Applications of GEE and GLIMMIX **The last time EPI 750 will be taught is Spring 2020**	EPI methods	Research	Pre-requisite: EPI 530, 534, 740; BIOS 500, 501. Permission Required. Uses SAS
HPM 510	3	FALL	Financial and Managerial Accounting	1. Use basic accounting concepts, analytical techniques, decision-making and vocabulary for financial management of organizations 2. Interpret and use accounting information to make managerial decisions	Programmatic work. Basic accounting concepts	M&E, Programs, Research	
HPM 522	4	SPRING	Economic Evaluation of Health Care Programs	1. Learn the four general forms of economic evaluation: cost minimization analysis; cost effectiveness analysis, cost utility analysis, and cost benefit analysis 2. Identify the circumstances in which the different forms of economic evaluations should be applied 3. Learn how to design an economic evaluation 4. Learn approaches to calculating the cost component of an economic evaluation 5. Learn the structure and purpose of cost of illness studies 6. Learn how to choose, measure the consequences (outcomes) of treatments/programs and incorporate them into evaluations, along side costs 7. Learn how to build and interpret decision analytic models 8. Learn how to analyze and interpret basic data from a decision analytic model 9. Learn how to calculate the quality-adjusted life years (QALYSs) 10. Learn how to interpret the results of different types of economic evaluations 11. Learn how to critique existing economic analyses of health care programs 12. Develop an understanding of how economic theory affects certain forms of economic evaluation 13. Understand the application of all of the above on public health	Programmatic Work, Economics	Research	Pre-requisite: HPM 500 and HPM 521 or instructor permission

INFO 503	2	FALL	Management of Public Health Informatics	The purpose of this course is to allow students to gain an understanding of the multiple dimensions of management related to: 1. Managing, implementing and evaluating information systems projects 2. Operations, maintenance and support of information systems 3. Defining and managing the information systems organization 4. Defining and managing the portfolio of information systems projects			Prerequisite: INFO 500 and INFO 501
INFO 511	3	SPRING	Analytics	This course covers the principles of data visualization, both for presentation and analysis. Using commercial and open source software, we will explore different data visualization techniques and the design principles.			pre-requisites: BIOS 500 and BIOS 501
INFO 521	3	FALL	Database Development for Public Health	This course will cover the principles utilized in data management and database development for purposes of Public Health. This is primarily a skills-based course. The students will learn: 1. To create a relational database using Microsoft Access 2013 2. Gain an understanding of the important terminology, standards and data management principles utilized by data management teams			No prequisites but must be a 2nd year student
INFO 530	2	FALL	Geographic Information Systems	The course introduces the use of geographic information systems (GIS) in the analysis of public health data. We develop GIS skills through homework and case studies, and particularly address basic GIS operations such as buffering, layering, summarizing, geocoding, digitizing and spatial queries.			
INFO 532	4	FALL	Principles of Geographic Information Systems	The course introduces the use of geographic information systems (GIS) in the analysis of public health data. We develop GIS skills through homework and case studies, and particularly address basic GIS operations such as buffering, layering, summarizing, geocoding, digitizing and spatial queries.			
INFO 540	2	FALL	Informatics and Analytics for Public Health Surveillance	In this class students will learn about the use of advanced state-of-the-art computing technologies to synthesize very large datasets to support decisions in public health surveillance and research.			Prerequisites: INFO 500 and INFO 511
INFO 550	2	FALL	Informatics and Analytics for Public Health Surveillance	In this class students will learn about the use of advanced state-of-the-art computing technologies to synthesize very large datasets to support decisions in public health surveillance and research.			Prerequisites: INFO 500 and INFO 511