2019-2021 GH Approved Skill Based Methods Courses Guide (students must complete a minimum of 9 credits)

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.

EMORY | ROLLINS SCHOOL OF PUBLIC HEALTH

Course	Cr	Sem	Title	Learning Objectives	Area	Trajectory	Skills	Notes
GH 502	**2**	FALL	Intro to Quantitative Data Collection	This course provides an introduction to the collection of quantitative data. Taking an applied approach, we learn the entire process of designing a study, including instrument design, sampling methods, budgeting and training, fieldwork components, and data management. Special focus is given to research in lessdeveloped countries and to cross-cultural research. Participants develop their own studies, including survey instruments and method protocols.	Research Methods, Surveys	M&E, Programs, Research	Research Methods Evaluation	
GH 503	**3**	SPRING	Quantitative Data Collection	Understand and explain the importance of representative surveys *Write clearly defined survey objectivesvExplain the steps involved in conducting a survey*Develop a well-designed questionnaire appropriate to the settingvUnderstand the steps of survey development and how each is important *Plan appropriate sampling designs and conduct necessary sample size calculations *Implement appropriate methods for data editing and maintaining high data quality *Evaluate the quality of a survey and make recommendations for improvementsvDemonstrate knowledge of the current debates about survey methodology and ethics *Plan, pre-test, and be prepared to conduct a representative survey.	Research Methods, Surveys	M&E, Programs, Research	Research Methods Evaluation	
GH 509	**2**	SPRING	Knowledge Translation from Research to Policy and Practice	This course aims to introduce students to translation of scientific knowledge into real-world implementation (policy, practice, behavior change). The course covers:determining burdens; identifying proven interventions and barriers that impede implementation; designing innovative and creative solutions, and the studies to test these; and informed decision-making as well as implementation and sustainability. Students will be exposed to case studies of health interventions globally which illustrate theoretical concepts while providing inspiration and motivation.	Research Methods	M&E, Programs, Research	Research Methods	
GH 510	**2**	SPRING	Epidemiological Methods in Complex Humanitarian Emergencies	Identify and describe appropriate epidemiological methods for use in emergencies *Be familiar with tools used in emergencies such as IRA, survey and surveillance tools *Understand how to analyze data collected in emergencies * Link data collection and analysis with complex humanitarian emergency response interventions	Complex Humanitarian Emergencies	Research (Focused Topic)	Research Methods	Spring Break. Pre-requisite GH 512, BIOS 500, EPI 530. CHE certificate core
GH 513	**3**	SPRING	Community Based Participatory Action Research	Understanding of theories, principles and strategies of community-based action research, the advantages and limitations to using this approach, and some of the skills necessary for participating effectively in CBPAR *Acquire knowledge and develop some skills in the various methods used in CBPAR approaches such as facilitation, listening, feedback, body mapping, ranking, asset or social mapping, Photovoice *Identify and discuss ways to address issues of validity and rigor in CBPAR *Develop skills in critical reflection and become more aware of one's own role in CBPAR processes *Identify community assets and resources and apply the concepts learnt in class to developing a project in partnership with community group.	CHD	Programs, Research	Research Methods	Choice of requirements for the CHD concentration
GH 514	**2**	SPRING	Communicating for Healthy Behavior and Social Change	Describe a range of relevant web-based resources, prominent agencies and projects *Demonstrate a critical understanding of the role of an outside "change agent" in a resource-poor and/or post-colonial context *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 *Apply basic constructs from key behavioral and social change theories *Apply a toolbox of methods for use in the planning, development and implementation of health communication programs *Recommend channels and media, both traditional and modern, appropriate to audience, resources and program objectives in urban and rural "developing world" contexts *Critique existing health communication materials and programs *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	Research Methods, Program Design & Theory, Communication	
GH 517	**2**	FALL	Case Studies in Infectious Disease Epidemiology	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 *Construct from unorganized surveillance data appropriate line listings to describe pertinent data about infection episodes and risk factors for their occurrence *Characterize descriptive epidemiologic features (time, place, person), and summarize appropriate measures of risk and association, in infectious disease investigations *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 *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)	Research Methods	Pre-requisite/ concurrently:EPI 530 and BIOS 500, or permission from instructor. Crosslisted with EPI 540
GH 521		FALL	Program Management	This course is specifically designed for those who will be working in low and middle income countries and/or countries in economic and political transition – working in the public sector, the nongovernmental sector, the community or international organizations. We focus on key resources that must be managed in any organization or program – people, money, information, time, material goods – and the processes leading to high performance and quality. While derived from management theory and practice, the focus of this course is less on theory and more on application. This course focuses on increasing your ability to analyze, explain and diagnose managerial and organizational dilemmas and generate solutions that are feasible.	M&E, Programs,	M&E, Programs,	M&E, Programs	

GH 522	**3**	SPRING	Qualitative Research Methods	*Evaluate specific global health problems and available evidence in order to design appropriate qualitative research projects *Design strategies and instruments for qualitative data collection that are linked to study objectives and appropriate for the population of interest *Conduct effective qualitative interviews and focus group discussions *Construct qualitative data that adequately represent the verbal expression of participants by preparing high-quality transcriptions *Evaluate qualitative research designs and instruments for qualitative data collection	General Methods. Qualitative Methods	Research Methods Evaluation	Research Methods	
GH 523	**3**	FALL	Quantitative Data Analysis	This course provides an introduction to the process of addressing research questions using quantitative data. The course emphasizes the technical skills required to transform a quantitative data set (exemplars: NHANES and Demographic and Health Surveys) into a reproducible analysis for global health applications. Students will receive guided, structured experience with quantitatively operationalizing research questions, data acquisition and management, data exploration, formal data description, conceptualization and construction of composite variables, analysis of statistical associations, and addressing common threats to valid inference. Exercises will be completed using SAS or STATA software with an emphasis on programming specific to complex survey designs.	General Methods. Quantitative Methods	Research Methods Evaluation	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	*Articulate the relationship between health systems reform and health systems reform *Explain 5 methods used by countries to finance health servicesIdentify and appraise the incentives faced by patients, providers and payers in each financing system*Assess the performance of health systems with respect to efficiency, effectiveness, equity and stewardship *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 *Critically analyze the relationship between income and health status across a mix of countries *Recognize and critique stated and unstated assumptions in financing methodologies vDebate 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)	Research Methods, Program Design & Theory	Pre-requisite: GH 501
GH 525	**3**	FALL	Qualitative Data Analysis	Provides students with theoretical background and practical skills in analyzing qualitative data *Develop an understanding of the theoretical underpinnings of qualitative data analysis.Understand how to develop an analysis plan, prepare data for analysis, and identify themes in data *Conduct analytic tasks of description, comparison, categorizing, conceptualizing and theory development *Understand the role of software packages in data analysis, using MAXQDA10 *Apply the skills in qualitative data analysis to primary data *Develop skills in writing and presenting qualitative researchIdentify how to evaluate qualitative research.	General Methods. Qualitative Methods	Research, M&E	Data Analysis	Pre-requisite: GH 522.
GH 529	**2**	FALL	Water and Sanitation in Developing Countries	*Describe major transmission routes of infectious agents *Describe and apply appropriate strategies to prevent and control infectious disease - includingvaccines, antimicrobial therapy, behavior changes, and environmental interventions *Evaluate effectiveness of interventions to control or prevent infectious disease *Explain the environmental, behavioral, and evolutionary factors that contribute to the emergence and re-emergence of infectious diseases *Recognize, evaluate and control environmental health hazards *Identify environmental occupational health problems in developing countries (water, sanitation, indoor and outdoor air pollution, pesticide exposures, etc) *Characterize and quantify exposures to microbial and chemical contaminants *Evaluate behavioral and socio-economic factors that affect exposure levels *Describe global and trans-boundary threats and the environmental, economic and policy factors that create them *Identify appropriate technologies and interventions for addressing environmental health threats in resource-limited settings *Plan community health interventions to address environmental hazards.	Environmental Health, Infectious Diseases, Water and Sanitation	Program (Focused Topic)	Program Design and Theory	WASH certificate class
GH 530	**2**	SPRING	The GEMMA Seminar: Global Elimination of Maternal Mortality from Abortion	The overall objective of the course is for the participating student to understand the role of unsafe abortion in global maternal mortality, to develop a well-informed project that will have the potential to make substantive progress toward GEMMA, and become an informed advocate for eliminating maternal mortality from abortion. Students will have the opportunity to apply demographic, epidemiologic and anthropologic methods to measure [effect of abortion on] population change and population patterns at local, national and global levels.	Research Methods, Surveys	Research, Program	Research Methods, Data Analysis	
GH/EPI 535	**2**	SPRING	Field Epidemiology	*Understand the basic principles of applied epidemiology as practices in the files of investigation of diseases*Understand the principles of descriptive epidemiology *Appreciate the roles of the laboratory in the investigation *Able to develop a hypothesis *To know when an analytic epidemiology study should be initiated *To be familiar with the evaluation of the control and prevention measures *To know when to initiate control and/or prevention measures *To be able to confirm the existence of an epidemic *To be able to prepare for the initiation of the field investigation *To be able to develop a case definition and a case reporting form *Collect case data on the form *Describe the collected data by time, place and person *Identify the agent, method of transmission, and the susceptible host factors *Develop an hypothesis or initiate an analytic epidemiological study *Determine the appropriate control and/or prevention factor and initiate them.	Surveillance and Descriptive Epidemiology	Research, M&E	Research Methods	Pre-requisites:EPI 530 or permission from instructor. Crosslisted with EPI 535
GH 543	**2**	FALL	Fundamentals of Qualitative Data Analysis	*Assess the quality of a qualitative data set *define appropriate objectives for a specific analysis project *develop an analysis plan using appropriate analytic tools (e.g. segments, codes, memos, attributes) *apply analytic tools to textual data in individual and team settings *develop descriptive and comparative accounts of project findings *apply these skills using MAXqda10 qualitative data analysis software. Alternative to GH 525. Prior training and/or experience in designing qualitative research projects and collecting qualitative data required.Students are not required to bring their own qualitative data to the course; a secondary data set will be provided for practical exercises and activities.	Research Methods. Qualitative Methods	Research, M&E	Data Analysis	Pre-req: GH522 or equivalent. Short course

GH 544	**2**	FALL	Field Trials and Intervention Studies	*Describe the different types of interventions and intervention development process *Design a simple field trial *Analyze trial data including data for interim analysis *Design case report forms and outline a trial data management system *Describe regulatory requirements for conducting trials *Develop consent forms and informed consent procedures *Develop a study oversight plan; including plan for a Data Safety Monitoring Board (DSMB) *Write a report of study results per CONSORT guidelines.	Methods to community and facility based trials in resource poor settings	Research, M&E	Research Methods, Data Analysis	Prerequisite / EPI 530 .
GH 545	**3**	SPRING	Nutritional Assessment	*Perform and evaluate anthropometric assessment of growth and body composition *Define appropriate objectives for a specific analysis project *Discuss preparation and storage of various lab specimens *Assess hematocrit as well as evaluate lab values for various nutrients *Calculate the magnitude, distribution and trends of nutrition problems in populations by learning how to assess national food intake data *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	Research Methods, Evaluation	Choice of requirements for the PN concentration
GH 555	**2**	SPRING	Proposal Development	Over the course of the seven week class, students will develop an NIH-style research proposal. Enrollees in the class will learn the following skills: identifying appropriate literature for designing and supporting your research questions; formulating aims and hypotheses for research; selecting appropriate methodologies to answer your research questions; planning field work, timelines and simple budgets; clear and concise scientific grant writing; and peer review. Individual class projects can be used as the basis for seeking funding for research projects including summer practicums.	Research Methods, Surveys	M&E, Programs, Research	Research Methods, Evaluation	
GH 560	**3**	SPRING & FALL	Monitoring and Evaluation of Global Health Programs	*Explain the motivations for investing in monitoring & evaluation *Understand and be able to apply the different frameworks commonly used to describe projects/programs *Differentiate between various targeting strategies, assess each one's suitability for a particular project/program, evaluate whether or not the implemented strategy is being applied successfully *Think critically about the relevance and practicality of indicators for various stages of project/program implementation and effectiveness *Describe various project/program elements in need of monitoring, suggest data collection strategies, use findings to improve project/program implementation *Execute lot quality assurance sampling as a monitoring tool *Prepare a plan for a process evaluation *Categorize different evaluation types according to what you want to measure and how sure you want to be of the results, suggest the appropriate one for a given project/program, audience, and budget *Weigh the advantages and challenges of different options as a comparison group in plausibility and probability evaluations *Understand the fundamentals of cost-effectiveness, equity, and sustainability analysis *Critically review international public health evaluations.	Programmatic Work, community Metrics, Evaluation research	M&E, Programs, Research	Research Methods, Evaluation	
GH 568	**3**	SPRING ALT YEARS	Community Engaged Food Security	Limited access to healthy foods at the individual, household, and community level is associated with a range of health and development outcomes. This course will use case-based, experiential and student led learning strategies to 1) map the underlying and immediate determinants of food security and its associated public health and community development outcomes; 2) evaluate and apply a range of methods to assess food security; and 3) critique the effectiveness and sustainability of food security interventions. Throughout the semester, student teams will work in partnership with local community partners on food security issues in the Atlanta area and present their work at the end of the semester in a community-based forum.	Nutrition, Community Health	Programs, Research	Research Methods	Class is offered alternatively with GH 567, Food Policy.
BIOS 501	**4**	SPRING	Statistical Methods II	Addresses estimation and hypothesis testing within the context of the general linear model. Examines in depth the analysis of variance, multiple regression, and logistic regression. 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. 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 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. 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	Data Analysis	Pre-requisite: BIOS 500. Uses SAS. Data analysis beyond simple descriptive statistics and basic T-tests.
BIOS 502	**4**	FALL	Statistical Methods III	*Calculate, interpret and present selected descriptive statistics (specifically for longitudinal data) *Compute selected inferential statistics (e.g., confidence intervals, hypotheses testing as applied to longitudinal data) *Use computer statistical software for both data management and data analyses *Assist in the interpretation of study results *Communicate the results of the study both orally and in writing *Understand and adhere to guidelines of responsible research*Issues involved with the analysis of repeated measures data, particularly missing data, are also covered.	Statistical Methods	Research	Data Analysis	Pre-requisite: BIOS 500 and BIOS 501.
BIOS 522	**2**	FALL	Survival Analysis	*Students will understand the basic theoretical concepts underlying survival analysis *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 *Students will learn to use computer software packages, such as SAS and R, to analyze real-life survival data *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	Data Analysis	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: Utilize information technology tools and statistical programming packages in preparing scientific reports; Apply descriptive techniques commonly used to summarize public health data.	Statistical Methods	Research, M&E	Data Analysis	Fall section if for non BIOS students
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 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. 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.	Complex sample design	Research, M&E	Research Methods, Data Analysis	Pre-requisite: BIOS 500 and BIOS 501. The prerequisites assume that students already have the concepts. The class shows the analyses up in SUDAAN and SAS so students can get the right answers when they have to assume something other than a simple random sample
EH 515	**2**	SPRING	Air Quality in the Urban Environment	*Identify the key urban air pollutants based on their physical and chemical properties and their impact on human health and the environment *Identify the major sources of urban air pollution, their trends, fate and transport in the atmosphere*Perform basic air pollution calculations to estimate ambient concentrations of pollutants *Interpret and utilize online databases of air pollution monitoring information *Understand the role of meteorological factors and photochemistry in the formation and dispersion of urban air pollution *Display familiarity with methods for measuring urban air pollution including direct sampling and modeling techniques *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)	Research Methods	
EH 524	**2**	FALL	Risk Assessment I	*Become familiar with common methods and assumptions used in environmental (human) health risk assessment *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 *Understand how risk assessment is used by various groups and U.S. agencies, and how that use may change in the future *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)	Research Methods	
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
EH 548	**2**	SPRING	Research Methods for Studies of Water and Health	*Understand key issues in designing studies of water and health *Learn theory behind and how to carry out microbiological assessment of water quality *Learn theory behind and how to carry out physiochemical assessment of water quality *Learn how to carry out field evaluation of water treatment technologies *Learn how to carry out observational studies & observational techniques *Learn how to design surveys specific to studies of water & health *Learn how to carry out interviews and focus group.	Methods in EH. WASH	M&E, Programs, Research (Focused Topic)	Research Methods	GH 529 is a pre-requisite
EH 549	**2**	SPRING	Critical Analysis of Water, Sanitation, and Hygiene Research	*Learn to critically evaluate published literature *Learn to compare methods and research approaches used in peer-reviewed literature *Engage in in-depth discussion of water, sanitation, hygiene on health and development *Develop skills of clear and concise writing and summarization of study findings *Learn to distil messages of policy and public health importance *Develop and refine ability to guide critical discussion on scientific relevance and public health importance	WASH	Research (Focused Topic)	Research Methods	
EHS 747	**2**	FALL	Advanced Environmental EPI	*Apply epidemiologic methods learned in previous coursework to real study situations *Gain experience reading and understanding scientific journal articlesLearn new designs and methods of analysis commonly used in environmental/occupational epidemiology *Consider design constraints grappled with by epidemiologists performing studies of environmental/occupational health questions *Analyze real data from environmental/occupational epidemiology studies *Learn about appropriate interpretation of results of environmental/occupational epidemiology studies *Design an epidemiologic study to address an environmental/occupational health question *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)	Research Methods	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 534	**2**	SPRING	Statistical Programing	This is an applied computer course that provides an introduction to the SAS and R 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 and R 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.	EPI methods	Research	Research Methods	
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	Research	Research Methods	Pre-requisites: Pre-requisite: EPI 530 and EPI 534
EPI 538	**2**	SPRING	Advanced EPI Methods I	*Topics covered: Basic Measures * Basic Models & Causation * Cohort Study Design *Case-control study *Design, and Interpretation *Confounding *Selection Bias *Misclassification - Understand the concepts and associated theory for the topics covered. Students should be able to discuss these topics, cite examples, understand the underlying theory, justify important relationships, and indicate how the concepts relate to epidemiologic practice. He/she should understand how the ideas relate to design, analysis and interpretation of studies. **The last time EPI 538 will be taught is Spring 2020.**	EPI methods	Research, M&E	Research Methods	Pre-requisite:EPI 530, 534; BIOS 500, 501(EPI 534 and BIOS 501 may be taken concurrently), Calculus
EPI 540	**4**	SPRING	EPI Methods II	This course develops epidemiologic concepts introduced in EPI 1, providing a more advanced discussion of issues related to causality, bias, study design, interaction, effect modification and mediation. It will also provide opportunities for the application of these examples via analysis of epidemiologic data.	EPI methods	Research, M&E	Research Methods, Data Analysis	Prerequisites: EPI 530, BIOS 500, and BIOS 591P/501 (concurrent)
EPI 565	**2**	SPRING	Data Sources and Methods in MCH	*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) *Use Perinatal Periods of Risk to help develop a strategy to lower infant mortality *Calculate specialized indices such as the Kotelchuck index of adequacy of prenatal care *Define and use deterministic and probabilistic record linkage methods *Describe the CDC recommended approach to analysis of cluster of public health events *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)	Research Methods	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		
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 specificresearch 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	Research Methods, Evaluation	Choice of requirements for the PN concentration

EPI 740	**3**	FALL	EPI Modeling	*Linear regression *SAS review *Basics of logistic regression *EVW structure for logistic models *Confidence intervals for adjusted odds ratios/ Matched data *Modeling strategy- Single E *Modeling strategy- Several E's * Screening variables *Regression Diagnostics-collinearity *Polytomous and ordinal logistic regression *Diagnostics- Goodness of Fit *ROC curves *Regression Diagnostics- influential observations *Survival analysis *Kaplan-Meier curves and the log rank test *Intro to the Cox proportional hazards modelvAssessing the PH assumption *Stratified Cox *Time-dependent covariates *Survival analysis *Poisson Regression. **The last time EPI 740 will be taught is Fall 2019 (will be replaced by EPI Methods III)**	EPI methods	Research	Research Methods	Pre-requisite:EPI 530, 534 and BIOS 500, 501. Uses SAS, STATA, SPSS, S Plus and R (webbased)
EPI 750	**3**	SPRING	Analysis of Longitudinal Data in EPI Research	*Longitudinal data Matrix algebra for modeling * Linear models for longitudinal data *proc MIXED *Applications of procMIXED *Generalized Linear Models and quasi-likelihood methods *General Estimating Equations (GEE) Methods *Robust Variance Estimators; ALR approach *GLIMMIX and its SAS macro; NLMIXED*Hierarchical modeling/Applications of GEE and GLIMMIX. **The last time EPI 750 will be taught is Spring 2020**	EPI methods	Research	Research Methods	Pre-requisite: EPI 530, 534, 740; BIOS 500, 501. Permission Required. Uses SAS
HPM 510	**3**	FALL	Financial and Managerial Accounting	Use basic accounting concepts, analytical techniques, decision-making and vocabulary for financial management of organizations; Interpret and use accounting information to make managerial decisions	Programmatic work. Basic accounting concepts	M&E, Programs, Research	Management	
HPM 522	**4**	SPRING	Economic Evaluation of Health Care Programs	Learn the four general forms of economic evaluation: cost minimization analysis; cost effectiveness analysis, cost utility analysis, and cost benefit analysis *Identify the circumstances in which the different forms of economic evaluations should be applied *Learn how to design an economic evaluation * Learn approaches to calculating the cost component of an economic evaluation; Learn the structure and purpose of cost of illness studies *Learn how to choose, measure the consequences (outcomes) of treatments/programs and incorporate them into evaluations, along side costs *Learn how to build and interpret decision analytic models *Learn how to analyze and interpret basic data from a decision analytic model * Learn how to calculate the quality-adjusted life years (QALYSs) * Learn how to interpret the results of different types of economic evaluations * Learn how to critique existing economic analyses of health care programs * Develop an understanding of how economic theory affects certain forms of economic evaluation; and Understand the application of all of the above on public health.	Programmatic Work, Economics	Research	Research Methods	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: Managing, implementing and evaluating information systems projects; Operations, maintenance and support of information systems; Defining and managing the information systems organization; and, 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 to create a relational database using Microsoft Access 2013, as well as gaining 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