Rollins School of Public Health
Overview of Water, Sanitation, and Hygiene (WASH) Coursework

BIOLOGY						
Courses	**Term**	**Credits**	**Suitable for Years**		**Prerequisite**	**Overview**
			Y1	**Y2**		
EH 545 Introduction to Environmental Determinants of Infectious Disease	Spring	3	Yes	Yes	None, helpful if student has background in biology	This course covers ways the environment influences the transmission and spread of infectious diseases in humans. We consider air, water, soil, animal, and human influences, with case studies on each of these factors. The course covers methods used in the study of infectious diseases, including epidemiology, mathematical modeling, risk analysis, social science, ecology, and molecular biology. Students will learn to think from the perspective of a pathogen trying to maximize its fitness over both short- and long-term time scales.
EPI 544 Epidemiology of Foodborne and Diarrheal Diseases	Fall	1	Yes	Yes	Prerequisite/concurrent: EPI 504 or EPI 530	This course covers the basic epidemiology of infectious foodborne and diarrheal diseases of the United States and the world. Uses the study of these diseases and outbreak investigations to develop broadly applicable epidemiologic skills. Explores dynamic relationship between changing global environment and human health distribution, changes in the human population
GH 516: Global Perspectives in Parasitic Diseases	Irregular	3	Yes	Yes	EPI 530 may be taken concurrently	Focuses on prevalent parasitic infections seen in this country as well as those seen primarily abroad. Topics include parasite lifecycles, immunology, diagnostic methods, clinical manifestations, treatment and follow up, complications, epidemiology, prevention and control, methods of transmission, and future research priorities
GH 517/EPI 517: Case Studies in Infectious Disease	Fall	2			Prerequisites/concurrent: EPI 504 or EPI 530 and BIOS 500 or permission of instructor	Provides training in the investigation, control, and prevention of infectious diseases by both descriptive and analytic epidemiological techniques. Students work with infectious diseases of national and international interest.

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BIOLOGY						
Courses	**Term**	**Credits**	**Suitable for Years**		**Prerequisite**	**Overview**
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GH 518 / EPI 562: Emerging Infectious Diseases	Irregular	2	Yes	Yes	Prerequisite/concurrent: EPI 504 or EPI 530 or permission of instructor. Previous course work in microbiology strongly preferred.	This course examines factors that contribute to the emergence and re-emergence of infectious diseases, and provides a framework for assessing the public health threat changes in these factors on infectious disease epidemiology. Fundamental principles of infectious disease pathogenesis, epidemiology as well as prevention will be addressed using key syndromes or pathogens as examples. **This course may be used biology or elective credit.**
GH 580: Environmental Microbiology: Control of Food and Waterborne Diseases	Spring January short course	2	Yes	Yes	None	Introduces the major disease-causing microorganisms in the environment and their transmission through water, food, and air. Describes the organisms, pathogenesis, clinical diseases, reservoirs, modes of transmission, and epidemiology and surveillance systems. Discusses the transport, survival, and fate of pathogens in the environment, the concept of indicator organisms as surrogates for pathogens, and the removal and inactivation of pathogens and indicators by water and wastewater treatment processes. Presents examples of the public health impact of foodborne and waterborne diseases in developing countries Features lectures from CDC leaders in enteric diseases. **This course may be used for biology or methods credit.**

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METHODS						
Courses	**Term**	**Credits**	**Suitable for Years**		**Prerequisite**	**Overview**
			Y 1	**Y2**		
DATA 530: Introduction to Geographic Information Systems	Fall & Spring	2	Yes	Yes	None	This 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 basis GIS operations such as buffering, layering, summarizing, geocoding, digitizing, and spatial queries. ***Students must tell instructor that they are in the WASH Certificate Program so the instructor can arrange for the use of a WASH dataset*.** **This course may be used as methods or elective credit**
DATA 532: Advanced Geographic Information Systems	Fall & Spring	2	Yes	Yes	DATA 530 or permission of instructor	The course continues the use of geographic information systems (GIS) in the analysis of public health data and adds more advanced features. We develop GIS skills through homework, quizzes and a final project, and particularly build upon the skills learned in INFO 530 such as map layouts, visualization, basic spatial statistics, and basic GIS operations such as buffering, layering, summarizing, geocoding, digitizing and spatial queries. We add new topics such as raster analysis open source GIS, (qgis), geo databases, story maps, and making maps in R. ***Students must tell instructor that they are in the WASH Certificate Program so the instructor can arrange for the use of a WASH dataset.*** **This course may be used as methods or elective credit**
EH 548 Research Methods for Studies of Water and Health	Spring	3	Yes	Yes	Recommended Prerequisite: GH 529 Water and Sanitation in Developing Countries or equivalent	This hands-on course covers methods needed to carry out field studies focused on water and health. Through lecture and laboratory exercises, students will learn critical skills in measuring water quality exposure assessment and waterborne disease health outcomes that will enable them to conduct their own field studies and analyze the resulting data. The focus will be on issues of microbiological contamination in developing countries, but chemical contamination and domestic cases will also be covered.

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METHODS						
Courses	**Term**	**Credits**	**Suitable for Years**		**Prerequisite**	**Overview**
			Y1	**Y2**		
GH 522 Qualitative Methods - Data Analysis	Fall	3	yes	Yes	Pre-requisite of GH 521 or instructor permission.	This course provides students with the principles and skills for analyzing qualitative data. Students will learn how to assess data quality, prepare data for analysis, use different analytic techniques, and write and present data. Students will learn analytic techniques through guided classroom activities, lab sessions using MAXQDA software and structured assignments. No data are required, we provide class data sets, but students can use qualitative data collected during their summer applied practice experience if suitable. Each student will work with an individual data set in course assignments.
EPI 569 Concepts and Methods in ID Epidemiology	Fall	3	No	Yes	Prerequisites: EPI 530 and EPI 540 with experience using R	The course will provide an overview of the history, concepts and analytical methods that specifically apply to the study of infectious diseases. Topics covered include measures of frequency, burden and natural history; immune-epidemiology; vaccine epidemiology; methods for emerging infectious diseases; fundamentals of modeling and the application of classic epi methods to infectious diseases. Prerequisites: EPI 530 and EPI 540 with experience using R. This is a required course for the Infectious Disease Epidemiology certificate program.
GH 580: Environmental Microbiology: Control of Food and Waterborne Diseases	Spring January short course	3	Yes, preferred to guide practicum	Yes	None	Introduces the major disease-causing microorganisms in the environment and their transmission through water, food, and air. Describes the organisms, pathogenesis, clinical diseases, reservoirs, modes of transmission, and epidemiology and surveillance systems. Discusses the transport, survival, and fate of pathogens in the environment, the concept of indicator organisms as surrogates for pathogens, and the removal and inactivation of pathogens and indicators by water and wastewater treatment processes. Presents examples of the public health impact of foodborne and waterborne diseases in developing countries Features lectures from CDC leaders in enteric diseases. **This course may be used for biology or methods credit.**

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ELECTIVES						
Courses	**Term**	**Credits**	**Suitable for Years**		**Prerequisite**	**Overview**
			Y1	**Y2**		
DATA 530: Introduction to Geographic Information Systems	Fall & Spring	2	Yes	Yes	None	This 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 basis GIS operations such as buffering, layering, summarizing, geocoding, digitizing, and spatial queries. ***Students must tell the instructor that they are in the WASH Certificate Program so the instructor can arrange for the use of a WASH dataset.*** **This course may be used for methods or elective credit**
DATA 532: Advanced Geographic Information Systems	Fall & Spring	2	Yes	Yes	DATA 530	This course introduces the use of geographic information systems (GIS) in the analysis of public health data. We develop GIS skills through homework, quizzes, and a case study. Specific skills include map layouts, visualization, and basic GIS operations such as buffering, layering, summarizing, geocoding, digitizing and spatial queries. ***Students must tell the instructor they are in the WASH Certificate Program so the instructor can arrange for the use of a WASH dataset.*** **This course may be used for methods or elective credit**
EH 547 Design, delivery, and assessment of WASH in school programs	Spring	2	Yes	Yes	None	Online with synchronous and asynchronous sessions. S/U grading basis only. Develop the knowledge and skills necessary to be and engage with water, sanitation, and hygiene (WASH) champions, program managers, researchers, policymakers, and donors. The course supports applied learning on developing, executing, and evaluating sustainable and inclusive WASH in Schools interventions in collaboration with stakeholders. Students will interact with development professionals and policy makers from various countries and orgs such as UNICEF, CARE, Save the Children, GIZ and others.

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ELECTIVES						
Courses	**Term**	**Credits**	**Suitable for Years**		**Prerequisite**	**Overview**
			Y1	**Y2**		
EH 570: Environmental Health Law and Policy	Spring	2	NON-EH students must get permission – EH students get priority since this is a degree requirement	NON-EH students must get permission- EH students get priority since this is a degree requirement	None	This course introduces students to the major laws, regulations, and policies applicable to environmental health, primarily in the United States. Readings, discussions, and expert guest speakers are designed to explore the history, politics, economics, and ethics of environmental health policy, including issues around environmental justice. Case studies, in-class activities and policy analysis assignments will emphasize practical skills in policy development and promotion while exposing students to the challenges of advancing evidence-based environmental health policy in the context of competing political perspectives and priorities. ***Students must tell instructor that they are in the WASH Certificate Program and arrange for a WASH-related final project in order to obtain credit for the WASH certificate***
EH /GH 582: Global Climate Change: Health Impacts and Response	Fall	2	Yes - priority for Climate and Health Certificate students until a certain date, then others may enroll	Yes - priority for Climate and Health Certificate students until a certain date, then others may enroll	None	This course will explore the public health effects of global climate change, epidemiologic and other methods for understanding and studying these effects, the public health adaptation response, and potential mitigation efforts and activities. Public health responses will be discussed with particular focus on global health issues. The course will emphasize a practical approach to vulnerability and risk assessment, and students will develop skills assessing the risks of particular climate-related health impacts.

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ELECTIVES						
Courses	**Term**	**Credits**	**Suitable for Years**		**Prerequisite**	**Overview**
			Y1	**Y2**		
EH 586 Advanced Seminar in Climate Change: Research & Policy	Spring	2	priority for Climate and Health Certificate students until a certain date, then others may enroll	priority for Climate and Health Certificate students until a certain date, then others may enroll	Recommended prerequisite: EH 582/GH 582.	Building on EH/GH 582, this course offers an advanced examination of climate and health research and solutions. On the research side, this course will use an in-depth climate health impact assessment study to demonstrate scientific premise, study design, data access and processing, research methodology, results visualization and interpretation. On the solutions side, we will unpack the history and current state of play of global and national climate policy while also diving deep into state and local efforts. In addition, we will pursue emerging topics related to climate change research and policy. Throughout the semester, students will work on a project that will contribute to the Georgia Climate Project, a multi-university consortium co-founded by Emory. Through this effort we will apply systems thinking tools to propose strategies and identify stakeholders important for implementing climate solutions
EPI 569: Concepts and Methods in Infectious Disease Epidemiology	Fall	2	Yes	Yes		Fall. Prerequisites EPI 517, EPI 530, and EPI 540 or instructor permission. The course will provide an overview of the history, concepts and analytical methods that specifically apply to the study of infectious diseases. The course covers a range of methodological approaches and concepts for infectious disease epidemiology including natural history, household transmissions studies, concepts of dynamic modeling, sero-epidemiology vaccines and vaccine epidemiology, molecular epidemiology and pathogen strain dynamics, and emerging infectious diseases. **This course may be used for methods OR elective credit**
EPI 517/GH 517: Case Studies in Infectious Disease	Fall	2			EPI 504 or EPI 530 cross listed with EPI 517	Provides training in the investigation, control, and prevention of infectious diseases by both descriptive and analytic epidemiological techniques. Students work with infectious diseases of national and international interest. **This course may be used for biology or methods credit.**

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FOR ALL CERTIFICATE STUDENTS –

1. **Students may not count required coursework for their degree program towards a certificate,** except for electives. The RSPH catalog lists all degree program requirements by Department.
2. **HDGH students – please note that if a Methods course counts as CORE HDGH curriculum, you will be required to take a separate Methods to meet Certificate Requirements**
3. **If you are enrolled in two (or more) Certificates, you may double count for CERTIFICATE credit only**

Examples of what cannot "double count" include:

1. For GH or Global Epidemiology students' classes that are being used to fulfill the "GH Methods" Requirement of their degree. The most overlap in these requirements are seen in WASH and CHE.
2. For any Epidemiology or Global Epidemiology students, classes that are fulfilling the "Substantive" or "Methods" selective may not be used towards a certificate.
3. For EH and GEH students, EH 520, "Toxicology," may not be used as an elective course for GME or any other certificate program.
4. For HPM students, HPM 502 may not be used to count towards any certificate requirements.
5. For BSHES students, no BSHES required courses such as BSHES 532, BSHES 538, or BSHES 539 can count towards any certificate requirement.
6. Students who are pursuing multiple certificates, may "double count" elective courses towards two certificates. For example, if a GH MPH student takes GH 560: Monitoring and Evaluation, and it is not being used towards the GH Methods Requirement, it could be used as a course for both CHE and WASH Certificate requirements.

WASH Students MUST complete a WASH ILE and APE/Practicum. If the student is NOT being supervised by CGSW Faculty or Member, the student must fill out a Provisional Approval Form and receive approval from Dr. Christine Moe, CGSW Director. Without this provisional approval, there is no guarantee the Capstone or Thesis and Practicum will fulfill the WASH Certificate Requirement. Please submit the form to Kathleen Peters, WASH Certificate Coordinator at kpeter5@emory.edu

Please contact your ADAP or Certificate Coordinator(s) with questions/concerns.

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