

Summer 2020 Program in Clinical Effectiveness (CLE) Remote Learning Course Details

Core Morning Courses											
Course number	Course name	Term	Dates and Times	Credits	Grading basis	Live sessions	Options if students cannot join live sessions	Course description	Online format	Assignments and Grading	Estimated number of hours per week (including all course activities and assignments)
EPI 208	Introduction to Clinical Epidemiology	Summer 2020 (Full Summer)	7/7/20-8/14/20 9:45-11:15	5	Ordinal or Pass/Fail	9:45-11:15 am on weekdays (strongly recommended); optional office hours at a variety of times	Recordings of live sessions discussion board on course website	EPI 208 is an introductory-level course that covers the principles and methods used in traditional and clinical epidemiologic research through a series of lectures, seminars, written assignments, workshops, and presentations. This course is designed for individuals planning to conduct clinical research. Some of the main topics include outcome measures and measures of association, study designs (e.g., randomized controlled trials, quasi-experimental studies, cohort studies, case-control studies), confounding and bias, effect modification, multivariable regression models, clinical prediction rules, propensity scores, and diagnostic testing and screening. During the course, each student develops a study proposal addressing a specific clinical or public health problem of interest and presents this proposal to faculty and other students via workshops and a formal presentation. These proposals are then written in grant application format as the final paper for the course.	EPI 208 will have synchronous (i.e., live) sessions every weekday from 9:45-11:15 am EDT. These sessions will be held via Zoom and usually will consist of a lecture on a particular topic, interspersed with discussion and/or other interactive activities. It is strongly recommended that students join the live sessions whenever possible, but they will be recorded and posted afterwards on the course website if students are unable to join live. The lectures from 2019 also will be posted in advance, in case students want to view them ahead of time. On July 14 and July 21, there will be student project workshops, in which students present a brief outline of their study proposal and discuss it with a faculty member and several other students. These will be held via Zoom during the regular class time (9:45-11:15 am EDT), although other times may be offered depending on availability. On July 28 and 29, there will be student presentations from 9:45-11:15 am and 11:30 am-1 pm EDT via Zoom, although other times may be offered. Optional group and individual office hours will be offered by faculty and Teaching Fellows at a variety of times. There also will be a discussion board on the course website, for students to ask questions and interact with each other and with faculty and Teaching Fellows.	There will be three homework assignments, which will be due on July 13, July 20, and July 27; each of these will count for 10% of the grade (30% total). Students are allowed to work together on these assignments and can ask questions about them during group office hours; however, each student will submit his/her own homework. There will be a brief timed quiz that students will complete individually; it will be due before class on July 24 and will count for 10% of the grade. There will be a joint computer exercise with the biostatistics course that will be due on August 11 and will count for 10% of the grade. The final study proposal (8 pages, double-spaced) will be due on the last day of the course, August 14, and will count for 50% of the grade.	12-15 hours/week
BST 206	Introductory Statistics for Medical Research	Summer 2020 Summer1 Term	7/7/20-7/24/20 11:30 - 1:00	2.5	Ordinal or Pass/Fail	11:30am - 1:00pm on weekdays (strongly recommended); optional office hours at a variety of times; optional Stata sessions at 8:30-9:30 on Thursdays	Recordings of live sessions discussion board on course website	BST 206 is the first part of an introductory course that covers the basic ideas and methods of biostatistics in clinical research. Each class will introduce new concepts and techniques which are then illustrated in the literature, or applied to data using the SAS statistical package. As with EPI 208, the course is designed for individuals who intend to carry out clinical research. The main concepts covered in the course are probability, hypothesis testing, p-values, confidence intervals, the central limit theorem, the normal and binomial distributions, and power and sample size calculations. The main techniques include calculating descriptive statistics, graphics, t-tests, Wilcoxon tests, and chi-square tests. Students will learn to use the SAS package and will run analyses for their homeworks and the exam. Optionally, students may also choose to learn and use the Stata package.	BST 206 will have synchronous live sessions every weekday from 11:30-1:00 EDT. These sessions will be held via Zoom and usually will consist of a lecture on a particular topic, interspersed with examples from the literature and software demonstrations. It is strongly recommended that students join the live sessions whenever possible, but they will be recorded and posted afterwards on the course website if students are unable to join live. The lectures from 2019 also will be posted in advance, in case students want to view them ahead of time. Optional group office hours will be offered at a variety of times. There also will be a discussion board on the course website, for students to ask questions and interact with each other and with faculty. For students wishing to learn Stata, optional Stata Zoom demonstration sessions will be held Thursday mornings from 8:30-9:30 am, with recordings posted for students unable to attend.	There will be two homework assignments, which will be due on July 14 and July 22 and each will count for 15% of the grade (30% total). Students are allowed to work together on these assignments and can ask questions about them during office hours; however, each student will submit their own homework. On July 23rd, students will receive a final exam which will be turned in on July 30th and which will count for 70% of the grade. Students must work alone on the final.	12-15 hours/week
BST 208	Statistics for Medical Research, Advanced	Summer 2020 Summer2 Term	7/27/20-8/14/20 11:30 - 1:00	2.5	Ordinal or Pass/Fail	11:30am - 1:00pm on weekdays (strongly recommended); optional office hours at a variety of times; optional Stata sessions at 8:30-9:30 on Tuesdays (8/4 and 8/11).	Recordings of live sessions discussion board on course website	BST 208 is the second part of the introductory biostatistics sequence, that adds to the material covered in BST 206. Students taking BST 208 must have taken BST 206 in July. The format of each class remains the same, with an introduction to new concepts and techniques which are then illustrated in the literature, or applied to data using the SAS statistical package. There are fewer concepts (paired data and multiple testing), and more techniques including McNemar's test, paired t and Wilcoxon tests, anova and Kruskal-Wallis tests, and regression. Students will continue to use the SAS package and will run analyses for their homework and the exam. Optionally, students may also choose to continue learning and using the Stata package.	BST 208 will continue with synchronous live sessions every weekday from 11:30-1:00 EDT. These sessions will be held via Zoom and usually will consist of a lecture on a particular topic, interspersed with examples from the literature and software demonstrations. It is strongly recommended that students join the live sessions whenever possible, but they will be recorded and posted afterwards on the course website if students are unable to join live. The lectures from 2019 also will be posted in advance, in case students want to view them ahead of time. Optional group office hours will be offered at a variety of times. There also will be a discussion board on the course website, for students to ask questions and interact with each other and with faculty. For students wishing to learn Stata, optional Stata Zoom demonstration sessions will be held Tuesday mornings, 8/4 and 8/11, from 8:30-9:30 am, with recordings posted for students unable to attend.	There will be one homework assignment, which will be due on August 6th and which will count for 20% of the grade. Students are allowed to work together on this assignment and can ask questions during office hours; however, each student will submit their own homework. There will be a joint computer exercise with the epidemiology course that will be due on August 11 and will count for 20% of the grade. On August 6th, students will receive a final exam which will be turned in on August 14th and which will count for 60% of the grade. Students must work alone on the final exam.	12-15 hours/week
Summer 1 Elective Courses											
Course number	Course name	Term	Dates and Times	Credits	Grading basis	Live sessions	Options if students cannot join live sessions	Course description	Online format	Assignments and Grading	Estimated number of hours per week (including all course activities and assignments)
ID251	Ethical Basis of the Practice of Public Health	Summer 2020 Summer1 Term	7/7/20-7/24/20 2:00 - 3:30	2.5	Ordinal or Pass/Fail	Synchronous live class sessions at assigned time each day; may offer optional discussion group sessions; optional office hours at a variety of times;	Live Synchronous Sessions will not be recorded	ID251 is intended to provide physicians and public health professionals with an understanding of the major ethical issues confronting health care delivery and public health practice. This course will provide familiarity with some of the fundamental ethical theories that have shaped our thinking about key public health issues. We will engage in lively discussions on challenging issues such as: mandatory vaccinations, paternalistic public health policies, rationing of health care resources, the use of quarantine, genetic screening, access and "rights" to health care and personal responsibility for health. Students will learn to analyze complex ethical problems, and to apply philosophical theories to produce well-reasoned policy recommendations.	ID251 will continue with synchronous live sessions every weekday from 2:00 - 3:30 EDT (please confirm). These sessions will be held via Zoom and usually will consist of a dynamic lecture mixed fluidly with class discussion, much like the live classes in the past. Students will be required to attend the live sessions, given that the class focuses on debate of ethical issues. Optional group discussion may be offered if students think they would be helpful. Also, office hours will be offered at a variety of times. There also will be a discussion board on the course website, for students to ask questions and interact with each other and with faculty.	There will be two homework assignments, and one final paper. Homework 2 helps students prepare for their final paper. Homework 1 asks students to formulate an argument based upon a specific prompt, and Homework 2 asks them to formulate a detailed outline for an ethical argument on a topic of their choosing -- we encourage students to pick a topic from their areas of interest and expertise. Using this outline, with the feedback we provide, the students write a final argument paper using the ethical frameworks and argument structure they learned in the class. Course grade = weighted average of final paper score (60%), homework 1 (15%), homework 2 (15%) and class participation (as assessed by class attendance, and the quality of in-class and online participation) (10%).	12-15 hours/week
HPM276	Introduction to Methods and Applications in Health Services Research	Summer 2020 Summer1 Term	7/7/20-7/24/20 2:00 - 3:30	2.5	Ordinal or Pass/Fail	Synchronous live class sessions at assigned time each day; may offer optional discussion group sessions; optional office hours at a variety of times;	Recordings of live sessions	HPM276 introduces students to the interdisciplinary field of health services research. The course uses theory, methodology, and applications in a highly interactive teaching approach and is designed for students who lack significant prior experience in research or advanced knowledge of research methods. Individual sessions cover a variety of topics including research design, large databases, cost-effectiveness analysis, surveys and focus groups, assessment of health status, quality measurement, measurement of race, ethnicity, and socioeconomic status, appropriateness of care, and risk adjustment. There will be one or more sessions reviewing managerial applications such as case management, use of hospital information systems, and targeting for high-risk patients. The course will also include class sessions and exercises devoted to critique of journal articles. These will supplement didactic presentations and will target development of skills in performing research and writing papers. In the final part of the course, students will work in small groups to critique a "grant proposal" designed to study an important problem in health services or health policy research. Each group of students will write up their critique in a format typical for a federal study section. This effort is designed to educate students on important aspects of grant writing.	HPM 276 will have synchronous (i.e., live) sessions every weekday from 2:00-3:30pm EDT. These sessions will be held via Zoom and usually will consist of a lecture on a particular topic, interspersed with substantial discussion and/or other interactive activities. It is strongly recommended that students join the live sessions whenever possible, but they will be recorded and posted afterwards on the course website if students are unable to join live. Power point will be posted before the class; and review of it before class will reinforce learning. Office hours will be held at 3:30 or 4:00 several days a week and expanded as needed.	In view of the goals of this course, grading will be based on two written assignments: 1) a critical review of two manuscripts for the mid-term exam (20%); and, 2) a written critique of a grant proposal, due on the last day of class (80%). The first assignment will be described in class. Instructions and expectations for both assignments are in the last section of the syllabus. Grades also may be influenced by class participation.	12-15 hours per week

HPM284	Implementation Research in Health and Healthcare	Summer 2020 Summer1 Term	7/7/20-7/24/20 200 - 3:30	2.5	Ordinal or Pass/Fail		Recordings of live sessions	HPM284 introduces students to the study of interventions to facilitate the translation evidence-based interventions into practice. There is a growing awareness that studies on comparative and cost effectiveness, which identify practices that will maximize quality and value, require companion work on implementation research to assure that current evidence is ultimately implemented into real-world clinical settings and health policy. This course is intended to provide an introduction to the theory and methods that address the facilitators and barriers to the translation of evidence into practice, i.e., the field of implementation research.	HPM284 will continue with synchronous live sessions every weekday from 2:00-3:30 EDT. These sessions will be held via Zoom and usually will consist of a lecture on a particular topic, including from the two course co-directors as well as guest lecturers. The course directors will monitor the chat box on Zoom to help moderate questions throughout the lectures. Lecture slides and readings will be posted in advance of each lecture. There will also be group projects with video presentations at the end of the course. A design workshop session will also involve real-time interactions using Zoom's various functionalities. Optional office hours with the course directors will be offered at a variety of times.	- Article Critique (40%): Students will be provided with an implementation research study from the peer-reviewed literature and asked to write a detailed critique of the soundness of the study's motivation, the methods used (both to execute the intervention and to conduct the statistical analyses) and the implications of the results. - Group Project + Presentation (40%): Students will be presented with an implementation research problem and asked to identify and describe the barriers to changing behavior relevant to the scenario, to propose (and justify the choice of) an intervention to address this problem, and to describe an evaluation plan (commenting on the study design, setting, outcome measures, statistical analysis approach, and ethical/IRB issues). - Class Participation (20%): Participation grades will be based on class attendance, contribution to group work, as well as asking insightful questions and offering thoughtful comments during class discussion or through the Zoom chat function and other asynchronous means.	Lectures: 7.5 hours/ week Readings: 2.5 hours/ week Assignments: 2.5 hours/ week Total: 12 hours/week
RDS286	Decision Analysis in Clinical Research	Summer 2020 Summer1 Term	7/7/20-7/24/20 2:200 - 3:30	2.5	Ordinal or Pass/Fail	Synchronous live class sessions each day 2:00-3:30pm via Zoom; may offer optional discussion group sessions; optional office hours at a variety of times	Recordings of live sessions; discussion board on course website	RDS286 introduces students to systematic methods of decision analysis relevant to clinical decision making, clinical research and comparative effectiveness research. Topics of the sessions include: the use of causal estimands to express efficacy and real-world clinical effectiveness; the use of probability and sensitivity analysis to express and assess uncertainty; Bayes theorem and evaluation of diagnostic test strategies; utility theory and its use to express patient preferences for health outcomes; benefit-harm analysis and cost-effectiveness analysis in clinical research, clinical guideline development, health technology assessment, and health policy decision making. Lectures are accompanied by case problems, review sessions and computer exercises. After this course, students will understand the uses, strengths, limitations and ethical issues of decision analysis and cost effectiveness in clinical decision making and research design. We will discuss case examples from different disease areas including cancer, cardiovascular disease, infectious disease and others. Prerequisites: BST202 or BST206 (which may be taken concurrently) or BST201.	RDS286 will have synchronous (i.e., live) sessions every weekday from 2:00-3:30pm EDT. These sessions will be held via Zoom and usually will consist of a lecture on a particular topic, interspersed with discussion and/or other interactive activities, including one 'Mini-Symposium on COVID-19 Modeling' with invited panelists. It is strongly recommended that students join the live sessions whenever possible, but they will be recorded and posted afterwards on the course website if students are unable to join live. Some lectures from 2019 also will be posted in advance, in case students want to view them ahead of time. Optional office hours will be offered by faculty and Teaching Fellows at a variety of times. There also will be a discussion board on the course website, for students to ask questions and interact with each other and with faculty and Teaching Fellows. There will be two optional review sessions and one optional computer tutorial.	There will be a midterm take home exam and a final take home exam. Students must work alone on these exams. Student grades are based on these exams (90%) and class participation (10%).	12-15 hours/week
HPM512	Medical Informatics	Summer 2020 Summer1 Term	7/7/20-7/24/20 2:00 - 3:30	2.5	Ordinal or Pass/Fail	Online lectures of Commonly used databases; Online SAS software Screencasts: 2:00pm - 3:30pm on weekdays (live sessions/teaching staff available. We will likely use live sessions for structured help and support with projects)	Live sessions will be recorded and will be available after the sessions. Office hours will be held and will probably be 1-2 before sessions.	HPM512: Medical Informatics and health information technology are increasingly critical for delivery of safe, effective health care, and also for research, and management. Health information technology is transforming health care, and electronic health records represent a treasure trove of data for anyone interested in clinical effectiveness research, and a vehicle for improving healthcare delivery. In this course we describe the core issues in the field of medical informatics, survey the methods used to perform clinical effectiveness research using clinical systems, give examples of healthcare improvement using health information technology, and describe how to evaluate clinical systems interventions. Major topics include: the impact of clinical systems with a focus on clinical decision support, evaluation methods, obtaining information from clinical systems, and the role of informatics standards. Issues such as confidentiality and privacy, organizational factors, interoperability, and return on investment will also be covered. So will the topics of social media, mobile health, big data, artificial intelligence and the cloud. The relevance of informatics in disease management, genomics, patient computing, biosurveillance, and health care policy will also be highlighted. You do not need to be a programmer or to have medical informatics as a primary interest to take this course.	There will be synchronous live sessions every weekday. These sessions will be held via Zoom and usually will consist of a lecture on a particular topic, interspersed with examples from the literature and software demonstrations. It is strongly recommended that students join the live sessions whenever possible, but they will be recorded and posted afterwards on the course website if students are unable to join live. Optional office hours will be offered. There also will be a discussion board on the course website, for students to ask questions and interact with each other and with faculty.	Most of the grade will be based on the project. Students will present this twice orally, and then submit a proposal at the end which will be in the for of a grant. There will also be three short homework assignments.	10 hours per week.
Summer 2 Elective Courses											
Course number	Course name	Term	Dates and Times	Credits	Grading basis	Live sessions	Options if students cannot join live sessions	Course description	Online format	Assignments and Grading	Estimated number of hours per week (including all course activities and

BST215	Linear and Longitudinal Regression	Summer 2020 Summer2 Term	7/27/20-8/14/20 3:45 - 5:15	2.5	Ordinal or Pass/Fail	<p>Daily Videos: Each day (Mon-Fri), you will view a sequence of recorded lecture videos on a specific topic; the total length of the videos for each day is approximately 45 minutes.</p> <p>Live Sessions (Computer Labs): 3:45-5:15 pm twice a week (strongly recommended): Wed 7/29, Fri 7/31, Wed 8/5, Fri 8/7, Mon 8/10, Wed 8/12. Optional Live Session (Introduction to Stata/SAS Lab): Tues 7/28, 3:45-5:15. Optional office hours: Tuesdays and Thursdays, 8:00-9:00pm.</p>	<p>Live Sessions (Computer Labs) will be recorded and posted.</p> <p>BST215 is intended for students who are already very comfortable with fundamental techniques in statistics. The course will cover methods for building and interpreting linear regression models, including statistical assumptions and diagnostics, estimation and testing, and model building techniques. These models will be extended to handle data arising from longitudinal studies employing repeated measurement of subjects over time. Lectures will be accompanied by computing exercises using the Stata and SAS statistical packages; students are encouraged to use either package to complete assignment throughout the course. Prerequisites: EPI522 or BST201 or ID201 or ID207 or BST202&203 or BST206&207 or BST206&208 (can be taken concurrently).</p>	<p>BST 215 is an online course that includes synchronous and asynchronous components. Each day, Monday through Friday, you will view a sequence of recorded lecture videos on a specific topic. The total length of the videos for each day is approximately 45 minutes. After each video, there will be several quiz questions to help you evaluate your understanding of the content before proceeding to the next video. These quiz questions are not graded but are strongly recommended.</p> <p>Teaching staff will hold two live sessions (Computer Labs) each week via Zoom where emphasis is placed on implementation of methods using either Stata or SAS; students can choose to attend either Stata or SAS computer labs (Stata and SAS computer labs are scheduled at the same time) and are encouraged to use either package to complete assignments throughout the course. The computer labs are scheduled for 60 minutes (3:45-4:45pm); the last 30 minutes is an optional "informal office hour", reserved for any course or homework related questions. Attending these twice every week live sessions is strongly recommended. However, if you are unable to attend, you may view the recording of the session.</p> <p>There will be optional office hours in Zoom offered on Tuesdays and Thursdays (8:00-9:00 pm EDT) where the Faculty or Teaching Assistants will be available to answer any questions you may have related to the course activities and/or course logistics. We encourage you to take this opportunity for live interaction with the teaching staff.</p> <p>There will be a Q&A forum on the course website, for students to ask course-related questions so other students may benefit from their questions and the answers. There also will be separate Stata and SAS discussion boards for students to ask questions, share ideas, and suggest Stata and SAS commands/code for implementing the statistical methods covered in BST 215.</p> <p>Note: At the beginning of the course, the materials for the entire first week will be posted. Subsequently, one week of material will be posted each Monday. This will allow you to work ahead of time if you know that you will have some conflicts during the week.</p>	<p>Homework (50%) There will be a total of 2 graded assignments during the first two weeks. These assignments are designed to solidify your understanding of linear and longitudinal regression covered in lectures. Each assignment will consist of a set of specific questions about a particular dataset. These questions are intended to guide you through some of the analyses. We are particularly interested in your reasoning, presentation, and how well you incorporate the statistical results with your substantive conclusions. You are allowed to discuss the homework assignments with other students, but you must submit your own answers.</p> <p>Prior to each homework's due date, teaching staff will hold two live sessions (Computer Labs) where emphasis is placed on implementation of methods using Stata and SAS. Attending these sessions is strongly recommended and will prepare you well for the homework assignment due that week. Homework assignments will be due on Sundays at 11:59 pm EDT.</p> <p>Final Examination (50%) You will be required to complete one exam, worth 50% of your grade. The purpose of this exam is to consolidate your understanding of linear and longitudinal regression and apply the results of linear and longitudinal regression analysis to answer scientific questions. The final exam will be posted on Monday August 10 and will be due by Friday, August 14, 2020 at 3:45 pm EDT.</p> <p>The exam must be completed by you individually, and may not be discussed with any other students. Unless previous permission is requested and granted, late examinations will not be accepted.</p>	12-15 hours/week
EPI253	Effectiveness Research with Longitudinal Healthcare Databases	Summer 2020 Summer2 Term	7/27/20-8/14/20 3:45 - 5:15	2.5	Ordinal or Pass/Fail	3:45-5:15 PM Eastern time on weekdays	<p>Recordings of live sessions (though real-time attendance preferred); discussion board on course web site for additional questions</p> <p>Practical issues in obtaining, linking, and analyzing large databases will be emphasized throughout the course, and key analytic issues will be addressed, including design considerations and multivariate risk-adjustment. Students will work in teams with faculty advisors to conduct research projects using a nationally representative claims database of 23 million lives. They will work with an easy-to-use software platform that helps them implement complex studies without requiring programming skills.</p> <p>The course focuses on analytic principles and their application to database research. It requires an understanding of epidemiologic study designs (cohort, case-control) and typical analysis strategies (logistic regression, Cox regression, propensity score analysis).</p>	<p>EPI 253 includes an approximately even mix of lecture and hands-on components. All elements will be adapted to allow students to engage with class projects while taking the class remotely</p> <p>Lectures account for 8 sessions and will be conducted primarily live over zoom and students will have the chance to ask questions over zoom. All lecture sessions will be recorded for students needing to attend asynchronously and students can submit questions via the class discussion board at any time. Some lectures may be pre-recorded depending on the lecturer's schedule constraints.</p> <p>There are 3 small group sessions in which teams workshop and refine their project proposals. These sessions will be conducted in smaller zoom meetings, with no more than 10 students per faculty member. For students taking the course in other time zones we will offer small group sessions at other times of day, to the extent feasible. The final class session has each group presenting their project and will be conducted synchronously for as many students as are able to attend. Presentations are not part of final grading, so students who cannot attend synchronously will not be penalized.</p> <p>Three computer lab sessions form a key part of the course. These will be conducted live over zoom, with extensive use of breakout rooms to allow smaller groups to ask specific questions. As with the small groups, we will explore offering additional sessions at other times of day, to the extent feasible.</p> <p>Office hours and additional computer labs support sessions will be available at varying times of day to accommodate students in different time zones</p>	<p>Student grades are based on the final paper due at the end of the course (40%), an interim feasibility analyses due on the 2nd Friday of the course (30%), and class participation (30%).</p>	12-15 hours per week
HPM253	Improvement in Quality in Health Care	Summer 2020 Summer2 Term	7/27/20-8/14/20 2:00 - 3:30	2.5	Ordinal or Pass/Fail	2-3:30pm eastern time on weekdays with office hours and summary sessions	<p>Recordings of live sessions (though real-time attendance preferred); daily office hours and interactive summary sessions; discussion board on course web site</p> <p>HPM253 is designed for practicing clinicians and those with an interest in health care management. This interactive and challenging course will provide students with a fresh perspective on improvement in health care systems, and provide them with the necessary tools to effect the kind of real change in their own organizations and practices that can improve outcomes for patients. Topics of the sessions will include: systems thinking; the leadership of improvement; statistical thinking and the management of variation; process knowledge and design; change methods, improvement, and design and creativity; collaborative work; matching service design to needs; personal and professional learning and change; the diffusion of innovations; spreading new models of care across organizational silos and boundaries; and integrating cost and quality, and managing resistance to improvement.</p>	<p>Synchronous sessions with course faculty and guest speakers (improvement leaders from around the world) will be offered from 2-3:30pm eastern time Monday through Friday. These sessions will happen via Zoom and will include a combination of lecture, breakout discussions, polls, project presentations and interactive exercises. Sessions will be recorded and posted although, since student participation is an important part of the course, real-time attendance is preferred. Virtual office hours with the course faculty will also be held four days per week, at times to accommodate different time zones, and there will be a moderated (asynchronous) discussion board on the course web site. We will also explore abbreviated, interactive "summary sessions" for those living in time zones where real-time attendance would be difficult.</p>	<p>Students grades will be based upon participation (20%) plus two assignments - a personal quality improvement project, with graphs and data on progress (40%), and a detailed patient interview (40%), both due on the final day of the course.</p>	10-12 hours per week
HPM299	Research with Large Databases	Summer 2020 Summer2 Term	7/27/20-8/14/20 2:20 - 3:30	2.5	Ordinal or Pass/Fail	Online lectures of Commonly used databases; Online SAS software Screencasts; 2:00pm - 3:30pm on weekdays (live sessions/teaching staff available. We will likely use live sessions for structured help and support with projects)	<p>optional office hours (considering adding weekend hours)</p> <p>HPM299 provides an overview of existing large administrative, clinical, and national survey databases and addresses the potential uses of these data to study important questions regarding clinical risk factors, treatment, outcomes and health policy. Strengths and limitations of large databases that are commonly used for research will be considered. Special attention will be devoted to large federal databases that are publicly available and readily usable by new investigators. Students will have hands-on experience using SAS statistical software to obtain, create, manipulate, and analyze large databases. Key statistical issues, including risk adjustment and sampling weights, will be emphasized in the course. Students will evaluate published studies based on large databases and develop a proposal for analyzing a specific research question with a large database. Note that this course uses SAS software (not STATA). Prior experience with SAS is not assumed or required.</p>	<p>HPM299 will have synchronous (i.e., live) sessions every weekday from 2:00-3:15 pm EDT. These sessions will be held via Zoom. We will use these sessions to provide support on projects. We will have online lectures and SAS Screencasts that will be posted in advance, and students may view at any time. It will be important for students to be thinking of their group projects in advance. We will send a list of available databases in advance of the course. Later in the first week, we will have small group seminars, in which students present a brief outline of their research questions and discuss it with a faculty member and several other students. These will be held via Zoom during the regular class time (2:00-3:15 pm EDT, but we may need to extend this time to accommodate all project groups). Optional group and individual office hours will be offered from 1:00-2:00 pm EDT, and at other times by request. There also will be a discussion board on the course website, for students to ask questions on discussion board so other students may benefit from their questions.</p>	<p>All students will be required to use SAS. There will be a group project. Students will be asked to create groups of 4-5 students. These groups must be formed early in the course (by Wednesday of Week 1). Students will choose to work on a project using databases offered in the course. We will send out a list of databases to registered students in advance so they can begin to think about their project. There will be a brief quiz that students will complete individually. Groups will create a group presentation of their study that will be due on the last day of class.</p>	12-15 hours/week

EPI288	Introduction to Machine Learning and Risk Prediction	Summer 2020 Summer2 Term	7/27/20-8/14/20 8:00 - 9:30	2.5	Ordinal or Pass/Fail	Synchronous analysis workshops will be scheduled from 8:00 – 9:30 on Wednesdays and Fridays and repeated from 1:00 - 2:00 for students in time zones that are not compatible for the 8:00 - 9:30 slot. Students are required to view a specified set of asynchronous videos in advance of the workshops. Workshops will be interactive and demonstrate methods covered in the asynchronous videos. Optional Group Office Hours will be held on Mondays in the same time slot, the first providing an overview of logistic regression .	Synchronous Sessions and Optional Group Office Hours will be recorded and posted.	EPI288 is an introduction to the methods of Machine Learning and Predictive Modeling. Basic concepts and philosophy of supervised and unsupervised machine learning as well as appropriate applications will be discussed. Topics covered will include regression, classification trees, random forests, boosted trees, neural networks, cluster analysis, and principal component analysis. The course is divided into 6 modules (2 per week). Each module will have a synchronous session on a Wednesday or Friday morning with a series of specified asynchronous videos for students to view in advance of each synchronous session. Optional Group Office Hours will be held on Mondays of each week .	A series of asynchronous video lectures will be posted for viewing at your own schedule in advance of each synchronous session. The total length of the videos for viewing in advance of a synchronous session is approximately 2-3 hours. These videos will describe analytic methods that will be demonstrated in the subsequent synchronous session.	Homework (40%): There will be a total of 4 computer- graded assignments during the first two weeks. These assignments are designed to solidify your understanding of material covered in the first four modules. Toy Data Exercise (60%): Each student will be given a different computer-generated data set to create and validate a prediction rule using methods covered in the first four modules.	12-15 hours/week
Second Summer Courses - for previous PCE students											
Course number	Course name	Term	Dates and Times	Credits	Grading basis	Live sessions	Options if students cannot join live sessions	Course description	Online format	Assignments and Grading	Estimated number of hours per week (including all course activities and
EPI236	Analytic Issues of Clinical Epidemiology	Summer 2020 Summer1 Term	7/7/20-7/24/20 9:45 - 11:15 (Office Hours: 8:00 -9:30)	5	Ordinal or Pass/Fail	Synchronous analysis workshops will be scheduled from 9:45 – 11:15 on Mondays, Wednesday, and Fridays, starting on July 8. Students are required to view a specified set of asynchronous videos in advance of these sessions. These workshops will be interactive and demonstrate the methods covered in the asynchronous videos. Optional Group Office Hours will be held prior to each workshop during the 8:00 - 9:30 slot.	Live Synchronous Sessions (Analysis Workshops and Group Office Hours) will be recorded and posted.	EPI236 examines analytic issues encountered in clinical research. Emphasis is placed on the use of regression models to control of confounding and to develop and evaluate clinical prediction rules. The focus of this course is on applications and interpretations of results with limited introduction to theory that underlies these techniques. This summer EPI236 will utilize videos for a similar online course from the MPH in Epidemiology Program (EPI522) along with scheduled workshop sessions to demonstrate the analytic techniques covered in those videos. In addition to homework assignments, students complete two analysis projects.	A series of asynchronous video lectures will be posted for viewing at your own schedule in advance of each synchronous analysis workshop. The total length of the videos for viewing in advance of a workshop is approximately 2-3 hours as this is a 5 credit course. These videos will describe analytic methods that will be demonstrated in the subsequent workshop.	Homework (50%): There will be a total of 5 computer- graded homework assignments. Analysis Projects (50%): Students will be required to complete two analysis using a logistic regression model, one to measure the effect of a risk factor controlling for multiple confounding factors and the other to create and validate a prediction rule,	15 - 30 hours/wk (this is a 5 credit course)
BST224	Survival Methods in Clinical Research	Summer 2020 Summer2 Term	7/27/20-8/14/20 11:30 am to 1:00 pm	2.5	Ordinal or Pass/Fail	We will have live lecture each day via Zoom from 11:30 am to 12:30 pm, and analysis code section (using SAS) from 12:30 pm to 1:00 pm. We will have daily short quiz which can be taken any time prior to the following lecture. The quiz will be time-limited to 20 minutes. The daily Zoom lecture section will be recorded, and the instructor will be available for Zoom office hours which are convenient for students.	All lectures will be recorded and posted. Individual appointments will be available to students at times that are convenient for the students.	BST224 will cover statistical methods of survival analysis used in clinical research, including study design and power analysis, Kaplan-Meier product-limit estimation, Cox proportional hazards models, models with time-dependent covariates and repeated events, and models with competing risks. We will use SAS software in the course; however, students can use Stata, R, SPSS or other software. Students are encouraged to bring in their own project data for consultation. Course evaluation will be based on 13 daily quizzes. All lecture notes and SAS code will be available on the course website https://my.harvard.edu/ .		Evaluation: We will have 15 days in the course. We will have a daily quiz on day 2 to 14. Each quiz will have 4 questions, and will take about 10-20 minutes to finish. The scores from the top 12 quizzes will be counted and divided by 12. The range of the average will be from 0 to 4. The grade will be based on the following: A:3.8-4.0, A-:3.60-3.79, B+:3.4-3.59, B:3.0-3.39.	12/15 hours per week