HARVARD T.H. CHAN | SCHOOL OF PUBLIC HEALTH
Department of Epidemiology

Area of Specialization	Competency	Describe how this competency is covered
Epidemiology		
Cancer epidemiology and cancer prevention	Apply frameworks for assessing and designing cancer prevention strategies	Students are required to take **EPI 224: *Cancer Prevention***. The course reviews theoretical and practical challenges in developing and implementing interventions to reduce individual, public health, and population health cancer burdens,focusing on primary and secondary prevention. Homework assignments require students to collect and apply new knowledge to case studies, which are used to develop a cancer prevention intervention as a final project.
Cardiovascular epidemiology	Critically assess the literature on the epidemiology of cardiovascular disease, including principal methods and their limitations.	Students are required to take **EPI 223: *Cardiovascular Epidemiology I***. This course reviews the epidemiology of cardiovascular disease, including the major cardiovascular diseases, related conditions, emerging risk factors, and current controversies. Assignments include written paper critiques, and an in-class final presentation.

Clinical epidemiology	Examine major problems in the use of observational studies in clinical research.	Students are required to take **EPI 203: *Study Design in Epidemiologic Research for Clinical Epidemiology***. This course examines common problems in the design, analysis, and interpretation of observational studies, with a focus on cohort and case-control studies Problems of exposure and disease definitions, time-dependent effects, confounding, and misclassification are considered in the light of data sources typically available.
Environmental and occupational epidemiology	Assess the application of common epidemiologic methods used to evaluate the health effects of physical and chemical agents in the environment	Students are required to take **ID 215: *Environmental and Occupational Epidemiology***. This course review methods used in evaluating the health effects of physical and chemical agents in the environment, reviews available evidence on the health effects of such exposures, and considers policy questions raised by the scientific evidence.
Epidemiologic methods	Assess methods for drawing causal inference from observational studies.	Students are required to take **EPI 207: *Advanced Epidemiologic Methods***. This course provides an in-depth investigation of causal inference methods, including topics such as confounding, selection bias, overall effects, direct effects, and intermediate variables, and methods such as g-computation algorithm estimators, inverse probability weighted estimators of marginal structural models,and g-estimation of structural nested models. For the major assignment in the course, students reanalyze data sets using the above methods.

Epidemiology of aging	Examine epidemiologic methods used to analyze diseases of aging.	Students are required to take **EPI 254: *Epidemiology of Aging***. This course covers epidemiologic concepts and methods related to diseases of aging as well as general health issues in older persons. Topics the epidemiology of Alzheimer's Disease; pharmacoepidemiology in the older persons; and methodologic dilemmas in such research.
Genetic Epidemiology and Statistical Genetics	Assess the basic principles and methods of genetic epidemiology.	Students are required to take **EPI 507: *Prinicples of Genetic Epidemiology***. This course examines methods for the study of both high penetrance and low penetrance alleles, as well as other high throughput genomic data, with a particular focus on methods of analysis of genome-wide association studies. Examples of contribution of genetic analysis to major diseases are also reviewed.
Infectious Disease Epidemiology	Apply mathematical modeling techniques to understand infectious disease dynamics.	Students are required to take **EPI 501: *Dynamics of infectious Disease***. This course covers the basic concepts of infectious disease dynamics within human populations, with a focus on transmission of infectious agents and the effect of biological, ecological, social, political, economic forces on the spread of infections. Students are introduced programming mathematical modeling techniques using the programming language R. Students complete written homework assignments and engage in a final class debate.

Nutritional Epidemiology	Apply quantitative methods to the evaluation of diet and disease relationships in epidemiologic studies.	Students are required to take **ID 214**: ***Nutritional Epidemiology*** (2.5 credits), which teaches methods for assessing the dietary intake of populations and individuals, including . actual collection, analysis and interpretation of dietary intake. The course also reviews several specific diet/disease relationships, integrating information from international studies, secular trends, clinical trials, analytical epidemiology, and animal experiments.
Pharmacoepidemiology	Examine decision-making of manufacturers, regulators, and researchers who have inadequate and imperfect pharmacoepidemiologic information.	Students are required to take **EPI 221: *Pharmacoepidemiology***. This course provides an overview on inference about the effects of pharmaceuticals and other medical products on health outcomes from case reports, case series, vital statistics and other registration schemes, cohort studies, and case-control studies. Students are assessed through written individual and group assignments, modelled after real-world scientific contributions (e.g., letter to the editor, peer review of pharmacoepidemiologic study).
Neuroepidemiology and Psychiatric Epidemiology	Apply basic epidemiologic methods to neuroepidemiology and psychiatric research.	Students are required to take **EPI 284: *Epidemiology of Neurological Diseases***. This course iintroduces students students to the epidemiology of major neurologic diseases, with an emphasis on etiologic and research integrating epidemiology with clinical and pathological aspects. Students are assessed through discussion posts and a final examination.

		Students are required to take **EPI 219: *Assessment Concepts and Methods in Psychiatric Epidemiology***. *This course covers a range of epi*demiologic and psychometric concepts and methods, including measurement theory, reliability, validity, screening, and diagnostic classification procedures, as they specifically relate to psychiatric research. Students are assessed through homeworks and a final paper and oral presentation.
Reproductive and Perinatal Epidemiology	1. Propose an appropriate epidemiologic method to measure a specific reproductive outcome.	Students are required to take **EPI 269: *Reproductive and Perinatal Epidemiology***. This course cover a range of including concepts and methods, including: the biology of human reproduction; an evolutionary perspective of pregnancy; fertility and time to pregnancy; infertility and its treatment; complications in pregnancy; adverse perinatal outcomes; sexual health and induced abortion; gynecological Students are assessed through peer reviews of published papers and a final project (study design) and oral presentation.

	2. Propose an appropriate epidemiologic method to measure a specific perinatal outcome.	