Course Syllabus

Visiting professor : Murray A. Mittleman

Course	Epidemiology		
Credit	1	Method of Teaching	Lecture and Seminar

Objective

The objective of this course is to provide students with a solid understanding of fundamental epidemiologic principles and methods and to apply them to evaluate public health questions and develop skills in critiquing the epidemiologic and clinical research literature. The course will be taught with an emphasis on epidemiologic measures, study design and control of confounding.

By the end of the course, students should be able to:

1. Understand the basic principles of epidemiology, including how to calculate and interpret measures of disease frequency and association; epidemiologic study designs for descriptive and analytic studies; how to interpret results from epidemiologic studies including cohort and case-control designs

2. Understand the concepts needed to identify sources of bias that may arise in epidemiologic studies including confounding and selection bias

3. Be an informed consumer of the public health and epidemiologic literature

Outline

Measures of Disease Frequency and Measures of Association: Characteristics of basic measures of disease frequency (prevalence, cumulative incidence, incidence rates) and association (relative and absolute measures) with a focus on the use, interpretation, and relationship between these measures.

Epidemiologic Study Design: Characteristics, strengths and limitations of each of the major study designs including descriptive and analytic studies with a focus on cohort and case-control approaches.

Sources of Bias in Epidemiology: Core concepts of confounding, selection bias, and recognizing the presence of effect measure modification on the additive and multiplicative scales.

Class Schedule   (90 minutes each)

Day 1 (January 5, 2024)

1. Lecture: Measures of disease frequency and association   (9:00-10:30)

2. Seminar: Measures of disease frequency and association   (10:45-12:15)

Day 2 (January 6, 2024)

3. Lecture: Study design overview and cohort studies   (9:00-10:30)

4. Seminar: Cohort study critique   (10:45-12:15)

Day 3 (January 7, 2024)

5. Lecture: Case-control study design   (9:00-10:30)

6. Seminar: Case-control critique   (10:45-12:15)

Day 4 (January 8, 2024)

7. Lecture: Confounding and Selection bias   (9:00-10:30)

8. Lecture: Effect measure modification   (10:45-12:15)

Examination (January 8, 2024):   (14:00-15:30)

We may add seminars by Japanese teachers for each to assist students with difficulty in language/background knowledge

Text

Rothman KJ. Epidemiology: An Introduction (2nd ed.) New York, NY: Oxford University Press, 2012 (ISBN-10 0199754551)

Related readings

Will be provided

Achievement evaluation

Students are expected to attend all classes, read the course material before coming to class, and actively engage in course discussions.

There will be a written final exam after the completion of the course.

Course Syllabus

Visiting Professor: David Wypij

Course	Biostatistics: Principles of Clinical Trials		
Credit	1	Method of Teaching	Lecture

Outline (subject to change)

This short course is designed to introduce basic principles in the design, conduct, and analysis of clinical trials including scientific and management aspects. Topics include trial design (different study designs, the study cohort, study treatments, treatment allocation methods, study outcomes, and sample size calculations), trial documents (protocols, statistical analysis plans, data monitoring plan, consent documents, trial registration, case report forms, and manual of operations), and data analysis (interim trial monitoring, adverse events, final data analyses, subgroup analyses, multiple comparisons, handling of missing data, and manuscript preparation). Use of the SPIRIT guidelines for protocol development and the CONSORT guidelines for trial manuscript preparation will be an important component of the course. The course should be of benefit to statisticians and quantitatively-oriented clinicians interested in working on clinical trials. Background in basic biostatistics (comparisons of two groups, hypothesis testing, confidence intervals) and regression methods (linear and logistic regression) is strongly recommended.

Class Schedule (90 minutes each) (subject to change)

Day 1 (January 9, 2024)

1. **Introduction to Clinical Trials (Overview, basics of drug development, basic study design, ethics)** (9:00-10:30)

2. **Protocol Development (Study objectives, study outcomes, surrogate and composite endpoints, repeated measurements, study population, SPIRIT guidelines)** (11:00-12:30)

Day 2 (January 10, 2024)

3. **Treatment Allocation and Blinding (Randomization methods, blocking, stratification, adaptive randomization, types of blinding)** (9.00-10.30 am)

4. **Sample Size Considerations (Type I error and power, adjustment for multiple comparisons, nonadherence, noncompliance, and dropouts)** (11:00-12:30)

Day 3 (January 11, 2024)

5. **Statistical Analysis Plan and Operational Issues (Multiple endpoints and hypotheses, data analysis plan, unadjusted vs. adjusted analyses, exploratory analyses, case report forms, manuals of operation)** (9:00-10:30am)

6. **Study Monitoring and Interim Analyses (Data Monitoring Committees, adverse events and safety data, outcome data, early study stopping, group sequential methods, conditional power)**   (11:00-12:30)

Day 4 (January 12, 2024)

7. **Example of a Clinical Trial from Start to Finish, including the CONSORT guidelines**   (9:00-10:30)

8. **Modern Developments (Novel designs, personalized medicine, and the future of clinical trials)**   (11:00-12:30)

Written Exam (January 12, 2024): (13.30-15.00pm)

We may add seminars by Japanese teachers for each to assist students with difficulty in language/background knowledge

Recommended Text (subject to change)

Fundamentals of Clinical Trials, Fifth Edition, Lawrence M. Friedman, Curt D. Furberg, David L. DeMets, David M. Reboussin, Christopher B. Granger, Springer, 2015.

Clinical Trials: A Methodologic Perspective, Third Edition, Steven Piantadosi, Wiley, 2017.

Related readings

Handout of lecture slides will be made available prior to the lecture.

Achievement evaluation (subject to change)

There will be a written final exam about the course contents scheduled in the class upon completion of the course.

Course Syllabus

Visiting professor : Ichiro Kawachi

Course	Behavioral Science / Social Epidemiology		
Credit	1	Method of Teaching	Lecture

Objective

The purpose of this course is to introduce students to the major social variables -- social class, gender, poverty, income distribution, social networks/support, community cohesion, the psychosocial work environment and neighborhood contexts -- that affect population health.

By the end of the course, students should be able to:

- Describe the theories (mechanisms and pathways) through which education affects health, health behavior, and illness.
- Describe the three theories linking income distribution to population health.
- Identify community-level determinants of health, such as neighborhood assets (e.g. social capital) and deficits (e.g. concentrated disadvantage).
- Compare and contrast compositional versus contextual influences of neighborhood environments on health.
- Discuss the mechanisms and pathways by which neighborhood contexts influence population health.
- Define and describe measurement approaches to assess social networks, social support, and social capital.
- Describe the mechanisms through which social networks affect health outcomes.
- Describe the demand/control model of job stress.
- Understand the behavioral economics concepts of "scarcity" and the sadness trap, and describe how they influence behaviors.

Outline

The course covers the theoretical underpinnings of each construct, their measurement, and empirical research linking each to population health status.   Methods are introduced to operationalize each construct for the purposes of empirical application in epidemiologic research.

Class Schedule   (90 minutes each)

Day 1 (January 14, 2024)

1. Introduction to the social determinants of health (9:00-10:30)
2. Socio-economic status, Measurement and causal evidence   (10:45-12:15)

Day 2 (January 15, 2024)

3. Income distribution and health   (9:00-10:30)

4. Social networks, social support, and health   (10:45-12:15)

Day 3 (January 16, 2024)

5. Neighborhood contexts and health   (9:00-10:30)

6. Social capital, social cohesion and health   (10:45-12:15)

Day 4 (January 17, 2024)

7. Psychosocial work envrionment and health   (9:00-10:30)

8. Behavioral economics and public health   (10:45-12:15)

Examination (January 17, 2024): (14:00-15:30)

We may add seminars by Japanese teachers for each to assist students with difficulty in language/background knowledge

Text

Berkman LF, Kawachi I & Glymour MM. (2nd ed). Social Epidemiology. New York: Oxford University Press, 2014.

Related readings

Kawach I. "Inochi no Kakusa wa Tomerareruka". Shogakukan 101 Shinsho, 2013 [in Japanese].

Achievement evaluation

   1.5-hour in-class written examination consisting of 3 short-essay questions

Course Syllabus

Visiting professor : Jaime Hart

Course	Occupational and Environmental Health		
Credit	1	Method of Teaching	Lecture and Seminar

Objective

The objective of this course is to provide students with a solid understanding of the fundamental principles and methods used in occupational and environmental health and to understand how to best apply them to evaluate public health questions and develop skills in critiquing the literature.

At the end of the course the student will be able to:

1. Undertand how occupational and environmental exposures are measured and how they can impact health
2. Understand how to assess potential sources of bias in studies of occupational and envirionmental exposures including confounding and selection bias.
3. Critique scientific manuscripts in occupational and environmental health

Outline

This course provides an introduction to occupational and environmental health, so that students can describe and apply basic concepts of of exposure assessment and epidemiology, to the evaluation and decision-making related to issues such as air pollution, occupational hazards, built environment, and climate change.

Class Schedule   (90 minutes each)

Day 1   (January 18, 2024)

Session 1   Lecture: Overview and Introduction to Occupational and Environmental Health (9:00-10:30)

Session 2   Lecture: Environmental and Occupational Study Designs (10:45-12:15)

Day 2   (January 19, 2024)

Session 3   Lecture: Health Effects of Air Pollution (9:00-10:30)

Session 4   Seminar: Environmental Study Critique (10:45-12:15)

Day 3 (January 20, 2024)

Session 5   Lecture: Health Effects of Nature and the Built Environment (9:00-10:30)

Session 6   Lecture: Health Effects of Climate Change (10:45-12:15)

Day 4 (January 21, 2024)

Session 7   Lecture: The Healthy Worker Effect in Occupational Health Studies (13:05-14:35)

Session 8   Seminar: Occupational Study Critique (14:40-16:20)

<u>Examination (January 21, 2024):</u> (16:35-18:05)

We may add seminars by Japanese teachers to assist students with difficulty in language/background knowledge

Text

None

Related readings

Will be made available in advance of the lecture.

Achievement evaluation

Students are expected to attend all classes, read the course material before coming to class, and actively engage in course discussions.

There will be a written final exam after the completion of the course.

Course Syllabus

Visiting professor : Alastair Gray

Course	Health Policy Management		
Credit	1	Method of Teaching	Lecture

Objective

To introduce students to the methods and uses of health economic analysis. By the end of the course students should be familiar with the main methods used by health economists, and the main uses to which economics can be put in the area of health and health care.

Outline

The course will consist of 8 lectures over 4 days. It will begin with a broad introduction to economics and health economics. It will then demonstrate some of the main tools of economic analysis and how these can be applied in health and health care. The course will then examine the main steps involved in evaluating health interventions: measuring costs, measuring and valuing quality of life, modelling and extrapolation, and using cost-effectiveness to set priorities and make decisions.

Class Schedule   (90 minutes each)

Day 1 (January 21, 2024)

1. **Economics, health and health economics**   (9:00-10:30 am)

    What is economics; what is health economics; health care spending: international trends; health care spending: composition and explanations. Health and wealth.

2. **Applying economic tools to health and health care**   (11:00-12:30am)

    Supply and demand; the market for health and health care; market failure and its consequences

Day 2 (January 22, 2024)

3. **Costs**   (9:00-10:30 am)

    Costs, prices and opportunity costs. Which perspective: the patient, the health system, the employer, society. How to collect cost information. Analysing and reporting cost data. Time horizon, discounting, dealing with missing data.

4. **Cost of illness and burden of disease**   (11:00-12:30am)

    What are cost of illness studies; what do they tell us; the Global Burden of Disease study; some national examples and their uses; using cost of illness data to inform research spending priorities.

Day 3 (January 23, 2024)

5. **Measuring and valuing quality of life**   (9:00-10:30am)

    Why measure quality of life? Some common instruments and questionnaires; valuing health states: the time trade-off and standard gamble. Quality Adjusted Life Years (QALYYs), and Disability Adjusted Life Years (DALYs). Other approaches, such as willingness to pay.

6. **Disease modelling and decision models**   (11:00-12:30am)

    Why disease models are useful: for prognosis, for prediction, for extrapolation. How they are built and validated. Some common examples in heart disease, cancer and diabetes. A closer look at a diabetes model: its development and use.

Day 4 (January 24, 2024)

7. **Using cost-effectiveness analysis to set priorities**   (9:00-10:30am)

    What is priority-setting? Using cost-effectiveness to set priorities. What is a cost-effectiveness analysis. What is a cost-benefit analysis? Taking account of costs and effects. Interpreting cost-effectiveness studies. Examples of cost-effectiveness analyses in diabetes and cancer. Cost-effectiveness databases.

8. **Using cost-effectiveness to make reimbursement decisions ; the example of NICE in the UK**   (11:00-12:30am)

    The National Institute for Health and Care Excellence; why it was set up; how it works; some controversies in the way it works and its decisions; other international reimbursement bodies. Looking into the future.

Examination (January 24, 2024): (2:00-3:30pm)

We may add seminars by Japanese teachers for each to assist students with difficulty in language/background knowledge

Text
I do not propose to have set readings for each lecture. At the end of each lecture I will provide some further reading and references.
Related readings
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Achievement evaluation
Students will be tested by oral examination "Oxford style" at the end of the course.