平成 29 年度

帝京大学大学院公衆衛生学研究科

第 7 回 ハーバード特別講義
Harvard Special Session 2018

授 業 計 画
(Course Syllabus)

TEIKYO

Teikyo-Harvard Program 主催

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 two strategies of prevention (the high risk and population strategies) and formulate interventions to address population health problems using these concepts and principles.
- Critique the validity and reliability of methods used to measure the dimensions of socio-economic status (SES), i.e. income, education, and occupation.
- Describe the theories (mechanisms and pathways) through which income, education, and occupation affect health, health behavior, and illness, and analyze their applicability to different types of health problems.
- Describe and contrast the absolute versus relative approaches to conceptualizing and measuring poverty.
- 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.
- Describe the hierarchy of public health strategies (information, incentives, regulations) to reduce health disparities.
- Describe the process of developing policies to address health disparities, and the barriers to implementing such policies.

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)

1. Introduction to the social determinants of health   (6 Jan Sat 9:00-10:30 am)

2. Socio-economic status, Measurement and causal evidence   (6 Jan Sat 10:45-12:15pm)

3. Income distribution and health   (7 Jan Sun 9:00-10:30 am)

4. Social networks, social support, and health   (7 Jan Sun 10:45-12:15pm)

5. Social capital, social cohesion, and health   (8 Jan Mon 9:00-10:30am)

6. Psychosocial work environment and health   (8 Jan Mon 10:45-12:15pm)

7. Behavior economics and public health (9 Jan Tue 9:00-10:30am)

8. Reducing health inequalities: a policy perspective   (9 Jan Tue 10:45-12:15pm)

Exam (9 Jan Tue 14:00-15:30pm)

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 eds). 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

   2-hour written examination consisting of 4 short-essay questions   (9 Jan Tue, afternoon)

Course Syllabus

Visiting professor : Garrett Fitzmaurice

Course	Biostatistics		
Credit	1	Method of Teaching	Lecture

Objective

The emphasis of this course is on understanding basic concepts and methods and how they can be applied in the health sciences.

Outline

The aim of the course is to introduce modern methods for the analysis of longitudinal data when the response variable is a continuous or quantitative measurement. Data of this type commonly arise in epidemiological studies and in clinical trials. Topics include an introduction to the analysis of longitudinal data, the analysis of response profiles, fitting parametric curves, covariance pattern models, random effects and growth curve models. The course is intended for all students interested in epidemiology, biostatistics and public health.

Class Schedule   (90 minutes each)

Day 1 (Wednesday, January 10, 2018)

1. **Introduction; Review of Basic Concepts; Examples; Notation;**   (9:00-10:30 am)
    Introduction to Correlated Data.   *Readings: FLW, Chapters 1 and 2.*

2. **Modelling the Mean: Analysis of Response Profiles.**   (10:45-12:15pm)
    Readings: FLW, Chapter 5 (Sections 5.1-5.4, 5.8-5.9).

Day 2 (Thursday, January 11, 2018)

3. **Modelling the Mean: Parametric & Semi-Parametric Trends.**   (9:00-10:30 am)
    Readings: FLW, Chapter 6.

4. **Case Study: Modelling the Mean – Application to Weight Loss Study**   (10:45-12:15pm)

Day 3 (Friday, January 12, 2018)

5. **Modelling the Covariance, Strategies for Modeling the Mean and Covariance.**   (9:00-10:30am)
    Readings: FLW, Chapter 7.

6. **Case Study: Jointly Modelling Mean & Covariance – Application to Dental Growth Study**   (10:45-12:15pm)

Day 4 (Saturday, January 13, 2018)

7. **Linear Mixed Effects Model for Longitudinal Data.** (9:00-10:30am)

   Readings: FLW, Chapter 8.

8. **Case Study: Linear Mixed Models – Application to Menarche Study** (10:45-12:15pm)

Written Exam (Saturday, January 13, 2018): (13:30-15:00pm)

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

Text

Fitzmaurice, G.M., Laird, N.M., and Ware, J.H. (2011). Applied Longitudinal Analysis, 2nd Ed. Wiley & Sons. (FLW)

Related readings

Will be made available prior to the lecture.

Achievement evaluation

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

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.

Causal Inference in Epidemiology: Core concepts of exchangeability, the counterfactual basis for understanding causal effects and identification of confounding and recognizing the presence of effect measure modification on the additive and multiplicative scales.

Class Schedule   (90 minutes each)

Day 1 (Monday, January 15, 2018)

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

2. Seminar: Measures of disease frequency and association   (11:00-12:30pm)

Day 2 (Tuesday, January 16, 2018)

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

4. Seminar: Cohort study critique (11:00-12:30pm)

Day 3 (Wednesday, January 17, 2018)

5. Lecture: Confounding (9:00-10:30 am)

6. Lecture: Effect measure modification (11:00-12:30pm)

Day 4 (Thursday, January 18, 2018)

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

8. Seminar: Case-control critique (11:00-12:30pm)

Exam (Thursday, January 18, 2018): (14:00-15:30pm)

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 : 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 introuction 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 extraolation, and using cost-effectiveness to set priorities and make decisions.

Class Schedule   (90 minutes each)

Day 1 (Saturday, January 20, 2018)

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**   (11:00-12:30pm)

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

Day 2 (Sunday, January 21, 2018)

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. Hospital costs and DRGs; the cost of events. international comparisons of costs.

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

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 (Monday, January 22, 2018)

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

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

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.

Day 4 (Tuesday, January 23, 2018)

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

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** (11:00-12:30pm)

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.

Exam(Tuesday, January 23, 2018): (14:00-15:30pm)

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.

Course Syllabus

Visiting professor : Rose H Goldman

Course	Environmental / Occupational Health		
Credit	1	Method of Teaching	Lecture, Discussion and Case Studies

Objective

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

1. Describe how human impacts on the environment, both local and global, contribute to promoting health and/or causing illness

2. Describe and apply basic concepts of toxicology, exposure assessment, environmental epidemiology, risk assessment/risk management, health impact assessment/life cycle analysis and injury analysis in order to evaluate, and develop a plan for decision-making involving human health effects related to acute and chronic exposures involving major environmental and occupational hazards, such as air pollution, metals, drinking water, physical hazards (such as injuries), and climate change.

3. Describe how factors (such as age, disproportional exposures, socio-economic status, cigarette smoking, and nutrition) can modify the impact of environmental and occupational hazards on a population

Outline

  As countries face growing energy needs and increasing concerns about the effects of climate change, greater attention is being paid to the environmental factors that detract, or enhance, human health. This course provides an introduction to environmental health, so that students can describe and apply basic concepts of toxicology, exposure assessment, environmental epidemiology, risk assessment/risk management, health impact assessment/life cycle analysis and injury analysis, to the evaluation and decision-making related to issues such as air pollution, drinking water, occupational hazards, injuries, built environment/energy choices and climate change. The course also illustrates some of the inter-relationships between local and global effects, as well as the role of other factors (such as age, disproportionate exposures, socio-economic factors, cigarette smoking, etc.) in modifying the impact of environmental and occupational hazards on a population.

Class Schedule   (90 minutes each)

Session 1 (Thursday, January 25 (9:00-10:30) Overview and Introduction to Environmental Health

Case Study # 1 – Pregnant woman, fish and mercury: Part 1: Why mercury in fish?

Session 2 (Thursday January 25,   10:45-12:15)   Pathways & Measurement of exposures; toxicological principles

Case Study #2- Pregnant woman, fish and mercury: Part 2

Session 3 (Friday, January 26,   9:00-10:30) Environmental Epidemiology and Air Pollution

Case Study #3: PM2.5 levels in different locations, impact on mortality, sources and prevention strategies

Session 4 (Friday, January 26, 10:45-12:15)   Risk Assessment and policy decisions

Case Study #4 Pregnant woman, fish and mercury: Part 3: balancing toxic effects of mercury vs health effects of fish consumption

Session 5 (Saturday, January 27,   9:00-10:30)   Water and Sanitation

Case Study # 5:   Water and Health—case study in Bangladesh

Session 6 (Saturday, January 27,   10:45-12:15)   Occupational Health; Introduction to Injury Prevention

Case Study #6:   Injury case analysis using Haddon's Matrix

Session 7 (Sunday, January 28,   9:00-10:30)   Built Environment and Energy Choices

Case Study #7 : Use a life cycle/health impact approach to look at the pros and cons of different energy sources
Also, Ecological Foot print calculation

Session 8 (Sunday, January 28, 10:45-12:15)

Case Study #8   Climate Change and Health Effects;   Strategies for reducing carbon

Examination (Sunday, January 28, 2018): (15.00-16.00pm)

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

Text

Frumkin H, Editor. Environmental Health: From Global to Local. San Francisco: Jossey-Bass, 2016

Related readings

Will be made available in advance of the lecture. Textbook in own language may help understanding.

Achievement evaluation

There will be a written final exam after the completion of the course. Participation of the class in discussion will be appreciated.