

# Life course research

Schedule#:

Winter 2017; [day] [Time] [Room #]

Course Units: 2

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## Course Description:

This course examines the life course research for health sciences. Emphasis will be placed on methodologies employed to estimate cumulative effects from earlier life exposures and biologic pathways to describe risks on health and disease across the life course.

## Prerequisites:

Undergraduate degree is required. Successful completion of an introductory statistics or biostatistics is encouraged. Background courses in Life Sciences (biology, natural science, etc) are also encouraged.

## Rationale:

This course expands health science research by focusing on the independent, cumulative and interactive risk factors across the lifespan. By studying the long-term effects of physical or social exposures during gestation, childhood, adolescence, young adulthood and later adult life on later health or disease risk, students will gain an appreciation of critical periods and transitions that occur throughout life. Students will further be exposed to the appropriate methods to employ, and to think critically of biases that arise with longitudinal data. In order for health sciences researchers to study and intervene on adult disease, an understanding and appreciation of life course research is critical.

## Course Aims and Objectives:

### *Aims*

This course aims to introduce students to the concept of life course research. Through lectures on methodology, biologic pathways and mechanisms, and specific periods of human development, experts in the field will prepare students to think critically of the life course perspective when researching health and disease at any point in the life span.

### *Specific Learning Objectives*

- I. Introduction to life course research
  - a. To define the life course perspective in health sciences, with an appreciation to biologic plasticity, fetal programming, and critical periods of growth and development.
  - b. Appreciate how socially patterned exposures during childhood, adolescence, and early adult life, both independently and jointly with biologic exposures, influence adult disease.
- II. Research Methods: Data, Analytic Techniques

- a. To describe the methodological challenges to life course research, and explore analytical techniques.
  - b. Understand how missing data, omitted exposures, and measurement error bias results.
  - c. Explore analytical techniques to when modeling repeat observations, hierarchical data, latent exposures, or multiple interactive effects.
  - d. Identify data sets where longitudinal analysis for social and biologic factors is possible.
- III. Applications of Life Course Research in the Health Sciences
- a. Understand the factors, starting with preconception, fetal growth and development, infancy, childhood and adolescence that contribute to and impact the condition into adulthood and later life.
  - b. Identify interventions that exist at various stages of the life course.
  - c. Describe the implications for clinical and public health practice and policy.

**Course Format and Procedures:**

Classes will consist of lectures delivery by topic experts. Students are expected to read the pre-reads prior to the lecture and participate in discussion following the lecture. Additionally, students will each present a journal article they feel utilizes life course research, and critically discuss the strengths and limitations of the research.

**Course Requirements:**

1. Class attendance and participation policy: students are expected to read assigned readings prior to class. In addition, students are expected to attend class and contribute to class discussions during the class time.
2. Course readings:
  - (a) Required readings will be pre-assigned and made available to students prior to each lecture.

**Assessment and Grading:**

Assessment	Details	Points	Due	Designed to assess Student Learning Outcome #
1. Journal article presentation	Each student will do a 15-20 minute presentation of a journal article that pertains to life course research.	100	TBD	I-III
<b>TOTAL:</b>		<b>100</b>		

A = ≥92 pt	B = 82-87	C = 72-77	F = < 65
A- = 90-91	B- = 80-81	C- = 70-71	
B+ = 88-89	C+ = 78-79	D = 65-69	

If you are taking this course for P/NP, PASS = ≥80 pt.

## Schedule of Lectures:

Schedule and topics are tentative and may be revised with ample notice.

Date	Wk	Topic
	1	Introduction to life course research: conceptualization and causation
	2	Review of study design, methodological challenges to longitudinal modeling
	3	Analytical techniques for life course research, current and potential data sets
	4	Biologic mechanisms for the transmission of early life exposures
	5	Fetal health and development, fetal programming and plasticity
	6	Childhood and adolescent health
	7	Mental health
	8	Cognitive health and cognition
	9	Growth and development: a 30-year longitudinal cohort study
	10	Chronic disease and disability