Department of Population Health Sciences

Epidemiologic Methodology (PHS 798)

Spring Semester, 2016

Course Director: Leonelo Bautista, MD, DrPH
lebautista@wisc.edu
WARF 703
(608) 265-6176

Course Description: Epidemiologic Methodology (PHS 798) is directed to graduate and undergraduate students interested on the investigation of the occurrence and consequences of disease in humans. This course expands on the knowledge and abilities developed in Introduction to Epidemiology (PHS 797). The main emphasis of PHS 798 is on the design and interpretation of epidemiologic studies. The course will include hands-on experience in the evaluation of epidemiologic evidence, the analysis of epidemiologic data, and the discussion of strategies aimed to improve study validity and efficiency. Most lectures will be followed by a lab session.

Course Objectives: By the end the course the student will be able to:

a) Select, calculate and interpret measures of frequency and measures of effect used in different types of epidemiologic studies
b) Demonstrate understanding of the rationale behind the design of epidemiologic studies
c) Identify sources and types of bias in epidemiologic studies
d) Explain common strategies to prevent and correct for bias in epidemiologic studies.
e) Conduct a stratified analysis
f) Evaluate the validity and extrapolability of results from epidemiologic studies

Credits: 3

Grading: Grades will be based on lab assignments (15%), quizzes (15%), 2 midterm exams (20% each) and a final exam (30%). Grades will be assigned as 90.0-100, A; 85.0-89.9, AB; 80.0-84.9, B; 75.0-79.9, BC; 70.0-74.9, C; etc.

Policies: - Readings should be completed prior to the start of the corresponding lecture.
-Homework (lab problems) is due on the day following the corresponding discussion and must be handed in to the instructor or left in the instructor's office if needed (WARF 703).

- Students are encouraged to discuss course contents and lab problems with each other.
- Students will be assigned to lab groups and each student must individually contribute to the lab report from his/her group
- Students should expect to be individually asked to participate in the discussion of the lab problems.
- Lecture hand outs and homework assignments will be delivered through learn@UW.
- Cell phones **MUST** be turned off.
- Use of laptop computers is **NOT** allowed.

Office hours: LB (WARF 703) Tuesday & Thursday 1:00 to 2:00 pm or e-mail me for an appointment.

Recommended Textbook: Moyses Szklo, F. Javier Nieto. Epidemiology. Beyond the Basics. 3rd Edition. Jones and Bartlett, Sudbury, MA, 2014

Other useful books: Isabel dos Santos Silva. Cancer Epidemiology: Principles and Methods. International Agency for Research on Cancer (IARC), Lyon, France, 1999

Harvey Checkoway, Neil Pearce, David Kriebel. Research Methods in Occupational Epidemiology, 2nd. Edition. Oxford University Press, New York, 2004.

Online access: Desire to learn (D2L) at: **https://learnuw.wisc.edu/**

Course schedule: Tuesdays & Thursdays 11:00 to 12:30 a.m. at Clinical Science Center G5/119

Lectures and course activities

Date	Day	Topic	Instructor
Jan 19	Tuesday	Introduction	
		Causal effects: The Counterfactual Model	LB
Jan 21	Thursday	Measures of disease frequency	LB
		Reading: Szklo and Nieto, Ch. 2-3	
Jan 26	Tuesday	Measures of association	LB
		Reading: Szklo and Nieto, Ch. 2-3	
Jan 28	Thursday	Lab 1: Measures of disease frequency and measures of association	LB
Feb 2	Tuesday	Lab 1: Measures of disease frequency and measures of association	LB
Feb 4	Thursday	Study design: Experimental studies	LB
		Reading: dos Santos Silva, Ch. 7	

		Quiz 1 (Epi Measures)	
Feb 8	Tuesday	Study design: Experimental studies	LB
		Reading: dos Santos Silva, Ch. 7	
Feb 11	Thursday	Lab 2: Experimental studies	LB
Feb 16	Tuesday	Study design: Cohort studies	LB
		Quiz 2 (Experimental studies)	
		Reading: Szklo and Nieto, Ch. 1, p. 23-55	
		* dos Santos Silva, Ch. 8	
		* Checkoway, Ch. 5	
Feb 18	Thursday	Study design: Cohort studies	LB
Feb 23	Tuesday	Lab 3: Cohort studies	LB
Feb 25	Thursday	**1st Exam (up to and including cohort studies)**	
Mar 1	Tuesday	Study design: Case-control studies	LB
		Reading: Szklo and Nieto, Ch. 1, p. 23-55	
		* dos Santos Silva, Ch. 9	
		* Checkoway, Ch. 6	
Mar 3	Thursday	Study design: Case-control studies	LB
		Reading: Szklo and Nieto, Ch. 1, p. 23-55	
		* dos Santos Silva, Ch. 9	
		* Checkoway, Ch. 6	
Mar 8	Tuesday	Lab 4: Case-control studies	LB
Mar 10	Thursday	Assessing validity: Information bias	LB
		Reading: Szklo and Nieto, Ch. 4, p. 109-152	
Mar 15	Tuesday	Assessing validity: Information bias	LB
		Reading: Szklo and Nieto, Ch. 4, p. 109-152	
Mar 17	Thursday	Assessing validity: Confounding	LB/JN
		Reading: Szklo and Nieto, Ch. 5, p. 153-184	
Mar 19-26		**Spring Break**	
Mar 29	Tuesday	Assessing validity: Confounding	LB/JN
		Reading: Szklo and Nieto, Ch. 6, p. 185-226	
Mar 31	Thursday	Assessing validity: Selection bias	LB

		Reading: Szklo and Nieto, Ch. 4. p. 109-152	
Apr 5	Tuesday	Assessing validity: Selection bias	LB
		Reading: Szklo and Nieto, Ch. 4. p. 109-152	
Apr 7	Thursday	Interaction	LB
Apr 12	Tuesday	Interaction	LB
Apr 14	Thursday	Improving study efficiency	LB
Apr 19	Tuesday	**No class**	
Apr 21	Thursday	**2nd Exam (up to and including selection bias)**	
Apr 26	Tuesday	Stratified analysis	LB
		Reading: Szklo and Nieto, Ch. 7. p. 229-312	
Apr 28	Thursday	Stratified analysis	LB
		Reading: Szklo and Nieto, Ch. 7. p. 229-312	
May 3	Tuesday	Lab 6: Assessing Biases	LB
May 5	Thursday	Lab 6: Assessing Biases	LB
May 10	Tuesday	Review	LB
May 12	Thursday	**Final Exam (cumulative)**	

* Read one of the two.