



**DEPARTMENT:** Epidemiology

**COURSE NUMBER:** EPI 565    **SECTION NUMBER:** 000    **SEMESTER:** Spring 2016

**CREDIT HOURS:** 2

**COURSE TITLE:** Data Sources and Methods in MCH Epidemiology:  
An Introductory Course in Applied MCH Epidemiology

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**OFFICE HOURS:** By appointment, CNR 3004

#### **BRIEF COURSE DESCRIPTION**

This course introduces students to data sources and methods commonly used by epidemiologists in state or provincial health departments and the application of selected epidemiologic methods to needs assessment and development of maternal and child health programs and policies. Data sources include: vital statistics, census, population-based surveillance, and surveys (e.g. PRAMS). Methods include record linkage, trend analysis, bias in MCH research, cluster investigation, small area analysis, and secondary data analysis. Although an introductory course, EPI 530 and BIOS 500 are prerequisites. Because students learn hands-on techniques, laboratory exercises will be used to supplement class sessions.

#### **SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES**

- Describe public health problems in terms of magnitude, time, place, person and their associated risk factors
- Identify major epidemiologic problems of significance
- Identify key sources of data for epidemiologic purposes
- Differentiate between descriptive and analytic epidemiologic methods
- Calculate basic epidemiologic measures
- Implement methods for data cleaning and documentation for epidemiologic data sets
- Interpret epidemiologic results in a causal framework
- Utilize information technology tools and statistical programming packages in preparing scientific reports
- Recognize potential ethical and legal issues in epidemiologic studies

## LIST LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES

By the end of the course, students will:

- Know how to retrieve and manipulate publicly available vital records data
- Understand the strengths and limitations of vital records data
- Understand what secondary data analyses are, as well as their strengths and limitations
- Be familiar with PRAMS, including the methodology and available data and will know how to request PRAMS data for their future use
- Have an understanding of deterministic and probabilistic data linkage
- Obtain the skills to conduct deterministic and probabilistic data linkage
- Have background knowledge of trend analyses, cluster investigations, and questionnaire design
- Through a class assignment, students will generate a resource of several publicly available datasets that can be used for maternal and child health research

## EVALUATION

|  |     |
|--|-----|
| Class attendance and participation*        | 15% |
| Vital records assignment                   | 15% |
| PRAMS data request assignment              | 20% |
| Data linkage assignment                    | 15% |
| Publicly available data sources assignment | 35% |

Final grades will be rounded to the nearest whole number and assigned as follows:

A: 95 – 100; A-: 90 – 94; B+: 87 – 89; B: 84 – 86; B-: 80 – 83; C: 70 – 79; F: < 70

\*Attending and participating in each session are critical for your success in this course. Attendance will be taken each week.

## ACADEMIC HONOR CODE

**The RSPH requires that all material submitted by a student in fulfilling his or her academic course of study must be the original work of the student.**

## COURSE SCHEDULE

| Date  | Topic  |
|---|--|
| January 11  | <p><b><u>Course Introduction</u></b></p> <ul style="list-style-type: none"> <li>• Epidemiologic methods review</li> <li>• Important definitions for MCH epidemiology</li> </ul>  |
| January 18  | <b>MLK DAY – NO CLASS</b>  |
| <b>I. Data Sources in Maternal and Child Health</b> |  |
| January 25  | <p><b><u>Vital Records I</u></b></p> <ul style="list-style-type: none"> <li>• Brief history of vital statistics, vital events</li> <li>• Reporting responsibility</li> <li>• Latest revision (2003)</li> <li>• Available data</li> <li>• Confidentiality</li> </ul> <p>Lab: Downloading vital records data</p> <p><i>Readings to Prepare Before Class:</i></p> <p>CDC (1997). US Vital Statistics System: Major activities and developments, 1950-95. <i>Skim pages 1-26 of the report.</i></p> <p>Osterman, M. J., et al. (2011). "Expanded data from the new birth certificate, 2008." <i>Natl Vital Stat Rep</i> <b>59</b>(7): 1-28.</p>  |
| February 1  | <p><b><u>Vital Records II</u></b></p> <ul style="list-style-type: none"> <li>• Data quality concerns</li> </ul> <p>Lab: Calculating fetal death rates</p> <p><i>Readings to Prepare Before Class:</i></p> <p>Goldhaber, M. K. (1989). "Fetal death ratios in a prospective study compared to state fetal death certificate reporting." <i>Am J Public Health</i> <b>79</b>(9): 1268-1270.</p> <p>Heuser, C. C., et al. (2010). "Correlation between stillbirth vital statistics and medical records." <i>Obstet Gynecol</i> <b>116</b>(6): 1296-1301.</p> <p>Dietz, P., et al. (2015). "Validation of selected items on the 2003 U.S. Standard certificate of live birth: New York City and Vermont." <i>Public Health Rep</i> <b>130</b>(1): 60-70.</p> <p><b><u>Assignment:</u></b> Vital records assignment – DUE: FEBRUARY 8</p> |

| Date        | Topic   |
|-------------|---|
| February 8  | <p><b><u>Pregnancy Risk Assessment Monitoring System (PRAMS)</u></b></p> <ul style="list-style-type: none"> <li>• Guest Speaker: Nicole Kosacz, MPH<br/>GA PRAMS Coordinator, Georgia DPH</li> </ul> <p><i>Readings to Prepare Before Class:</i><br/> <a href="http://www.cdc.gov/prams/aboutprams.htm">http://www.cdc.gov/prams/aboutprams.htm</a><br/> <a href="http://www.cdc.gov/prams/methodology.htm">http://www.cdc.gov/prams/methodology.htm</a><br/> <a href="http://www.cdc.gov/prams/questionnaire.htm">http://www.cdc.gov/prams/questionnaire.htm</a></p> <p><u>Assignment:</u> PRAMS Data Request – DUE: FEBRUARY 22</p> <p><b>VITAL RECORDS ASSIGNMENT DUE</b></p>  |
| February 15 | <p><b><u>Secondary Data Analysis</u></b></p> <ul style="list-style-type: none"> <li>• Purpose</li> <li>• Pros and cons, examples</li> <li>• Analysis considerations</li> </ul> <p><i>Readings to Prepare Before Class:</i></p> <p>Boslaugh. (2007). Secondary data sources for public health: A practical guide. Chapter 1: An introduction to secondary data analysis, pages 1-10. Available at: <a href="http://assets.cambridge.org/97805218/70016/excerpt/9780521870016_excerpt.pdf">http://assets.cambridge.org/97805218/70016/excerpt/9780521870016_excerpt.pdf</a></p> <p>Brunner Huber, L. R., et al. (2006). "Body mass index and risk for oral contraceptive failure: a case-cohort study in South Carolina." <i>Ann Epidemiol</i> <b>16</b>(8): 637-643.</p> |
| February 22 | <p><b><u>Electronic Health Records in MCH</u></b></p> <ul style="list-style-type: none"> <li>• EnRICH Webinar Series: Using electronic health records for MCH research (12/6/2012)</li> <li>• Discussion of benefits and methodological challenges</li> </ul> <p><i>Readings to Prepare Before Class:</i></p> <p>Casey, J. A., et al. (2015). "Using Electronic Health Records for Population Health Research: A Review of Methods and Applications." <i>Annu Rev Public Health</i>.</p> <p>Weng, C., et al. (2012). "Using EHRs to integrate research with patient care: promises and challenges." <i>J Am Med Inform Assoc</i> <b>19</b>(5): 684-687.</p> <p><b>PRAMS DATA REQUEST ASSIGNMENT DUE</b></p>   |

| Date  | Topic  |
|---|--|
| <b>II. Methods in Maternal and Child Health</b> |  |
| <b>February 29</b>                              | <p><b><u>Bias in MCH</u></b></p> <ul style="list-style-type: none"> <li>• Methodological challenges for MCH</li> <li>• Examples: immortal time bias; selection bias; misclassification</li> </ul> <p><i>Readings to Prepare Before Class:</i></p> <p>Hutcheon, J. A., et al. (2013). "Immortal time bias in the study of stillbirth risk factors: the example of gestational diabetes." <i>Epidemiology</i> <b>24</b>(6): 787-790.</p> <p>Hatch, E. E., et al. (2016). "Evaluation of Selection Bias in an Internet-based Study of Pregnancy Planners." <i>Epidemiology</i> <b>27</b>(1): 98-104.</p> <p>Dietz, N. A., et al. (2015). "Identifying misclassification in youth self-reported smoking status: testing different consent processes of biological sample collection to capture misclassification." <i>Drug Alcohol Depend</i> <b>149</b>: 264-267.</p> |
| <b>March 7</b>                                  | <b>SPRING BREAK – NO CLASS</b>   |
| <b>March 14</b>                                 | <p><b><u>Data Linkage I</u></b></p> <ul style="list-style-type: none"> <li>• Guest Speaker: Michael Kramer, PhD,<br/>Assistant Professor, Emory<br/><i>Introduction to Data Linkage</i></li> </ul> <p>Lab: Deterministic data linkage</p> <p><i>Readings to Prepare Before Class:</i></p> <p>Kramer, M. R., et al. (2013). "Measuring women's cumulative neighborhood deprivation exposure using longitudinally linked vital records: a method for life course MCH research." <i>Matern Child Health J</i> <b>18</b>(2): 478-487.</p> <p><b><u>Assignment:</u></b> Deterministic Data Linkage Exercise – DUE: MARCH 21</p>   |
| <b>March 21</b>                                 | <p><b><u>Data Linkage II</u></b></p> <ul style="list-style-type: none"> <li>• Guest Speaker: Kevin Ward, PhD, MPH, CTR,<br/>Director, Georgia Center for Cancer Statistics<br/><i>Probabilistic Data Linkage – Lecture &amp; Lab Exercise</i></li> </ul> <p><i>Readings to Prepare Before Class:</i></p> <p>Jaro, M. A. (1995). "Probabilistic linkage of large public health data files." <i>Stat Med</i> <b>14</b>(5-7): 491-498.</p> <p><b>DETERMINISTIC DATA LINKAGE EXERCISE DUE</b></p>  |

| Date   | Topic   |
|--|---|
| <p><b>March 28</b></p>   | <p><b><u>Trend Analysis and Small Numbers</u></b></p> <ul style="list-style-type: none"> <li>• Considerations for MCH epidemiology</li> <li>• Uncertainty around estimates derived from small samples</li> </ul> <p><i>Readings to Prepare Before Class:</i></p> <p>Rosenberg (1997). "Trend analysis and interpretation: Key concepts and methods for maternal and child health professionals." Maternal and Child Health Information Resource Center. Available at:<br/> <a href="http://mchb.hrsa.gov/publications/pdfs/trendanalysis.pdf">http://mchb.hrsa.gov/publications/pdfs/trendanalysis.pdf</a></p>  |
| <p><b>April 4</b></p>  | <p><b><u>Cluster Investigations</u></b></p> <ul style="list-style-type: none"> <li>• CDC guidance for cluster investigations</li> <li>• Guidelines for MCH (Williams)</li> </ul> <p>Lab: Groups meet to discuss fact sheets and prepare presentations</p> <p><i>Readings to Prepare Before Class:</i></p> <p>CDC (1990). "Guidelines for investigating clusters of health events." <u>MMWR Recomm Rep</u> <b>39</b>(RR-11): 1-23. Available at:<br/> <a href="http://www.cdc.gov/mmwr/preview/mmwrhtml/00001797.htm">http://www.cdc.gov/mmwr/preview/mmwrhtml/00001797.htm</a></p> <p>Williams, L. J., et al. (2002). "Methods for a public health response to birth defects clusters." <u>Teratology</u> <b>66 Suppl 1</b>: S50-58.</p> <p><b>INDIVIDUAL FACT SHEETS DUE</b></p> |
| <p><b>April 11</b></p>   | <p><b><u>Conducting Research: Practical Issues</u></b></p> <ul style="list-style-type: none"> <li>• Things you don't usually hear about in coursework</li> <li>• Conducting research in the real world</li> <li>• Questionnaire design</li> <li>• Mailed and telephone surveys</li> <li>• Connecting with research subjects</li> </ul> <p>Lab: Groups meet to discuss fact sheets and prepare presentations</p>   |
| <p><b>III. Student Presentations</b></p>   |   |
| <p><b>April 18</b></p>   | <p><b><u>Student Presentations I</u></b></p> <p><b>GROUP CONSENSUS FACT SHEETS DUE</b></p>  |
| <p><b>April 25</b></p>   | <p><b><u>Student Presentations II</u></b></p>   |
| <p>*Schedule subject to change – any changes will be announced in-class and by email</p> |   |