Course Title: Applied Methods in Epidemiologic Research
Course Number: EPID 0657
Course Location: School of Public Health, Room 1A/B
Course Date & Time: Thursdays, 6:00 PM – 8:00 PM
Course Instructor: Michelle T. Bover Manderski, MPH, PhD Candidate Lecturer, Department of Biostatistics & Epidemiology michelle.manderski@rutgers.edu | (732) 235-9727
Office Hours: Thursdays, 4:00 PM – 5:00 PM, Location TBA
Course Assistant: Riddhi Babel, MPH; Doctoral Student, Epidemiology rab364@ sph.rutgers.edu

Additional/Supplemental Readings/Resources: Required articles will be posted in Canvas; SAS is required for the class. Please bring your laptop with SAS to class each week.

Course Description: This is an intermediate course designed to provide students with hands-on experience in the integration of epidemiologic theories and concepts with the analysis of study data. Students are introduced to various analytic approaches and quantitative methods for investigating public health issues, with a particular focus on logistic regression models. Students work on a publicly available dataset and work in designated groups throughout the semester. Students will perform a literature review, develop focused research hypotheses, develop an analytic plan, and analyze/interpret data applying the range of methods presented in lecture using SAS software. The data analysis project culminates in both oral and written presentations. Homework and a closed-book midterm examination are also required.

Selected Concentration Competencies Addressed: Each Concentration identifies competencies for each degree offered. The competencies addressed in this course for the MPH in Epidemiology include:

- Formulate a specific hypothesis and determine an appropriate study design and analysis plan
- Design and implement basic quality control methods during data entry and analysis
- Appropriately analyze and interpret epidemiologic data, including large national and state level datasets
- Communicate and present study findings to professional audiences

Please visit the Concentration webpages on the School of Public Health’s website at sph.rutgers.edu for additional competencies addressed by this course for other degrees and concentrations.
Course Objectives: By the completion of this course, students will be able to:

- Formulate study aims and hypotheses
- Build analytic models to test associations
- Use SAS software to run analyses and read SAS output
- Report and interpret findings from analytic models
- Present results in written and verbal form

Course Requirements and Grading:

- **Prerequisites:** Students must have completed Intro to Biostatistics (CORE 0504), Principles of Epidemiology (CORE 0502), Intermediate Epidemiologic Research Methods (EPID 0656), and Biometrics Computing (BIST 0535) or obtain written approval from the Instructor.

- **Final course grades** will be based on the following:
  - Homework: 30%
  - Midterm Exam: 20%
  - Project: 35% - 40%
  - Quizzes: 25%
  - Participation: 10%

- **This course utilizes Canvas** learning management system. Guidelines for assignments, as well as assigned readings and discussions, will be posted on Canvas throughout the semester, and most assignments will be submitted via Canvas.

- **Homework assignments** will be assigned throughout the semester. About half of these will be related to the final project. Homework must be submitted by the designated due date/time. Late submission will result in the following deduction:
  - 25% automatic deduction if submitted within 24 hours following the due date/time
  - 50% automatic deduction if submitted within 48 hours following the due date/time
  - Homework will not be accepted after 48 hours following the due date/time

- **A final project** will consist of a group presentation and an individual paper. Details will be provided during the semester.

- **Participation grades** will be assigned as a function of class attendance, active participation in classroom activities, and participation in Canvas forum discussions.

- **All assignments are individual assignments,** unless explicitly stated otherwise. This includes homework assignments and the final paper. While collaborative learning is encouraged, each student must submit their own work.
- Plagiarism will not be tolerated. Students agree that by taking this course all required papers may be subject to submission for textual similarity review to Turnitin.com (directly or via Canvas) for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Usage Policy posted on the Turnitin.com site. Students who do not agree should contact the course instructor immediately.

- Grading Scale:
  - 94 – 100  A
  - 90 – 93.99  A-
  - 87 – 89.99  B+
  - 84 – 86.00  B
  - 80 – 83.00  B-
  - 77 – 79.99  C+
  - 70 – 76.99  C
  - < 70  F
Course Schedule: Below is a PRELIMINARY course schedule. Updates to this schedule, as well as additional readings, assignments, and discussions, will be communicated via Canvas.

### WEEK 1: SEPTEMBER 6

| Lecture/Lab          | Review syllabus and course format  
|                     | Review of epidemiology concepts and analytic approaches  
|                     | Literature review  
|                     | Developing Aims and Hypotheses  
| Lab                  | About Me survey  
| Discussion           | Project introduction  
| Project Timeline     | Cody & Smith, Chapters 1, 2  
| Reading(s)           | About Me survey – PLEASE COMPLETE ASAP  
| Homework             | Visit [www.cdc.gov/nchs/nhis.htm](http://www.cdc.gov/nchs/nhis.htm)  
|                      | - Review survey content/information  
|                      | - Explore code books/variables  
|                      | - Be prepared to discuss topics of interest for the project  

Required readings – be prepared to discuss:

- Barriers to health care among adults identifying as sexual minorities: A US national study
- Food security among young adults with disabilities in the United States: Findings from the NHIS
- Sex differences in the association of psychological distress and tobacco use

### WEEK 2: SEPTEMBER 13

| Lecture/Lab          | Getting started with SAS  
|                     | National Health Interview Survey (NHIS)  
|                     | Downloading and merging datasets  
| Discussion           | Project topics  
| Project Timeline     | Finalize topic, develop aims and hypotheses  
| Readings             | Cody & Smith, Chapters 2, 5  
| Homework             | Assignment #1 – Due 9/20 – GROUP SUBMISSION

### WEEK 3: SEPTEMBER 20

| Lecture/Lab          | Linear regression  
|                     | Data management and exploration  
| Discussion           | Manuscript Background sections  
| Project Timeline     | Begin literature review  
| Reading(s)           | Cody & Smith, Chapters 5, 12, 13, 14  
| Homework             | Assignment #2 – Due 9/27
### WEEK 4: SEPTEMBER 27

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<thead>
<tr>
<th>Lecture/Lab</th>
<th>Power</th>
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<tr>
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<td>Logistic Regression</td>
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<tr>
<td>Discussion</td>
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<tr>
<td>Project Timeline</td>
<td>Complete literature review; Identify study variables</td>
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<tr>
<td>Reading(s)</td>
<td>Cody &amp; Smith, Chapters 2, 3</td>
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<tr>
<td>Homework</td>
<td>Assignment # 3 – Due 10/4</td>
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### WEEK 5: OCTOBER 4

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<thead>
<tr>
<th>Lecture/Lab</th>
<th>Recoding Variables</th>
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<tr>
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<td>Logistic Regression</td>
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<td>Discussion</td>
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<tr>
<td>Project Timeline</td>
<td>Recode study variables for analysis</td>
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<td>Reading(s)</td>
<td>Cody &amp; Smith, Chapter 9</td>
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<td>Homework</td>
<td>Assignment # 4 – Due 10/11</td>
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### WEEK 6: OCTOBER 11

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<thead>
<tr>
<th>Lecture/Lab</th>
<th>Confounding and Mediation</th>
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<tbody>
<tr>
<td>Discussion</td>
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<tr>
<td>Project Timeline</td>
<td>Identify potential confounders, recode if necessary</td>
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<tr>
<td>Reading(s)</td>
<td>Review required readings – be prepared to discuss!</td>
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<tr>
<td></td>
<td>• Barriers to health care among adults identifying as sexual minorities: A US national study</td>
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<td>• Food security among young adults with disabilities in the United States: Findings from the NHIS</td>
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<td>• Sex differences in the association of psychological distress and tobacco use</td>
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<td>Homework</td>
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### WEEK 7: OCTOBER 18

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<tr>
<th>Lecture/Lab</th>
<th>Effect modifications and Interaction</th>
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<tr>
<td>Discussion</td>
<td>Manuscript Methods sections</td>
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<tr>
<td>Project Timeline</td>
<td>Finalize covariate list; Identify potential effect modifiers</td>
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<tr>
<td>Reading(s)</td>
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<tr>
<td>Homework</td>
<td>Assignment # 6 – Due 10/25</td>
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### WEEK 8: OCTOBER 25

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<tr>
<th>Lecture/Lab</th>
<th>Measurement</th>
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<tr>
<td>Discussion</td>
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<tr>
<td>Project Timeline</td>
<td>Test for EM/Interaction; Draft Methods section</td>
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<tr>
<td>Reading(s)</td>
<td>Cody &amp; Smith, Chapter 11</td>
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<tr>
<td>Homework</td>
<td>Assignment # 7 – Due 11/8</td>
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### WEEK 9: NOVEMBER 1
### Lecture/Lab
- **Midterm Exam**

### Discussion
- Review Required readings – be prepared to discuss!
  - Barriers to health care among adults identifying as sexual minorities. A US national study
  - Food security among young adults with disabilities in the United States. Findings from the NHIS
  - Sex differences in the association of psychological distress and tobacco use

### Project Timeline

### Reading(s)
- Assignment # 7 – Due 11/8

### Homework

### WEEK 10: NOVEMBER 8

### Lecture/Lab
- Complex survey analysis
- Presenting and reporting results

### Discussion
- Manuscript Results sections

### Project Timeline
- Consider weighted analyses; Draft results section

### Reading(s)
- Review STROBE checklist for cross-sectional studies

### Homework
- Assignment # 8 – Due 11/15

### WEEK 11: NOVEMBER 15

### Lecture/Lab
- Survival analysis

### Discussion
- Manuscript Discussion sections

### Project Timeline
- Draft Results section

### Reading(s)

### Homework
- Assignment # 9 – Due 11/22

### WEEK 12: NOVEMBER 22 20 (TUESDAY)

### Lecture/Lab
- Hierarchical data

### Discussion

### Project Timeline
- Draft Discussion section

### Reading(s)

### Homework
- Assignment # 10 – Due 11/29

### WEEK 13: NOVEMBER 29

### Lecture/Lab
- Longitudinal data
- Project Presentations (?)

### Discussion

### Project Timeline
- Prepare and practice presentation

### Reading(s)

### Homework

### WEEK 14: DECEMBER 6

### Lecture/Lab
- Project Presentations
WEEK 15: DECEMBER 13 – FINAL PAPER DUE

Learning Management System: Canvas will be used extensively throughout the semester for course syllabus, assignments, announcements, communication and/or other course-related activities. It is the student’s responsibility to familiarize themselves with Canvas and check it regularly. If you have difficulties accessing Canvas, please inform the instructor and Canvas Support (help@canvas.rutgers.edu). Canvas is accessible at canvas.rutgers.edu.

School of Public Health Honor Code: The School of Public Health Honor Code is found in the student bulletin (sph.rutgers.edu/academics/catalpp/index.html). Each student bears a fundamental responsibility for maintaining academic integrity and intellectual honesty in his or her graduate work. For example, all students are expected to observe the generally accepted principles of scholarly work, to submit their own rather than another’s work, to refrain from falsifying data, and to refrain from receiving and/or giving aid on examinations or other assigned work requiring independent effort. In submitting written material, the writer takes full responsibility for the work as a whole and implies that, except as properly noted by use of quotation marks, footnotes, etc., both the ideas and the works used are his or her own. In addition to maintaining personal academic integrity, each student is expected to contribute to the academic integrity of the school community by not facilitating inappropriate use of her/his own work by others and by reporting acts of academic dishonesty by others to an appropriate school authority. It should be clearly understood that plagiarism, cheating, or other forms of academic dishonesty will not be tolerated and can lead to sanctions up to and including separation from the Rutgers School of Public Health.

Students with Disabilities: Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student must Apply for Services by first completing a Registration Form with the Rutgers Office of Disability Services (ODS) at ods.rutgers.edu. The student will also be required to participate in an ODS intake interview and provide documentation. If reasonable accommodations are granted, ODS will provide you with a Letter of Accommodations which should be shared with your instructors as early in your courses as possible.

Graduate Student Computer Policy: Students are required to possess a personal laptop, no older than approximately two years, that must meet minimum requirements which may be found online at: sph.rutgers.edu/student-life/computer_requirements.html

Policy Concerning Use of Recording Devices and Other Electronic Communications Systems: When personally owned communication/recording devices are used by students to record lectures and/or classroom lessons, such use must be authorized by the faculty member or instructor who must give either oral or written permission prior to the start of the semester and identify restrictions, if any, on the use of mobile communications or recording devices.

Withdrawal/Refund Schedule: Students who stop attending their course(s) without processing an Add/Drop Course form will receive a failing grade. Furthermore, students dropping to zero credits for the
semester are considered withdrawn and must submit a completed Leave of Absence form from the School of Public Health’s Office of Student Affairs. The School of Public Health refunds tuition only. Administrative and technology fees are non-refundable. You may find the Withdrawal/Refund Schedule on the School of Public Health website at:

sph.rutgers.edu/academics/registration/school_calendars.html