DEPARTMENT: Environmental Health

COURSE NUMBER: EH 596  SECTION NUMBER: 000  SEMESTER: Fall 2014

CREDIT HOURS: 1

COURSE TITLE: Research Design in Environmental Health

INSTRUCTOR NAME: P. Barry Ryan

INSTRUCTOR CONTACT INFORMATION

EMAIL: bryan@emory.edu

PHONE: 404-727-3826

SCHOOL ADDRESS OR MAILBOX LOCATION: CNR 2035

OFFICE HOURS: By appointment

BRIEF COURSE DESCRIPTION

Introduces basic concepts for conducting research in environmental health. The course takes place during the first half of the fall (second year, for most students) semesters. Students will have opportunities to identify and/or refine potential culminating experience project topics. Students will also review: criteria for selection of a project topic, objectivity in science, research design issues, human subject’s requirements, and use of the literature. Students will complete a brief plan for the steps in the development of their potential projects. Students will then have opportunities to develop, refine and apply their analytical and writing skills in the development of their culminating experience project proposal. Students will refine their research questions and/or project objectives, formulate plans for data management and analysis, and prepare and present their project proposal to departmental faculty for review, comment and approval.

LIST SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES

The completion of a culminating experience project allows students to apply the knowledge and skills they have gained from their coursework and practicum to a public health issue.

EH and GEH competency for this course: Design environmental health programs, policies, interventions and/or research intended to improve the health of individuals, communities, and populations
# LIST LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES

1. Teach students the basic concepts involved in developing and pursuing a project in the field of environmental health
2. Provide opportunities for students to identify potential project topics and evaluate their feasibility
3. Guide students in choosing between thesis and capstone culminating experience options
4. Provide opportunities for students to plan, develop, and write sections of their culminating experience project proposal
5. Provide opportunities for students to receive peer and faculty feedback on their project ideas

# EVALUATION

This course is graded on an S/U grading basis. Students will be required to turn in several assignments that will move them toward presentation of their thesis proposal in late October and Early November. Students will receive qualitative comments throughout the course.

# 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 OVERVIEW

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<th>Topic</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>September 2, 2014</td>
<td>Course introduction- 15-20 minutes</td>
<td>Barry Ryan</td>
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<td>Objectivity in Science- 70 min</td>
<td>Jeremy Sarnat</td>
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<td>September 9, 2014</td>
<td>Research Design, Part I - 45 min</td>
<td>Paige Tolbert</td>
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<td>Transfer the Health Sciences Library- 15 min</td>
<td>Barry Ryan</td>
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<td>Locating the Literature- 50 minutes</td>
<td>Barbara Abu-Zeid</td>
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<td>September 16, 2014</td>
<td>Project Proposal Development - 50 min</td>
<td>Barry Ryan</td>
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<td>Research Design, Part II- 50 min</td>
<td>Mitch Klein</td>
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<td>September 23, 2014</td>
<td>Discussion of Proposal Drafts</td>
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<td>September 30, 2014</td>
<td>Peer Review and Discussion Full Session</td>
<td>Barry Ryan</td>
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<td>October 7, 2014</td>
<td>Choosing Appropriate Statistical Methods- 50 min</td>
<td>Kyle Steenland</td>
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<td>Discussion of Individual Proposals- 50 min</td>
<td>Barry Ryan</td>
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<td>October 14, 2014</td>
<td>No class (Fall Break)</td>
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<td>October 21, 2014</td>
<td>Presentations that Matter- 50 minutes</td>
<td>Gary Miller</td>
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<td>Grant Proposals- 50 minutes</td>
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<td>October 30, 2014</td>
<td>Proposals Due to Ariadne</td>
<td>Ariadne Swichtenberg</td>
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<td>November 6-7, 2013</td>
<td>Project proposal presentations</td>
<td>ALL</td>
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DETAILED SCHEDULE AND ASSIGNMENTS

Note that there are 10 Assignments, with the 11th being your presentation in November. All of these assignments are geared toward your presentation with many of them being directly parts of either your presentation or your formal write-up of the presentation. The timing of the assignments and the in-class presentations are designed to keep you on track and moving toward the formal presentation of your proposals to the faculty. Some may seem like busy work, but all lead toward this goal.

1. September 2, 2014: Course Introduction (Ryan)
   - Course goals, objectives, assignments
   - Finding topics and advisors

   General Assignments: To be completed prior to the beginning of class or very near the beginning of the semester.
   (1) Read through the Culminating Experience Guide (available on the EH Blackboard site under “Thesis/Capstone”) prior to the class on September 2, 2014.
   (2) Schedule a meeting with your faculty and/or thesis advisor.

   Assignment 1 (due in class on September 9, 2014):
   (1) Provide an outline of the progress you have made to date on identifying a culminating experience project and your current thoughts on pursuing a thesis vs. capstone as your culminating experience.
      a. If you have already chosen a topic, provide a brief introduction to the topic, its relevance to environmental health, and a research design strategy or management process that could be used for this project.
      b. If you are still searching for a topic, list up to three areas of interest and strategies for finding and pursuing projects in these areas. Also give insight as to how you will find a mentor.
      c. Include in your write-up your current career goals upon completion of your degree and your thesis advisor or capstone mentor (if already identified).
      d. In preparation for next class, create a list of focus areas/keywords that you might use to perform a literature search.

   (2) Learn about the Institutional Review Board and requirements for human subjects research
      a. Watch the IRB Info Session video: Go to http://www.sph.emory.edu/cms/current_students/index.html and click link on right side of page “School-Wide IRB Training for First Years” even if you have seen this before, re-watching is a good idea.
      b. Note the PDF attached (tab near top) to the video: “Emory IRB Guidance: Is this research for IRB purposes”
      c. If you have not already done so, complete the CITI certification (an EH Departmental requirement for all students). Please hand in a hard copy in class; these will be forwarded to Ariadne to satisfy the departmental requirement.

2. September 2, 2014: Lecture: Objectivity in Science: The Role of Science and the Researcher (J. Sarnat)
   - What is scientific inquiry?
• Objectivity
• Use of language

Assignment 2 (Due in class by September 9, 2014):
(1) Prepare a timeline with action items that will lead up to submission of your proposal (latest by October 30, 2014 for May 2015 graduation) and ultimately your final project. Overarching categories to consider include departmental and school-wide deadlines, IRB submission, literature search/review, research design, data collection, data processing, data analysis, writing, etc. These are to be turned in at the beginning of class on September 9, 2014.

(2) Assignment 3 (by email to bryan@emory.edu by September 19, 2014): Read and prepare a critique of a previous student’s culminating experience project. Several theses and capstone reports will be posted on Blackboard, and you will be assigned a specific item to review. Critiques will be discussed in class on September 23, 2014. Please be sure to retain a copy of your critique for yourself.

3. September 9, 2014: Research Design Considerations (Tolbert)
• What is research and what is research design?
• Research design approaches and considerations

Assignment 4 (due in class on September 16 2016):
(1) Meet with your faculty and/or thesis advisor to discuss your progress on identifying a project and any relevant issues, including research design and IRB considerations. Create brief notes and action items stemming from your meeting and turn this in as your assignment. If you have already met with your advisor this semester, you may turn in your notes and action items from that meeting.

Assignment 5:
(1) By 12 pm Friday September 12, 2014, e-mail me a 1-page Word document that contains a brief (bullet point) write-up of your project, with the following:
   a. Your name
   b. Whether you are pursuing a capstone, a thesis, or are undecided
   c. Your capstone mentor/thesis advisor
   d. Project title
   e. Background
   f. Purpose of project (hypothesis, if applicable)
   g. Study design, methods
   h. Measurements and/or data (sources of data and key variables, such as main exposure of interest, if applicable)
   i. Analytic plan or strategy for managing your information
   j. NOTE: Keep each bullet short, typically one or two sentences or sentence fragments

These materials will be used in conjunction with Dr. Klein’s presentation on September 16, 2014 and should be prepared prior to our discussion with your capstone mentor or thesis advisor

4. September 9, 2014: Locating the Literature (Abu-Zeid, at Health Sciences Library)
• Literature resources available - library, web
• How to organize and use the literature (use of EndNote, keywords, abstraction)
**Assignment 6 (Sent by email to bryan@emory.edu by September 19):**

1. Searching, documenting, and organizing the literature
   a. Use an online database to search for literature on your topic.
   b. Conduct several searches to find at least 10 articles relevant to your project topic that you might select and abstract for your understanding of the literature. Download these references to EndNote. Insert them as citations into Word and create a bibliography.

   Document your search strategy by identifying the databases that you searched and the keywords/terms that you used.

2. **Assignment 7. (Sent by email to bryan@emory.edu by September 19): Abstraction exercise**
   a. Find full-length articles for at least two of these references. Review both articles in depth and abstract relevant information for your project topic (either paragraph or bullet form).
   b. Include information such as: bibliographic information, study objectives and/or hypotheses, study design, location of the study, study population, short descriptions of the exposure and/or health data, data analysis, key findings that relate to your project, interpretation of findings, limitations.
   c. Include notes of how this article is useful for your project (e.g., study design, analysis methods, background information, etc.).

5. **September 16, 2014: Project Proposal Development (Ryan)**
   I will choose at random some individuals for evaluation of their materials from the passed-in literature review and abstraction exercise. These will be evaluated critically for content, appropriateness of references, and quality of the summaries.

6. **September 16, 2014: Research Design, Part II (Klein)**
   - Formulation of project objectives and hypotheses
   Dr. Klein will choose from among the materials turned in the previous week to discuss concrete examples of objectives and hypotheses.

**Assignment 8: (Send assignment via e-mail to bryan@emory.edu by September 22, 2014)**

1. Prepare a 1-2 page draft project proposal. Include the following information:
   a. Project title and advisor/mentor (if applicable)
   b. Background and significance
   c. Purpose of your project. Include your research hypothesis or study question (if applicable) and your specific aims.
   d. The design of your project and methodology to be used (e.g., data collection methods, and strategy for analyzing or managing the data or information)
   e. Provide 3+ citations as part of the justification for your topic
   f. Detailed timeline outlining the anticipated progression of your project. Include what steps of the project you have already accomplished; what steps are still required for completion of your project, and a proposed timeline.

2. Send assignment via e-mail to bryan@emory.edu by September 22, 2014. Your file will be distributed to a peer reviewer via e-mail (see assignment for the following week).
7. September 23, 2014 Peer Review and Discussion (Ryan)

Dr. Ryan will schedule meetings with each of you to discuss proposal drafts. Meetings will occur during the regularly scheduled class time plus 30 minutes before and 30 minutes after to account for all students, and will be limited to five minutes each. Those needing or desiring more time can make an additional appointment.

Assignment 9:
(1) You will be matched with another student in the class randomly. Prepare a brief review of your colleague’s draft project proposal—no more than one-half page. Your job is to be constructive and help your colleague. Make sure you are convinced that the topic is important and that the framework, project design and/or methods are appropriate. In addition, make sure you indicate whether the topic is too broad or cannot be accomplished during the MPH timeframe. Project proposals will be distributed via e-mail. Please hand in your review via e-mail to bryan@emory.edu by Friday, September 26, 2014. These will be shared with your partner and used as discussion in the class scheduled for September 30, 2014.

8. September 30, 2014 Peer Review and Discussion (Ryan)
- Discuss project proposal presentations
- Peer-review of draft presentations
- After the proposal—project writing strategies

9. October 7, 2014: Choosing Appropriate Statistical Methods (Steenland)
- Analytical approaches
Dr. Steenland will discuss the types of statistical methods that should be used in assessing your data. He will draw from materials turned in in class and from class discussion and questions.

Assignments 10: Send assignment via e-mail to bryan@emory.edu by October 17, 2014 if you want feedback from Dr. Ryan.
(1) Revise your project proposal, incorporating comments and feedback received on your project to date. In the revised version, be sure to include details of the data management and/or statistical procedures you plan to use for your project. If your project is qualitative or informational, describe how you intend to organize and manage your information.
(2) Prepare and print out draft slides for your proposal presentation. Include the following information: Background and significance, research question and hypothesis (if applicable), specific aims, proposed methods.

10. October 14, 2014: Fall Break - No Class

11. October 21, 2014: Grant Proposals (Miller)
- Purpose of a proposal
- Components of a proposal
- Using literature, and if available, preliminary studies or data
- What does a good proposal look like?

12. October 21, 2014: Presentations that Matter (Miller)
- Structure of a professional presentation
- How to present data in a useful and compelling manner
- How to use tables and figures
• Communication skills

**Assignment 11**: Due October 30, 2014. Dr. Ryan will review any presentation if the student requests with 24 hour turnaround between October 21, 2014 and October 30, 2014.

(1) Prepare a 5-minute PowerPoint presentation describing your proposal. Include the following information: Background and significance, research question and hypothesis (if applicable), specific aims, proposed methods. The proposal presentations sessions will take place during the morning and afternoon of October 31, and November 1, 2014. Presentation slots within each session will be assigned randomly and the schedule will be posted on Blackboard. You are required to attend the entire session (morning or afternoon) in which you are scheduled to present. **Please send your presentation to Ariadne by close of business on November 5th**, so it can be loaded and ready to go. The session will be attended by EH faculty and EH594 instructors. Be prepared for 3-5 minutes of questions. Be sure to practice your presentation several times and keep within the 5-7 minute timeframe.

13. **October 30, 2014: Forms and Proposals due (to Ariadne)**

    *** November 6-7, 2014: Proposal Presentations ***
    (NOTE: Attending the entire session in which you are scheduled session is required. Attendance will be taken)