Bio. 486(1) Senior Seminar: Reproductive Biology
Syllabus, Spring, 2015

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Goals:
Rhodes requires all of its students to participate in a senior capstone experience. The purpose of this experience is to allow students to integrate knowledge from different sources and to refine their writing and speaking skills. In this class we will accomplish these objectives as part of a seminar concerning reproductive biology. A seminar course is one in which the participants teach and learn from each other through reading and discussion.

Specifically, my goals for this senior seminar are to give you the opportunity to:
1. learn and appreciate the biology of reproduction, especially in humans
2. refine your critical thinking skills and the ability to integrate different sources of information into a coherent picture
3. understand and evaluate how science is done by finding, reading and discussing primary literature
4. appreciate how information is transferred from the primary literature to advanced textbooks, introductory textbooks, or the popular press
5. develop your speaking and writing skills

To achieve these goals, the first and second parts of the course will be organized and run differently, although both sections will require you to read and discuss primary literature. To begin with, it is important for everyone in the class to learn basic background information about reproductive biology. This includes the subjects of male reproductive anatomy and physiology, female reproductive anatomy and physiology, fertilization and contraception, and pregnancy and birth. In another type of course I might simply provide a series of lectures on these four topics, but a seminar course provides you with the opportunity to learn by doing. Therefore, in the first half of the course you will work in groups to create a series of "lecture notes" about reproductive biology. Typically, lecture preparation involves reading several sources on a topic to get a complete picture, deciding what information is relevant and important, and synthesizing all of the information into an organized, comprehensible format. As you do this work in the beginning of the semester, not only will you learn the important background information in reproductive biology (which you undoubtedly will remember far longer than if you had merely listened to my lectures), but you will also gain experience that you will use in second part of the course. In addition to creating lectures, each student will also give a brief presentation on an assigned journal article that relates to the lecture material being covered.

During the second half of the semester, each student will give a longer and more formal presentation to the class on a topic s/he has chosen. This will allow everyone to learn about something important or especially interesting to you and will allow you to become the expert in that subject. Based on your experiences in the first half of the course, you should be well prepared to read and synthesize information from the primary literature and present it to a group in a clear and organized format. You will also have had practice in leading your classmates through a critique and discussion of a primary research paper on your topic.
Course requirements: (details given below)

A. First presentation on a journal article (articles provided) (50 pts)
B. Second presentation on a research topic (topics chosen) (100 pts)
C. Paper on the research topic (100 pts)
D. Written material (article summaries, discussion questions, and exam questions) (75 pts)
E. Peer evaluations of papers and presentations (38 pts)
F. Attendance at and critique of 2 departmental seminars (10 pts)
G. Final exam (70 pts)
H. Class participation (20 pts)

Explanation of Requirements:
Note that additional documents and guidelines are available on Moodle

A. First presentation on a journal article (articles provided) - 50 pts

In the first part of the semester we will be learning background information about reproductive biology from group discussions intended to create a set of "lecture" notes. For each topic we will also be reading and discussing some primary literature concerning special issues within the topic. For example, while we are learning about female reproductive anatomy and physiology, we may read and discuss an original research article regarding what triggers an egg to mature. This will allow us to explore some subjects in greater depth and allow everyone to see some of the original research papers that are the sources of textbook information.

During the first class period, you will choose the article that you wish to present from a list provided. In preparation for the class presentation, all students are to read the journal articles. The presenter should also read any other background texts or journal articles that are necessary to acquire a clear understanding of the article and subject to be discussed. Your presentation should be 15-20 minutes with 5-10 minutes for questions and should have the following format:

1. an explanation of the research question investigated
2. why it was investigated (the importance or significance of the question)
3. a brief description of the methods used (including sample sizes), particularly the methods for the major finding
4. the major results of the study
5. the conclusion(s) of the author(s)
6. at least one question you can ask of the class

Be prepared because others in the class will have questions for discussion! Also, if you are presenting one of the older papers, you should be familiar with relevant work that has been done on the subject since the paper was published. This information may be discussed in answer to questions from the class, or may be given as an epilogue to your talk, if there is time.

To present a single paper that everyone has read, you do not need to prepare a formal PowerPoint. However, you may use PPT to project figures and tables from the paper as you discuss them. You can also use PPT slides to list bullet points to keep yourself on track as you explain the main points and to allow others to follow. For methods, a figure or table that summarizes the experiments may be helpful for these presentations. Also feel free to provide handouts or write on the board to teach the class about the paper. Just remember that you want people listening to you, not reading a book’s worth of handouts or a lot of text on slides.
B. Second presentation on research topic (topics chosen) - 100 pts

By Tuesday, February 3, each student will choose a topic to research and present to the class. The goal of these presentations is to increase the class’s knowledge of reproductive biology as students teach each other about special topics of interest. Although these presentations are scheduled in the latter half of the semester, you should begin your research early in the term so that you have time to acquire and read the relevant literature. It often takes a long time to track down the appropriate journal articles and to read enough to fully understand the latest research on a topic. Another reason to start early is that you may find that your topic isn’t a good one. For example, there may not be any good basic science articles available, or you may find that the information on your subject isn’t interesting. If you start early, and decide you don’t like your topic, then you still have time to change it and find appropriate literature. Although you may use other types of sources (reviews, books, websites), your presentation should be based mostly on current primary literature. One of your primary literature articles (with my approval) should be assigned to the class, and much of your presentation (but not all) should focus on this reading. A PDF of the reading assignment and an outline of your talk should be e-mailed to me by 8 AM one week before your presentation. If you want to give the class a list of defined terms for your paper, turn that in as a separate document with the outline. The format may vary slightly depending on the topic, but each presentation should include the following sections:

1. Overview of the topic (background information, context, significance leading up to a key question that is addressed by the assigned article)
2. Presentation and critique of the assigned research article (see 1-6 above)
3. Summary
4. Discussion of questions
5. A literature cited section. Be sure also to cite references and images in each slide.

For some topics, when you look at the primary literature you will see two types of articles. The first type includes case studies or clinical trials. For example, if you were interested in whether oral contraceptives cause breast cancer, case studies or clinical trials would report how many women in a population received oral contraceptives and what percentage of them were found to have cancer. The other type of article is basic science and its focus is often mechanistic. Typically, these papers describe laboratory research, particularly experiments to demonstrate causation or the mechanism of causation. Some examples would be a study in which female lab rats were given specific doses of estrogen to see if there was an increase in breast tissue tumors or a study to determine if estrogen causes changes in RNA synthesis within cells in culture. Your presentation (and your paper) must include a good foundation of basic science articles, and the article you assign to the class must be basic science.

You will have 35 minutes total for your PowerPoint presentation. That means about 25-30 minutes for the actual presentation, with an additional five to ten minutes allotted for discussion. To avoid exceeding these time limits, be sure to practice your presentation! We only have 75 minutes for class, so if you start to run long I will cut you off and your grade will be lowered accordingly. You should also have your PowerPoint presentation loaded on Moodle by 8AM of the day of the presentation, and you should come in early to make sure that it works properly. One point that is critical to remember: Your talk should be an engaging, easy to follow lecture that prompts questions and discussion from your audience. It should NOT be a reading of the research paper you plan to turn in. The wording of papers is very different from that of oral presentations.
C. Paper on research topic -- 100 pts

Your paper is due before the start of class one week after the oral presentation and it may incorporate aspects of class discussion. It may also have a slightly different emphasis, since one goal of your oral presentation is to prompt discussion of a journal article and you may choose an alternative focus for your paper. Refer to the Moodle document “Guidelines for the paper” for research and writing suggestions and for details of the paper’s format. You should e-mail your paper to me as a Word document. I will then forward it to your two anonymous peer reviewers (see section on Paper Evaluations below). Your paper will be more like a review article that a primary literature article, and the content should be divided as follows:

1. Introduction: This part should provide background and explain why the topic is important or of interest. It should also set up a current question or issue to be addressed in the discussion. There should be substantial depth here beyond the lecture notes and textbooks we have used in class, but it should be written so that anyone in the class can understand it. It should draw on a diversity of primary literature. (35 pts)

2. Discussion: This is the logical, organized presentation of the current critical issue(s) in the topic. It should address and give the most current answers (if known) to the key question(s) posed in the introduction. As in the introduction, this section should be based on recent primary literature, most likely including the article discussed in your oral presentation. It also may include substantial discussion of controversies found in the literature. In this section, you may find it helpful to create new tables or figures that compare or summarize findings from your references (35 pts)

3. Summary: This brief section should recap the key points or conclusions. It should also state which side of the controversy you think is best supported (if appropriate) and where future research in this topic should go. (20 pts)

4. Literature Cited. Here are all the citations, i.e. the authors’ names, dates, etc. from each source you used in your paper. Each paper listed here should be referenced in your paper, and each reference in your paper should be listed in this section. See the documents about plagiarism on Moodel for more information (10 pts.).

Each section, especially the introduction and discussion, should be extensively and appropriately referenced. **Failure to do so may result in a grade of 0 on the paper, or possibly a trip before the honor council (be sure you have read the three documents on Moodle regarding plagiarism).** I expect that most of your references will be primary literature (a minimum of 20 primary literature references are required, but more than 20 are expected). How do you know what is primary literature? Be sure that you are clear on this before you proceed! Your paper will be read and evaluated by two anonymous reviewers so be sure to follow the guidelines provided (see also Paper Evaluation Form).

**Refer to the “Guidelines for citing in the text” and “Guidelines for the literature cited section” on Moodle for the proper formats to use!!**
D. Written material (journal article summaries and discussion questions, and exam questions) -- 75 pts.

1. Journal article summary and discussion questions (57 pts): You will be given a journal article one week before the class. You are to read the article and submit a critique that includes a summary and two questions for discussion. This is due on Moodle by 10:30 AM on the day of the presentation. The main purpose of these critiques is to prepare you for active participation in the upcoming class. Please refer to the “Guidelines for the Journal Article Critiques” on Moodle for information on doing this assignment.

2. Exam questions should be entered in Moodle (18 pts):
   - For lectures: each group will submit two questions for each lecture from the topic assigned to that group (1 question/person). Due by the next class after the lecture notes are finished.
   - For first presentations on journal articles: each student (including the presenter) will submit one exam question for the journal article. These are due on Moodle by the noon of the day following the presentation. You will be able to enter your question at the end of your peer evaluation response.
   - For second presentations on research topics: The student presenter will submit four exam questions on either the journal article or the presentation. These should be written as a list of four questions and e-mailed to me and a Word attachment (.doc or .docx) before the start of class following the presentation.

E. Peer evaluation of presentations and papers (38 pts. No credit will be given for evaluations that are superficial or reflect an inability to critique).

1) For all presentations (18 pts): Following the presentation, students will be asked to fill out an evaluation on Moodle that includes a numerical grade and specific written comments for the presenter. These must be entered on Moodle by noon the day following the presentation. These evaluations (without the names of the reviewers) will be given to the presenter, who will use them and his/her self evaluation to arrive at a fair numerical grade. The presenter will submit the grade and a written justification for the grade to me by the next class. I will consider the written comments of the peer and self evaluations when I do my evaluation and grading of the work. The presenter should keep the peer evaluations and use them to make corrections or improvements in the next presentation.

2) For all research papers (20 pts): Two students will sign up to do anonymous evaluations of each research paper based on the criteria provided (thus, each student does evaluations of two different papers). Copies of the numerical grades and evaluations they complete will be given to the author of the paper, who will do a self-evaluation to assign himself/herself a fair numerical grade. The author will then submit the grade and its written justification to me within one week. I will consider the written comments of the peer and self evaluations when I do my evaluation and grading of the work. To receive full credit for doing the peer evaluations, evaluators should seek to provide detailed feedback that is constructive, specific, and thoughtful.
F. Attendance at and critique of 2 departmental seminars (10 pts)
The Biology Department will host four or five seminars this spring, including three given by candidates for our position in environmental biology. After attending, you must submit a one page summary and critique by the next class. If you cannot attend one of these seminars, you may substitute another seminar at U. Memphis, UT, etc. It will be your responsibility to find an alternative and have it approved before attending the seminar. Unless otherwise noted, the seminars begin at 4:15 in FJ-B. Refreshments are served in the hallway at 4:00.

G. Final exam (70 pts)
Throughout the semester you will have submitted several exam questions. The criteria for these questions will be distributed to you in advance. During the last few class periods the class will meet in groups to review the questions, select the best and most appropriate ones and work together to determine the best correct answer for each. The final exam will include the most appropriate and best written of these questions.

H. Class participation (20 pts)
A seminar is only as good as its participants, and for a class to be excellent, everyone needs to be there ready to talk. You are required to attend all classes and be on time. Late appearances and unexcused absences will result in a loss of points. Remember, the goal of a seminar is for us to learn from one another. If you are confused during a presentation, stop the presenter and ask a question. Your participation in that capacity will probably help others in the class to understand the concept better as well! At the end of the semester your performance will be rated approximately as follows:
- 20 pts -- participated frequently (at least once in all classes) and added substance to the discussion
- 15 pts -- participated frequently (at least once in all classes)
- 10 pts -- participated occasionally (not every class period)
- 5 pts -- participated rarely (once every couple of weeks), or questions and comments did not contribute much to the discussion
- 0 pts -- said something once or twice, or did not participate

Grading Scale:

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<th>Grade</th>
<th>Percentage Range</th>
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<tr>
<td>A</td>
<td>93% ≤ A ≤ 100%</td>
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<tr>
<td>A-</td>
<td>90% ≤ A- &lt; 93%</td>
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<tr>
<td>B</td>
<td>87% ≤ B &lt; 90%</td>
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<tr>
<td>B-</td>
<td>83% ≤ B- &lt; 87%</td>
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<tr>
<td>C</td>
<td>77% ≤ C &lt; 80%</td>
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<tr>
<td>C-</td>
<td>73% ≤ C- &lt; 77%</td>
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<tr>
<td>D</td>
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<td>63% ≤ D- &lt; 67%</td>
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Books
There is not a required textbook for you to purchase in this course; however, there is an e-book (Jones & Lopez, 2014, Human Reproductive Biology) on reserve at the library that you can access. The link is in the first topic block on Moodle. For assembling background “lecture” information, I will try to provide PDFs of other sources on Moodle. If I cannot do this, or the PDF quality is too poor, then I will put these books "on reserve" in room 117w. These are mostly my personal copies of books. Please be considerate of me and of others in the class and do not remove any of the books except to make copies, using the sign out sheet when you do. Also, be sure to lock the door when you leave so none of the books “disappear.” Finally, please do not write in the books (unfortunately, some of them were marked up by students previously).
Expectations regarding the Student Honor Code.

1. All assignments described above are to be done by you with no help from others. However, there are two important exceptions: 1) group research and notes for "lectures" on the first four topics (Male A&P, Female A&P, Fertilization, Pregnancy & Birth) and 2) the exam questions for those lecture notes only. Although each group member is responsible for creating exam questions for these lecture topics, the group should meet and discuss the questions to make sure that there is no redundancy. All other exam questions should be done independently.

2. When evaluating papers or presentations of peers it is your duty to be fair, honest and considerate with your criticism, and unbiased by your friendship with the presenter/author.

3. There is to be no misuse of the class "library" housed in FJ 117

4. Any work submitted for this class must not have been used for a previous class or a class you are taking concurrently.

5. You must read the guideline documents on Moodle regarding plagiarism and citations. Ignorance is not an excuse for plagiarism. In my experience, the honor council holds seniors, especially those in a senior seminar in their last semester, to the highest standards. If you have any doubts, talk to me.

Electronic Devices

Electronic devices are allowed only for legitimate classroom purposes (reading electronic texts, taking notes, etc.); do not use a personal device for any purpose unrelated to the class. All devices should be silenced. Cell phones should be put away unless you are asked to use them for a class activity; otherwise, they should be powered down. If there is a serious need to leave your cell phone on, such as a family emergency, please put it on vibrate mode and let me know. Violations of this policy will affect the student’s final grade.

Accommodations

Students with a documented disability in need of special accommodations should contact the Office of Disability Services. Please come see me to discuss your situation and to provide your documentation by the end of the first week of classes.

Mutual Respect

The Biology Department is committed to creating an academic climate that is safe, respectful, and appreciative of all students, staff, and faculty regardless of race, ethnicity, sexual orientation, gender identity, age, size, socioeconomic background, religion, spirituality, physical ability, mental ability, or any other aspect of one’s identity. A climate of mutual respect allows us to discuss difficult questions and to participate in honest discussions, even in the context of strong disagreement. Creating this kind of open, honest, and respectful climate is our mutual responsibility.