Instructor:
Dr. Josh Campbell

Faculty Advisors:
Dr. Josh Campbell   Dr. Chuck Smith
Dr. Angie Bauer    Dr. Gerald Smith
Dr. Patrick Vigueira Dr. Cynthia Vigueira
Dr. Sandra Cooke

Course Description
BIO 4990 examines the various areas of current biological interest and concern through the use of primary literature with an emphasis on research methodology. This course will satisfy the capstone experience in Biology.

Meeting Time and Place
F 2:00 – 5:00 pm  Room 206, Congdon Hall

Course Objectives:
1. Select and define a topic on some biological phenomenon that is both of general interest and of specific concern (the topic must be approved by the faculty advisor).

2. Conduct a systematic library search of scientific literature pertinent to the topic.

3. Select a primary biological article for critical review (the article must be approved by the faculty advisor), prepare a summary of the research article, and prepare and deliver an oral presentation of the research article.

4. Prepare and deliver an oral presentation of the literature review.

5. Write a scientific review paper on the literature reviewed using the specified format.

6. Participate by contributing positively to the presentations given by their classmates by asking relevant questions.

Honor Statement
Each student is expected to adhere to the highest standards of ethical behavior as stated in the High Point University Honor Code. Specifically, it is expected (1) that students deal honestly with the faculty advisor in consultations on determination of legitimacy of absences, (2) that all work you present is your own work and, (3) that you give proper credit to all references used in written assignments (AVOID PLAGIARISM).
Attendance Policy
Students are expected to attend all classes. If an absence is determined to be unexcused (e.g. having to be at work, overslept, alarm clock issues), the session missed must be made up by writing a report on the topic(s) covered at that session. Excused absences include, but are not limited to hospitalization (documentation required), death in the family, post-graduate interview. A grade of zero is assigned for work not made up by a specified time set by the faculty advisor after consultation with the student.

Required Course Activities
1. Each student will work with an assigned faculty advisor. You are required to meet weekly with your advisor at a time deemed convenient for the both of you.

2. Selecting a Topic: Each student will, with the help of their faculty advisor, select an appropriate topic (general information on a disease or genetic disorder, studies focusing on drug or vaccine trials are examples of inappropriate topics). It is critical that you select a topic within the realm of your comprehension and the scope of the courses you have or are currently taking. Example: You should not select a topic that requires some background in immunology if you have not had the course. If you choose to do this you will be expected to acquire the necessary knowledge to understand your topic and present it to your peers in an understandable manner.

3. Each student, with the assistance of the faculty advisor, will select and review a specific primary research article on your topic. This article selected should be of considerable extent and must be approved by the advisor. The student will prepare a critical review of the article including discussion of methodology reported in the article, objectives presented by the author(s), presentation of results, and discussion of results.

4. A summary of the research article selected will be written and a rough draft submitted to the advisor for criticism. The summary should be a minimum of three pages in length and, as a general guideline, should address the following questions:
   a. What was the question or questions addressed by the author(s)?
   b. What were the methods (general approach, not detailed step by step procedures)?
   c. What were the major results and conclusions?
   d. What is your assessment of whether the conclusions of the author(s) are valid?

5. The summary will be returned for revisions, and final version will be graded by the advisor.

6. The critical review of the research article will be presented as an oral presentation. The oral presentation must be presented to your advisor the week before you are scheduled to go or
you will not be allowed to present. The presentation should be a **maximum of 15 minutes**; with two to three minutes allotted for questions (students that exceed the time limit will be penalized). The use of effective visual aids is necessary, and you should use PowerPoint for your presentation. The student will provide an **outline and abstract of the presentation** for members of the seminar (students and faculty). This is a formal presentation, you are expected to **present and dress appropriately**.

7. With the assistance of the advisor the student will select and develop a **review of literature** pertinent to a more comprehensive topic. The advisor and the other faculty members must approve the topic. The advisor should approve the bibliography, from which the articles are reviewed. Topics should encompass or review an **area of interest that broadens the research article critiqued in the first presentation**. A complete switch of topics should be avoided.

8. Each student will prepare and present to the class an oral presentation of the seminar topic (**maximum of 20 minutes**). The **oral presentation** is made on a designated day (refer to course schedule). The student presenting may use notes, if necessary, but should not read their presentation. The student will provide an **outline and abstract of the presentation** for members of the seminar (students and faculty). The use of effective visual aids is necessary, and you should use PowerPoint for your presentation.

9. Each student will prepare an **outline of the review paper** on the seminar topic and submit it to the advisor on the date specified in the course schedule.

10. Each student will prepare a **written review paper** on the seminar topic and submit a rough draft to the advisor for editing on the date specified in the course schedule. The rough draft will likely require multiple revisions. The **rough draft should include citations within the paper and a literature cited section**. A final draft, with revisions, is due on the date specified in the course schedule. Failure to comply with these requirements affects the grade assigned to the paper. The **review paper should:**

a. Use the **author-year format** for citations within the text and in the literature cited section; spell out journal names in the literature cited section of your writing assignments

b. Include an in depth review of a **minimum of 7 primary research articles** (not reviews, abstracts, or internet sites); fewer than 7 articles will result in a letter grade deduction; students are encouraged to review more than the minimum number of articles if you are seeking to receive high marks on your paper

c. **Minimum of 10 pages of text** (this does not include the literature cited section of your paper)
Text should be Times New Roman with a font size of 12, double-spaced, and 1 inch margins on all sides.

Figures/graphs/tables/images should be included in the paper and must be placed at the end of the paper (not within the text of the paper), and must be referred to within the text.

It should be a synthesis of the articles you selected, written in a manner that integrates the articles, and brings them together to tell a story. DO NOT just discuss each paper one after the other. The paper should reflect not only your understanding of the primary literature of your topic, but your ability to synthesize/bring together the information and draw conclusions that span the scope of the literature you reviewed.

Each student is expected to participate in a positive manner by contributing to discussions based upon readings on the topics. Attendance at all presentations is required. Absences will affect the participation grade. If you are absent for the presentations for any reason, you will be required to write a 2 page summary on the topic of each missed presentation.
**Grade Determination**
Oral Presentation I (20%)
Oral Presentation II (25%)
Summary of Research Article (15%)
Outline of Review Paper (5%)
Review Paper (30%)
Participation/Weekly Advisor Meetings (5%)

Failure to complete any of the following assignments on time will result in a letter grade deduction.
1) Oral presentations on the scheduled dates
2) Rough draft of the article summary
3) Summary of the research article
4) Outline of the review paper
5) Review paper

**Grading Scale:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100</td>
</tr>
<tr>
<td>A-</td>
<td>90-92</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
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<tr>
<td>C</td>
<td>73-76</td>
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<tr>
<td>C-</td>
<td>70-72</td>
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<tr>
<td>D</td>
<td>63-66</td>
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<tr>
<td>D-</td>
<td>60-62</td>
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<tr>
<td>B+</td>
<td>87-89</td>
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<tr>
<td>C+</td>
<td>77-79</td>
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<tr>
<td>D+</td>
<td>67-69</td>
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<tr>
<td>F</td>
<td>below 60</td>
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*** The course grade is determined by all of the instructors.

**Course Evaluations**
1. All students are expected to complete course evaluations in the week preceding final exams. These evaluations, which are delivered online, are an important part of High Point University’s assessment program, so your cooperation in completing them is greatly appreciated. As the end of the semester or academic session draws near, you will receive information from the Office of Institutional Research and Assessment about how to complete the online evaluations. **IMPORTANT NOTE:** All communications from the Office of Institutional Research and Assessment will be sent to your High Point University e-mail account, so please be sure to check and maintain your account regularly.

2. **STUDENTS WITH DISABILITIES:** Students who require classroom accommodations due to a diagnosed disability must submit the appropriate documentation to Disability Support in the Office of Academic Development, 4th Floor Smith Library. A student’s need for accommodations must be made at the beginning of a course. Accommodations are not retroactive.
### COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug</td>
<td>29</td>
<td>Organizational meeting- review course syllabus</td>
</tr>
</tbody>
</table>
| Sept. | 5   | Select topic and advisor assignment  
(Students will meet with their advisor individually following the meeting) |
| Sept. | 12  | Select first research article to present  
Work on article summary and oral presentation |
|       | 19  | Work on article summary and oral presentation  
Search/collect additional primary research articles for review paper |
|       | 26  | Work on article summary and oral presentation  
Search/collect additional primary research articles for review paper |
| Oct   | 3   | **Oral presentations of research articles**  
Be sure to provide abstract/outline handouts for faculty and students  
Rough draft of article summary due |
| Oct   | 10  | **Final draft of article summary due**  
**Work on outline of review paper** |
|       | 17  | Meet with Advisor |
|       | 24  | Fall Break |
|       | 31  | Meet with advisor to go over outline of review paper and to discuss the structure of second oral presentation |
| Nov   | 7   | Meet with advisor to finalize oral presentation |
|       | 14  | **Oral presentations of the review topics**  
Be sure to provide abstract/outline handouts for faculty and students  
Rough draft of review paper due |
|       | 28  | Thanksgiving Break |
| Dec.  | 5   | **Majors Field Test (Time TBD)** |
|       | 10  | **Review Paper Due to Advisor** |
Biology 4990 – Oral Presentations Guidelines

1. Keep in mind your body position relative to the screen. You may be blocking part of the audience’s view of your slides.

2. **Slides:** Make sure that you use a font size that is readable from anywhere in the room (i.e. text size of ≥20; put all text in bold; redo a figure with small print rather than scan it in). Pay attention to the colors that you are using (are they visible to everyone in the room?). It may be worth running through your talk in the same room in which you are presenting to make sure that the colors can be seen. If you need the room to be dark to see some of your figures, make sure that the blinds are closed before you begin.

3. When you introduce your paper(s), you do not need to read the names of all of the authors, just the last name of the senior author (this should be included in your summary); this will take up time that you could use in presenting your paper.

4. **Presentation:** be aware of your pace (do not speak so fast that the audience can’t follow), maintain eye contact with your audience; when describing a graphic that contains data – do not turn your back to the audience (stand to the left or right of the screen when talking). Be sure to point to what you are showing on the slides.

5. **Data:** When describing data, leave the graphs, tables, etc. on the screen long enough for people to examine. Describe how the data is presented (i.e. what are the axes of the graph you are showing. Which columns of the table do you want your audience to focus on?). If the data you have to show are quite complex, rather than showing the entire data set, show only a portion of or make a simplified version to show your audience.

6. The majority of your presentation (especially the first presentation) should focus on the **methods and results.** Do not allow the majority of your talk to be the introduction and conclusions. We are interested to see how well you were able to understand the paper. Sometimes, the hardest part of the article will be understanding the materials and methods. You may have to read this section several times and/or use other resources to gain an understanding of the methods and how the results were interpreted.

7. If you use note cards, try to use them as more of an outline, rather than reading directly from the cards during your entire talk (this makes you less likely to maintain eye contact with the audience); the more you practice your talk the less you will have to rely on your cards. Do not take text directly from the paper (This is plagiarism!!). You should put things into your own words when talking about the paper. This is also true when putting together your PowerPoint presentation.

8. If talking in front of a group is difficult for you, give your talk to your faculty advisor or others in the class you feel comfortable with. This will decrease your nervousness when you
give it in front of the entire group. Practicing the talk in front of someone will also give you a better idea about how long your presentation is in terms of time.

9. When selecting articles for your second presentation, choose ones that you feel comfortable in being able to explain based on your background. Just because an article is on your topic does not mean that it is one you should try presenting to the class. Also, keep in mind that you do not always need to present the paper in the same sequence that material is covered in the original. If the paper is hard to follow, or not well organized, you may come up with a better way to present it to the class.

10. **Ask Questions!!** – Part of your presentation grade is how well you answered questions asked by the audience. Help each other out by asking each other questions at the end of the presentation. Faculty notices those students who have asked other students questions at the end of their presentation. Make it a point to ask a question to at least 2 students during the round of presentations.

11. When putting your talk together, it is important to have transition statements in your presentation (i.e. now we are going to look at the results of experiment 1. Based on the results, the researchers concluded …). This makes your talk flow better and also keeps the audience on track. This will be especially important for your second presentation, which will involve presenting the ideas of several papers.