

BIOL 4900: Senior Seminar

Spring Semester 2016, Section B (CRN# 21593) & C (CRN# 22887), 1 Credit hour (0-3-1)
Department of Biology, College of Arts & Science, Valdosta State University

Section B (BC 1202): T 3:30 – 5:20 p.m.
Section C (BC 2022): R 2:00 – 3:50 p.m.
Science Seminar (Powell Hall): R 4:00 – 5:00 p.m.

Instructor: Dr. Brian C. Ring
Office: BC 2084
Office hours: M 3:00 p.m. – 5:00 p.m.
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Pre- or Co-requisites: Completion of all required courses in the senior curriculum for the biology major (0-3-1).

Course Description: “The capstone course in biology. Students are required to attend outside lectures chosen by the instructor. This course assesses the student’s ability to research independently topics in biology, assimilate the information, and disseminate the information in an organized and understandable fashion in both written and oral forms. Besides demonstrating comprehension of their topic and competence in communication skills, students take the ETS Major Field test in biology and complete the departmental Senior Exit Questionnaire for successful course completion.” (From VSU Catalogue)

In other words, this is the capstone course for your undergraduate biology degree. As such, you will prove that you are ready to become a professional biologist. Specifically, you will **(1)** attend and evaluate scientific presentations; **(2)** develop a research paper on some topic in biology, and **(3)** present your findings to the class. You must also take the Major Fields test to demonstrate your knowledge of biology content and complete an exit questionnaire. Educational outcomes associated with this course include numbers 1-5 as specified by the VSU Biology Department, and general outcomes numbers 4, 5 and 7 as specified by the University.

1. Science Seminar: You must attend at least 8 (12 scheduled) of the seminar presentations during the semester. See this web site for the current schedule: <http://www.valdosta.edu/colleges/arts-sciences/science-seminars/2016-spring>

Prior to each seminar you must see me at Powell Hall (or designee) in order to get an evaluation sheet that you will fill out about the seminar before the seminar starts. The completed form must be returned to me at the end of the seminar. Two important warnings: **(1)** No evaluation forms will be handed out once the seminar has started. So, if you get there late, you will not receive credit for attending that seminar and will have to attend an extra one. **(2)** Disruptive behavior during the seminar (talking, texting, surfing the web, etc.) will not be tolerated. I will not accept evaluation forms from anyone causing problems during a seminar, which will then count as an absence and require you to attend an additional talk. Be aware that VSU policy is that missing 20% of a class results in automatic failure of that course. Thus, in the present case, if you are absent from 20% of the seminars, you will receive a grade of Unsatisfactory for this course.

2. Review Paper: Each of you must write a review paper about a topic in biology. I have developed a list of potential topics that are evenly spread across some of the major sub-disciplines of biology (see below). You are not obligated to adhere to this list; if you have a preference for something else let me know and we will try to accommodate that. However, whatever topic you choose **CANNOT** be one for which you have already written a paper for another class. **Chosen topics must be approved in class by January 25** (see below). See the course schedule for other due dates relating to the research paper.

3. Presentations: Presentations will consist of a talk to the class about the subject of your research paper followed by questions and discussion. Your talk should be relatively brief (~ 15-20 minutes) and highlight what you view as the main issues. One way to think about this is to imagine you are teaching this material to a group of novices who will be tested on the information. Thus, be sure to fully explain all concepts and avoid too much

technical jargon. The use of powerpoint and/or other technologies is recommended to convey organization and images on your topic. Failure to give a presentation will result in a grade of Unsatisfactory for the course (U).

4. Major Fields Test: You must contact the VSU Testing Office located in Powell Hall to schedule a day and time to take the Major Fields test. A score of at least 140 is required to achieve a grade of Satisfactory. You must take the Major Fields test by no later than mid-term (**Thursday, March 3, 2016**). If you score less than 140, you must continue to re-take the test until you reach 140. The Biology Department will pay for your initial test; you are responsible for all fees associated with retaking the test. No scores on the Major Fields test will be accepted after NOON on dead day, **Tuesday, May 3, 2016**. If I have not received a score of 140 or more for you by that time, you will receive an Unsatisfactory for the course (U).

ATTENDANCE AND CLASS PARTICIPATION: Students are expected to attend all scheduled meetings (below); any student who cannot attend one or more sessions should discuss this with the instructor prior to the absence. It is expected that all members of the class will participate in a brief discussion after each presentation is given. Therefore, be prepared to ask meaningful questions, critique the quality of the material presented and raise meaningful issues related to the topic discussed.

COURSE GRADE:

Annotated Bibliography	+10
Rough Draft	+20
Final Paper	+40
Presentation	+30
TOTAL	100 points
Each absence from scheduled class	-10
Failure to score 140 or higher on Major Field Test	-40
Failure to attend 8 of 12 Science Seminars	-40

OVERALL: Satisfactory (S) \geq 70% of points or Unsatisfactory (U) $<$ 70%

NOTE: Failure to provide a Bibliography and/or Rough Draft by the due dates will not allow your peers and me to help you prepare for the final paper and presentation and will affect your overall grade.

Format of the Written Paper

This document may not exceed 15 double-spaced, typed pages (12 point font), excluding figures, tables and bibliography. The following format is suggested:

1. Main body of the paper
 - A. Introduce the topic
 - B. Present concepts and theories relevant to the topic
 - C. Define key terms
 - D. Present basic information gained by past and present research on the topic
 - E. Discuss experimental procedures involved in gaining information on the topic
 - F. Discuss controversial issues and changes (if any) on your topic

The main body of the paper may be organized in any way that is appropriate. You can use an historical approach, present basic theory with supporting research results or focus on controversy associated with competing ideas/theories. The way in which the paper is written depends largely on the student's perspective of the topic. If there are any questions, please consult the instructor before starting to write.

When researching information, you must use review articles, books, and professional peer reviewed journals which provide research results central to the topic examined. The Literature Cited section (see below) must include AT LEAST 10 references (more is better) appropriately cited in the body of the manuscript; at least 7 of these references must be scientific articles from peer-reviewed journals.

2. Summary

The summary should *briefly* restate the major points in the body of the paper and not present any new information. It should not exceed two paragraphs in length. No references should be cited in the summary. The summary is, in a sense, the equivalent of the abstract of a review/research paper.

3. Literature Cited

All sources of information used in the paper should be cited. In the body of the paper citations should follow either of the following common APA formats:

Johnson (1995) found that *Bufo valiceps* eggs were tolerant to 3 ppt NaCl for up to eight days.

Bufo valiceps eggs were tolerant to 3 ppt NaCl for up to eight days (Johnson 1995).

Bufo valiceps eggs were tolerant to 5 ppt NaCl for up to eight days in two different studies (Harrington et al. 1995, Hampton & Ralph 1996).

References in the literature cited section should be listed in the same format as APA style, see this website for tutorials: <http://flash1r.apa.org/apastyle/basics/index.htm>

Special notes to students: The VSU Biology Department Plagiarism Policy (<http://www.valdosta.edu/biology/>) will be discussed in class with each student's signed receipt of acknowledgement due thereafter. Plagiarism in any form will not be tolerated and will be grounds for a failing grade (U).

Special needs: Students requesting classroom accommodations or modifications due to a documented disability must contact the Access Office for Students with Disabilities located in Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY).

Possible Senior Seminar Topics:

1. Ecology and Evolutionary Biology

- a. Impacts of Xenoestrogens on reproductive biology of animals
- b. Behavioral syndromes (aka animal personalities)
- c. Phylogenetic assembly of a taxonomic group (i.e. fishes)
- d. Hominid evolution and speciation
- e. Effects of climate change on populations
- f. Trophic cascades in natural food webs
- g. Cutting edge developments in disease ecology
- h. Human evolutionary genetics

2. Organismal Biology

- a. Functional significance of the gut microbiome
- b. Isotopic analyses of animal diets
- c. Geometric morphometry
- d. Insights into brain function from imaging studies
- e. Cancer immunotherapy
- f. Nanoparticle applications
- g. Metabolism and aging
- h. Microchimerism applications in human health or diagnosis

3. Cell and Molecular Biology

- a. Interference RNA (RNAi) or microRNAs
- b. Epigenetics and development
- c. Environmental DNA studies
- d. Use of ancient DNA in the study of disease
- e. Cancer genomics
- f. Comparative analyses of gene expression profiles
- g. Molecular control of a biological process (i.e. circadian rhythms)
- h. Progress in understanding the early evolution of life

BIOL 4900 Course Schedule

Week of:	Classroom Activity	Science Seminar
Jan. 11	Syllabus & Introductions	None
Jan. 18	Literature Search & APA Proper Citation (see video)	None
Jan. 25	Writing & Plagiarism, Topic Discussion & Selection, Practice Major Field Test	1
Feb. 01	Annotated Bibliography Due & Discussion	2
Feb. 08	Work on Rough Draft (no class)	3
Feb. 15	Rough Draft Due & Peer Review	4
Feb. 22	Pick-up Rough Draft (work on paper)	5
Feb. 29	Work on Paper (no class)	6
Mar. 07	Final Paper Due & Peer Review Major Field Test Due Midterm Mar. 3	7
Mar. 14	Spring Break (no class)	None
Mar. 21	Set Presentation Schedule & Exit Questionnaire	8
Mar. 28	Work on Presentation (no class)	9
Apr. 04	Class Presentations 1	10
Apr. 11	Class Presentations 2	11
Apr. 18	Class Presentations 3	12
Apr. 25	Class Presentations 4	None