

BIOL 4900A – SENIOR SEMINAR, Spring 2011

CRN 21225; T 3:30 – 5:20 p.m. in BC 1025, R 4:00 – 4:50 p.m. in Student Union Theater

Instructor: Dr. Russell H. Goddard

BC 2090: 249-2642

Office Hours: Tues.-Thurs. 2:00 - 3:30 p.m. or by appointment.

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Web Page: <http://www.valdosta.edu/~rgoddard/>

(Further course materials are available at this location)

Course Description. Pre- or Co-requisite: Completion of all required courses in the senior curriculum for the biology major. Graded “Satisfactory” or “Unsatisfactory.” The capstone course in biology. Students are required to attend outside lectures chosen by the instructor. This course assesses students’ 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. [0-3-1]

Course objectives:

- To assess students ability to independently research topics in biology, assimilate the information, and then to disseminate the information in an organized and understandable fashion in both written and oral forms.
- To administer and evaluate students’ satisfactory completion of the ETS Major Field Test in biology and completion of the departmental Senior Exit Questionnaire

Course Outcomes. This course meets the following educational outcomes.

VSU General Education Outcomes 4, 7

Biology Educational Outcome 1

Specific Course Requirements:

Outline with references for term paper (due by 5 p.m. Thurs., 17 February)

Oral Presentation

Term Paper

Completion of the Major Fields Test in Biology with a score of 140 or higher.

Completion of the Senior Exit Questionnaire

Attendance at all scheduled class meetings

Attendance of and submission of completed evaluation forms for all science seminars.

Major Field Test. The ETS Major Field Test is a comprehensive, standardized test designed to evaluate the student’s general knowledge in the sub-disciplines of biology. The test scores will be used to evaluate the effectiveness of the department’s curriculum, and VSU’s scores will be compared to the national average to identify possible weak areas in our curriculum. Thus, students should take the test seriously and make every effort to excel on it. *Completion of the ETS Major Field Test with a score of 140 or higher is a course requirement, and students who fail to complete the ETS Major Field Test will receive a grade of unsatisfactory for the course.*

Each individual student is responsible for contacting the VSU Testing Office (Powell Hall-West, First Floor, Room 1120; Telephone 229-245-3878) and arranging a time to take the ETS Major Field Test in Biology. Students must complete the Major Field Test by Friday, 11 February 2011. A fee is assessed to take the Major Field Test. The Biology Department will pay the fee for each student to take the test once. Students who fail to score at least 140 on the test must re-take it until a score of 140 is achieved. The student will bear the cost for any re-taking of the Major Field Test.

Science Seminar Series. Attendance and completion of an evaluation form is required for all seminars in the Science Seminar Series. Normally these seminars are held Thursdays at 4:00 PM in the Student Union Theater. The schedule with time, date and venue may be found at the following Internet address: <http://www.valdosta.edu/cas/scisem/>. *Evaluation forms will be passed out by the instructor at the entrance to the Student Union Theater up until 4:00 p.m. Any student not in attendance prior to 4:00 p.m. will be considered absent. In order for the student to receive credit for attending a science*

seminar, it is the student's responsibility to see the instructor immediately after each seminar and submit her/his signed, completed evaluation form.

Plagiarism.

Plagiarism has become an increasing problem on University campuses. Plagiarism is the representation of someone else's work as your own. You may not blatantly copy phrases, paragraphs, or ideas from another's work. You cannot paraphrase someone else's ideas and use them as your own. You must analyze all data and work by others and then integrate this information with new data and conclusions that you independently synthesize, properly citing past work that supports your conclusions.

Students should read and be familiar with the Biology Department policy on plagiarism:

<http://www.valdosta.edu/biology/documents/biologyplagiarism.doc> and read and understand the University policy on Academic Integrity: <http://www.valdosta.edu/academic/AcademicHonestyPoliciesandProcedures.shtml>.

Each student will be required to read the VSU Biology Department's Plagiarism Policy and to sign this form to be kept on file with the department, indicating they have read and comprehend this policy.

Additionally, there have been many articles written on what is plagiarism and I refer students to the one referenced here and published in the Chronicle of Higher Education. The link for this article is available from the electronic version of this syllabus on the course web page.

McLemee, Scott. 2004. What is plagiarism? *The Chronicle of Higher Education* 51(17); A9.

<http://chronicle.com/article/What-Is-Plagiarism-/6962>

In the article by Scott McLemee, the author quotes Joseph Telushkin in a passage that I believe aptly captures the reasons why academicians find plagiarism so ethically abhorrent. The quote by Joseph Telushkin reads, "If a person presents as her own an intelligent observation that she learned from another, then it would seem that she did so only to impress everyone with how 'bright' she is. But if she cites the source from whom she learned this information, then it would seem that her motive was to deepen everyone's understanding. And a world in which people share information and insights to advance understanding, and not just to advance themselves, is one well on its way to redemption."

Any act of plagiarism in the student presentation of the written paper will result in a failing grade for the term paper and therefore, this course.

It is imperative that the term paper be the student's own original work. Plagiarism will not be tolerated, and any student caught plagiarizing shall receive a failing grade on the term paper resulting in a grade of unsatisfactory in the course. Please be forewarned that various web search engines will be used to check for plagiarism, as well as SafeAssign (see below).

Use of SafeAssign: By taking this course, you agree that all required course work may be subject to submission for textual similarity review to SafeAssign, a tool within BlazeView. For more information on the use of SafeAssign at VSU, see SafeAssign for Students (<http://www.valdosta.edu/academic/SafeAssignforStudents.shtml>).

Oral Presentations:

Oral Presentations will be scheduled later in the semester and will be prepared and delivered using PowerPoint software unless an exception has been previously approved by the instructor. Attendance at all student presentations is absolutely required. Failure to attend any student presentation will adversely affect your grade and could result in your failing this course. All students will evaluate each other's presentation. It is expected that students will be critical in these evaluations and will be able to justify their evaluation for each of their colleagues. Student evaluations will be used as part of the criteria for their participation grade for this course (below).

Students must electronically send a copy of their PowerPoint presentation as an attachment to Dr. Goddard at rgoddard@valdosta.edu at least four hours in advance of their seminar, but preferably earlier to insure compatibility with the classroom computer.

Written Term Paper:

Written term papers are due at the time of your scheduled presentation to the class. The term paper must be delivered electronically *twice*, once to Dr. Goddard's email address (rgoddard@valdosta.edu) as an attachment in Word or Rich text format, and the second submitted directly to SafeAssign from the BlazeView course page. Additionally, all references cited must be included as hard copies or as pdf attachments to Dr. Goddard. The format of the paper should be sub-headed for ease of reading and include:

A **title page** with the title of the paper, student name, course title (Senior Seminar; BIOL 4900), the name of the instructor, and the submission date.

The body of the paper should have:

An **introduction** that introduces the reader to the research topic and leads into:

a **Discussion** that will contain a detailed discussion of the subject with primary references cited where appropriate.

Finally, you should end your paper with:

a **Conclusion** that summarizes the student's interpretation of the information in the paper.

Literature Cited: The literature cited must contain at least 10 primary source research articles. In addition to these, students may choose to add no more than three review articles, and no more than one textbook. No web based references will be accepted unless from an online peer-reviewed journal.

Format: All references used must be cited at least once in the body of the paper using proper format. In-text citations are generally written as (Author, year; Author and author, year; or Author et al., year, for one, two, or three or more author papers). For this class we will adhere to the *Instructions to authors for Plant Physiology* that can be found in the first issue of a volume available in the library, or online at: <http://www.plantphysiol.org/misc/ifora.shtml> (pay particular attention to the "Text Requirements" section). At this location are instructions for proper format of journal, book, patent, and other reference types as well instructions for formatting tables and figures or abbreviations needed for the paper.

Class Participation:

Students are expected to attend all scheduled class periods and this will count towards your grade. Students are also expected to ask questions and participate in discussions about other student's topics and presentations. Students will provide an email address to the instructor on the first day of class and, given all students email addresses, may continue discussions, questions, and class participation in general by email (be sure to copy all correspondence to rgoddard@valdosta.edu for class credit).

FERPA: The Family Educational Rights and Privacy Act (FERPA) prohibits the posting of grades by social security number or in any manner personally identifiable to the individual student. Grades will not be posted by social security number or by name. Students will have the opportunity to have their grades posted by a unique alphanumeric sequence identifiable only by the student and the professor. No grades can be given over the telephone, as positive identification cannot be made by this manner.

Students with Disabilities: Students requiring classroom accommodations because of documented disabilities should discuss their needs with the instructor at the beginning of the quarter. Disabled students not registered with the Special Services Program should contact the program officer in Nevins Hall 1115 (phone: 245-2498).

Grading:

Outline of Research paper	10 pts
Written Presentation	40 pts
Discussion/Participation	10 pts
Oral Presentation	<u>40 pts</u>
Total:	100 pts.

Deductions to grade:

Plagiarism found in paper – automatic zero for paper	
Each absence from a scheduled class	-10 pts.
Each absence from the science seminar series	-10 pts.
Failure to complete the MFT with a 140 or higher	-40 pts.
Failure to complete the senior exit questionnaire	-20 pts.
Late papers/outlines/scheduled talks (each occurrence/day)	-10 pts.

This class is graded Satisfactory/Unsatisfactory. Your final grade must be equal to, or higher than 70 to receive a satisfactory grade.

Additional Instructions for Seminar Talk Presentation

1. Talks are expected to be professional in nature.
 - a) Delivered on assigned date
 - b) Organized
 - c) Well spoken (adequate volume, elocution)
 - d) Practiced
 - e) Substantial / non-superficial
 - f) Demonstrate a clear mastery and understanding of the topic and relevant biology
2. Talks should last about 20 min with an additional 5 minutes allowed at the end for questions and discussions.
3. Talks should be prepared using PowerPoint

Note: PowerPoint allows for vast amounts of graphic design for presentation slides. Good graphics matter only in so far as they actually contribute to the clarity of the presentation. Please do not waste huge amounts of your time on meaningless, computer graphic tricks assuming they will generate a better grade.
4. Talks should be well organized summaries of:
 - a) Introduction of the topic
 - b) Explanation of the biology/ interest/ problem
 - c) Discussion of the technical aspects of the science and methods used to study the question
 - d) Discussion of what the data drawn from these methodologies are
 - e) Conclusions drawn from the data - what do the data mean?
 - f) Your opinions and /or projections based upon your research.
5. If any reference material is directly cited, citations should be included on the relevant slide (This includes 'borrowed' graphics! Be sure to give credit where credit is due.
6. Handouts may be prepared directly from PowerPoint and given to the class as a guide if so desired
7. You are expected to be practiced and ready to deliver your seminar on the date assigned. Very limited exceptions may be made. There are no free seminar dates available. If you miss your own seminar, you will receive a zero and it cannot be made-up.

Additional Instructions for Paper Presentation

1. Choose a topic from the list provided, or, suggest one of your own for approval by the instructor. Choose a topic, or some aspect of that topic, which can be reasonably and thoroughly discussed in the confines of this assignment. Avoid being too broad and general. There is some overlap in the content of the topics provided. Stay on track for your topic.
2. Research that topic well in the literature. Note that information content is critical. Specific, detailed and well-understood information to support your thesis is required.
 - a) Each paper should have a title page. Text should be centered on the title page. It should contain only: Paper title, authors name, course name and number, and the date on which the paper is submitted. This page should not be numbered
 - b) Each paper must have a summary abstract at the beginning. Abstracts are limited to no more than 250 words. Abstracts should be on a separate page after the title page and this page should not be numbered.
 - c) **Text:**
 - i) Begin numbering pages with the introduction page and continue numbering through the references
 - ii) Papers should contain the following sections identified by headings: Abstract, Introduction, Discussion, Conclusions, and References. Additional subheadings pertaining to content may be added.
 - d) Each paper should be well supported by ample references. References must be cited in text where appropriate and listed in correct format, in alphabetical order, in the reference section of the paper. Since students always ask: a minimum of 10 (**30 for graduate students**) primary source references are required, however, most will need to find more to do their topic justice. And, yes, I will take off even if 15 are used, but the topic is not well developed and supported.
 - i) **References MUST come from professional, peer reviewed, primary research or secondary review sources.**
 - ii) **References MAY NOT be web pages.** You may use the web to search data bases and find appropriate, original literature. You may use the internet to find and download original, full text articles. You may use Galileo to locate abstracts and citations, but you MUST find, read and include the entire article from the peer-reviewed journal. Photocopies or pdf's of each cited article must be turned in with the final draft of your paper.
 - iii) Any references cited simply as web pages will be discounted from the grade – heavily – with few exceptions.
3. An outline of the general paper is due by the fifth week of this class. This outline should cover the basic premise of the paper, it's general sections and structure and include much specific information. It also must include a list of references gathered to that date. Take these seriously, as they will be one chance for me to give you feedback on your progress **BEFORE** a grade is written.
4. Paper texts should be at least 10 double spaced, pages in length. Try to limit them to a maximum of 12 pages. Text must be in Times New Roman font and have a 12 point font size. One inch margins are required.
 - a) Paper length does NOT include references, they are an extra requirement.

- b) Paper length does NOT include the Abstract or title page, they are extra requirements.
 - c) Paper length does NOT include figures. If figures are used, each figure must be on its own page and have an appropriate figure caption as formatted in the "Instruction to Authors"
 - d) Papers must be well written.
 - i) Correct English is required
 - ii) Correct punctuation is required
 - iii) Clear, readable, understandable, complete sentences are required.
 - iv) Bulleted or numbered lists are generally not allowed
 - v) **If quotations are used, they must be short and to the point and they must be appropriately cited. Absolutely only one quotation will be acceptable; more will indicate a failure by the student to adequately synthesize the information and report on it.**
 - vi) Acts of plagiarism will be detected using SafeAssign and other methods. **Any act of plagiarism will result in the paper being rejected and receiving a grade of zero.** Do not cut and paste text from web sources or other student papers. This is ridiculously easy to detect, prove and potentially may result in dismissal from the university.
5. Text should follow the "Instructions to Authors" provided from *Plant Physiology*. **Generally we are exposing students to professional methods of information dissemination that scientists use. All primary source journals will have an "instructions to authors" section, usually in the first edition of a new volume, that functions to guide authors in the proper preparation of their scientific papers for publication in that journal.** All details; margin requirements, headings, punctuation, abbreviations, and literature citation formats are included in these 'rules' for authors.

Course Theme: Origin of Eukaryotic Cells and organelles and mutualistic host-symbiont interactions. **Suggested topics:**

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| <ul style="list-style-type: none"> 1) Serial Endosymbiotic Theory and history 2) Did eukaryotic cells arise by cells that were nucleus-bearing but amitochondriate first, followed by the origin of mitochondria in a eukaryotic host or from a cell that derived the origin of mitochondria in a prokaryotic host, followed by the origin of eukaryotic-specific features? 3) What proteobacterial lineage gave rise to eukaryotic cells? <ul style="list-style-type: none"> a. The neomuran hypothesis b. The eocyte hypothesis 4) Evolutionary origin of nuclear DNA → lineage to a prokaryote 5) Origin of the Endomembrane system/coevolution of the nucleus 6) Evolution of mitosis (a mitotic nucleus) 7) Evolutionary origin of recombinant DNA and meiosis. 8) Origin of the cytoskeleton, centrosomes, and flagella/cilia 9) The Endosymbiotic origin of higher plant plastids 10) The Endosymbiotic origin of mitochondria 11) Evolutionary comparisons of hydrogenosomes, mitosomes, and mitochondria 12) Secondary endosymbiosis; Comparison of plastids/symbiosis among the algae 13) Gene transfers between host and symbiont 14) Analysis of gene expression in mitochondria (which are nuclear encoded and which are mitochondrial encoded?) Evolution of mitochondrial genome | <ul style="list-style-type: none"> 15) Analysis of gene expression in plastids (which are nuclear encoded and which are mitochondrial encoded?). Evolution of plastid genomes. 16) Organellar transcription, ribosomes, and translation. 17) Evolution and mechanism of protein import into plastids and mitochondria. 18) Cladistic/sequence analysis of DNA to support endosymbiosis. 19) Origin and evolution of eukaryotic programmed cell death. 20) Origin and function of peroxisomes 21) Are cyanobacteria chloroplasts or endosymbiont prokaryotes? 22) Nucleomorphs and their relation to our understanding of endosymbiosis 23) <i>Zooxanthellae symbiosis</i> 24) <i>Elysia crispata</i> (elysiid sea slug) and intracellular symbiosis of chloroplasts from siphonaceous algae. 25) Phylogeny of ascidian-<i>Prochloron</i> symbiosis / Significance of <i>Prochloron</i> to Endosymbiotic origin of plant plastids. 26) Green hydra symbiosis with <i>Chlorella</i> 27) Rhizobial communication and symbiosis with leguminous plants 28) Agrobacterium communication and infection of plants 29) Wolbachia symbiosis in arthropods 30) Vesicular Arbuscular Micorrhizae symbiosis 31) <i>Other topics with approval of instructor</i> |
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Science Seminar and Course Schedule: Speaker schedule is not yet complete. Updated seminar schedules will be available during the semester. *March 3rd is mid-term.*

Week:	Date:	Topic / Deadlines
1	Tues. 1/11/2011	General Course information: <i>Choose topics</i>
	Thurs. 1/13	No Seminar
2	Tues. 1/18	Library Searching: Primary source literature; <i>List of references on topic required.</i>
	Thurs. 1/20	Seminar: Dr. Bob Cook: To infinity and beyond
3	Tues. 1/25	<i>Required 10 primary source references, and other viable references that may be used in your paper</i>
	Thurs. 1/27	Seminar: Dr. Jennifer Breneiser: Prospective memory performance and very mild dementia: A signature decline.
4	Tues. 2/1	<i>Final Approval/Revision of topics</i> , Oral presentations, PowerPoint presentations demonstration
	Thurs 2/3	Seminar: Dr. Jonghoon Kang: Enthalpy-Entropy Compensation in Biological and Chemical Processes
5	Tues. 2/8	Student Research, No Class
	Thurs 2/10	COMPLETION OF MAJOR FIELDS TEST BY TOMORROW! Seminar: TBA
6	Tues. 2/15	Student Research, No Class
	Thurs 2/17	Term Paper Outline due with references Seminar: TBA
7	Tues. 2/22	Student Research, No Class
	Thurs 2/24	Seminar: Dr. Nicole Gerardo: Using Insect Systems to Study How Organisms Interact with Beneficial and Harmful Microbes
8	Tues. 3/1	<i>Draft; complete outline of your research paper.</i>
	Thurs 3/3	Seminar: Dr. David Kimbro: Impacts of predators on estuarine foundation species across environmental gradients Midterm: Last day to drop without penalty.
9	Tues. 3/8	Presentations
	Thurs 3/10	Seminar: Charles Craig TBA
10	Tues. 3/15	Spring Break No Class
	Thurs 3/17	Spring Break No Class
11	Tues. 3/22	Presentations
	Thurs 3/24	Seminar: TBA
12	Tues. 3/29	Presentations
	Thurs 3/31	Seminar: TBA
13	Tues. 4/5	Presentations
	Thurs 4/7	Seminar: TBA
14	Tues. 4/12	Presentations
	Thurs 4/14	Seminar: TBA
15	Tues. 4/19	Presentations
	Thurs 4/21	Seminar: Dr. Erik Johnson TBA
16	Tues. 4/26	Presentations
	Thurs 4/28	Seminar: TBA