

Meeting times and places:

Class time: 3:30 - 5:20 PM, Tuesdays, BC 1025

Science Seminar: 4:00-4:50 PM, Thursdays, Powell Hall

Instructor: Jim Loughry

Office: BSC 2087

Phone: 333-5765

Email: jloughry@valdosta.edu

Office hours: 2:00-3:00 PM, Tuesdays or any other time by appointment

General course description: This is the capstone course for your undergraduate degree. As such, you need to 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. 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 of the seminar presentations during the semester. See this web site for the current schedule: <http://www.valdosta.edu/colleges/arts-sciences/science-seminars/2015-fall>. Prior to each seminar you must see me in order to get an evaluation sheet that you will fill out about the seminar. The completed form must be returned to me at the end of the seminar. Each evaluation is worth 10 points (80 points total). In addition, you must ask at least one question of a speaker during the semester. This question is worth 20 points, and you must write the question you asked and the speaker's answer on the evaluation form. 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. Research Paper: Each of you must write a review paper about some 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. No double-dipping is allowed. Topics will be assigned on a first-come, first-served basis, so if you have a particular area you wish to cover, sign up soon. **The deadline for topic approval is Tuesday, September 1.** See the course schedule for other due dates relating to the research paper.

Papers must be written in the style of a journal article (the *Quarterly Review of Biology* and *Annual Review of Ecology and Systematics* provide excellent models) and be exhaustive reviews of the subject. The research paper is worth a total of 175 points; the grading rubric by which they will be evaluated is as follows:

- (1) Initial bibliography: 1 point for each peer-reviewed publication, to a maximum of 25
- (2) Complete rough draft of paper: 50 points, allocated as follows:
 - Bibliography: 1 point for each peer-reviewed publication, to a maximum of 25
 - Content: 15 points
 - Style: 10 points
- (3) Final paper: 100 points total
 - Bibliography: Two points for each peer-reviewed citation to a maximum of 25 (50 points)
 - Content: 25 points
 - Style: 25 points

Late submission of any of the items above will be penalized at the rate of 10% per day.

3. Presentations: Presentations will consist of a talk to the class about the subject of your research paper. 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. Each presentation is worth a maximum of 100 points. The grading rubric for presentations is:

- Effective use of time: 15 points
- Content: 30 points
- Clarity: 20 points
- Organization: 20 points
- Effective use of media: 15 points

Failure to give a presentation will result in a grade of Unsatisfactory for the course.

4. Major Fields Test: You must contact the VSU Testing Office 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, October 8**). 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, December 8**. If I have not received a score of 140 or more for you by that time, you will fail the course.

Grading: Grades will be based on a total of 375 points as described below. In addition, you need to be aware that there is a punitive attendance policy. This class requires active participation by all of you. So, if you are not here, the class will suffer dramatically. As already mentioned above, failure to attend at least 8 Science Seminars will result in a grade of

Unsatisfactory for this class. In addition, more than one unexcused absence from class meetings will also result in a grade of Unsatisfactory.

Presentation:	100 points
Science Seminar evaluations:	100 points
Review paper:	175 points

Final grades are assigned as Satisfactory/Unsatisfactory. To achieve a grade of Satisfactory, you must have a minimum total point count of 262 (70%) from the items listed above, and you must score at least 140 on the Major Fields test.

Accomodations Statement:

If you are registered with the Access Office, please let me know so that we can make any necessary arrangements.

Academic Integrity:

University Prepared Statement: Academic integrity is the responsibility of all VSU faculty and students. Students are responsible for knowing and abiding by the Academic Integrity Policy as set forth in the Student Code of Conduct and the syllabus. All students are expected to do their own work and to uphold a high standard of academic ethics. Cheating (including plagiarism) will not be tolerated. The instructor reserves the right to dismiss you from the course without credit if you are caught cheating. You will be respectful of your instructor and your fellow students at all times, or you will be dismissed from the class and potentially the course.

BIOL 4900 Course Schedule

Month	Day	Classroom activity	Science Seminar speaker
August	18/20	Organizational meeting	None
	25/27	Scientific literature searches; meet in room 2633, Odum Library	TBA
September	1/3	Perils of plagiarism; How to write a research paper	TBA
	8/10	Initial bibliography due	TBA
	15/17	Work on research paper	TBA
	22/24	Rough draft of paper due	No seminar this week
	29/Oct. 1	Work on research paper	TBA*

October	6/8	Research paper due Oct. 6; Initial attempt at Major Fields test must be completed by Oct. 8	TBA
	13/15	Fall Break—no class	None
	20/22	Work on presentation	TBA
	27/29	Set presentation schedule	TBA*
November	3/5	Class presentations #1 (n = 5)	TBA*
	10/12	Class presentations #2 (n = 5)	TBA
	17/19	Class presentations #3 (n = 5)	D. Marks
	24/26	Class presentations #4 (n = 5)	Thanksgiving—no seminar
December	1/3	Class presentations #5 (n = 4)	None

* Speaker hosted by the Biology Department

Potential Research Paper Topics:

1. Ecology and Evolutionary Biology

- a. Impacts of climate change on reproductive phenology
- b. Behavioral syndromes (aka animal personalities)
- c. Animal cognitive abilities
- d. Social network models in the study of animal groups
- e. Phylogenomic analyses of the evolution of placental mammals
- f. Trophic cascades in natural food webs
- g. Cutting edge developments in disease ecology
- h. Current debates in the evolution of humans

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. Biomimetic materials
- g. Metabolism and aging
- h. Evolutionary medicine

3. Cell and Molecular Biology

- a. Interference RNA (RNAi) or microRNAs
- b. Epigenetics and development
- c. CRISPR

- d. Use of ancient DNA in the study of disease
- e. p53 and cancer
- f. Comparative analyses of gene expression profiles
- g. Molecular control of circadian rhythms
- h. Progress in understanding the early evolution of life