BIO 4800 Senior Seminar—Biology

SYLLABUS

Purpose

This capstone experience is intended to provide you with an opportunity to demonstrate your ability to choose a topic of biological interest (perhaps a topic in which you have already conducted laboratory research).

Objectives

Successful completion of this course requires that you (the student):

1) Analyze results of empirical studies.
2) Interpret results of empirical studies.
3) Communicate results of empirical studies.
4) Demonstrate scientific knowledge.
5) Demonstrate analytical reasoning.
6) Integrate subject with biblical, ethical, and philosophical considerations

Choice of Topic/Title

1) The choice of a seminar topic should be a result of classroom and/or laboratory experiences which have stimulated your interest and one that will serve as a means to a larger end – that of demonstrating your maturing ability to develop and present an excellent seminar as described under "Purpose" above.
2) Consult with your Advisor and any alternate faculty mentor(s) prior to the semester in which you enroll in Seminar. Come prepared with ideas of possible topics you would like to explore.
3) Your topic must relate to some area of biological research or philosophy of science. [For example, your presentation may represent one (or more) of the following:
   a) Research you have conducted as part of BIO 3800 Biological Research, or research internship
   b) A survey of current research on a topic of your choosing
   c) Historical background in a given field of biology
4) The primary criteria for grading the seminar are content & rigor (i.e. depth and breadth of communicated knowledge). Be sure that your topic is one that allows you to get into the "nuts and bolts" of the biology involved. Depending on your topic, these "nuts and bolts" may involve biochemistry, physiology, molecular genetics, cell signaling, interactions or processes operating at the population, biotic community, ecosystem, or global level – you get the idea. Some topics lend themselves more easily to this than others. So please discuss your topic with your advisor or a qualified mentor.

Scheduling for BIO 4800 Biology Seminar

This occurs in two important steps as follows:

1) *Selecting your presentation date* – During Spring Registration of your junior year, select a calendar date and indicate on a sign-up sheet the date to which you are committed to present your seminar. At this time, please identify possible seminar topics and seek input from your advisor. Scheduling is done on a first come, first served, basis with priority given to AYA majors who will be student teaching during the semester they plan to present their seminar. If you plan to present in the Fall you should continue to Step 2. If you plan to present the following Spring you should complete Step 2 during Fall Registration.
2) *Preregistering& Registering for BIO 4800* requires that you declare an approved topic for your seminar:
   a) Obtain a "Seminar Topic Approval Form" (STAP) and a "Registration Approval Form" (RAF) from the departmental Administrative Assistant. Seek your advisor's approval of your topic which should be the result of careful consideration and mutual understanding of its significance and appropriateness. Approval will be indicated by your advisor's signature on the STAP.
   b) Present both forms to the Seminar Coordinator for signature, and give the RAF to Academic Services to complete your pre-registration. NOTE: This step must be completed promptly to retain the calendar date you chose in (a.) for your presentation. Furthermore, successful completion of BIO 4800 requires that your seminar presentation be given on the date you have chosen except in a case where a health-related condition brings an official recommendation by a health care professional that you be excused.

Conduct of Research and References

1) Your research must draw from current articles of professional level in primary sources (i.e. scientific journals that report on original research, not Reader's Digest or the New York Times science section) and refereed review articles (e.g. *Bioscience, American Scientist*).
   a) Use indexes of current periodical literature in library or online indexes such as *Biological Abstracts, Medline,* and others available through Ohiolink (found on library home page).

   b) Find a minimum of 10 references with at least 5 articles representing recent primary sources. You may work backward using references in a recent journal article or review.
2) You may use some textbooks, but reference books are preferred.

Outline, Abstract, Bibliography, and Presentation

1) Outline - An effective means of organizing your presentation is to use an outline. The outline can also serve as a vehicle through which you can explain the organization, content, and allocation of time to each part of your seminar to your advisor. Your advisor will specify whether or not he/she wishes to have you submit an outline when you first agree on a timetable for meeting (See Part 3 below.).
2) Abstract- the abstract and bibliography should each be no more than one page in length (single-spaced). Your abstract should include the title of your seminar, your name, and the seminar date at the top. Below the title, enter the text of your abstract written in a logical, concise, and grammatically correct fashion.
3) Bibliography - Your bibliography should contain in alphabetic order the sources you used to prepare your seminar. Use the style of the American Psychological Association (APA) (For example, see http://www.ccc.commnet.edu/apa/). Your Bibliography should contain at least ten (10) references with at least five (5) representing recent primary sources.
4) **Timetable** for Successful Seminar Preparation: You are responsible to consult with your advisor as early as the time at which he/she approves your topic to arrange a timetable and deadlines for completion of your seminar research and preparation of your presentation according to the following:
   a) At least three weeks prior to your presentation date – present an outline and list of references to your advisor. Use these to discuss how you intend to organize the seminar. If your seminar date is near the beginning of a semester or follows a semester break or holiday, you are still responsible to establish the three-week timetable with your advisor.
   b) At least two weeks prior to your presentation, submit Abstract and Bibliography to your advisor. This approach allows one week for revisions before final submission (see c.).
   c) At least one week prior to your seminar, obtain your advisor's approval (indicated by signature on the reference page) and submit your approved Abstract and Bibliography to Mrs. Penrose, Science Department Administrative Assistant (ENS 230) for copying and distribution to faculty.

Presentation Time Allotment should be according to the following (for a 4:00 pm seminar):

4: 00 pm Greeting and Prayer by Advisor
4:02 - 4:37 Presentation – maximum of 35 minutes
4:38 - 4:42 Q&A open to entire audience – 4 minutes
4:42 - 4:50 Students/Parents Dismissed for Q&A by faculty – 8 minutes or as necessary to complete Q & A; the intent will be to keep time uniform among students.
4:50 - 4:55 Presenter excused; faculty deliberations for grading.

Quality Factors:

1) Practice your seminar repeatedly so that you do not have to "read the slides" and so that you can maintain good poise and eye contact with your audience.
2) Your seminar should have an introduction, including some background information and an idea of where you plan to go with the seminar, a data presentation section (roughly akin to the "results" section of a paper or lab report), and a conclusion section (roughly akin to the "discussion" section of a paper or lab report). If there is no consensus on the data you've presented, you need not draw a definitive conclusion.
3) Project data in tables and graphs in clearly visible form. You may compile the research of others and make these yourself, or you may take them from other papers, giving appropriate credit to your source. Be sure you know what the statistics mean (*p*-values, etc. "Are the data significant?")

On the Day of Your Presentation:

1) Arrive for your presentation 10-15 minutes before the scheduled starting time. This will allow you to log on to the computer and get everything ready to go.
1) If friends or family members are preparing any refreshments, please have them do so beforehand. If there are two presentations on the same afternoon, please coordinate so as to prepare them ahead of time, and provide them for attendees at both sessions. Please do NOT prepare these between the sessions.
2) Have any props, laser pointers, chalk / markers ready to use.

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NOTE: *In addition to presenting a seminar, you must attend a minimum of 10 seminars (nine presented by others plus your own presentation) during your senior year to receive credit for the course. These are in addition to the 10 seminars attended during your sophomore and junior year. A student who attended less than 10 seminars before his or her senior year must attend enough seminars during the senior year so that the overall total equals 20.*

Seminar Evaluation

1) Seminars are evaluated by the biology faculty in attendance and your grade is based upon a consensus of the faculty panel.
2) Each faculty utilizes the "Biology Seminar Evaluation Rubric" (see page 4) as an aid to highlight the perceived strengths and weaknesses of the seminar according to the categories stated in the left column of the rubric.
3) Each criterion is evaluated on a 10-point scale (see top row). The "Content and Rigor" and "Critical Thinking" categories are weighted more heavily as shown in the "Weight" column.
4) Faculty members' evaluations via the rubric are considered in the deliberations which lead to faculty consensus and the determination of a letter grade.
5) Following these deliberations the seminar coordinator (or the student's faculty advisor) will deliver the student's grade and general feedback.

Academic Assistance: If you believe you may need support in managing the impact of a disability, please contact Amy Frey, afrey@cedarville.edu, (Disability Services). Faculty rely on Disability Services to verify the need for academic accommodations and to identify reasonable and appropriate accommodation strategies. Disability Services is part of the Academic Enrichment Center-The Cove located in the CBTS building.

Teacher Education Program

Teacher Education Program Unit and Program Assessments Assigned to Course

Unit Outcome	Program Outcome	Decision Points	Assessment
Competence	NSTA Std 1a.	4	#1 Content Knowledge
Competence	NSTA Std 1a.	1, 2, 3, 4	#2 Content Knowledge

Student's Name _____ Topic _____

BIO 4800: Biology Seminar Date _____ Faculty Initials _____

Criterion	9 to 10	8 to 8.9	7 to 7.9	≤ 6.9	Raw Score / Weight	Score
Evidence of Planning	Gains and keeps audience attention. Clear focus, Clear intro and body, effective summary.	Clear intro and body, general summary. Coherent presentation.	Weak intro, disjointed outline or sequence. Lacks coherency at several points.	Ill-defined opening and body. Conclusion not related to opening. Little evidence of planning.	X1 =	
Content & Rigor NOTE: Because of the fundamental importance of "Content/Rigor" And "Critical Thinking" each presenter must earn at least 35 out of the 50 points available in these two categories for successful completion.	Used correct terms, excellent detail; comprehensive descriptions and explanations. Fully informs the audience of the topic. Demonstrates rigor in research and understanding throughout the presentation and in the Q & A period.	Good detail, examples, illustrations, some terms used incorrectly. Most explanations & examples appropriate. Adequately informs the audience of the topic. Rigor in research and understanding seen occasionally.	Some details provided. Explanations incomplete. Inadequately informs the audience of the topic. Little evidence of rigor in content.	Terms used incorrectly, few details provided, explanations incoherent, brief coverage. Of little use to the audience.	X3 =	
Critical Thinking	Demonstrates analysis of relationships, states connections, interactions per parts. Demonstrates depth of understanding and ability to apply and integrate material in different contexts or biological levels when answering questions.	Applied or used ideas or principles to particular or concrete situations. Demonstrates depth of understanding when responding to questioning.	Knows concepts being presented, demonstrates use concepts without relating to other principles, concepts or applications. Some understanding demonstrated during questioning.	Basic regurgitation, recites specifics, universals etc.	X2 =	
Use of Media and Technology	Visually clear, readable & understandable. Appropriate use of background color and graphics. Aesthetically pleasing.	Lettering appropriate size, graphics clarify and extend oral content, usually clear, appropriate to content. Appropriate use of equipment. Minimum grammar/syntax errors	Occasional mismatch between media and content; graphics unclear; Hard to decipher text and media layout. Several grammar/syntax errors	Difficulty in operating equipment, few graphics; mismatched media and content.	X1 =	
Delivery	Clear and effective, excellent eye contact, minimum use of "ah" and "um" or use of a mantra.	Good eye contact, minimum errors in grammar. Occasional use of "ah" and "um" or use of a mantra.	Minimal eye contact, not clearly understood. Many "ah's" and "ums" and uses of a mantra. Reads the slides or notes to the audience.	Talked to the floor, hard to hear. Limited vocabulary, Poor diction.	X1 =	
Course Deadlines	Meets all deadlines established with advisor; see Seminar Requirements, Part D.	Did not always show professional effort in meeting deadlines.		Did not meet deadlines required for submitting approved work.	X1 =	
Abstract and Bibliography	Meets Requirements for primary sources; proper format, grammar	Insufficient primary sources and/or poor format or grammar			X1 =	
Total Score (100 max)	A = 93 to 100 A- = 90-92	B+ = 88 to 89.9 B = 83 to 87 B - = 80 to 82	C+ = 78 to 79.9 C = 73 to 77 C - = 70 to 72	< 70 = D range (unacceptable)		