Syllabus for Biology 370A/ENVR 370A
Seminar: Applied & Environmental Microbiology
Fall 2011

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Office Hours: MWF 10:00 AM - 11:00 AM and by appointment

Class Times & Rooms: MWF 1a (7:50 AM-8:40 AM)
301 Pricilla Payne Hurd Academic Complex (PPHAC)

Course Description:

Microbes play significant roles in practical endeavors related to agriculture, food production, industrial processes, waste treatment, and the bioremediation of polluted habitats. Water quality is greatly dependent on its microbial and chemical content and is made safe by treatment methods that remove pathogenic microorganisms and toxic wastes. Microbes can be used to mitigate the effects of toxic contaminants such as petroleum spills and mine wastes. Biotechnology creates industrial, agricultural, nutritional and medical products through microbial activities. Food fermentations are used to make a variety of milk products, such as cheeses and yogurt, and alcoholic beverages, such as beer, wine, and spirits. Large-scale industrial fermentations employ microbial metabolism to manufacture antibiotics, hormones, enzymes, vaccines, and vitamins. In this seminar students will learn to utilize the scientific literature to explore the nature of these advances and the status and application of some of these technologies. Students will present the results of their own research into the literature in both papers and oral presentations. Extensive student participation will be an absolute requirement of the course. This course fulfills the writing intensive and the capstone senior seminar requirements for biology, environmental science and environmental policy & economics majors.

Course Objectives: Upon completion of this course students will be able to:

1) select and research specific topics in the areas of applied and environmental microbiology using both primary and secondary literature sources
2) concisely describe a body of research in abstract form
3) construct written outlines and drafts based on feedback from peers and the professor
4) write book and research review papers in a proper scientific format
5) give concise, well-organized oral presentations to peers
6) clearly discuss and answer questions from their peers about their research findings
7) offer valuable, constructive criticism on peers' written and oral work

Texts: Offit, P.A. 2005. *The Cutter Incident: How America's First Polio Vaccine Led to the Growing Vaccine Crisis*. Yale University Press, New Haven (ISBN: 978-0-300-12605-1; pbk).

Pechenik, J.A. 2004. *A Short Guide to Writing About Biology* (5th edition). Pearson Education Inc., NY (ISBN: 0-321-15981-0; pbk).

Grading:

Literature Review Paper	200 points
Research Proposal Paper	200 points
Book Review Paper	100 points
Abstract Exercise	50 points
CV/Resume Exercise	50 points
Peer Editing	200 points
Presentations	400 points (2 @200 points each)
Presentation Evaluations	100 points
Class Participation & Attendance	100 points
	1400 points

Grading Scale: The grading scale is as follows:

A	93.0-100%	C	73.0-76.9%
A-	90.0-92.9%	C-	70.0-72.9%
B+	87.0-89.9%	D+	67.0-69.9%
B	83.0-86.9%	D	63.0-66.9%
B-	80.0-82.9%	D-	60.0-62.9%
C+	77.0-79.9%	F	59.9% and below

This is what the Student Handbook has to say about grades:

A and A-

These grades are given for achievement of the highest caliber. They reflect independent work, original thinking, and the ability to acquire and effectively use knowledge.

B+, B, and B-

These grades are given for higher than average achievement. Evidence of independent work and original thinking is expected.

C+, C, and C-

These grades are given when the student has devoted a reasonable amount of time, effort, and attention to the work of the course and has satisfied the following criteria: familiarity with the content of the course, familiarity with the methods of study of the course, and active participation in the work of the class.

D+, D, and D-

These grades are given for unsatisfactory work, below the standard expected by the College. They indicate work which in one or more important aspects falls below the average expected of students for graduation. The work is, however, sufficient to be credited for graduation, if balanced by superior work in other courses.

F

This grade is given for work that is insufficient to be credited for graduation.

Class Attendance:

It has been my experience that students who do poorly in class generally have numerous absences. In this course it is especially important for you to attend because much of the time we will be hearing from your classmates and it would be in very bad form for you to not show up for them while expecting that they will be there for your presentations. Because of that I will be taking daily attendance.

That said, I understand that sometimes things intervene and make absences unavoidable. Over the course of the semester you can miss one draft-editing session and two presentations (not your own, obviously!) without penalty, provided you have a good reason for missing class. Serious illness is pretty much a minimum for "good" here, and any rescheduling of a missed presentation is entirely at my discretion. If you must miss a class, please let me know in advance if at all possible or immediately thereafter. It's a question of respect, both for me and for your fellow students. In case of any crisis or emergency, or an extended absence from class, you must inform me directly, through Learning Services or the Academic Affairs Office.

Papers:

Each draft you hand in **must** clearly indicate what it is: Who wrote it, when you wrote it, which assignment it is, which draft it is. Be sure to also indicate the word count (see below). All drafts must be word-processed, unless you speak to me first.

In accordance with College policy, it is your responsibility to keep **all** materials (notes, jottings, index cards, intermediate drafts, etc.) for **all** assignments in this course until you receive a final grade. It is especially important that those of you writing with a word-processor be sure to save intermediate drafts ***as separate documents***!

There will be two major writing assignments in this course:

1) Review paper. We'll review the structure of a scientific review article on Monday, September 19, but in short they synthesize a number of papers in a particular area into a coherent and fluid whole. The author may choose to extend the content beyond what is known by adding his or her own speculations, but this isn't a requirement. *minimum of 10* I want to see a primary sources used for this paper.

(The notion of a peer-reviewed journal is **absolutely critical**: *be certain you understand what is meant by this term*!)

2) Research proposal. Scientific research costs money, and oddly enough, people with money almost always need to be convinced to give some to you. Knowing how to write a solid, interesting, effective research proposal is a critical skill in modern science. We'll look at this kind of writing later in the semester.

The two papers must be on separate topics, unless you have double the minimum number of references. I intend the two presentations to be keyed to these papers, so if you *do* use the same topic for both papers, you're going to have to choose a different topic for one of the talks.

I expect a certain minimum length for each draft:

First Draft	2000 words
Second Draft	2500 words
Final Paper	3000 words

And don't forget to schedule time with the staff at the Writing Center — getting a real outsider's perspective (by which I mean a non-scientist, or one who isn't very familiar with your subject) can be an invaluable asset to your writing.

In addition, there will be three minor writing assignments, a book review of *The Cutter Incident*, a personal resume, and an assignment focused on writing abstracts.

Presentations:

Each of you will give two oral presentations over the course of the semester. You will also be responsible for evaluating the presentations of your classmates. We'll discuss and develop criteria for evaluating these presentations late in September, but here are a few ground rules:

- Your presentation should take between 15 and 20 minutes, to allow time for questions
- You must provide me an abstract (200-250 words) **one week before** your presentation; I will post this abstract on Blackboard.
- For at least one presentation you must use a software presentation program such as PowerPoint.
- In each presentation you must present experimental results (from one of the papers that you have read, of course — I don't expect you to create them!) in reasonable detail.

Late Assignments:

Late assignments are ***very*** bad. We're on a tight schedule, and you need to stay on top of the assignments. Anything you hand in late disrupts my schedule as well as the schedules of your classmates. Late assignments will be penalized 10% of the full value for each day (or fraction thereof) that they are late. This also applies to assignments that simply aren't up to snuff: if you hand in two hand-scrawled pages and expect that to count as a draft, you are going to be disappointed!

Reading Assignments:

It is important that you do the reading assigned for any given session (see the syllabus) in advance. Discussion of the material is a critical part of the course, and if you haven't read that day's material, you're depriving yourself and your classmates of your most informed and considered opinion.

Studying Together:

Working together is a Good Thing! I encourage you to talk with friends in and out of this course about what you're doing, how effective your writing is, whether the approach you've chosen to take makes sense, whatever. There is no aspect of this course that can't be improved by working with other students on it.

Academic Honesty:

I adhere to the Academic Honesty Policy of the College. If you're not familiar with College policy, you should be. See the Student Handbook for details. Any and all written work must be done in your own words (with the exception of direct quotations which are clearly indicated as such), and written work must include proper citations indicating the sources for any ideas, concepts, facts, or other information derived from others, whether or not you have restated it in your own words. Any cases of suspected cheating or plagiarism will be referred to the Academic Affairs Office. Academic dishonesty may result in a failing grade in the course.

Accommodations:

Per Moravian College policy: "Students who wish to request accommodations in this class for a disability should contact Mr. Joe Kempfer, Assistant Director of Learning Services for Disability Support, 1307 Main Street (extension 1510). Accommodations cannot be provided until authorization is received from the office of Learning Services."

Access for Disabled Students:

Our classroom is accessible to students with impaired mobility. I hope that all of you will avail yourselves of the College's Writing Center as well, as part of your process for improving your written work for the course. However, I am required to point out that "the Writing Center is located in a building that is not accessible to persons with mobility impairments. If you need the services of the Writing Center, please call 610-861-1392." If you have any questions about this, please don't hesitate to ask me.

Classroom Expectations:

Respect for others' answers and views.

Disruptive behavior during class will result in your dismissal from the class the first time, after that, disciplinary action will be taken.

Cell phones need to be turned to OFF and put away in a purse or book bag during class. Use of cell phones in any way during class will result in dismissal from class and be counted as an absence.

Non-alcoholic drinks are allowed in class; food is not.

If you arrive late, be respectful by not disrupting a class already in progress**.**

These guidelines are intended for the benefit of the students as far as clarification of my expectations for the course; however, in exceptional circumstances I reserve the right to exercise discretion in the application of these guidelines to individual cases or to refer a particular case to the Academic Dean if necessary.

Class Participation:

Beyond your written and oral presentations, I also expect you all to participate in editing your classmates' written drafts and evaluating their presentations. You can see by the point distribution I use for grading that I take these aspects of the course very seriously.

In addition, I expect you to give me evaluations of each talk. We'll discuss the format later in the semester.

Seminar: Applied & Environmental Microbiology
Class Schedule
Fall 2011

Date		Lecture Topic	Reading
M Aug.	29	Organizational meeting	
W	31	The Polio Crusade	Offit: Prologue, Introduction, Ch.1
F Sept.	02	Finding & Evaluating Sources	Pechenik: Ch. 1, 2
M	**05**	**No Class-Labor Day**	
W	07	Discussion: Back to the Drawing Board	Offit: Ch. 2
		Discussion: The Grand Experiment	Offit: Ch. 3
F	09	Discussion: How Does It Feel to Be a Killer of Children?	Offit: Ch. 4
		Discussion: A Man-Made Polio Epidemic	Offit: Ch. 5
M	12	Discussion: What Went Wrong at Cutter Laboratories	Offit: Ch. 6
		Discussion: Cutter in Court	Offit: Ch. 7
W	14	Discussion: Cigars, Parasites, and Human Toes	Offit: Ch. 8
		Discussion: Death for the Lambs	Offit: Ch. 9, Epilogue
F	16	Discuss possible topics	
M	19	Discuss structure of literature reviews	Pechenik: Ch. 6, 7
W	21	Discuss structure of laboratory and research reports	Pechenik: Ch. 8
F	23	Discuss reading and writing about statistical analyses	Pechenik: Ch. 3
M	26	Discuss writing resumes and letters of application	Pechenik: Ch. 14
W	28	Discuss citing sources and listing refences	Pechenik: Ch. 4
F	30	Discuss drafting and revising	Pechenik: Ch. 5
M Oct.	03	Discuss preparing oral presentations	Pechenik: Ch. 13
W	05	Discuss writing for a general audience	Pechenik: Ch. 12
F	07	Discuss writing research proposals	Pechenik: Ch. 9
M	**10**	**No Class-Fall Break**	
W	12	Oral presentations 1 & 2	
F	14	Oral presentations 3 & 4	
M	17	Oral presentations 5 & 6	
		Give review draft 1 to peer editors & Dr. Kuserk	
W	19	Review draft 1 of the review paper	
F	21	Oral presentations 7 & 8	
M	24	Oral presentations 9 & 10	
W	26	Oral presentations 11 & 12	
		Give review draft 2 to peer editors & Dr. Kuserk	
F	28	Review draft 2 of the review paper	
M	31	Oral presentations 13 & 14	
W Nov.	02	Oral presentations 15 & 16	
F	04	Oral presentation 17	
		Final review paper due to Dr. Kuserk	
M	07	Oral presentations 1 & 2	

		Chs. 5, 8-11
W	09	Oral presentations 3 & 4
F	11	Oral presentations 5 & 6
		Give research proposal draft to peer editors & Dr. Kuserk
M	14	Review draft 1 of the research proposal paper
W	16	Oral presentations 7 & 8
F	18	Oral presentations 9 & 10
M	21	Oral presentations 11 & 12
		Give research proposal draft 2 to peer editors & Dr. Kuserk
W	**23**	**No Class-Thanksgiving**
F	**25**	**No Class-Thanksgiving**
M	28	Review draft 2 of the research proposal paper
W	30	Oral presentations 13 & 14
F Dec.	02	Oral presentations 15 & 16
M	05	Oral presentation 17
W	07	Final research proposal paper paper due to Dr. Kuserk

Final Exam: Thursday, December 15, 8:30AM