

Biology 330**Course Syllabus Form
American University of Beirut
Faculty of Arts and Sciences
Biology Department****Course Number and Title: 393/394 SEMINAR (1 credit)
Semester FALL/SPRING****1. Course Description**

This course trains students how to present research findings.

2. Course Learning Outcomes

Students completing the course are expected to:

- i) use the biological literature;
- ii) read, understand, and discuss articles in peer-reviewed journals biological sciences;
- iii) demonstrate the ability to construct and deliver an oral presentation to a scientific audience
- iv) become useful and critical members of seminar audiences, participating with useful questions and comments and able to evaluate and suggest improvements to presentations.

3. Course Structure

With the course being one credit, the class meets once a week for a 50 minute period. Initial classes are dedicated to instruction on presentation and then practice with review and discussion by peers. Seminar subjects must be approved by the instructor. Students will submit suggestions and advice to speakers for each presentation.

4. Seminar Topics

Any topic which falls within the vast domain of biological sciences is appropriate for a presentation in this course. Students will present a primary research paper from highly regarded biology journals. Review articles and topics that are primarily technological or descriptive (such as clinical) are not permitted. Experimental data must be included. Articles must be approved by the instructor.

5. Grading Policy

In addition to being graded on choice of topic, preparation and the presentation itself, a significant element of such a course is the contribution of students by their presence, attention and discussion during seminars. The following grading scheme is meant to reflect the various components of student performance:

Preparation and documentation	15%
Understanding of presented material	15%
Participation in class	20%
Presentation	50%
Total	100%

6. Plagiarism

Students' attention is drawn to the AUB' Student Code of Conduct

(<http://pnp.aub.edu.lb/general/conductcode/index.html>), and in particular section 1.1.B which reads as follows

“Whenever students draw on another's work, they must specify what they borrowed, whether facts, opinions, or quotations, and where they borrowed it from. Using another person's documented ideas or expressions in one's writing without acknowledging the source constitutes plagiarism.”

7. Particularities and Advice

Instructor: Colin Smith, Ph.D.

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Office: Biology 313, ext 3887

Office hours: TBA

Course schedule

There will be several sessions to discussing how to present a scientific seminar. I intend to have everyone pick an article early, and present a 5 minute talk to force a functional structure, then later present a 40 minute talk.

Appropriate Articles (Required)

Do not use the internet search by topic for an article, because you will most likely pick a difficult, narrowly focused publication of interest mainly to specialists. You must choose an article (or two competing articles, or a primary paper and co-published supplementary article) that you find interesting and is in the context of a complete scientific story (phenomenon, explanation, test of explanation). Hypothesis-driven experimental research will be the easiest to present. First look to recent issues of Nature and Science. You can be sure that any article published in these journals has high scientific relevance, and that will make your work much easier. Also, these journals often have scientific commentary (commentary, news and views, mini-review, or preview) about important articles, which will greatly help guide you on what is important about them. I encourage you to choose articles that have a scientific commentary written about them. If unsuccessful finding an article in Nature or Science, look in Cell, PLOS, PNAS, and other Nature-, PLOS-, and Cell-related journals in the biological sciences. I must approve of you article before it is presented, and I am unlikely to approve articles that do not have clear scientific significance, quality and story. Please distinguish between what is science (improving descriptions of physical reality) and what is technology (applications of knowledge, such as medicine).

Preparation and documentation (15%)

You must have an article approved by me by the set deadline. Before the presentation, the following must be received: Copies of the approved articles being presented, an electronic copy of the presentation (only if used), plus a summary of the presentation including student's name, date, presentation title, abstract, outline and bibliography.

Understanding of Presented Material (15%)

Effort spent helping someone else improve their presentation is very useful to developing presentation skills. You are required to submit, by the next section, a written (typed is fine, but not email) evaluation of the previous seminar, in which you succinctly offer constructive criticism in the form of advice for improving the seminar. This means 2-5 simple sentences. Summaries, expressions of appreciation, praise, etc. are not requested. I want evidence that you thought about how the presentation was effective. Good advice might typically be something such as "Do not begin the presentation with an explanation the technical methods, instead, explain what human concerns are addressed in the work, then immediately present the model they propose (do not wait for the end!), then aspects of the model addressed by the work and then experimental strategy. Do not show slides of text, we can hear you fine. Do not present those 4 slides of materials and methods, just explain what is necessary while presenting the data figure. Do not show the figure with the three experiments together, when you only discuss one experiment. Explain why the second experiment was done, or do not discuss it at all. The yellow and pink lines were hard on the eyes, and the axes were not explained and the labels were too small to read. Slides 6 and 7 should be after slide 8, and slides 11 and 12 should be dropped because they are too complicated to explain properly."

Your submission of advice will not affect my assessment of the seminar, but in some circumstances, the advice may be forwarded anonymously to the presenter.

Participation in Class (20%)

You are expected to attend every session and ask thoughtful questions. You will be assessed on attendance and how many good questions you ask.

Presentation (50%)

At the end of the presentation, every member of the audience should understand why the research area was undertaken, why the findings are important, what hypotheses were tested, how the experimental strategy tested the hypotheses, and how the data are interpreted as findings, and how the findings support the author's claims.

I will assess you on: the difficulty of the article, my perception of your effort, the ability to convey the scientific significance, poise, effectiveness of the presentation structure, creativity, effectiveness of figures, data presentation, how well data is related to findings, how well findings are related to scientific significance, effective use of time, adherence to time limit, avoidance of boredom, explanation of experimental approach, question handling, technical mastery, how well you explained the central model, hypothesis or problem.

I would like to expect that the presentation will convey more understanding to me than an equal amount of time spent with the article.

Advice

The goal of a presentation is to entertain and educate the audience. Ideally, the subject is interesting to you, and you convey your interest and enthusiasm to the audience, and they leave with a greater interest and knowledge. This means that if the audience becomes lost or bored, that the presentation is a failure. Appearing to be knowledgeable about the subject is not the goal. Picking an article on a glamorous topic with clear hypotheses, significant findings, and strong conclusions will make you work much easier.

Consider what makes it interesting and important, and focus on conveying that and only that. Why was this research undertaken, why was it funded, why was it accepted for publication? Omit unnecessary details. Many details, especially in an article, are not read by most, are not important to understand the work, and obfuscate rather than clarify. You must keep the audience engaged and interested, and that means keeping it clear and simple.

Think about the following questions:

1. What is the broad scientific relevance of the article?
2. What important gaps exist in understanding?
3. What are the specific scientific questions being addressed?
4. What is the scientific significance of the question being addressed?
5. What are the major findings?
6. Why is this article interesting to scientists in other fields?
7. Why was this experimental strategy chosen?
8. How do the experiments support the conclusions?
9. Are any of the interpretations or conclusions controversial or disputable?
10. What did the article leave unresolved?

Omit unnecessary details.

Completely liberate yourself from other formats. The work may exist largely in written form, but that is a different medium of communication, and what works on the written page does not work necessarily work in an oral presentation. The most obvious difference is the amount of words and details. The usual advice is to simplify, simplify, and simplify until you are left with the most important and interesting points of the research, perhaps as few as two. These should be presented and supported with data from the paper. Any hypothesis or model supported by the research is usually better presented in the beginning and repeated at the end, and any time useful.

Consider your audience. Since the goal is for them to understand, every aspect of the presentation should be viewed from their perspective. Construct a presentation that will not lose anyone, everyone will understand, and bore no one. Background, technical issues, and complications to interpretations should be treated carefully, which means only as much as necessary. If an experimental technique is used that requires background, provide it immediately before or during the explanation of the data derived from the technique. This is one of the most difficult aspects of presenting research, to get the audience to understand a complicated or technical matter at a depth sufficient to understand the interpretations and conclusions. Try to accomplish this without going into unnecessary details, or confusing or boring the audience, or spending too much time. Focus on the rationale, the whys and hows of the research, experimental approach, interpretations, and conclusions. Are there any surprising data or controversial interpretations? Rationales form the structure of scientific presentation, and make the research a story.

Design the projected images that support, rather than compete with you. Powerpoint is very convenient, and if used properly, an excellent tool, but it makes it easy to create a presentation that does not work. The projected image should be used for what cannot be easily communicated in words, and the voice should support and guide the audience. Any projected text will be read by the audience, and the audience does not listen to what you are saying while reading. Avoid projecting the statements you want to make and reading them. Simple titles and main points are the only text that should be projected in the body of the presentation, and most of the projected images should be data and explanatory figures. Do not display anything you are not going to explain, and explain everything you display. Anything displayed and not explained will confuse, irritate, or distract your audience.

Practice in front of others and demand criticism, what works, what does not work. Sufficient practice will give you more confidence, and allow you to present naturally without sounding like you have memorized every word.

Consider the following generic framework for a talk, whether 3 minutes or 60 minutes:

1. Title that communicates the major findings and their scientific significance
2. The existing hypothesis that is disproved in the present work, the provoking observations, the scientific question examined, or whatever inspired the project
3. The new hypothesis, model, or findings of the work
4. The experimental approach chosen, why it was chosen.
5. The experiments that disprove the previous hypothesis, with just sufficient technical details to allow an understanding of the validity of the experiment, with interpretation of the data
6. In a logical order, the experiments (not necessarily all) that support the new model, with explanation of why this experiment was performed this way, and just sufficient technical details to allow an understanding of the validity of the experiment, with the interpretation of the data
7. Any needed restatement of logical connections between the data and findings or conclusions
8. Any controversies or unexplained phenomena, or issues that arise

One last piece of advice: to determine what is essential and what not, imagine having to explain why the article is interesting and important to an elderly, non-scientist relative in 5 minutes or less. This exercise should effective structure for any length presentation.