Course Description
Course Coordinator: Samuel Gunderson (445-1016; gunderson@biology.rutgers.edu; Nelson A322)
Instructors for the 2 smaller sections for Fall semester are: Isaac Edery and Garth Patterson.
These section instructors will be changed in the Spring 2002 semester.

1. Who can take the 483-484 course?
   a) This course is normally reserved for students in their senior year.
   b) 483-484 is required as a co-requisite for all of the possible senior research courses including:
      481-482 (independent laboratory-based research)
      489-490 (independent literature-based research)
      495-496 (honors research)
      497-498 (Henry Rutgers Honors) or equivalent in other Colleges.
   c) In the case of a student taking 381-382 (independent research) in their junior year and no research in their senior year, that student is still required to take 483-484 in their senior year.
   d) Note that the 483-484 course is designed for the MBB faculty to monitor the research projects of the MBB students and to give students experience and exposure to writing their senior thesis, oral presentations, honors criteria etc... The course will also have guest speakers (see below).

2. Course Overview: The first meeting is designed to inform the students on their research projects, honors thesis, thesis writing and oral presentations. The next part of the course will consist of outside guest speakers from academia and industry who will present their perspectives on how to choose a career and what influenced their own career choices. You should feel free to ask questions during the presentation. The last part of the course we will break up into smaller sections each monitored by one of the section instructors. These smaller sections will serve as a forum for the oral presentation of student research or literature reports pertinent to your senior research project, regardless of whether you are following the Laboratory or Non-Laboratory Options in the MBB major.

3. Requirements for both Semester's Talks.
   You will give a 20 minute oral presentation related to your research activities. You should also plan for 5 minutes discussion/questions for a total of 25 minutes. Note: you should target your presentation for a scientific audience, therefore this is not a "Newsweek Magazine Level" or "New York Times Journalistic Level" type of presentation. Thus the introduction, results, conclusions of your talk should match the audience which means you assume everyone has a B.S. degree in molecular biology or biochemistry. One week prior to your talk you must email an abstract (~1 page) to Dr. Gunderson who will critique it and may ask for you to submit a revised abstract. Dr. Gunderson will then distribute the abstract by email to the students and instructor who will be listening to your talk in your section. Students are expected to invite their P.I. to sit in on the presentation. If the P.I. is unavailable, a senior member of the laboratory should attend the student's presentation. The student presentation should follow the format described below.

4. Role of Discussants: In order to encourage discussion, each speaker will have designated Discussants. Each Discussant should prepare a question for the speaker or for the audience as a whole. Note however, you are expected to participate even when you are not a discussant. Your 20% participation grade is based on overall participation, not just on the one day that you are a discussant.
Research talks will consist of 20 minute overviews of the research focus of the laboratory in which the student is working. This means presenting a summary of all the projects that are ongoing in the lab rather than on the student's own particular research project. If the lab is too large or diverse to logically present such an overview in a 20 minute time frame, then the student may choose to present a subset of the projects that are ongoing. If possible this subset should overlap with the student's own research project. Remember to allow 5 minutes for questions to give a 25 minute total presentation time.

a.) Time/Organization. Provide an appropriate balance among the various parts of your talk. Below are some guidelines.

• (40%) **Introduction.** Present background and objectives of work. Note that even if we assume your audience has a MBB-type of degree you should still assume that the audience has only a limited knowledge of the topic. State hypothesis or questions being tested, give an outline of your talk; if applicable give importance to human health.

• (40%) **Results and Experimental Approach** Give examples of the types of research ongoing in the lab. You can give primary experimental data or summaries of that data. Showing models and/or schematics is fine, even good. However, do not just give models or schematics but also show at least some primary data (published or unpublished) or describe the assays commonly used in the lab. The audience should come away from the talk with a clear idea of what people in the lab actually do on a day-to-day basis.

• (20%) **Conclusions and Summary** - If possible, apply conclusions to a wider range of phenomena; discuss future approaches that might be explored. What questions does the research answer, and what questions does it raise?

**Abstract.** The abstract is about one page or less and you should email it to Dr. Gunderson one week before your presentation. The abstract should summarize your presentation and must also include a few references from the primary literature. The abstract should be in your own words, do not copy the abstracts from your research advisor's grants or publications. Keep in mind the abstract may also be emailed to your research advisor.
Information for the Talk in the Spring Semester,

Research talks will summarize the student's own research project. However, you should mention how your project fits into the overall scheme of the lab. Remember to allow 5 minutes for questions to give a 25 minute total presentation time.

a.) Time/Organization. Provide an appropriate balance among the various parts of your talk. Below are some guidelines.

• (20%) Introduction Keep it shorter than in the Fall. Present background and objectives of your work and how it fits into the overall scheme of the lab. State hypothesis or questions being tested, give an outline of your talk; human health issues...

• (60%) Results This is the main body of the presentation.

For students doing laboratory work: describe the experimental method, show examples of the primary data, and show data summaries.

For students whose lab work is mostly computer oriented give descriptions of what the programs do/find and show printouts of the primary data and explain what they mean.

In the rare case that the student is giving a literature talk, critically evaluate methods used and evidence obtained and suggest possible improvements in experimental design.

• (20%) Conclusions and Summary If possible, apply conclusions to a wider range of phenomena; discuss future approaches that might be explored. What questions does the research answer, and what questions does it raise?

Abstract. The abstract is about one page or less and you should email it to Dr. Gunderson one week before your presentation. The abstract should summarize your presentation and must also include a few references from the primary literature. The abstract should be in your own words, do not copy the abstracts from your research advisor’s grants or publications. Keep in mind the abstract will also be emailed to your research advisor.

Additional things to keep in mind.
You will give a 20 minute oral presentation related to your research activities. You should also plan for 5 minutes discussion/questions for a total of 25 minutes. Note: you should target your presentation for a scientific audience, therefore this is not a "Newsweek Magazine Level" or "New York Times Journalistic Level" type of presentation. Thus the introduction, results, conclusions of your talk should match the audience which means you assume everyone has a B.S. degree in molecular biology or biochemistry. One week prior to your talk you must email an abstract (~1 page) to Dr. Gunderson who will critique it and may ask for you to submit a revised abstract. Dr. Gunderson will then distribute the abstract by email to the students and instructor who will be listening to your talk in your section. Students are expected to invite their P.I. to sit in on the presentation. If the P.I. is unavailable, a senior member of the laboratory should attend the student's presentation.
General Tips for the presentation of an effective research seminar.

Consider your seminar as an opportunity to improve your professional communication skills. They will be useful when you interview, whether it be at a company or Graduate or Medical school, and the interviewer asks you what your research project was on. These people will often be scientists and may have M.D’s or Ph.D.’s as well, so it is important not to stumble your way through a description of your research project.

1. **Organization.** The key to an interesting and exciting presentation is good organization and a thorough understanding of the material. Choose only the crucial experiments (one or two) that answer the questions raised or critically test an hypothesis, i.e., only those that are essential for the understanding of your topic. A carefully conceived, deliberately and logically presented seminar will have a much greater impact on your audience than a detailed and exhaustive collection of figures and tables.

2. **Overall** your talk should be designed to be a coherent framework for presenting the material. Therefore carefully consider the following points.
   1. What you are trying to prove;
   2. The key experiments supporting the conclusions;
   3. Whether the evidence is sufficient to justify the conclusions;
   4. Additional experiments necessary to prove or disprove hypothesis;

3. **Avoid jargon** and unfamiliar phrases. Make sure you fully understand the material at the outset (get clarification of anything not understood from your P.I. or members of the laboratory).

4. **Use of visual aids** - make sure they are uncomplicated and easy to read and comprehend - avoid large tables of data and complicated figures that will confuse and dismay the audience.
   1. It is most effective to use simple graphic presentations or to draw straightforward schemes, graphs and tables neatly in color on overhead sheets that are clearly labeled.
   2. Clearly label all important parts of a Figure in simple, easily understood terms.
   3. If a blackboard is used, write clearly and plan sketches carefully for maximum clarity.
   4. Simple flow diagrams are useful for illustrating experimental plans.

5. **Verbal communication** - this is the most important part of your talk.
   1. Prepare a draft of your talk and read it to yourself several times so that important points are recognized and there is a smooth flow of statements from one part to another.
   2. Prepare an outline for yourself to aid in the presentation so that the talk need not be read and can be presented extemporaneously.
   3. Preview your seminar with your colleagues to get constructive criticism and feedback (it may be worthwhile to tape your seminar).

6. **During the presentation.**
   1. Outline your talk in a dynamic way on the board and leave up for future reference;
   2. Maintain eye contact with your audience and do not rush your presentation;
   3. Relax, don't be nervous;
   4. Limit amount of material;
   5. Ask if there are questions as you go along;
   6. Allow at least 2 min per slide or transparency. This means:
      *DO NOT RUSH THROUGH SLIDES AND TRANSPARENCIES AND REMOVE THEM BEFORE AUDIENCE HAS HAD A CHANCE TO ASSIMILATE THE MATERIAL;*
   7. Discuss material presented on summary slides rather merely reading it; use voice dynamics to emphasize points;
   8. Keep voice up, speak clearly with confidence and authority; avoid delays in presentations when changing slides or overheads.