INTRODUCTION TO PHYSIOLOGY

BIOL. 225

COURSE SYLLABUS
Spring Semester, 2008

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COURSE INFORMATION

This Syllabus

You are responsible for knowing all the contents of this syllabus. It provides information on the organization of the course, schedules for the lecture and the laboratory, and assignments from assigned texts.

1. GRADING: POINTS

A. **Lecture**: five (5) 100 point exams **500 points**

B. **Laboratory**:

1. Four (4) Laboratory Reports (LR); 25 points each------ 100 points
2. Ten (10) Data Reports (DR); 15 points each.---------- 150 points
3. Self Designed Laboratory Report ----------50 points
4. Topic Paper ----------50 points
5. Comprehensive Laboratory Final---------- 150 points
6. TOTAL Laboratory points _____ **500 points**

C. **Total Points Possible**_____ **1000 points**

2. GRADING: EXTRA CREDIT

There is a **MAXIMUM OF 30 POINTS** that can be earned as extra credit in this course. These points must be verified with the instructor **BEFORE** they may be applied to the points possible total for a student. This maximum does not include any extra credit points that may be awarded on individual laboratory assignments or lecture exams

A. LECTURE: MAXIMUM OF 15 EXTRA CREDIT POINTS POSSIBLE
B. LABORATORY: MAXIMUM OF 15 EXTRA CREDIT POINTS POSSIBLE

Possible sources of extra credit points include the following:

- ATTENDING LECTURES ON PERTINENT TOPICS
- ORGANIZING FIELD TRIPS FOR COURSE MEMBERS
- INTERVIEWS WITH INDIVIDUALS WITH JOBS RELATED TO PHYSIOLOGY
- INVOLVEMENT IN ACTIVITIES RELATED TO PHYSIOLOGY

3. DUE DATES:

A. Policy: You are expected to comply with all deadlines**. FAILURE TO DO SO FOR ANY REASON WILL RESULT IN A MANDATORY LOSS OF POINTS**. Points will be deducted as follows:

Day One: -3points
Each subsequent day: -1point per day

B. DATES:

1. Laboratory Reports (LR) and Data Reports (DR):

   Reports must be submitted at the beginning of the laboratory meeting subsequent to the meeting in which the experiment was scheduled to be performed. In most instances, this allows a full week for research and write-up.

2. Topic Paper: April 08, 2008

   The Topic paper must be turned in at the **BEGINNING** of the lecture period on April 08, 2008. It is to be placed on the front table in the lecture facility.

3. Self-Designed Laboratory Report May 12, 13 or 14, 2008

   The Self-Designed Laboratory Report must be placed on the front table in the laboratory facility at the **BEGINNING** of the laboratory period.

4. Laboratory extra credit Last day of Lab

   Submit at the beginning of the period.

5. Lecture extra credit Date of Lecture Final Exam

   Submit at the beginning of the period.

Make-up examinations will not be given unless absence is due to a College recognized emergency. You must be present when these examinations begin, or risk forfeit of the opportunity to take the examination. The instructor will determine start times for all examinations.

4. CLASS HOURS

LECTURE:

9:35am-11:00am TTh; Science Lecture 101; S. Daniel. Section 0407; Honors 0976. Lecture Exams will be administered in this facility during class hours.

LABORATORY CLASSES:

1:00pm-4:10pm MW; S. Daniel. Section 0408; Honors 0988

11:30am-2:40pm TTh; S. Daniel. Section 0409; Honors 1051

9:00am-12:10am WF; S. Haeri. Section 1731.

The laboratory classes meet in *Sci 145*. There are three scheduled laboratory classes. You are expected to attend your scheduled laboratory class. You may not take exams or give presentations during any but your scheduled class period. Laboratory exams and

laboratory presentations are administered in this facility during scheduled class hours.

When possible, the laboratory is open for independent work. Do not expect assistance during these open hours, or expect the lab to always be available. Never interfere with other classes or instructors who also use the laboratory facility.

NOTE: Students must enroll in a lecture and a laboratory simultaneously. You may combine any lecture with any laboratory.

5. TEXT AND OTHER CLASS MATERIALS

The text entitled *Human Physiology* (10th edition) by Fox is required and intended to augment lecture material. The reading assignments listed in the schedule are subject to examination whether or not the material is covered in class. Some of the text material is designed to help you with laboratory material. These chapters will be indicated when they become relevant.

For the laboratory, materials will either be handed out in hardcopy, posted on the class website which also contains some lecture materials (http://faculty.orangecoastcollege.edu/happ/), or be made available in the Hoag laboratory. An orientation to the Hoag lab is mandatory, and is scheduled for week 1.

6. ATTENDANCE AND CHEATING

Attendance

Attendance in class is very important. It is your responsibility to keep up with the reading assignments, changes in the schedule and any other activities outlined by the instructor in class meetings. You may be dropped from the class after three unauthorized absences

Do we really need to say this?

Cheating will not be tolerated, and is cause for immediate dismissal. The college will be notified, and appropriate action will be taken

ASSIGNMENT OF LABORATORY PARTNERS -- **Instructor's copy**

GROUP NUMBER _____

TURN IN ONE COMPLETED SHEET FOR EACH GROUP

Each laboratory group may consist of 3 to 5 members. Each group will complete both copies of the 'Assignment of Laboratory Partners' forms. One copy per group will be given to the instructor during the first lab session; each member should have a copy.

A 'group number' will be assigned *by the instructor*. This group number will be referred to throughout the semester.

PRINT CLEARLY

LAB DAY AND TIME _____

NAME PHONE NUMBER e-mail

_____

_____

_____

_____

_____

PETITIONERS -- You must attend and take part in the labs you wish to petition.

Note: If any changes are made with regard to the lab partners assigned above, the instructor and/or teaching assistants must be notified immediately. Failure to due so may result in your being dropped from the class.

ASSIGNMENT OF LABORATORY PARTNERS -- Lab member copy

GROUP NUMBER _____

Each laboratory group may consist of 3 to 5 members -- no exceptions. Each group will complete both copies of the 'Assignment of Laboratory Partners' forms. One copy per group will be given to the instructor during the first lab session; each member should have a copy.

A 'group number' will be assigned *by the instructor*. This group number will be referred to throughout the semester.

PRINT CLEARLY

LAB DAY AND TIME _____

NAME PHONE NUMBER e-mail

_____

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_____

_____

_____

PETITIONERS -- You must attend and take part in the labs you wish to petition.

Note: If any changes are made with regard to the lab partners assigned above, the instructor and/or teaching assistants must be notified immediately. Failure to due so may result in your being dropped from the class.

THE SCIENTIFIC METHOD

GENERAL POINTS:
Scientists use the scientific method in their quest for new information. The scientific method involves the formation of questions, followed by the search for answers to those questions. Use of the scientific method often entails the performance of experiments designed to test possible answers to questions of interest.

The application of the scientific method to a question is as varied as scientists themselves. There are, however, certain processes that can be identified as typical of the method.

STEPS IN THE SCIENTIFIC METHOD:
The scientific method can be broken down into a sequence of steps: (1) Observation and accumulation of scientific data, (2) Formation of a hypothesis, (3) Experimentation, (4) Results, (5) Conclusion, and sometimes, (6) Retesting and, (7) Publication. When many other observations and experiments by other scientists come to a conclusion consistent with a particular hypothesis, the hypothesis is called a *theory.* When a theory has been proven by the accumulated data of many scientists, it is sometimes called a *principle* or *law*.

(1) OBSERVATION AND ACCUMULATION OF SCIENTIFIC DATA:
The scientific method usually begins with new observations as well as previous observations (called *accumulated data*). For example, a scientist doing research may notice a result that can not be explained, or is not understood. The scientist will most likely puzzle over this observation, perhaps talk to colleagues about the finding, and consult the scientific literature.

(2) FORMATION OF THE HYPOTHESIS
Following speculation, the scientists forms a hypothesis. A ***hypothesis*** is a tentative explanation of the observed phenomenon. In formulating a hypothesis, the scientist will attempt to make a statement that is testable. This leads to the next logical step; that is, testing the hypothesis

Hypotheses are always subject to modification. Consequently, they can never be proven to be absolutely true. They can, however, be proven false. When the data do not support the hypothesis, the hypothesis must be rejected.

(3) EXPERIMENTATION

A hypothesis is tested in an experiment. In an experiment, carefully planned conditions are deliberately created to produce the observation in question. One purpose of an experiment is to determine whether a cause-and-effect relationship exists between an observation and a variable. In this case, a ***variable*** is the hypothesized cause of the observation.

An experiment should be designed in such a way that only one explanation exists for the observation. Frequently, two sets of conditions are used to accomplish this goal. In one set, called the ***experimental set***, the variable is included. In the second set, called the ***control***, all conditions are identical to the experimental set -- except the variable is excluded. The control is a standard to which the experimental set can be compared, thus determining the effect of the variable. Conditions in the control and the experimental set must be identical for this comparison to be valid. Any differences that creep into the experimental design are termed uncontrolled variables.

(4) RESULTS (DATA)

After the experiment is complete, results are collected. Results are in the form of factual information called data. Data are often represented visually in the form of graphs.

It is extremely important that all data collected and accumulated in the results of an experiment are true. False data will result in an erroneous conclusion. The effects of such errors, whether accidental or deliberate, can be very serious. False conclusions can lead to the acceptance of an inaccurate hypothesis. Scientists may base their experiments on inaccurate hypotheses, wasting valuable time, and resources.

(5) CONCLUSION

A conclusion can be drawn from the results of the experiment, and will either support or oppose the original hypothesis. The conclusion can be firm or tentative, depending on the nature of the results.

(6) RETESTING

An experiment should be repeated by the scientist. Retesting substantiates the initial results of the experiment. In the case of results that support the hypothesis, retesting enables the scientist to accept the hypothesis more confidently. In the case of results that negate the hypothesis, retesting enables the scientist to abandon or modify the hypothesis more confidently.

The scientist may also repeat the basic experiment, but vary it slightly by introducing another variable. This procedure serves to clarify the hypothesis or broaden understanding of the matter under study.

(7) PUBLICATION

The sharing of new information is consistent with the goals of modern science, and an important aspect of the scientific method. Only the maintenance of an ongoing dialogue between scientists can foster the advancement of knowledge. To this end, scientists will compile data from experimentation and submit a paper describing them for publication in an appropriate journal.

Not all experiments produce positive or clear-cut results. Reasons for experimental failure vary, but can include uncontrolled variables, faulty equipment, poor experimental design, or human error. In some situations, the original hypothesis is not supported by the results, and must be abandoned or modified. Much can be learned from experiments that fail. Pondering the reasons for failure may lead to new insights, for example. At the very least, negative results are also information about the observation being tested.

LABORATORY REPORTS REQUIREMENT OUTLINE

Laboratory reports submitted in this class will consist of the following elements: (1) **Cover Sheet**, (2) **Introduction**, (3) **Materials and Methods**, (4) **Data** (Results), (5) **Conclusion**, (6) and **References Cited** (Bibliography)

1. **COVER SHEET**: Name and Number of the experiment
   Date the experiment was *performed*
   Name of the person submitting the report
   Names of the team members
   Class (complete title)
   Class meeting time (day and hour)
   Instructor (spelled correctly)

2. **INTRODUCTION**:
   This element consists of two parts, the PROBLEM and the RESEARCH DESIGN.

   The Problem: This part of the Introduction provides a purpose for the experiment. Clearly state the purpose of your study in one or two sentences. It should also provide a background for your experiment. In it, you should present what is known about the subject of your experiment. Since this data has been accumulated by others, be sure and give credit where credit is due. Cite your references! Be sure and use an accepted style for citations. For this class, use the CBE STYLE MANUAL. The CBE Style is used for writing scientific papers

   The Research Design: In this part of the Introduction you should describe the research desing you used for your study. If your study was experimental, outline your **hypothesis**. Identify it as such, and state it clearly. If your study is investigative, outline your objectives and specific questions you seek to answer.

3. **MATERIALS AND METHODS**:
   You may include a copy of your laboratory instructions. This may be done as an attachment to the formal report; however, you just label it as such. Be sure you note any and all changes to the instructions, if they are used. If you fail to do so, you may lose points!

4. **DATA/RESULTS**:
   This section of a lab report is very important. You should present your data visually when appropriate. DO NOT FALSIFY DATA. This is the number one mortal sin in science! You will not receive credit for the lab report if you do this; in serious cases of cheating, the student will not be allowed to continue in the class. Remember, not all experiments are successful. What is expected is an explanation (in the conclusion section) of *why* the experiment failed.

Be sure you provide results for each hypothesis, objective or question listed in the introduction.

5. **CONCLUSION**:
   Your conclusion should tie together the accumulated information presented in the introduction and the data/results from your experiment. If you formulated a hypothesis, is it supported by your dats/results? If your data/results fails to support your original hypothesis, explain why. If you feel the hypothesis is in error, modify it and suggest ways that this new hypothesis could be tested.

6. **REFERENCES CITED**:
   Include all references used to generate your lab report. Use the format accepted in this field. Style manuals are available in the library if your are not familiar with such formats. The Council of Biology Editors (CBE) style manual is recommended. You will lose points if your format is inconsistent, inappropriate, or if you fail to cite your sources.
   For this class, the "day and date" method is recommended from the CBE style manual.

7. Lab reports must meet the following criteria:
   1. No more than 10 pages long (excluding data).
   2. Must be legible. Typed reports are preferred.
   3. Must be well presented. (i.e. use of a cover sheet, put in a folder, don't let the dog chew on it...)
   4. Must be submitted with the appropriate data attached (i.e. hard data).

EXAMPLE: Name – Year (N-Y) System (also called the Harvard Method)

<u>JOURNAL</u>

Author (s) . Year. Article title. Journal title volume number (issue number): inclusive pages.

<u>BOOK</u>

Author (s) {or Editor (s)] . Year. Title. Place of Publication:publishers name. Number of pages.

<u>TEXT CITATION</u>

Text text text (Author Year) text text text

TOPIC PAPER REQUIREMENTS

The topic paper is worth 50 points. These points will be assigned based upon meeting the following requirements:

1. BIBLIOGRAPHY: (20 POINTS) The bibliography is one of the most important elements of the topic paper. You are expected to:
   a. Include five (5) sources less than two (2) years old: You may include as many references in your bibliography as you which, of any age. However, five of your references **must** be less than two years old! These five sources will be considered your primary reference.
   b. Provide a photocopy of the primary references: This photocopy **must** include the title and date. It is not necessary to provide a copy of an entire article or book. Make sure these copies are easy to identify.
   c. Quality: Your five current sources must be from reputable scientific journals or books.
   d. Bibliography: It should follow the body of your paper.
2. PRESENTATION: (20 points)
   a. The paper must be typed.
   b. Page layout:
      1. Margins: Top: 1"; Bottom: 1"; Right side: 0.75"; Left side: 1"
      2. Running head: 0.5" from the top of the page. Should be on all but the first page.
      3. Footer: 0.5" from the bottom of the page; to include a centered page number on all but the first page. Verify any deviation with me BEFORE submission.
   c. Double space.
   d. Use 10 or 12 point type.
   e. Include a COVER SHEET: On your cover sheet, provide the following information:
      1. Your name
      2. Course Title and Course Number
      3. Your Instructor's Name
      4. Due Date
      5. Title of the paper
   f. LENGTH (NO EXCEPTIONS):
      1. Maximum = 10 pages
      2. Minimum = 5 pages
3. TOPIC: (5 points) As long as your topic is physiological, go for it. Pick something that interests you, and something about which you can find recent publications.
4. DEADLINE: (5 points) To be announced during the semester. Any papers not received on this due date, at the beginning of lecture, will be considered late.