

Biology 124; 503 Laboratory – Fall 2015

Wednesday 10:30-1:15 – A135

Instructor Dr. Melanie Sanchez-Dinwiddie

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Office Hours: I am here for *you* to succeed. If you need to see me outside of class please stop by anytime or schedule an appointment. I will be in my office during the following scheduled times: Tuesday & Thursday 1:30-3:30.

Required lab manual: Thinking About Biology: An Introductory Laboratory Manual 5th ed. We will be using this lab manual extensively; you will need to have your own to do well in this course.

Course description: This course will a fun and stimulating way to learn biology. The hands on experience will provide you with further understanding of problems and concepts in basic biology. The laboratory course will also provide you with skills needed to work in a laboratory setting.

Student Learning Objectives: At the completion of this course the student will be able to:

- Demonstrate the correlation of lecture concepts with laboratory exercises.
- Distinguish the difference between knowledge of biological concepts and the application and analysis of biological concepts.
- Use a compound and dissecting microscope to identify microscopic structures.
- Explain and illustrate concepts of cell biology including: function and properties of cells, diffusion and osmosis, organic molecules, enzyme structure and function, molecular genetics, mitosis and meiosis, and human genetics.
- Relate the structure of tissues and organs to its function.
- Identify gross anatomy of a fetal pig.

Grading policy: The course grade will be determined as follows:

| | |
|-------------------------|-----|
| Attendance | 10% |
| Pre-lab Assignments | 15% |
| In-lab Quizzes (4 of 5) | 30% |
| Midterm Exam | 20% |
| Final Exam | 25% |

Hints for Doing Well:

- ❖ Be thorough in completing your exercises
- ❖ Ask questions
- ❖ Refer to your lecture textbook to further explain concepts
- ❖ Ask questions
- ❖ Repeatedly ask yourself “Do I understand?” and “Could I explain these concepts to someone else?”
- ❖ Ask questions
- ❖ Come to class prepared

Make-up Exams: There are no make-up exams in this course. Make-up quizzes are given at the instructor's discretion.

UNM Learn: This course will use UNM Learn (learn.unm.edu) for a variety of materials. You are responsible for all material distributed here. The due dates and due times are strictly enforced.

Attendance: Each absence will result in a 10% loss of your *attendance* grade. Laboratory exercises cannot be made up under any circumstances.

Withdrawal: If a student drops the course after the deadline to drop without a grade (September 4th) a grade of W may be given. It will be at the instructor's discretion whether a W will be granted. Therefore by withdrawing a student *may* earn a grade of F.

Safety: Absolutely no food or drink is allowed in the laboratory. Please store your personal items in cabinets. For good laboratory practice wear closed toe shoes.

Financial Assistance: It is the student's responsibility to know policies for funding their education. It is the student's responsibility to maintain funding for their education.

Cell phones: As a courtesy to the class, please turn off all cell phones. Do not text message during class. It is disruptive to your classmates and the instructor "I can see you." Any sight of a cell phone during exams or quizzes will result in an automatic fail for that assignment.

Special Needs: Qualified students with disabilities needing appropriate academic adjustments should contact the instructor by the end of the 1st week of the semester to ensure that your needs are met in a timely manner.

Academic Dishonesty: Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards.

Bloom's Taxonomy: Dr. Benjamin Bloom was a psychologist who worked on theories of education and learning. He was one of the first to publish a system for the classification of learning objectives. The aim of "Bloom's Taxonomy" is to achieve a higher level of learning and thought process. As an instructor I will construct this course with Bloom's Taxonomy in mind. A current version is provided for you on the following page. You are NOT required to memorize this list in any way. However understanding the lists will improve your success in this course.

| Cognitive Process | What the Learner Does | Action Verbs for Cognitive Process | Examples |
|-------------------|---|---|--|
| Remember | Recalls or recognizes information: facts, definitions, generalizations. | List, describe (from memory), name, label, repeat, recall, identify, state, select, match, know, locate, recognize, observe, choose, who, what, where, when, cite, define, indicate, memorize, outline, record, relate, reproduce, sort | <ul style="list-style-type: none"> -List the four biological molecules. -Identify the muscles of the forearm. |
| Understand | Constructs meaning by interpretation, classification, comparing, explaining, summarizing. | Arrange, associate, clarify, compare, convert, demonstrate, diagram, discuss, estimate, explain, extend, generalize, illustrate, organize, outline, paraphrase, restate, review, relate, sketch, summarize, translate, transform, similarities and differences, give examples | <ul style="list-style-type: none"> -Illustrate the four biological molecules. -Explain the function of cellular respiration. |
| Apply | Use methods, concepts, principles and theories in new situations; solve realistic problems that require the identification of issues and use of appropriate generalizations and skills. | Apply, calculate, change, collect, compute, construct, demonstrate, develop, employ, graph, illustrate, interpret, investigate, manipulate, modify, operate, practice, predict, prepare, produce, schedule, sketch, solve, use | <ul style="list-style-type: none"> -Produce a chart of the presence of the four biological molecules in a food sample. -Predict the action of a forearm muscle. |
| Analyze | Identifies how parts relate to one another or to a larger structure or purpose; considers available evidence to reach a conclusion, inference or generalization. | Analyze, appraise, break down, criticize, debate, deduce, detect, deconstruct, determine evidence and conclusions, discriminate, dissect, distinguish, examine, experiment, focus, find coherence, interpret, investigate, infer, inspect, inventory, map, question, relate, research, select, separate, structure, survey, test | <ul style="list-style-type: none"> -Interpret the results of an experiment to identify the four biological molecules. -Relate the structure of a protein to its function. |
| Evaluate | Judges the value of something by setting up criteria, processes, or standards and then determining how closely the idea or object meets the standards. | Coordinate, judge, select/choose, decide, debate, evaluate, justify, recommend, verify, monitor, the best way, what worked, what could have been different, what is your opinion, appraise, assess, conclude, criticize, discriminate, estimate, grade, prioritize/rank, rate, revise, score, support, value | <ul style="list-style-type: none"> -Evaluate why bone is composed of mostly minerals and not biological molecules. -Support your answer. |
| Create | Brings together parts to form a new whole or solve a problem that requires new creative thinking (at least new to the learner). | Create, hypothesize, design, construct, invent, imagine, discover, develop, induce, bring together, compose, pretend, predict, organize, plan, modify, improve, suppose, produce, set up, propose, formulate, solve (more than one answer), arrange, assemble, combine, devise, generate, manage, perform, prepare, dramatize, paint, compose, rearrange, reconstruct, relate, reorganize, revise, argue for, speculate | <ul style="list-style-type: none"> -Design an experiment to investigate the presence of biological molecules in a food sample. -Construct an argument for the necessity of phospholipids in a cell membrane. |

| <i>Date</i> | <i>Exercise</i> | <i>Activity</i> | <i>Quiz</i> |
|--------------------|-------------------------------------|------------------------|--------------------|
| Wed 8/19 | #1 Scientific Method | 1, 2, 3, 4, 5, 6 | |
| Wed 8/26 | #7 Organic Molecules | 1, 2 | |
| Wed 9/2 | #2 Microscopy & #3 Cells | 1, 3, 4, 5, 6/1, 3, 4 | Quiz #1 |
| Wed 9/9 | #4 Diffusion & Osmosis | 1, 2, 3, 4 | |
| Wed 9/16 | #8 Enzymes | 1, 3 | Quiz #2 |
| Wed 9/23 | #9 Molecular Genetics | 1, 2, 3, 4, 5 | |
| Wed 9/30 | #10 Mitosis | 1, 2, 3 | Quiz #3 |
| Wed 10/7 | Midterm Exam | | |
| Wed 10/14 | #11 Connecting Meiosis & Genetics | 1, 2, 3, 4, 5, 6, 7 | |
| Wed 10/21 | #12 Human Genetics | 1, 2, 3, 5 | |
| Wed 10/28 | #14 Functions of Tissues and Organs | 1, 2, 3, 6, 7 | Quiz #4 |
| Wed 11/4 | #15 Cardiovascular System | 1, 2, 3, 4 | |
| Wed 11/11 | #16 Fetal Pig I | 1, 2, 3, 4, 5, 6 | Quiz #5 |
| Wed 4/18 | #17 Fetal Pig II | 1, 2, 3, 4, 6 | |
| Wed 4/25 | Off-Thanksgiving Holiday | | Quiz #6 |
| Wed 10/2 | FINAL EXAM | | |