Southwestern College, Spring 2019

Principles of Biology Laboratory [1 unit]
BIOL 101- 33
Tuesday, [3:25 – 6:35 PM]
Room 314

Instructor: __Dr. Greg Brulte___
Email: __gbrulte@swccd.edu_____
Office Hours and Location: _3-3:30 60-277
special appointments before class
Phone: _____
Mailbox: _____

Prerequisite: 0

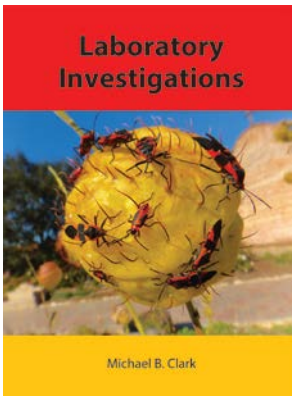
Recommended Preparation: ENGL 115 or equivalent; RDG 158 or the equivalent skill level as determined by the Southwestern College Assessment or equivalent

Corequisite: BIOL 100 (Principles of Biology lecture).
BIOL 101 (lab) and BIOL 100 (lecture) courses are co-requisites of each other. This means that unless you already have passed BIOL 100 (lecture) with a grade of **C** or better (a grade of D is not sufficient), you must take both courses in the same semester. If you drop either class, or if one of your instructors drops you, you must drop both classes, regardless of grade. It is your responsibility to know if you have been dropped from either class and then it is your responsibility to drop the remaining class. *SWC's Admissions will periodically check to make certain that students meet the corequisite requirement and are in both BIOL 100 and BIOL 101. Students missing a corequisite (either BIOL 100 or BIOL 101) will be dropped…regardless of their grades or whether their intended transfer institute requires both classes. If you only need a biology lecture course and not a lab, consider taking BIOL 130, 140, 143, 145, 160, 180 or 185.*

Your actions in either BIOL 101 or 100 impacts both classes; for example, if you arrive late, leave early, or miss class often enough you will be dropped and if you are dropped from one class, you must be dropped from both.

Grading Basis: Grade only

Required Textbook:



Clark, M. 2016. ***Laboratory Investigations***. **4th edition.** Suspended Animations, Jamul, CA.
ISBN: 978-1-885380-02-9

This lab manual is available at Southwestern College's bookstores.

- You must have the 4th not the 3rd, edition.
- You must start the semester with a new, unmarked copy of the manual. This means that if you dropped the class in a previous semester, you must start fresh with a clean, unmarked lab manual.
- If you elect to purchase your book off-campus, it is your responsibility to make sure that it is unmarked; otherwise you will have wasted your money. You will not be permitted to use a lab manual previously used.

- You will need your lab manual on day #1 of the class.
- Bring your lab manual to every lab meeting.
- Sorry, you cannot share a lab manual with another student.

Here is the login link to Southwestern College's online Blackboard:

https://swccd.blackboard.com/webapps/portal/execute/tabs/tabAction?tab_tab_group_id=_258_1

Course Description: Provides laboratory experience to supplement Biology 100. May require field trips during laboratory periods. [D; CSU; UC; BIOL 100 + BIOL 101 = CAN BIOL 2]

This course has been designed to be both a demonstration of concepts discussed in the lecture class, and as an experience of the experimental process used in science.

Course Objectives:

1) Student will demonstrate proper laboratory safety.
2) Student will make measurements using the metric system.
3) Student will use the scientific method to collect data; form questions, hypotheses, and predictions; design experiments; as well as analyze data and assess results.
4) Student will identify and explain the function of various parts of a microscope, prepare and focus slides, and use a dissecting scope.
5) Student will identify and draw basic structures of eukaryotic cells, as well as discuss and describe certain unicellular prokaryotic and eukaryotic organisms.
6) Student will perform and interpret results of various experiments related to physical properties of water and explain the nature of hydrogen bonds, adhesion, and evaporation.
7) Student will explain and analyze hydrogen and hydroxyl ions and their relationship to pH.
8) Student will describe basic atomic structure and the interaction of atoms in molecular formation, and perform simple tests for the presence of carbohydrates, fats, and proteins in a selected sample of commonly eaten foods.
9) Student will observe and explain Brownian movement, diffusion, osmosis, and dialysis and determine the effects of temperature, chemical molecular weight, and concentration on these processes.
10) Student will design, perform, and interpret the results of various experiments to test how changes in temperature, pH, and concentration affect an enzyme's behavior, shape, and energy of activation.
11) Student will design, perform, and interpret the results of various experiments related to photosynthesis, including analysis of substrates and end products, chromatography of leaf pigments, light activation of chlorophyll, as well as CO2 uptake and O2 production under light and dark conditions.
12) Student will perform a series of experiments performed at different environmental temperatures to demonstrate the differences in the rates of respiration in endothermic and ectothermic animals, and will correlate respiration to photosynthesis.
13) Student will describe the life cycle of body cells and explain or demonstrate how chromosomes behave differently during mitosis and meiosis, which will result in the genetic sameness of body cells and the genetic uniqueness of gametes.
14) Student will solve genetic problems demonstrating Mendel's principles of segregation (monohybrid and dihybrid crosses, dominance, codominance, sex-linkage, and polygenes), as well as describe and analyze the phenotypic frequencies of certain traits found among classmates.
15) Student will perform and analyze various experiments related to biotechnology, including DNA fingerprinting, isolating DNA, and recombinant DNA techniques.
16) Student will participate in one activity designed to focus on either the reproductive, embryonic development, circulatory, digestive, or nervous system.
17) Student will identify examples of bacteria, protistans, and fungi, as well as distinguish the key characteristics and adaptations of each group.
18) Student will identify examples of mosses, ferns, conifers and flowering plants, as well as describe their life cycles, key reproductive features and adaptations, which result in their success and biodiversity in various terrestrial environments.
19) Student will identify examples of major phyla of animals, including porifera, cnidarians, platyhelminthes, nematoda, mollusca, annelida, arthropoda, echinodermata, and chordata, as well as identify members of classes of chordates (cartilaginous and bony fishes, amphibians, reptiles, birds and mammals), and distinguish the key features and adaptations of each group.

20) Student will demonstrate the process of natural selection by analyzing changes in the frequency of selected alleles within a population reflecting principles of evolution, and discuss types of environmental change that might impact natural selection.
21) Student will analyze characteristics of various hominoid skulls (models of fossils) and assess hypotheses concerning the evolution of humans.
22) Student will participate in a field trip to a local ecosystem to study its community of species and its environmental features, to determine its function and structure, and assess the extent and forms of human impact on the ecosystem.

Student Learning Outcomes: Upon successful completion of BIOL 101, the student will be able to:

1) Recognize, identify, and use appropriate terminology and vocabulary to describe the characteristics, classification, and biology of major groups of organisms; and to describe and explain the evolution of populations and inter-relationships between organisms at the species, community and ecosystem levels.
2) Apply laboratory methods and practices relevant to general biology in the areas of safety, measurement, microscopy, cell structure, basic chemistry, enzyme action, photosynthesis, respiration, genetics, and biotechnology.
3) Apply critical thinking skills and the scientific method to design experiments, to analyze data, and to present experimental results and conclusions visually, orally and in writing.

Attendance: Each student is expected to attend every class meeting. In the case of absence, it is the student's responsibility to inform the instructor. After the add period, only students whose names appear on the official college roster may be present in the classroom.

- **Mandatory First Day of Class:** Instructors must drop any student who fails to attend the first class meeting, if the class is at maximum enrollment and other students are waiting to enroll, unless the student notifies their instructor in advance.
- **Dropping for Absences:** Per SWCCD Policy 5075, after the add/drop period of the term, you will be dropped if you miss more than two weeks of instruction (the missed weeks do not have to be consecutive), in which case and you **will** receive a "W" or an "F" depending on the date that you are dropped.
- **Dropping for Tardiness:** A tardy is defined as arriving after the start time up to 10 minutes late. If you are more than 10 minutes late, this will count as a tardy. Two (2) tardies will count as one (1) absence. This tardy policy also applies to students leaving before the end of class or returning late from a break. The tardy policy will begin after the end of the add/drop period. Dropping students for being tardy will be in accordance with SWCCD Policy 5075 stated above. Arriving late or leaving early is a problem for both the students and the instructor. Students are expected to be in class for the entire class period.
- **Late Adds: (There is no longer an option for Late Add – this process is only for clerical errors.)** All students must submit add codes and pay for classes prior to the close of the add period. After the add period concludes, a student may be added only if there is a clerical error and if 1) the instructor certifies that the student has been in attendance since the beginning of the term **and** 2) the request is approved by the Dean of MSE and the Dean of Student Activities.

Incomplete (I): No Incompletes will be given. (The only time an instructor can assign an incomplete is if the student missed the final. The student cannot miss more than the last 2 weeks of the semester. If an Incomplete is assigned, this requires an approved Incomplete grade form, signed by the Dean, submitted with the missing exam, grading rubric for the exam, grade without the missing work, and grading rubric for calculating the grade in the course. (In the end, it is easier to assign the grade earned and submit a grade change after the student completes the final. All grade changes, whether with an Incomplete or any other grade change must be submitted within one year.)

Important College Add/Drop Dates: Spring Semester:

Spring Semester:

- **Feb 8th:** Last day to qualify for a full refund or enrollment fees and non-resident tuition.

- **Feb 10th:** Last day to drop without receiving a "W". A "W" is not calculated in your GPA, but is counted as an attempt of the course. You can attempt a course three times to replace a W, D or F. If you drop (or are dropped from) either BIOL 101 or BIOL 100, you must drop both classes regardless of grades.

- **Drop Window: Feb10 – Apr 27th.** During this period you may withdraw (drop) this class without receiving a grade. A "W" (withdrawl) will appear on your transcript. If you drop this class, you must also drop BIOL 101 lab. Communicate with me. If you are experiencing any difficulties in the course or any personal crisis, please let me know well in advance of deadlines so I can work with you.

- **Sat, Apr 27th:** Deadline for you to drop this class. If you are still enrolled after this date, you will receive an evaluative letter grade (A, B, C, D, F) based on work completed in the course. Work not submitted will be counted as zeros. If you stop participating after this time you probably will fail the class.

- **Final: Tuesday, May 21 (3:15– 1:15 PM)**

Class Procedure & Participation: You are expected to arrive on time, not leave early, and attend all class meetings.

Lab Assignments: These will be completed and turned in everyday at the end of class. The lab assignments will be a series of questions based on the lab we completed that day. They will be graded using a rubric to determine points allocated to each question. You will be working in groups on the lab exercises but these assignments are to be done independently. You may work on them with your group but be sure to write your answers in your own words. Similarities between group members will be noticed- after one warning, you and those involved will receive no credit for the assignment.

Pre-lab Quizzes: These will be taken at the beginning of class focusing on the lab exercise we will be performing that day. The lowest quiz score will be dropped.

Grade Evaluation Procedure: Your grade will be based on the number of points you earn. The total points possible in the class are 320 points. You need to obtain at least 288 points to earn an A, 256 points to earn a B, 224 points to earn a C and 192 points to earn a D.

Final Exam Date and Time: Wednesday, December 7 (3:5 – 5:15 PM)
The final will a group presentation relating one of the lab topics to your everyday life. You will work in groups of 3-6 on this presentation. There will be a few assignments providing feedback on your ideas for the presentation. The presentations will last somewhere between 15-30 minutes for each group.

Grades:

Lab Quizzes (10 points each)	= 150 points
Lab Participation (5 points each, lowest score dropped)	= 70 points
Final Presentation (all components) or Final	= 100 points
	320 points

SWC Grade Scale:
100 - 90% = A
89 - 80% = B
79 - 70% = C
69 - 60% = D
59 – 0% = F

Late Policy: _3 times late (more than ten minutes) counts as an absence___
Tutorial Services: Tutorial services are available through SWC's Academic Success Center (main campus, room 420; https://www.swccd.edu/index.aspx?page=1283) and MESA (main campus, room 396; http://www.swccd.edu/index.aspx?page=89).

DSS: Southwestern College recommends that students with disabilities or specific learning needs contact their professors during the first two weeks of class to discuss academic accommodations. If a student believes they

may have a disability and would like more information, they are encouraged to contact Disability Support Services (DSS) at (619) 482-6512 (voice), (619) 207-4480 (video phone), or email at DSS@swccd.edu. Alternate forms of this syllabus and other course materials are available upon request.

Academic Success Center Referral: Services are located in the ASC (420), the Writing Center (420D), the Reading Center (420), the Math Center (426), the Library/LRC Interdisciplinary Tutoring Lab, MESA (396), specialized on-campus School tutoring labs, the Higher Education Center, and the San Ysidro Education Center. Online learning materials and Online Writing Lab (OWL) are available at www.swccd.edu/~asc. The tutorial services at Southwestern College will serve you best if you attend regularly.

Classroom Guidelines: Your decision to enroll in this class constitutes an implicit agreement to the following:

- You will conduct yourself so that the classroom is a positive learning environment for all by treating everyone with respect and consideration.
- You will plan to attend every class meeting and stay for the entire class period. You will not be absent more than the maximum number allowed during the course of the semester. Once you have missed the maximum number of classes, I will drop you. Do not assume that you will be dropped if you do not attend classes. To ensure that you are withdrawn, you must officially withdraw online, in person, or by telephone. Failing to drop a class in a timely manner may earn you a failing grade in the class.
- You will do the assigned work and be responsible for all class work or assignments even if you miss school for a legitimate reason. It is not acceptable to return to class following an absence and claim that you did not know about some assignment, class activity, or exam. Find out what you missed before returning and get caught up.
- You accept the expectation to spend a minimum of two hours outside of class for every hour that the class meets during the week and will plan your schedule accordingly. This means that you should expect to spend a very minimum six to nine hours of work outside of class preparing for lab. More or less time may be required depending on how quickly and thoroughly you work, your learning styles and your study habits.
- You will come to class on time. Excessive tardiness may result in you being dropped from the class. Excessive tardiness is defined in the section on attendance although you may be asked to speak to the Dean if excessive tardiness becomes disruptive to the class.
- You will turn off your pager, cell phone, iPods and/or any other electronic devices; take notes; be attentive; participate in classroom activities; and not disrupt the rest of the class. There is no excuse for excessive talking. Dismissal from the class may result if your behavior continues to be disruptive after being warned. If you answer a phone or pager during class, you will be asked to leave and not return until the following class.

My Expectations of Your Performance for this Class:

- Come to class on time and having read the week's lab, this will be required to do well on the pre-lab quizzes.
- Be prepared to stay the entire lab period- lab assignments cannot be turned in early they will be due when I dismiss the class at the end of our time. (Attendance is important. Arriving late or leaving early too often will be counted as an absence. Missing too many classes will result in your being dropped from BIOL 101, which will trigger you being dropped from BIOL 100 as well regardless of grades (see page 3, Attendance).)
- Participate in class- ask questions and be involved in the lab exercises. For some exercises you will be working in groups- it is important to work well together and not let one person perform the whole exercise. Clean up should also be done as a group.
- Be respectful of each other. Be patient with each other and help a fellow student when he/she doesn't understand the materials. We are all learning together.
- Make the most of the time you devote to this class. Your grade in this class will be a direct reflection of the effort you put into the class. Understanding the concepts presented in lab exercises will help you understand the material in the lecture portion of this class, BIOL 100.

What you can expect of me: __Clear explanations of course material and prompt responses to questions_____

Safety:

- At the beginning and end of each lab, wash your hands and wash your lab table's workspace.

- Throughout the entire lab period, you are responsible to keep your lab table's workspace and the stations along the side and back counters clean and organized.
- It is your responsibility to read and understand all signs at the stations along the side and back counters and to have carefully listened to my instructions.
- It is your responsibility to ask me questions if you have any questions about how to carry out a lab activity, experiment, use a piece of equipment, or if you have any concerns regarding safety.
- Please, immediately let me know if something gets broken, does not work correctly, or if a spill occurs during a lab.
- Food and beverages are not permitted in the lab room.
- It is your responsibility to conduct yourself in a professional manner throughout the lab so that it is a safe learning environment.

Medical Conditions: It is the student's responsibility to check with their Health Care Provider regarding exposure to preservatives used during dissections or other lab activities. I will further discuss student concerns on a case by case basis and provide Material Safety Data Sheets (MSDS) if requested.

Misconduct: Faculty may require a student who disrupts the classroom to meet with the Dean of MSE prior to the next class meeting. Instructors may exclude a student on the day of the disruption and an additional due to misconduct. Further disciplinary action may be pursued by the instructor or college administration.

- **Academic cheating and plagiarism**. Academic dishonesty of any type by a student provides grounds for disciplinary action by the instructor or college. In written work, no material may be copied from another without proper quotation marks, footnotes, or appropriate documentation. Students (both the giver and the receiver) involved in cheating and/or plagiarism will receive a zero on that exam (this exam cannot be dropped) and, at the discretion of the instructor, earn a failing grade in the class. Academic dishonesty of any type such as cheating and plagiarism can result in one or all of the following: a failing grade on the assignment, a failing grade in the class, and/or formal disciplinary action by the college.
- Disruption of instructional activities or administrative procedures. Continued disruptive behavior, continued willful disobedience, habitual profanity or vulgarity, or the open and persistent abuse of college personnel.
- Use, sale, possession on campus or campus premises, or under the influence of alcoholic beverages, narcotics, other hallucinogenic drugs or substances, or any poison classified as such by schedule "D" in Section 4160 of the Business and Professions Code.
- Alteration or misuse of college documents, including acts of forgery and furnishing false information.
- Acts or threats of damage to or theft of property belonging to or located on college-controlled property or facilities.
- Acts or threats of physical abuse of any person. Assault or battery upon any student, college personnel, authorized college guest, or any other person.
- Violation of college regulations or state laws.
- Also, see course catalog regarding student conduct.
- See Southwestern Community College District Procedure No. 5550 or college catalog for more information regarding student conduct.

Disciplinary Action Procedures:

1. When a student conduct violation has occurred, the first attempt to resolve the misconduct will be an informal consultation between the student and the instructor (or college staff member).
2. If the situation is unresolved, the Dean will meet with the instructor and the student(s) involved.
3. If the situation remains unresolved, the instructor will complete a "Report of Student Misconduct" and file the report with the Dean of Student Services.
4. In situations involving safety or if the College Police have become involved, steps 1 and 2 need not be adhered to.

Modifications to this syllabus may occur due to unforeseen circumstances.

Note: Grading policy and class activities are subject to change at the instructor's discretion.

See Calendar below. ↓↓

BIOL 101-__ Lab Schedule Spring 2019

Week # (date)	Lab	Notes for Students
1 (January 29)	Measurement	
2 (February 5)	Microscopes	
3 (February 12)	Instructor's Choice – Senses of Perception	
4 (February 19)	Instructor's Choice – The Heart	
5 (February 26)	Cells	
6 (March 5)	Chemistry of Water	
7 (March 12)	Enzymes	
8 (March 19)	Photosynthesis	
SPRING BREAK March 26 (Monday) – April 3 (Monday) ~ NO CLASSES, CAMPUSES CLOSED		
9 (April 2)	Reproduction/Embryology	
10 (April 9)	Respiration – Mouse Lab	
11 (April 16)	Biotechnology (swab plates)	
12 (April 23)	Surrounded by Microbes	
13 (April 30)	Dry land Plants	
14 (May 8 -12)	Animal Survey	
15 (May 17)	Zoo Day	
16 Week of Finals May 21(time _ 3:00_)	Final or Presentations	