

Northern Wyoming Community College District

Sheridan College
3059 Coffeen Avenue
Sheridan WY 82801

Gillette College
300 West Sinclair Street
Gillette WY 82718

COURSE SYLLABUS

BIOL 1101 Standard Laboratory Operating Procedures (3 credits)
Life Science Department
Natural Science Division

Fall Semester 2009

INSTRUCTOR: Ami Erickson, Ph.D.

OFFICE: AG 102

WEB PAGE: www.proferickson.com\ami

TELEPHONE: 307-674-6446 ex 3104

E - MAIL: ami@proferickson.com

OFFICE HOURS: TBA

Please feel free to contact me to schedule additional office hours.

Description

This course will introduce the student to the diverse and dynamic field of biotechnology by exploring career opportunities and developing skills in SLOP (Standard Laboratory Operating Procedures). Biotechnology applications, job responsibilities, and bio-ethical issues will be discussed. Students also will learn how to safely apply common biotechnology laboratory techniques.

Purpose

BIOL 1101 Standard Laboratory Operating Procedures is intended for students who desire a career in health and biomedical related fields, as well as pharmacology, agriculture, forensics, biology, science education, chemistry, computer science, criminal justice or for individuals interested in learning more about the field of biotechnology and its influence on our lives. The course is required for the Certificate of Biotechnology, and can be used as an elective for the Associate of Arts or Associate of Science degrees. Students planning to continue for a Bachelor's Degree should consult with an advisor and appropriate college catalogs for the transfer status of this course.

Class Meeting Times

Day	Time	Location
Tuesday	4:00 - 6:30 pm	SC 144
Thursday	4:00 - 6:30 pm	SC 144

Textbooks

Ellyn Daugherty. *Biotechnology: Science for the New Millennium*. EMCParadigm. 2007. **Edition:** 1. **ISBN:** 0-7638-2282-5.

Ellyn Daugherty. *Biotechnology: Laboratory Manual*. EMCParadigm. 2007. **Edition:** 1. **ISBN:** 0-7638-2902-1.

Supplies

Lab Coat. **Quantity:** 1.

Eye Goggles. **Quantity:** 1.

Lab Manual. **Quantity:** 1.

Prerequisites

Complete DVST 0930 Intermediate Algebra with a C or better OR Algebra placement of 66 or higher.

Biotechnology Industry External Standards

- Maintain laboratory and equipment
- Operate equipment
- Prepare biological and/or chemical materials
- Communicate with co-workers to ensure quality laboratory work
- Perform assays and experiments
- Perform data analysis
- Communicate results
- Identify unsafe conditions and take corrective action
- Maintain lab notebook

BIOL 1101 Competencies

1. Compare job skills associated with various biotechnology careers.
2. Evaluate the bio-ethical issues involved with the use of biotechnologies.
3. Illustrate how products are created by genetic engineering.
4. Correlate cell structures and types with their roles in biotechnology.
5. Use laboratory equipment effectively.
6. Organize molecular information using database applications.
7. Document activities and results of all laboratory activities in a legal, scientific notebook.
8. Integrate the scientific method in laboratory experiments.
9. Apply proper safety precautions while working in a biotechnology laboratory.

Assessments	Grade Value
1. Scientific Journal	15%
2. Lab Skill Assessments (5 + Scientific Journal) <i>The Scientific Journal and all lab skills assessments must be completed with a minimum of a 70% score to pass the class</i>	25%
3. Lab Reports	15%
4. Comprehension Quizzes	10%
5. Career Classification	5%
6. Genetic Engineering Flowchart	5%
7. Cell Structure Concept Map	5%
8. Database Data Analysis	10%
9. Bioethical Critique <i>Items 3 - 8 must average a 70% to pass the class.</i>	10%

Grading Policy

Because this course is a skill-based biotechnology course, you will complete six authentic skill assessments, which you must pass with an 70% or higher in order to pass the class. Assessments may be attempted twice, but the second attempt will be worth a maximum of 80%. Assessments will be evaluated using a grading rubric which will be available prior to the assessments as you learn the skills.

In addition to skill assessments to pass the course you must successfully complete 70% of the lecture assignments, discussions and lab exercises assigned throughout the course. Lab exercises will be recorded in a legal scientific notebook, which must be maintained at specified standards. Maintenance of the scientific notebook is one of the authentic skill assessments.

Grading Scale

A	90% - 100%	B	80% - 89%	C	70% - 79%
F	Less than 70% on skill assessments and/or lecture assignments and laboratory exercises				

STUDENT RESPONSIBILITIES

Classroom Conduct Policy: Be respectful of your fellow classmates and the instructor. Do not distract your fellow students in their ability to learn. Please turn off ringers for all cell phones and pagers during lecture and exam sessions. Feel free to use your cell phones outside of the classroom. ***If your cell phone or pager rings during an exam, presentation or discussion, you will automatically lose 5 pts for each ring or measure of a song.*** Use of cell phones, other communication devices or audio devices are not permitted during exams. Cell phones cannot be used as a calculator on exams.

Attendance Policy: Your attendance and participation is instrumental to learning this material. You are expected to attend each class session, be on time, and stay for the entire session. *You are responsible for learning ALL material covered in class, whether you are present or not.* ***If you do miss a class or part of a class, it is your responsibility to obtain the missed notes from a classmate.*** Discussion activities and assignments occur in class and cannot be made up if missed.

Come to Class Prepared: It is expected that every student will come to class prepared, having reviewed prior class concepts and completed any assignments. You will not be able to learn all of the biology content during the class sessions. A significant amount of learning has to happen during study time, outside of class.

Academic Honesty: Students at Sheridan College are expected to maintain the highest standards of academic honesty and integrity. Academic honesty means performing all academic work without lying, cheating, deceit, plagiarism, misrepresentation, or unfairly gaining advantage over any other student.

Violations of academic honesty are in violation of District standards for student conduct and shall result in disciplinary action. You are expected to do your own work throughout this course and demonstrate academic integrity. **Cheating of any kind will not be tolerated and will result in zero credit for the assignment or exam. Continued cheating (a second cheating event) will result in an F in the course.** "Cheating" includes (but is not limited to) looking at, copying, discussing exam items with another student, copying answers from another's assignment, using notes, a cheat-sheet or text book during an exam or quiz unless given permission to do so, and plagiarism on any assignments, oral or written. Written assignments must be your own work, and the work must have been undertaken for this class.

-Note - Working together and discussing lab exercises, discussion questions, or assignments is encouraged, but each student must answer questions using their own words, unless given instructions to do otherwise (i.e. Team writings).

DROP / WITHDRAWAL / INCOMPLETE: Ceasing attendance does not activate the drop, withdrawal or incomplete grade processes. You must submit the appropriate forms for each by the published deadlines to end your enrollment in this class. Failure to complete the appropriate forms may result in a failing grade for this course on your permanent transcript. Forms for incomplete and in progress grades are available from the instructor. Only you, the student, can activate the withdrawal. See the Sheridan College Schedule for deadlines.

Incompletes are available to students who have completed 3/4th of the class with a grade of 70% or higher, but find themselves unable to complete the course. Incompletes must be requested prior to submission of final grades to the registrar. Incompletes must be completed within 6 months.

STUDENTS WITH DISABILITIES who believe they may need accommodations in this class are encouraged to contact the ADVISING OFFICE as soon as possible to ensure such accommodations may be implemented.

Tentative Course Schedule:

Date	Topic	Reading	Assignment
Week 1 9/3/09	1. Defining Biotechnology 2. Identifying Career Paths	Chapter 1	1. List of Careers with skills, education and application identified. Minimum 10
Week 2 9/8/09	1. Finish Career Pathway Discussion 2. Basic Skills of Biotechnology	Chapter 3	1. Career Classification & Pathway
Week 3 9/15/09	1. Investigating Cell Structure	Chapter 2	Assign Bio-ethics critique - due week 14.
Week 4 9/22/09	1. Studying DNA	Chapter 4	1. Concept Map: Cell structures & Roles
Week 5 9/29/09	1. Proteins	Chapter 5	
Week 6 10/6/09	Review & Quiz	Ch 1 - 5	Comprehension Quiz
Week 7 10/13/09	1. Potential Biotech products	Ch 6	
Week 8 10/20/09	Bioinformatics	Handout	Organizing & Finding molecular information
Week 9 10/27/09	Spectrophotometers and Assays	Ch 7	
Week 10 11/3/09	Recombinant Biotechnology	Ch 8	Genetic Engineering Flowchart
Week 11 11/10/09	Bringing a Biotechnology Product to Market	Ch 9	
Week 12 11/17	Plant Biotechnology	Ch 10	
Week 13 11/24	Quiz Thursday = Thanksgiving = no class	Ch 6 - 10 Ch 11	Comprehension quiz
Week 14 12/01/09	1. Biotechnology in Agriculture 2. Bio-ethics Panel	Ch 12	Bio-ethics critique due
Week 15 12/08/09	Biotechnology in Medicine	Ch 12	
Week 16 12/15/09	Finals week Quiz		Comprehension Quiz