BIOL 1414 Introduction to Biotechnology
Master Syllabus

SECTION I: COURSE INFORMATION

Section: XXXXX-XXX
Lecture: Room, day, time
Lab: Room, day, time

Instructor: Name, title, department
Office Phone: Adjunct faculty must provide an ACC voice mail
Office Location:
Office Hours: day, time, or by appointment
E-mail: must provide and use your ACC email
Website: If you have one

Course Description:
An introduction to the field of biotechnology including applications of biotechnology in molecular biology, biochemistry, research, bioethics, and laboratory safe practices in a regulated environment. The course is supplemented with exciting hands-on laboratory exercises, and real-world research and industry applications which enable the student to master basic skills in working in a biotechnology lab; solution preparation, safe handling of hazardous material, nucleic acid isolation, recombinant DNA cloning, PCR and ELISA. The course concludes with a bioscience career exploration including applied research, biomanufacturing, biomedical devices, and clinical trials.

Prerequisites:
Skills: O Prerequisites: One year of high school biology and one year of high school chemistry or co-requisite of BIOL 1406 or BIOL 1408. Course Type: T

Instructional Methodology:
There is both a laboratory and lecture component to this course, which must be taken together. There will be required readings from the textbooks, as well as occasional additional reading assignments from the literature. Both the lecture and laboratory components will require the use of the Internet and Blackboard which is made available to the student in the Austin Community College computer labs or learning center. ***An emphasis is placed on active learning strategies for content mastery***.

Course Rationale
This course is designed to provide practical explorations into fields of biotechnology. In support of Austin Community College's Mission Statement to support skills for "life-long learning", this course will challenge students to apply critical thinking skills to their readings, class activities, laboratory exercises, and classroom discussions about current topics in biotechnology. Although an emphasis is placed on each student's personal responsibility for constructing their new knowledge, opportunities for working collaboratively with groups will also be provided. As an introduction to the ACC Biotechnology program curriculum, this course will prepare the student for more advanced Biotechnology courses.

ACADEMIC STUDENT LEARNING OUTCOMES:

1. **Students will demonstrate verbally and in writing knowledge of the field of biotechnology (including the historical development of the field) and applications of genomics. (interpersonal skills and Personal Responsibility)**
2. **Utilizing the S.I. system of units, students will use a variety of laboratory tools, and equipment to learn about and develop basic lab skills such as pipetting, preparing solutions, and weighing and measuring. (Empirical and Quantitative Skills)**
3. **Students will demonstrate verbally, and in writing, knowledge of DNA, RNA, and protein structures. (Critical Thinking Skills)**
4. Students will use technology to isolate, amplify, and detect DNA and proteins.
5. Students will demonstrate, both verbally and in writing, knowledge of scientific theory related to biotechnology techniques.
6. Students will be able to demonstrate their understanding of and to utilize proper laboratory procedures within a regulated environment.
7. **Students will consider, discuss and debate current ethical and legal issues in biotechnology. (Communication Skills)**

TSSB Course Student Learning Outcomes

The ACC Biotechnology Program adopted the Texas Biotechnology Skill Standards in 2007 that were validated by industry. These competences reflect skills necessary in the biotechnology workforce, which emphasize communication skills, punctuality, and teamwork in addition to molecular biology skills. They overlap and emphasize the academic student learning outcomes. The Texas State Skills Board (TSSB) recognized Skill Standards for this course can be found here: http://www.austincc.edu/biotech/skillstandards.php.

R&D Skill Standards

A3 Operate equipment	B2 Perform assays and experiments	B3 Troubleshoot experiments and equipment	B4 Perform data analysis	B5 Communicate results	C1 Participate in employer-sponsored safety training	C3 Identify unsafe conditions and take corrective action
C4 Suggest continuous improvements	C5 Coordinate with work team	C7 Handle and dispose of hazardous materials	C8 Maintain security	D1 Maintain lab notebook	D Create documents	

Biomanufacturing Skill Standards

1.1 Follow Standard Operating Procedures (SOPs)	1.3 Document and analyze data	2.1 Clean laboratory environment	2.2 Attend company safety and security training	2.3 Report unsafe conditions	2.4 Maintain laboratory security	

Required Texts/Materials

1. Ellyn Daugherty, Biotechnology: Science for the New Millennium. 2012. EMCParadigm Publications. ISBN: 978-0-76384-284-0
2. Lisa A. Seidman. Basic Laboratory Calculations for Biotechnology. 2008. Pearson. ISBN: 0132238101
3. (Optional) Seidman & Moore, Basic Laboratory Methods for Biotechnology: Textbook & Laboratory Reference, 2nd edition. 2009. Prentice Hall. ISBN: 0321570146

Lab Manual: "BIOL1414 Introduction to Biotechnology Laboratory Manual". One copy of the lab manual will be supplied.

Supplies: 3-ring binder, Scientific Calculator with statistics and linear regression capability, Sharpie labeling pens (fine tip), and earphones.

Lab Safety: Safety glasses with a rating of Z87 and close-toed shoes. A disposable lab coat will be provided.

Email: You are ***required*** to communicate with your instructors using your ACCmail account ONLY. To obtain your email: ***http://www.austincc.edu/accmail/*** Instructions on forwarding your email to a more regularly monitored email address can be found there.

Blackboard: You are ***required*** to utilize Blackboard for this course. To access Blackboard you need an ACCeID. To activate your ACCeID: ***http://www.austincc.edu/acceid***
To log on to Blackboard: ***http://acconline.austincc.edu***

NOTE: If you are a **student worker**, or ACC staff member, your default email is your STAFF account, not your student account. Therefore your email in Blackboard will be your STAFF email, and you will need to access that account to retrieve messages from your instructor.

SECTION II: GRADING SCHEME AND MISSED EXAM POLICY:

Grading information: Lecture contributes towards half of the course grade and lab contributes the other half. At the end of the course, all the points a student has received will be added up as described below.

1. **Lecture & Lab Exams.** (350 points) The course is set up in three modules, and there will be three lecture/lab exam modules. ***Module 1 & 2 exams will be worth 100 points each***. ***The final third module is a comprehensive exam and is worth 150 pts.*** Each exam will cover topics and concepts covered by lecture, lab and other assigned reading materials. They will include a laboratory practical portion.

   The format of these exams will be diverse, and may include short answer, definitions, problems, discussions, and analysis, graphing and multiple choice questions. The hands-on portion format may require the student to identify equipment, calibrate or use equipment to demonstrate skill mastery, accurately and precisely use a micropipette, and/or perform a short experiment such as analyzing DNA on an agarose gel. Questions on these exams will emphasize higher-level critical thinking skills as mandated by the ACC Biotechnology Department and will challenge students to be able to use their factual knowledge in order to answer the questions.

2. **Class Participation Exercises.** (50 points) There will be periodic in-class activities, homework and/or quizzes. These may be individual or group work, some open book, some closed-book with a variety of formats including multiple choice, fill-in-the-blank, match-up, calculations, label figure or diagram. This may also be a quiz or exercise on Blackboard. Questions will be based on work covered in the lecture and readings in the textbook. Details about each in-class exercise will be provided in the lecture.

3. **Class Presentation.** (50 pts) There will be one class presentation on an ethical debate topic. The details to the presentation will be posted on Blackboard and given out in class. The due date is posted on the schedule. The format for this presentation will be a 10 minute PowerPoint presentation. Students will be graded on depth of knowledge, and presentation style.

4. **Employee Skills Evaluation.** (100 points). For every Biotechnology class with lab, the student will receive a "Work Performance & Technical Abilities Evaluation" from the instructor. The instructor will meet with the student individually to review the evaluation, give the student a copy and the department will retain a copy. Attendance is taken every class. You will be graded on preparing for class, participation in class, team work and safe behavior in the lab. Part of being a good technician is being able to work effectively in a team and this evaluation is designed to help the student achieve that goal. This evaluation will cover areas such as technical skills, initiation and follow through, independence and dependability, prioritization and organization, problem solving, quality of work and leadership.

5. **Lab Reports.** (400 points) Students will turn in lab reports as assigned. Lab report format and instructions are detailed in the lab manual. Lab reports are due one week after all the data has been collected for that lab. Students may collaborate with their team on the writing of lab reports, but each student ***must produce their own tables and graphs, and write their own lab report in their own words***. Photocopies or computer generated copies of others' works will NOT be accepted and will be considered plagiarism.

6. **Lab Notebook**. (50 points) Students will maintain a laboratory notebook as instructed in the lab manual. This notebook will be submitted for grading close to the end of the semester. Turn-in date posted on the schedule.

7. **Bonus Assignments**. (20 points). There will be opportunities for bonus points offered throughout the semester. They will total no more than 2% of your final grade. Instructions for bonus points will be given in class and posted to Blackboard; they will be due no later than the last class day.

SUMMARY GRADING SCHEME:
Grades will be assigned according to the following scale (*there will be no "curving" of grades*)

1. Content Knowledge:		
Exams	350	
Class Participation	50	
2. Employability Skills		
Employee Skills Evaluation	100	
Class Presentation	50	
3. Lab Skills		
Lab Notebook	50	
Lab Reports	400	
Total Lecture Points	**1000**	**(Divide total points by 10 = Grade %)**

Grading Scale: 90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; < 60% = F
Percentage scores will not be rounded nor curved.

SECTION III - ACC & CLASS POLICIES

1. **Graded Assignments**: All assignments, including exams will be graded and returned in one week after they are submitted for grading. Grades will be posted to Blackboard. If you find a discrepancy in your graded assignment and the grade posted to Blackboard, please notify me by email immediately so that it can be addressed.

2. **Use of ACC Email Communication:** All College e-mail communication to students will be sent solely to the student's ACCmail account, with the expectation that such communications will be read in a timely fashion. ACC will send important information and will notify you of any college related emergencies using this account. Students should only expect to receive email communication from their instructor using this account. Likewise, students should use their ACCmail account when communicating with instructors and staff. Instructions for activating an ACCmail account can be found at http://www.austincc.edu/accmail/index.php.

3. **Instructor Communication**: You may only use your ACCmail account when communicating with your instructor. You should check your email daily for time-sensitive communication from your instructor. You are expected to return communication within 72hrs. Emails from your instructor will be returned within 24-48hours during normal business hours M-F. On weekends there may be a delay in communication until the following Monday.

4. **Lecture:** Lectures will be given as outlined on the schedule for the most part, but may also be given during waiting periods during the laboratory periods. Lecture topics will closely follow the schedule. ***The reading assignments should be completed BEFORE lecture begins***. If you arrive more than 15 minutes late for the lecture you will be marked absent. Keep in mind that meeting time commitments counts towards your participation grade. If you are repeatedly 15min late for class you may be dropped from class.

5. **Lab:** The lab meets as outlined on the schedule for the most part, but some experiments may require some procedures to be done during the lecture period. The lab exercises will follow the schedule. No student may attend any lab session until they have completed the ACC Biotechnology Department safety training and have signed a safety contract. ***If you arrive late to class, and the lab has begun, you will not be permitted to participate in that lab.*** Most labs will consume the entire period and you will not have time to finish the lab if you arrive late.

   Pre-lab exercises are due at the beginning of a laboratory Unit. Remember we will start some labs during the lecture, so be prepared! Lab reports are due one week after all the data is collected. Pre-lab, post-lab and lab notebook format detailed instructions are outlined in the lab manual.

   Lab exercises will be performed in groups; however, <u>each student</u> is responsible for taking complete, accurate, and clear notes during the lab exercise directly in their lab notebook. All members of the group are expected to participate in the exercise and to work together. Student collaborations in the writing of lab reports are encouraged, but each student must produce their own tables and graphs, and write their own lab report. Photocopies or computer generated print-outs of others' works will not be accepted and will be considered plagiarism.

   You will only be permitted to attend the lab if you arrive on time with the following:
   - Appropriate PPE. Bring to every class!
   - The entire lab exercise must be printed out and read prior coming to labs.
   - A completed pre-lab exercise.
   - Your lab notebook

6. **Expectations.** Students are expected to be prepared for each class and to participate in all class activities. Please note that this is a ***rigorous*** course that requires a solid background in basic chemistry, biology and mathematics, and a strong commitment to succeed. To successfully complete

this course, regular class attendance is required in addition to study time outside of class. The 16 week course may require a minimum of 12 hours per week of study time outside of class and the 8 week accelerated course may require as much as 20 hours per week of study time outside of class. ***Missing one lecture and/or one laboratory exercise will have serious grade consequences.*** Note, based on in-class performance, you may be required to participate in Open Labs outside of class time.

7. **Attendance/Class Participation.** Regular and punctual class and laboratory attendance is expected of all students. If attendance or compliance with other course policies is unsatisfactory, the instructor may withdraw students from the class. It is of utmost importance that students miss no classes in order to perform well in this class. As with all math and science courses, topics build from each other such that a gap in knowledge will prevent the student from understanding concepts being covered. Also, class activities provide a significant component by which grades are assessed, and students must attend classes in order to earn these points.

   Attendance will be taken at each class period, and students who are late or absent are responsible for obtaining information about all deadlines, lecture notes, class discussions, handout materials, class activities, homework assignments, or announcements given in class**.** Students who are more than 15 minutes late for lecture or lab will be marked as absent for that day. ***Students with unexcused excessive absences may be withdrawn from the course by the instructor.***

8. **Lecture & Lab Exams.** Exams will be given in class during the regularly scheduled class time. If you are late to an exam, no extra time will be given. While taking an exam, students may not leave the room until they have completed their exam and turned it in for grading. ***If you have a medical condition that would require you to leave the room during the exam, you are responsible for arranging with the office of student disabilities, to take the exam before the rest of the class takes it.***

9. **Missed Exam Policy.** Make-up exams will only be given for the lecture exams and to students who provide the instructor with a written request prior to or within 24 hours following the missed exam, along with ***documentation for an excused absence***. Approval requires documentation of a medical emergency or death in the family. Makeup exams will be given in the Testing Center. Please familiarize yourself with their policies and hours of operation which are found at: http://www.austincc.edu/testctr/

10. **Late Work Policy:** Lab reports are due one week after the data collection is complete. Late work is accepted at the discretion of the instructor. ***Please note: I rarely accept late work, unless there is documented extenuating circumstances.*** Meeting time commitments is an important part of being a technician and will be reflected in the employee evaluation as well as your lab report grade.

11. **Safety Statement.** Austin Community College is committed to providing a safe and healthy environment for study and work. You are expected to learn and comply with ACC environmental, health and safety procedures and agree to follow ACC safety policies. Additional information on these can be found at http://www.austincc.edu/ehs. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the Emergency Procedures poster and Campus Safety Plan map in each classroom. Additional information about emergency procedures and how to sign up for ACC Emergency Alerts to be notified in the event of a serious emergency can be found at: http://www.austincc.edu/emergency

Please note, you are expected to conduct yourself professionally with respect and courtesy to all. Anyone who thoughtlessly or intentionally jeopardizes the health or safety of another individual will be immediately dismissed from the day's activity, may be withdrawn from the class, and/or barred from attending future activities.

Laboratory Safety: Health and safety are paramount values in science classrooms, laboratories, and field activities. Students are expected to learn, understand and comply with environmental, health and safety (EHS) procedures and protocols, and must agree to abide by the ACC science safety policy. Specific safety information for each activity will be discussed at the beginning of the class activity. For those activities that require specific safety training, a student who is late and misses the safety training will not be able to participate in the activity. The comprehensive science safety policy can be found at: **www.austincc.edu/sci_safe/**.

Before students may attend the laboratory classes, they must complete all of the following:

1. Watch the ACC Science Safety video
2. Review the ACC Biology Lab Safety Policy and fill out the safety guide for your campus
3. Sign the ACC Biology Safety Contract.

The instructor will drop any student from the class if the student has not completed this safety training within the first week of class.

Student use of Organisms policy is found here:
http://www.austincc.edu/biology/labanimalpolicy.html In the Biotechnology Program you may work with many different types of organisms, some of which may include human and animal cell culture, stem cells, bacteria, yeast, fungi and algae.

12. **Student Insurance:** Students enrolled in lab and field courses are covered by student insurance if they are injured as a result of the lab or field activity. If you are injured during class, please notify your instructor immediately and fill out the designated injury forms.

13. **Electronic Devices:** Although the use of electronic devices such as calculators, notepads, laptops and smart phone applications is highly encouraged, we ask students not use class time to talk on their cell phone, text message or check email. ***Unapproved electronic devices are not permitted on your person while writing exams. No exceptions, you will receive a zero grade for that exam if caught with a device.***

14. **Withdrawal Policy:** It is the responsibility of each student to ensure that his or her name is removed from the roll should he or she decides to withdraw from the class. The instructor does, however, reserve the right to drop a student should he or she feel it is necessary. If a student decides to withdraw, he or she should also verify that the withdrawal is submitted before the Final Withdrawal Date. The student is also strongly encouraged to retain their copy of the withdrawal form for their records.

    Students who enroll for the third or subsequent time in a course taken since fall, 2002, may be charged a higher tuition rate, for that course.

State law permits students to withdraw from no more than six courses during their entire undergraduate career at Texas public colleges or universities. With certain exceptions, all course withdrawals automatically count towards this limit. Details regarding this policy can be found in the ACC college catalog.

Withdraw Dates: Are posted on the ACC academic calendar:
http://www.austincc.edu/support/admissions/academiccalendar.php

15. **Incomplete Award Policy.** An instructor may award a grade of "I" (Incomplete) if a student was unable to complete all of the objectives for the passing grade in a course. An incomplete grade cannot be carried beyond the established date in the following semester. The completion date is determined by the instructor but may not be later than the final deadline for withdrawal in the subsequent semester.

    In order to get an incomplete grade ("I") in this course you must do all of the following **before the last class meeting**:
    a. Present a valid and well-documented reason, submitted in writing, for the instructor to give an incomplete grade. This should include the reason that the student has missed the official drop deadline for that semester.
    b. Complete at least 70% of the course, and ***have at least a 70% grade average in the course***.
    c. Meet with your instructor to discuss what is involved in getting and finishing an incomplete. Incomplete grades must be completed by approximately two weeks before the end of the next semester. If not completed by that time, the incomplete grade becomes a failing grade (F).
    d. Sign an Incomplete Grade Form, and give it to your lecture instructor prior to the last day of class.

    An incomplete grade will not be given for procrastination. An Incomplete grade must be completed by approximately two weeks before the end of the succeeding semester. If not completed by that time, the incomplete becomes a failing grade.

    Reinstatement Procedures: Reinstatement procedures will follow those outlined in the current ACC General catalog.

16. **Scholastic Dishonesty:** A student attending ACC assumes responsibility for conduct compatible with the mission of the college as an educational institution. Students have the responsibility to submit coursework that is the result of their own thought, research, or self-expression. Students must follow all instructions given by faculty or designated college representatives when taking examinations, placement assessments, tests, quizzes, and evaluations. Actions constituting scholastic dishonesty include, but are not limited to, plagiarism, cheating, fabrication, collusion, and falsifying documents. Penalties for scholastic dishonesty will depend upon the nature of the violation and may range from lowering a grade on one assignment to an "F" in the course and/or expulsion from the college. See the Student Standards of Conduct and Disciplinary Process and other policies at http://www.austincc.edu/current/needtoknow

    Biotechnology students who are not meeting course objectives and/or not conducting themselves in a professional and ethical manner (this includes academic dishonesty) will be apprised of their performance status using the progressive discipline process. This procedure progresses throughout

the program, not in each individual course. Any warnings and/or conferences will be kept in the student's file. The full policy can be found here: http://www.austincc.edu/biotech/

17. **Student Rights and Responsibilities:** Students at the college have the rights accorded by the U.S. Constitution to freedom of speech, peaceful assembly, petition, and association. These rights carry with them the responsibility to accord the same rights to others in the college community and not to interfere with or disrupt the educational process. Opportunity for students to examine and question pertinent data and assumptions of a given discipline, guided by the evidence of scholarly research, is appropriate in a learning environment. This concept is accompanied by an equally demanding concept of responsibility on the part of the student. As willing partners in learning, students must comply with college rules and procedures.

18. **Statement on Students with Disabilities.** Each ACC campus offers support services for students with documented disabilities. Students with disabilities who need classroom, academic or other accommodations must request them through the office of Student Accessibility Services (SAS). Students are encouraged to request accommodations when they register for courses or at least three weeks before the start of the semester, otherwise the provision of accommodations may be delayed.

    Students who have received approval for accommodations from SAS for this course must provide the instructor with the 'Notice of Approved Accommodations' from SAS before accommodations will be provided. Arrangements for academic accommodations can only be made after the instructor receives the 'Notice of Approved Accommodations' from the student.

    Students with approved accommodations are encouraged to submit the 'Notice of Approved Accommodations' to the instructor at the beginning of the semester because a reasonable amount of time may be needed to prepare and arrange for the accommodations. Additional information about Student Accessibility Services is available at http://www.austincc.edu/sas

19. **ACC Policy Concerning Copyrighted Materials:** All class materials provided on the instructor's web page, Blackboard, CD, and/or in printed form (labs, objectives, assignments, etc.) are copyrighted and may not be reproduced without the written consent of the copyright holder (this may be the instructor, ACC, or a separate third party entity or publisher). Reproduction consists of photocopying, scanning, copying, or posting files on a server or web site. Students currently registered for this section have permission to print one copy of course materials for their own personal use. No permission is given for posting any course materials on web sites or sharing with anyone not enrolled in this class.

20. **Testing Center Policy:** Under certain circumstances, an instructor may have students take an examination in a testing center. Students using the Academic Testing Center must govern themselves according to the Student Guide for Use of ACC Testing Centers and should read the entire guide before going to take the exam. To request an exam, one must have:
    ACC Photo ID, Course Abbreviation (e.g., BIOL), Course Number (e.g. 1414), Course Synonym (e.g., 10123), Course Section (e.g., 005) and Instructor's Name.
    Do NOT bring cell phones to the Testing Center. Having your cell phone in the testing room, regardless of whether it is on or off, will revoke your testing privileges for the remainder of the semester. ACC Testing Center policies can be found at http://www.austincc.edu/testctr/

21. **Student Support & Success Resources (Student & Instructional Services):** ACC strives to provide exemplary support to its students and offers a broad variety of opportunities and services. Information on these services and support systems is available at: http://www.austincc.edu/support/
    - For help setting up your ACCeID, ACC Gmail, or ACC Blackboard, see a Learning Lab Technician at any ACC Learning Lab.
    - Links to many student services: http://www.austincc.edu/current/
    - ACC Learning Labs provide free tutoring services to all ACC students currently enrolled in the course to be tutored. The tutor schedule for each Learning Lab may be found at: http://www.austincc.edu/tutor
    - The Biotechnology Department offers Open Labs for tutoring and assistance with mastering laboratory skills. Information on open labs and other Biotechnology Department student success initiatives are found at: http://www.austincc.edu/biotech
    - For help setting up your ACCeID, ACC Gmail, or ACC Blackboard, see a Learning Lab Technician at any ACC Learning Lab. Or contact the helpdesk: http://www.austincc.edu/helpdesk/
    - The ACC student "need to know" website can be found here: http://www.austincc.edu/current/needtoknow/
    - The Biotechnology Program Student Handbook: http://www.austincc.edu/biotech/studentresources.php
    - For feedback to the Biotechnology program we have provided an anonymous feedback online form. You can find this at our website here: http://www.austincc.edu/biotech/suggestion.php

BIOL 1414 Introduction to Biotechnology Schedule

PLEASE NOTE THAT CHANGES IN THE SCHEDULE MAY OCCUR

NOTE: All lab reports due the Monday after all the data collected.

Week	Date	LECTURE & READING ASSIGNMENT	LAB
1	8/25-26	**MODULE 1: BASIC BIOTECHNICIAN SKILLS** Class &Syllabus Overview, Study Skills (M) and Program Rubrics Ch 1-What is Biotechnology? (M) Basic Math Review: Ch 1, 3 & 4 Seidman	Lab Unit 1: Introduction to Biotech Lab (T) *Mandatory Safety Training
	8/27-28	Lecture on Quality (W) Ch 2-The Raw Materials of Biotechnology	Lab Unit 2: Quality in the Biotechnology Laboratory: Manufacturing cGMP Popcorn (W-Th)
2	9/1-2	Sept 1 – ACC CLOSED Ch 3-Basic Skills of the Biotechnology workplace Seidman: Ch 2, 11	Lab Unit 3: Basic tools in the Biotechnology lab (T)
	9/3-4	Preparing Solutions: Ch 12, 13, 14 Seidman Graphing: Ch 5 & Ch 15 Seidman (Th)	Lab Unit 4: Preparing Solutions (W)
3	9/8-9	Module 1 Review & lab catch up (M) Module 1 Exam (9/9) T ---------- **MODULE 2: BASIC BIOTECHNOLOGY LABORATORY EQUPIMENT**	Lab Notebook due (M) ---------- Lab Unit 5-A: DNA Barcoding (T)
	9/10-11	Ch 10 – Plants, Ch 4-Intro to Studying DNA Seidman: Ch 22 Ch 5-Intro to Studying Proteins	5-B: DNA isolation (W) 5-C: Agarose gel and Graphing (Th)
4	9/15-16	Ch 6 – Identifying Biotech Product	Lab Unit 6: RNA Isolation from Alfalfa sprouts (M) Lab Unit 6: Gel Analysis and Graphing (T)
	9/17-18	Ch 7 – Spectrophotometers & Assays Seidman: Ch 16	Lab Unit 7: ELISA & Graphing (W) Module 1 & 2 Review (Th) Pour plates (Th)
5	9/22-23	Module 2 Exam (9/22) M **MODULE 3: ADVANCED BIOTECHNOLOGY TECHNIQUES** Ch8 – Producing Recombinant Products	Lab Unit 8: Recombinant DNA Technology-Bioinformatics & Prepare starter culture plates (M) Lab Unit 8-B: Transformation (T)
	9/24-25	Ch9 – Bringing Biotech Product to market Seidman: Ch 23	Lab Unit 8-B: Transformation (results) W Lab Unit 9: Plasmid Isolation Inoculation (W) Lab Unit 9: Plasmid Isolation (Th)
6	9/29-30	Ch10 – Plant Biotechnology (finish chapter)	Lab Unit 10-A: Restriction Enzyme Digest (M) Lab Unit 10-B: Agarose Gel Electrophoresis (T) Lab Unit 11: GFP Purification – inoculate cultures (T)
	10/1-2	Ch 11 – Biotechnology in Agriculture	Lab Unit 11: GFP Purification – purification (W) Lab Unit 12: SDS-PAGE – (Th)
7	10/6-7	Ch 13- DNA Technologies Seidman: Ch 24	Lab Unit 12: SDS-PAGE - results (M) Lab Unit 13-A: DNA Barcoding – PCR amplification (M) Lab Unit 13-B/C: DNA Barcoding (T)
	10/8-9	Ch 12 – Medical Biotechnology	Lab Unit 14-A: PCR-based VNTR on Human DNA (W) Lab Unit 15: DNA barcoding - Bioinformatics (Th) Lab Unit 14-B: Gel Analysis (Th)
8	10/13-14	Ch 14- Biotechnology Research & Application Class Presentations: Practice Mon, present Tue	Lab Unit 16: Career Exploration & Resume Building
	10/15-	Internship Presentations, Semester Review (W)	All outstanding graded work & lab notebook due

	16	***MODULE 3 COMPREHENSIVE EXAM (Th)***	Work Place Evaluations, Lab Clean up

BIOL 1414 Introduction to Biotechnology
STUDENT INFORMATION SHEET

Name (Print)	
Phone Number	
Yes I have required co & pre-requisites: (year completed & grade)	BIOL 1406_____ CHEM 1405 _____ ENGL 1301_____
Other information	Do you have an advanced degree? If yes, what is it: _____ List any other courses you are enrolled this semester: _____ Are you currently employed? If yes, the number of hours per week: _____
I have received the syllabus and I have the co/prerequisites listed	_____ (Signature) _____ Date

Lecture Grades	**Attendance**				**Quiz/Homework**		**Lab Grades**
	CLASS		**CLASS**		**CLASS**		Safety:
Module 1 Exam: _____ / 100	1		17		1		1:
	2		18		2		2:
	3		19		3		3:
Module 2 Exam: _____ / 100	4		20		4		4:
	5		21		5		5:
Final Exam: _____ / 150	6		22		6		6:
	7		23		7		7:
	8		24		8		8:
Class Presentation: _____/50	9		25		9		9:
	10		26		10		10:
	11		27		11		11:
Bonus Points: _____/20	12		28		12		12:
	13		29		13		13:
	14		30		14		14:
	15		31		15		15:
Total Points: _____ / 1000	16		32		16		16:
Grade Percent: _____ % **Final Grade: _____**	**In-class Exercises: _____/50**			**Employee Evaluation: _____ / 100** Employability: ___/50 Attendance: ____/10 Workforce: ____/40			**Total: _____ / 400** **Lab Notebook:____/50**