



TENTATIVE—SUBJECT TO CHANGE

BIOLOGY (BIOL) 1111: Biology I

COURSE SYLLABUS

Lecture

Fall Semester 2022

COURSE INFORMATION

Credit Hours/Minutes: 3/2250

Class Location: Vidalia Campus/Health Sciences Annex (HSA) Building C: Room 902

Class Meets: M, T 11:45am-1:00pm

Course Reference Number (CRN): 20070

INSTRUCTOR CONTACT INFORMATION

Instructor Name: Sherry C. Sturgis

Professional Bio: I received my B.S. and M.S. in Biology from Georgia Southern University, with an emphasis in Ecology. I am an Ecologist, Conservationist, and Environmental/Nature Educator. I have taught many courses in Science, especially Biology in the field of higher education. I love all aspects of Biology, especially Anatomy & Physiology and Microbiology. I also enjoy teaching Forensic Science.

Office Location: Vidalia Campus/Health Sciences Annex (HSA) – Building C: Room 901

Office Hours: M-W 8:30am-11:30am & TH 8:00am-9:00am

Email Address: ssurgis@southeasterntech.edu

Office Phone: (912) 538-3188

Cell Phone: (912)-531-4543, please text me first, and do not use this number unless you really need to reach me. I do not mind you contacting me by cell phone, just don't abuse the privilege.

Fax Number: NA

Tutoring Hours: By appointment only, I will be glad to set up a tutoring session during office hours.

SOUTHEASTERN TECHNICAL COLLEGE'S (STC) CATALOG AND STUDENT HANDBOOK

Students are responsible for all policies and procedures and all other information included in Southeastern Technical College's [Catalog and Student Handbook](http://www.southeasterntech.edu/student-affairs/catalog-handbook.php) (<http://www.southeasterntech.edu/student-affairs/catalog-handbook.php>).

REQUIRED TEXT

1. Biology, Mader & Windelspecht, 12th edition, McGraw Hill
2. Laboratory Manual to accompany Biology, Mader, 12th edition, McGraw Hill

REQUIRED SUPPLIES AND SOFTWARE

3 hole binder, clear front report cover (make sure it is sturdy and can hold 100 pages or more), colored pencils, ink pens, highlighter, and any other supplies deemed necessary by instructor.
Ink pens, highlighters, and any other supplies deemed necessary by the instructor.

Note: Although students can use their smart phones and tablets to access their online course(s), exams, discussions, assignments, and other graded activities should be performed on a personal computer. Neither Blackboard nor Georgia Virtual Technical Connection (GVTC) provide technical support for issues relating to the use of a smart phone or tablet so students are advised to not rely on these devices to take an online course.

Students should not share login credentials with others and should change passwords periodically to maintain security.

COURSE DESCRIPTION/COMPETENCIES

1. Organization and Chemical Basis of Life
2. Cell Structure and Function
3. Metabolism
4. Cell Division
5. Protein Synthesis
6. Central Dogma of Biology
7. Genetics
8. Biotechnology
9. Evolutionary concepts

PREREQUISITE(S)

Regular Admission

Co-requisites: All Required

BIOL 1111L

COURSE OUTLINE

CHAPTER 1:

1. List the characteristics of life.
3. Distinguish between prokaryotic and eukaryotic cells.
4. List the six kingdoms of life and distinguish among them.
5. Outline the scientific method.

CHAPTER 2:

1. Define element.
2. State four elements essential to life that make up 96% of living matter.
3. Describe the structure of an atom.
4. Define and distinguish among atomic number, mass number, atomic weight, and valence.
5. Given the atomic number and mass number of an atom, determine the number of neutrons.
6. Define electro-negativity and explain how it influences the formation of chemical bonds.
7. Distinguish among nonpolar covalent, polar covalent and ionic bonds.
8. Describe the formation of a hydrogen bond and explain how it differs from a covalent or ionic bond.

9. Explain why weak bonds are important to living organisms.
10. Explain the relationship between the polar nature of water and its ability to form hydrogen bonds.
11. Describe the biological significance of the cohesiveness of water.
12. Explain the basis for the pH scale.
13. Explain how acids and bases directly or indirectly affect the hydrogen ion concentration of a solution.

CHAPTER 3:

1. Recognize the major functional groups, and describe the chemical properties of organic molecules in which they occur.
1. List the four major classes of biomolecules.
2. Describe how covalent linkages are formed and broken in organic polymers.
3. Describe the unique properties, building block molecules and biological importance of the three important of lipids: fats, phospholipids and steroids.
4. Distinguish between a saturated and unsaturated fat, and list some unique emergent properties that are a consequence of these structural differences.
5. Describe the characteristics that distinguish proteins from the other major classes of macromolecules, and explain the biologically important functions of this group.
6. Identify a peptide bond and explain how it is formed.
7. Explain what determines protein conformation and why it is important.
8. Define denaturation and explain how proteins may be denatured.
9. Summarize the functions of nucleic acids.
10. List the major components of a nucleotide, and describe how these monomers are linked together to form a nucleic acid.
11. Briefly describe the three-dimensional structure of DNA.

CHAPTER 4:

1. Describe the anatomy of Prokaryotes.
2. Describe the structure and function of the Eukaryotic nucleus, and briefly explain how the nucleus controls protein synthesis in the cytoplasm.
3. Describe the structure and function of a eukaryotic ribosome.
4. List the components of the *endomembrane system*, describe their structures and functions and summarize the relationships among them.
5. Explain how impaired lysosomal function causes the symptoms of storage diseases.
6. Describe the types of vacuoles and explain how their functions differ.
7. Describe the structure of a *mitochondrion* and explain the importance of compartmentalization in mitochondrial function.

CHAPTER 5:

1. Describe the function of the plasma membrane.
2. Describe the fluid properties of the cell membrane and explain how membrane fluidity is influenced by membrane composition.
3. Explain how hydrophobic interactions determine membrane structure and function.
4. Define diffusion; explain what causes it and why it is a spontaneous process.
5. Define osmosis and predict the direction of water movement based upon differences in solute concentration.
6. Explain how active transport differs from diffusion.

CHAPTER 6:

1. Distinguish between exergonic and endergonic reactions.
2. Describe the function of ATP in the cell.
3. Explain how ATP performs cellular work.
4. Describe the function of enzymes in biological systems.
5. Explain the relationship between enzyme structure and enzyme specificity.

6. Explain the *induced fit* model of enzyme function and describe the catalytic cycle of an enzyme.
7. Explain how substrate concentration affects rate of an enzyme-controlled reaction.
8. Explain how enzyme activity can be regulated or controlled by environmental conditions, cofactors, enzyme inhibitors and allosteric regulators

CHAPTER 7:

1. Distinguish between photosynthetic autotrophs and chemosynthetic autotrophs.
2. Describe the location and structure of the chloroplast.
3. Write a summary equation for photosynthesis.
4. Explain what happens when chlorophyll or accessory pigments absorb photons.
5. List the components of a photosystem and explain their function.
6. Trace electron flow through photosystems II and I
7. Compare cyclic and noncyclic electron flow and explain the relationship between these components of the light reactions.
8. Describe the role of ATP and NADPH in the Calvin cycle.

CHAPTER 8:

1. Describe the overall summary equation for cellular respiration.
2. Distinguish between substrate-level phosphorylation and oxidative phosphorylation.
3. Define oxidation and reduction.
4. Describe the structure of coenzymes and explain how they function in redox reactions.
5. Describe the role of ATP in coupled reactions.
6. Write a summary equation for glycolysis and describe where it occurs in the cell.
7. Describe where pyruvate is oxidized to acetyl CoA, what molecules are produced and how it links glycolysis to the Krebs cycle.
8. Describe the location, molecules in and molecules out for the Krebs cycle.
9. Describe the process of chemiosmosis.
10. Explain how the cell membrane structure is related to membrane function in chemiosmosis.
11. Describe the fate of pyruvate in the absence of oxygen.
12. Explain why fermentation is necessary.
13. Distinguish between aerobic and anaerobic metabolism.
14. Explain how ATP production is controlled by the cell and what role the allosteric enzyme, phosphofructokinase, plays in this process.

CHAPTER 9:

1. Describe the structural organization of the genome.
2. Overview the major events of cell division that enable the genome of one cell to be passed on to two daughter cells.
3. List the phases of the cell cycle and describe the sequence of events that occurs during each phase.
4. List the phases of mitosis and describe the events characteristic of each phase.
5. Recognize the phases of mitosis from diagrams or micrographs.
6. Compare cytokinesis in animals and plants.
7. Describe the roles of checkpoints, cyclin, Cdk, and MPF, in the cell-cycle control system.
8. Describe the internal and external factors which influence the cell-cycle control system.
9. Explain how abnormal cell division of cancerous cells differs from normal cell division.

CHAPTER 10:

1. Distinguish between asexual and sexual reproduction.
2. Diagram the human life cycle and indicate where in the human body that mitosis and meiosis occur; which cells are the result of meiosis and mitosis; and which cells are haploid.
3. List the phases of meiosis I and meiosis II and describe the events characteristic of each phase.
4. Recognize the phases of meiosis from diagrams or micrographs.
5. Describe the process of synapsis during prophase I, and explain how genetic recombination occurs.

6. Describe key differences between mitosis and meiosis; explain how the result of meiosis differs from that of mitosis.
7. List the sources of genetic variation.

CHAPTER 11:

1. List several features of Mendel's methods that contributed to his success.
2. State, in their own words, Mendel's law of segregation.
3. Use a Punnett square to predict the results of a monohybrid cross and state the phenotypic and genotypic ratios of the F₂ generation.
4. Distinguish between genotype and phenotype; heterozygous and homozygous; dominant and recessive.
5. Explain how a testcross can be used to determine if a dominant phenotype is homozygous or heterozygous.
6. Use a Punnett square to predict the results of a dihybrid cross and state the phenotypic and genotypic ratios of the F₂ generation.
7. Explain how the phenotypic expression of the heterozygote is affected by complete dominance, incomplete dominance and codominance.
8. Describe the inheritance of the ABO blood system and explain why the I^A and I^B alleles are said to be *codominant*.
9. Define and give examples of pleiotropy.
10. Give a simple family pedigree, deduce the genotypes for some of the family members.
11. Describe the inheritance and expression of cystic fibrosis, Tay-Sachs disease, and sickle-cell disease.
12. Explain how a lethal recessive gene can be maintained in a population.

CHAPTER 12:

1. List the three components of a nucleotide.
2. Distinguish between deoxyribose and ribose.
3. List the nitrogen bases found in DNA and distinguish between pyrimidine and purine.
4. Explain the "base-pairing rule" and describe its significance.
5. Describe the structure of DNA and explain what kind of chemical bond connects the nucleotides of each strand and what type of bond holds the two strands together.
6. Explain, in their own words, semiconservative replication and describe the Meselson-Stahl experiment.
7. Describe the process of DNA replication and explain the role of helicase, single strand binding protein, DNA polymerase, ligase and primase.
8. Explain the Central Dogma (transcription, translation, protein modification)

CHAPTER 13:

1. Explain Prokaryotic gene regulation and use the example of the *Lac* operon
2. List the four ways Eukaryotic gene regulation occurs
3. Explain how a gene mutation occurs

CHAPTER: 14

1. Explain the two methods of DNA cloning
2. List the benefits of biotechnology
3. Explain gene therapy and genomics

CHAPTER 15-18:

1. Write the general Hardy-Weinberg equation and use it to calculate allele and genotype frequencies
2. List the conditions a population must meet in order to maintain Hardy-Weinberg equilibrium
3. Explain how genetic drift, mutation, nonrandom mating and natural selection can cause micro evolution
4. Distinguish between the bottleneck effect and the founder effect

5. Distinguish between prezygotic and postzygotic isolating mechanisms
6. Explain how an atheistic world view can impact how data can be interpreted.
7. Define sympatric speciation and explain how polyploidy can cause reproductive isolation
9. Explain the difference between microevolution and macroevolution
10. Compare and contrast various models of creation
11. Explain the importance of the fossil record to the study of evolution

GENERAL EDUCATION CORE COMPETENCIES

STC has identified the following general education core competencies that graduates will attain:

1. The ability to utilize standard written English.
2. The ability to solve practical mathematical problems.
3. The ability to read, analyze, and interpret information.

STUDENT REQUIREMENTS

In order to be successful in this class, students should study a minimum of 2 hours per credit hour each week (minimum of 8 hours). Before arriving for class, students should read assigned chapters taking special note of bold-faced vocabulary terms and any study questions within the chapter. All assignments and pre-lab work must be completed before the regularly scheduled class meeting. Failure to comply with these suggestions will make it impossible to understand and follow the lecture material and will result in a student being unsuccessful in this course.

Students are responsible for the policies and procedures in the STC Catalog and Handbook. Additionally, during exams, students are to place all notebooks, bags, and other belongings on the floor or on the counters located in the back and sides of the classroom. Also during examinations students are to be seated with one empty chair between each student. No talking is permitted once the exams are handed out. Students are not allowed to leave the room during an exam (with their cell phone). Students need to go to the bathroom prior to the exam. The instructor will make an exception for emergencies. **Students found with their cellphone or any other personal communication device (including smart watches) will be considered cheating and given a zero for the exam. This includes taking out a phone or similar device after the student has completed the exam but while others in the classroom are still testing.**

Students are expected to exhibit professional behavior at all times. Each student is to show respect and concern for fellow students and for the instructor. Insubordination will not be tolerated, and disciplinary measures will be enacted.

As students taking this course are striving to become healthcare professionals, they will be expected to follow certain healthcare program rules. This includes but is not limited to: proper dress (when in lab setting or other activities in class), no perfumes or strong fragrances, cleanliness (hands, clothes, hair), and effective communication skills.

Per STC policy no cell phones are allowed in hallways or in classrooms. If your phone must be with you it must be turned off and in a bag. In cases of emergency when a student needs his or her phone, he or she is expected to 1) notify the instructor before class begins and 2) leave the phone on silent (NO VIBRATE) while they are in the class (this excludes examination guidelines for phones). No personal calls are to be taken during class, regardless of the situation. This should be handled before or after class.

No eating or drinking is permitted in the lab or lecture classroom. Water is allowed if it is in a spill-proof container and must be kept under the desk or on the sides of the classroom.

ATTENDANCE GUIDELINES

Class attendance is a very important aspect of a student's success. Being absent from class prevents students from receiving the full benefit of a course and interrupts the learning process. Southeastern Technical College considers both tardiness and leaving early as types of absenteeism. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is required for student success. Students will be expected to complete all work required by the instructor as described in the individual course syllabus.

Instructors have the right to give unannounced quizzes/assignments. Students who miss an unannounced quiz or assignment will receive a grade of 0. Students who stop attending class, but do not formally withdraw, may receive a grade of "F" (Failing 0-59) and face financial aid repercussions in upcoming semesters.

Instructors are responsible for determining whether missed work may be made up and the content and dates for makeup work is at the discretion of the instructor.

Students will not be withdrawn by an instructor for attendance; however, all instructors will keep records of graded assignments and student participation in course activities. The completion dates of these activities will be used to determine a student's last date of attendance in the event a student withdraws, stops attending, or receives an "F" in a course.

STUDENTS WITH DISABILITIES

Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact the appropriate campus coordinator to request services.

Swainsboro Campus: Macy Gay, (mgay@southeasterntech.edu), 478-289-2274, Building 1, Room 1210

Vidalia Campus: Helen Thomas, (hthomas@southeasterntech.edu), 912-538-3126, Building A, Room 165

SPECIFIC ABSENCES

Provisions for Instructional Time missed because of documented absences due to jury duty, military duty, court duty, or required job training will be made at the discretion of the instructor.

PREGNANCY

Southeastern Technical College does not discriminate on the basis of pregnancy. However, we can offer accommodations to students who are pregnant that need special consideration to successfully complete the course. If you think you will need accommodations due to pregnancy, please make arrangements with the appropriate campus coordinator.

Swainsboro Campus: Macy Gay, (mgay@southeasterntech.edu), 478-289-2274, Building 1, Room 1210

Vidalia Campus: Helen Thomas, (hthomas@southeasterntech.edu), 912-538-3126, Building A, Room 165

It is strongly encouraged that requests for consideration be made **PRIOR** to delivery and early enough in the pregnancy to ensure that all the required documentation is secured before the absence occurs. Requests made after delivery **MAY NOT** be accommodated. The coordinator will contact your instructor to discuss accommodations when all required documentation has been received. The instructor will then discuss a plan with you to make up missed assignments.

WITHDRAWAL PROCEDURE

Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to

the 65% point of the term in which student is enrolled (March 12) must speak with a Career Counselor in Student Affairs and complete a Student Withdrawal Form. A grade of "W" is assigned for the course(s) when the student completes the withdrawal form.

Students who are dropped from courses due to attendance after drop/add until the 65% point of the semester will receive a "W" for the course.

Important – Student-initiated withdrawals are not allowed after the 65% point. Only instructors can drop students after the 65% point for violating the attendance procedure of the course. Students who are dropped from courses due to attendance after the 65% point will receive either a "WP" or "WF" for the semester.

Informing your instructor that you will not return to his/her course, does not satisfy the approved withdrawal procedure outlined above.

There is no refund for partial reduction of hours. Withdrawals may affect students' eligibility for financial aid for the current semester and in the future, so a student must also speak with a representative of the Financial Aid Office to determine any financial penalties that may be assessed due to the withdrawal. A grade of 'W' will count in attempted hour calculations for the purpose of Financial Aid.

Remember - Informing your instructor that you will not return to his/her course does not satisfy the approved withdrawal procedure outlined above.

EVALUATION PROCEDURES

In order to sit for the final exam in this course a student must maintain a Lecture Exam and Lab Exam average of 70.0 or above prior to the date of the scheduled final exam. Exam averages of 69.9 will not be rounded up. If a student has below a 70.0 average, the student will be given a letter grade based on the exam average. There will be no drop grade for lecture or lab exams. **All lecture exams will take place in seat.**

MAKEUP GUIDELINES

There will be a day at the end of the semester for lecture & lab make-up exams, this is the only day you can make-up an exam. There is no exception to this rule!

Lecture examinations: Students will be allowed to make up one lecture examination (excluding the final exam), due to a documented, excused absence approved by the instructor. Any subsequently missed lecture exam will result in an automatic zero.

Lecture assignments: Late assignments will be accepted but not for full credit. Assignments submitted after the due date will incur a 10% deduction per day late.

Group Project: There will be no time designated for make-up on projects. If your group does not show up for your presentation, a zero will be given. If you have a documented excuse, the instructor will make an exception.

ASSIGNMENTS

Students will be asked to use a three prong notebook for this lecture class. This notebook should contain your learning objectives and assignments, as well as any new material given to you by the instructor. You should bring your notebook to every class session. Students are required to read each chapter and complete learning objectives for each chapter. Learning objectives can be found on the M-Drive and in Blackboard. All completed learning objectives should be submitted by the due date in the student's notebook. Your notebook should be well organized and your work easy to read.

GROUP PROJECT PRESENTATION

Students will work in small groups and give an educational presentation on a case in Forensic Science. Your

instructor will provide the class with a list of possible topics. The case must be approved by the instructor. Presentations should be 15-20 minutes long. The presentation should be a minimum of 15 slides. Students are required to use some type of visual aid. Informative videos or other media may be used if it will enhance the presentation. These video clips or other media are not to exceed 7 minutes of the presentation. Please see the rubric at the end of the syllabus.

Group members should have equal participation in the completion of this project. A team rating scale will be provided for students to “grade” each other on the work they have done concerning their project. Additionally, students are encouraged to report team member failure to comply with scheduled meetings, discussions, emails, group texts, etc. Failure to correspond and communicate with group members will result in very different project grades.

The deadline for the presentations (see course schedule), all presentations are to be submitted to the instructor, saved on the classroom computer’s desktop from a jump drive, or downloaded from the web prior to the day of the presentations. Thus, no procrastination will be accepted

ACADEMIC DISHONESTY POLICY

The STC Academic Dishonesty Policy states All forms of academic dishonesty, including but not limited to cheating on tests, plagiarism, collusion, and falsification of information, will call for discipline. The policy can also be found in the STC Catalog and Student Handbook.

PROCEDURE FOR ACADEMIC MISCONDUCT

The procedure for dealing with academic misconduct and dishonesty is as follows:

1. First Offense

Student will be assigned a grade of "0" for the test or assignment. Instructor keeps a record in course/program files and notes as first offense. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus. The Registrar will input the incident into Banner for tracking purposes.

2. Second Offense

Student is given a grade of "WF" (Withdrawn failing) for the course in which offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Registrar will input the incident into Banner for tracking purposes.

3. Third Offense

Student is given a grade of "WF" for the course in which the offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of third offense. The Vice President for Student Affairs, or designee, will notify the student of suspension from college for a specified period of time. The Registrar will input the incident into Banner for tracking purposes.

STATEMENT OF NON-DISCRIMINATION

The Technical College System of Georgia (TCSG) and its constituent Technical Colleges do not discriminate on the basis of race, color, creed, national or ethnic origin, gender, religion, disability, age, political affiliation or belief, genetic information, disabled veteran, veteran of the Vietnam Era, spouse of military member, or citizenship status (except in those special circumstances permitted or mandated by law). This nondiscrimination policy encompasses the operation of all technical college-administered programs, federally financed programs, educational programs and activities involving admissions, scholarships and loans, student

life, and athletics. It also applies to the recruitment and employment of personnel and contracting for goods and services.

All work and campus environments shall be free from unlawful forms of discrimination, harassment and retaliation as outlined under Title IX of the Educational Amendments of 1972, Title VI and Title VII of the Civil Rights Act of 1964, as amended, the Age Discrimination in Employment Act of 1967, as amended, Executive Order 11246, as amended, the Vietnam Era Veterans Readjustment Act of 1974, as amended, Section 504 of the Rehabilitation Act of 1973, as amended, the Americans With Disabilities Act of 1990, as amended, the Equal Pay Act, Lilly Ledbetter Fair Pay Act of 2009, the Georgia Fair Employment Act of 1978, as amended, the Immigration Reform and Control Act of 1986, the Genetic Information Nondiscrimination Act of 2008, the Workforce Investment Act of 1998 and other related mandates under TCSG Policy, federal or state statutes. The Technical College System and Technical Colleges shall promote the realization of equal opportunity through a positive continuing program of specific practices designed to ensure the full realization of equal opportunity.

The following individuals have been designated to handle inquiries regarding the nondiscrimination policies:

<p>American With Disabilities Act (ADA)/Section 504 - Equity- Title IX (Students) – Office of Civil Rights (OCR) Compliance Officer</p>	<p>Title VI - Title IX (Employees) – Equal Employment Opportunity Commission (EEOC) Officer</p>
<p>Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1st Street, Vidalia Office 165 Phone: 912-538-3126 Email: Helen Thomas hthomas@southeasterntech.edu</p>	<p>Blythe Wilcox, Director of Human Resources Vidalia Campus 3001 East 1st Street, Vidalia Office 138B Phone: 912-538-3147 Email: Blythe Wilcox bwilcox@southeasterntech.edu</p>

ACCESSIBILITY STATEMENT

Southeastern Technical College is committed to making course content accessible to individuals to comply with the requirements of Section 508 of the Rehabilitation Act of Americans with Disabilities Act (ADA). If you find a problem that prevents access, please contact the course instructor.

GRIEVANCE PROCEDURES

Grievance procedures can be found in the Catalog and Handbook located on Southeastern Technical College’s website.

ACCESS TO TECHNOLOGY

Students can now access Blackboard, Remote Lab Access, Student Email, Library Databases (Galileo), and BannerWeb via the mySTC portal or by clicking the Current Students link on the [Southeastern Technical College \(STC\) Website \(www.southeasterntech.edu\)](http://www.southeasterntech.edu).

TECHNICAL COLLEGE SYSTEM OF GEORGIA (TCSG) GUARANTEE/WARRANTY STATEMENT

The Technical College System of Georgia guarantees employers that graduates of State Technical Colleges shall possess skills and knowledge as prescribed by State Curriculum Standards. Should any graduate employee within two years of graduation be deemed lacking in said skills, that student shall be retrained in any State Technical College at no charge for instructional costs to either the student or the employer.

GRADING POLICY

Assessment/Assignment	Percentage
Lecture Exams	50%
Learning Objectives (LO) & Assignments (in class & homework)	20%
Group Presentation (Case Study in Forensic Science)	10%
Comprehensive Final	20%

GRADING SCALE

Letter Grade	Range
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

DISCLAIMER STATEMENT

Instructor reserves the right to change the syllabus and/or lesson plan as necessary. The official copy of the syllabus is located on the STC M-Drive and will be discussed on the first day of class. The syllabus displayed in advance of the semester in any location is for planning purposes only.

BIOL 1111: General Biology Lecture

Fall Semester 2022 Lesson Plan

Subject to change at instructor's discretion

Date	Chapter/Lesson	Content	Tests, Assignments, & Due Dates	Competency Area
Week of 08/15	Introduction to the Course, syllabus review, outline, regulation, etc. 1: A View of Life & Ecology 2: Basic Chemistry	Introductions, Syllabus Review, Group Project Group Assignments, File creations, Intro to Biology Basic Chemistry	Read the chapters for each week before coming to class and complete the learning objectives weekly (found on the M-Drive & in Blackboard). Complete the learning objectives (LO) and place in a notebook. You will work on these some at the end of class, if time permits. LO=Learning Objectives Chapter 1 & 2 are due 08/29	C: 1-9 G: a-c
08/22	2: Basic Chemistry 3: The Chemistry of Organic Molecules	Basic Chemistry The Chemistry of Organic Molecules Macromolecules	LO Chapter 3 & 4 are due 09/12 Review for lecture Exam 1	C: 1,2 G: a-c
08/29	3: The Chemistry of Organic Molecules 4: Cell Structure and Function	The Cellular Level of Organization The Cell Prokaryote & eukaryote Functioning parts of cells	Lecture Exam 1: Chapters 1 & 2 LO Chapter 5 due 09/19	C: 1,2 G: a-c
09/05 09/05 Labor Day Holiday- No class on Monday of this week	5: Membrane Structure and Function	Cell membrane Osmosis & diffusion How the cell membrane functions	LO Chapter 6, 7, 8 & 9 due 10/03	C: 2-5 G: a, c
09/12	5: Membrane Structure and Function 6: Energy and Enzymes	What is energy, ATP Energy cycles Metabolism Proteins & enzymes	LO Chapter 6,7,8 & 9 due 10/03 Review for Lecture Exam 2	C: 2-5 G: a, c

Date	Chapter/Lesson	Content	Tests, Assignments, & Due Dates	Competency Area
09/19	7: Photosynthesis	What is photosynthesis What organisms use this process? How it works?	Lecture Exam 2: Chapters 3-5 LO Chapter 10 & 11 due 10/17	C: 5-6 G: a-c
09/26	7: Photosynthesis 8: Cellular Respiration	How photosynthesis works? What is cellular respiration? How it works? How the two processes are interrelated	LO Chapters 12-17 Due 11/07	C: 5-7 G: a, c
10/03	8: Cellular Respiration	What is cellular respiration? How it works? How the two processes are interrelated	LO Chapters 12-17 Due 11/07 Review for Lecture Exam 3	C: 5-7 G: a-c
10/10	9: The Cell Cycle and Cellular Reproduction	What is the cell cycle? How the cycle functions? How cells reproduce and why?	Lecture Exam 3: Chapters 6-8 LO Chapters 12-17 Due 11/07	C: 5-7 G: a-c
10/17	10: Meiosis and Sexual Reproduction	Mitosis vs meiosis What is meiosis?	LO Chapters 12-17 Due 11/07	C: 6-7 G: a-c
10/24 10/24 Last day for students to withdraw without academic penalty	11: Mendelian Patterns of Inheritance 12: Molecular Biology of the Gene	Research Case Study in Forensic Science for Presentation	Research Case Study for Presentation Review for Lecture Exam 4	C: 6-7 G: a, c
10/31	Continuing work on Mendelian genetics problems 13: Regulation of Gene Expression	Genetics Gene expression Research Day for Case Study for Presentation	Lecture Exam 4: Chapters 9-13 Research Day for Case Study for Presentation All Learning objectives DUE	C:6-7 G:a-c

Date	Chapter/Lesson	Content	Tests, Assignments, & Due Dates	Competency Area
11/07	Presentations 14: Biotechnology and Genomics 15: Darwin and Evolution 16: How Populations Evolve	Forensic Case Presentations Biotechnology Darwin & the theory of evolution	Forensic Case Presentations Review for Lecture Exam 5	C: 6-7 G: a-c
11/14	Presentations 17: Speciation and Macroevolution 18: Origin and the History of Life Alternatives to the Theory of Evolution	Forensic Case Presentations Final Exam Review Speciation Darwin and the theory of evolution	Lecture Exam 5: Chapters 14-18 Forensic Case Presentations	C: 1-7 G: a-c
11/21 11/21-11/24 Thanksgiving Holidays	n/a	n/a	n/a	n/a
11/28	17: Speciation and Macroevolution 18: Origin and the History of Life Alternatives to the Theory of Evolution Presentations Review for Finals	Forensic Case Presentations Student study day Review for final Make-Up Exams	Forensic Case Presentations	C: 1-7 G: a-c

Date	Chapter/Lesson	Content	Tests, Assignments, & Due Dates	Competency Area
Last day of class 12/06 Finals 12/07 & 08	Final Lecture Exam	Final Lecture Exam -all chapters	n/a	C: 1-7 G: a-c

COMPETENCY AREAS (C)

1. Organization and Chemical Basis of Life
2. Cell Structure and Function
3. Metabolism
4. Cell Division
5. Protein Synthesis
6. Central Dogma of Biology
7. Genetics
8. Biotechnology
9. Evolutionary concepts

GENERAL CORE EDUCATIONAL COMPETENCIES (G)

- a) The ability to utilize standard written English.
- b) The ability to solve practical mathematical problems.
- c) The ability to read, analyze, and interpret information.

Case Presentation Instructions in Forensic Science:

Once your group has selected a case and the instructor has approved it, you will research the case and concentrate on organizing your information for a presentation. This presentation should consist of a total 15 slides. Your group should work out the work load and flow amongst yourselves. You should concentrate on organization and following the rubric below. The instructor will review this in class as well. A good organized guideline is as follows. This is only an example.

If your case is the "Green Mile Serial Killer," a good organization would be;

- a. Introduce the case of study
- b. What is the background of the case? What happened? Discuss details
- c. Who was involved? Was someone convicted and how?
- d. What evidence? How is each piece of evidence related to Science or Biology?
- e. How was the case solved?
- f. Was anyone charged in the case? If so, what charge(s) and how long were they sent to jail?
- g. What did we learn from the case?
- h. Conclusion

PLEASE SEE RUBRIC BELOW

Biology 1111

Group Project Rubrics (Forensic Case Study)

Students will work in small groups (2-3 people/group) and give an educational presentation on a Case Study in Forensic Science. Each member will participate in the research process, presentation and discussion.

EVALUATIONS

Case Study in Forensic Science: _____

Group Members: _____

Possible Points/Section	Criteria for each section	Instructor Comments	Points Earned
Introduction/Background (25 points possible)	The presenter(s) introduced the case study by providing: introduction, past history & background.		
The Case was addressed in detail (25 points possible)	The presenter(s) provided adequate information on the case. What actually happen (provide details) The evidence found was discussed, what happened, who was charged, and why, and how this case was solved.		
Ongoing Research (25 points possible)	The presenter(s) adequately summarized the various aspects of Science (Chemistry, Biology, Physics, & Environmental Science) & how each was related to the case (especially the disciplines in Biology.)		
Overall Presentation Quality & Group Participation (25 points)	All group members appeared to have contributed equally. The group's preparation, delivery, and use of visual aids all were both interesting and informative. The presentation was organized and professional.		
			Total Points:

Learning Objectives (LO) Grading Rubric

Category and Points Earned	Criteria and Examples
<p>Meets Expectations FULL CREDIT (100%)</p>	<p>The student provides:</p> <ol style="list-style-type: none"> 1. <u>Complete</u> and <u>thorough</u> discussion with <u>sufficient details</u> that support mastery of the material. 2. Answer that focuses on the <u>related</u> question. 3. Answer that deals <u>fully</u> with the <u>entire</u> question (some questions come in two parts, such as <u>list</u> and <u>describe...</u>). 4. Factually correct material. 5. Clear and readable answer with very few/no problems with spelling, punctuation or grammar. <p>Note: Do not copy answers from Instructor's PowerPoint, websites, etc. This is plagiarism. No credit will be given for taking someone else's work and passing off as your own.</p> <p>EXAMPLE: "Contrast internal and external respiration and explain the role of the alveolar-capillary membrane."</p> <p>STUDENT'S ANSWER:</p> <p><i>"External respiration is a pulmonary gas exchange. It is the diffusion of O2 from air in the alveoli of the lungs to the blood pulmonary capillaries and diffusion of CO2 in the opposite direction. It converts deoxygenated blood coming from the right side of the heart into oxygenated blood that returns to the left side. It occurs only in the lungs.</i></p> <p><i>Internal respiration is systemic gas exchange. It is the exchange of O2 and CO2 between systemic capillaries and tissue cells. It converts oxygenated blood into deoxygenated blood. It occurs in tissues throughout the body.</i></p> <p><i>Alveolar capillary membrane plays a role in the rate of external and internal respiration. It allows the gas exchange between blood and alveolar air depending on factors like partial pressure difference of the gases, surface area available for gas exchange, diffusion distance, and molecular weight and solubility."</i></p> <p>→ GRADING: The student dealt fully with the entire question by providing a clear and thorough contrast of internal and external respiration and completely explained the role of the alveolar-capillary membrane. The student used original work that is factually correct material. The student's answer was organized in such a way to make it clear and readable. The student's answer has few/no spelling, punctuation & grammar problems. This student receives full credit for this LO essay.</p>
<p>Below Expectations HALF CREDIT (50%)</p>	<p>The student provides:</p> <ol style="list-style-type: none"> 1. <u>Incomplete</u> discussion with <u>insufficient or missing details</u> that support mastery of the material. 2. Answer that focuses on an <u>unrelated</u> question or issue. 3. Answer that only <u>partially</u> deals with the question. 4. Some factually incorrect material. 5. Unclear answer with several problems with spelling, punctuation or grammar. <p>EXAMPLE: "Contrast internal and external respiration and explain the role of the alveolar-capillary membrane."</p> <p>STUDENT'S ANSWER:</p> <p><i>"Internal (tissue) respiration is the exchange of gases. It supplies cellular respiration and makes ATP. External (pulmonary) respiration is the exchange of gases between alveoli and blood. The alveolar capillary membrane (ACM) is composed of alveolar epithelial cells that share a basement membrane, and at times fuse with microvascular endothelial cells. The alveolar epithelium is composed of alveolar epithelial type 1 (T1) and type 2 (T2) cells."</i></p> <p>→ GRADING: The student mostly defined the terms and did not contrast them. The student described/defined alveolar-capillary membrane (ACM), but the discussion does not fully deal with what the LO essay asked, which was to explain the "role" of the ACM. Also, the ACM information was copied & pasted from an online source. This student receives half credit for this LO essay.</p>
<p>Did Not Meet Expectations NO CREDIT (0%)</p>	<p>The student provides:</p> <ol style="list-style-type: none"> 1. <u>No answer.</u> 2. <u>Incomplete</u> discussion with <u>no relevant details</u>. 3. Answer that <u>does not</u> focus on the <u>related</u> question. 4. Answer that <u>does not</u> deal with the question. 5. <u>Incorrect</u> material. 6. Unclear answer with frequent/many problems with spelling, punctuation or grammar. 7. Copied answer from Instructor's PowerPoint, websites, etc. (This is plagiarism). <p>EXAMPLE: "Contrast internal and external respiration and explain the role of the alveolar-capillary membrane."</p> <p>STUDENT'S ANSWER:</p> <p><i>"external resperrtions moves gas from blood.internal resperrations is when gas exchanges place of the blood and tissues"</i></p> <p>→ GRADING: The LO essay asks for a contrast of internal and external respiration AND to explain the role of the alveolar-capillary membrane. The student did not thoroughly contrast internal and external respiration. The student merely attempted to define the terms. The student did not correctly deal with the LO question. The student used factually incorrect material and did not explain the role of the alveolar-capillary membrane at all. The student's answer has frequent spelling, punctuation and grammar problems. This student receives no credit (0 points) for this LO essay.</p>

