BIOL 1106 Biology for Science Majors I (lab)
Credit: 3 semester credit hours

INSTRUCTOR CONTACT INFORMATION

Instructor: **Fadhili Tuguta**
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Office Location: **MPC 213**
Office Hours: **Monday-Thursday 12:00 PM– 3:00 PM**

This laboratory-based course accompanies Biology 1306, Biology for Science Majors I. Laboratory activities will reinforce the fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Study and examination of the concepts of cytology, reproduction, genetics, and scientific reasoning are included.

Pre-/Co-requisite: BIOL 1306 Biology for Science Majors

REQUIRED TEXTBOOK AND MATERIALS
Online registration instructions
Go to the web address https://connect.mheducation.com/class/f-tuguta-biol201106_2a20spring202024 and click the "register now" button.

Learning Outcomes

Upon successful completionof this course, students will:
Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipmentto collect and analyze data.
Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
Communicate effectively the results of scientific investigations.
Describe the characteristics of life.
Explain the methods of inquiry used by scientist.
Identify the basic properties of substances needed forlife.
Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
Describe the structure of cell membranes and the movementof molecules across a membrane.
Identify the substrates, products, and important chemical pathways in metabolism.
Identify the principles of inheritance and solve classical genetic problems.
Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
Describe the unity and diversity of life and the evidence for evolution through natural selection.

Daily Checklist-BIOL 1106 (LAB)

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Learning Outcomes

Critical Thinking Skills: To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
Communication Skills: To include effective development, interpretation and expression of ideas through written, oral, and visual communication
Empirical & Quantitative Skills: To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
To include the ability to connect choices, actions, and consequences to ethical decision making

Course Evaluation

Final grades will be calculated according to the following criteria:

Exams	30%
Lab Report	25%
Group project	20%
Quizzes	25%

Grading

89.5 – 100	A
79.5 – 89.4	B
69.5 – 79.4	C
59.5 – 69.4	D
59.4 and below	F

Week:	To Do:	Due Date:
Week 1 Introduction Study of Life Chemistry of Life	• Discussion Board: Introduction • Syllabus Quiz/Syllabus Acknowledgement • Register for McGraw-Hill Virtual Labs – Click on "McGraw Hill Virtual Labs" folder in Modules • **Complete the Introductory Materials:** 1. Virtual Labs Tutorial 2. Lab Safety – Hand Washing 3. Lab Safety – Personal Safety 4. Quiz: Lab Safety • Join a group for Group Project: Gene Therapy	• 08/30

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Week 2 Biological Molecules	• **Complete Module 1 "Chemical Foundations of Life" Labs** 1. Test for Sugars 2. Test for Starch 3. Test for Fat 4. Test for Protein 5. Digestion of Starch 6. Emulsification of Lipids 7. Assignment: Biochemistry 8. Quiz: Chemical Foundation of Life • Work on Group Project	• 09/06
Week 3 Cell Structure & Function	• **Module 2 "Cell Structure" Labs:** 1. Cell Structure – Plant and Animals 2. Diffusion 3. Osmosis 4. Passive & Active Transport 5. Assignment: Cells 6. Quiz: Cell Structure & Function Work on Group Project	09/13
Week 4 Cell Energy	• **Module 2 "Cell Energy" Lab:** 1. Enzyme Function • Work on Group Project	• 09/20

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	2.Module 2 "Cell Energy" Lab: 3.Cell Respiration 4.Cell Respiration – Yeast Fermentation 5.Work on Group Project 6.Module 2 "Cell Energy" Labs: Work on Group Project	
Week 5 Cell Energy	1.Photosynthetic Pigments 2.Photosynthesis – Carbon Dioxide Uptake 3Assignment: Cell Energetic 4.Quiz: Cell Energy Work on Group Project	09/27
Week 6 Midterm Exam	• Midterm Exam *(Chapters 1 – 9)* • Work on Group Project	09/27
Week 7 Cell Signal & Reproduction	• **Module 2 "Cell Reproduction" Lab:** 1. Cell Division-Mitosis 2. Assignment: Cell Division 3. Quiz Cell Division	10/04
Week 8 • **Module 3 "Heredity" Labs:**	Cell Division-Meiosis	10/11
Week 9 Mendel & Heredity Modern Inheritance	• **Module 3 "Heredity" Labs:** 1. Chromosomal Inheritance 2. Genetic Inheritance 3. Monohybrid Cross 4. Dihybrid Cross 5. X-Linked Fruit Fly Cross 6. Quiz: Cell Reproduction & Inheritance • Work on Group Lab	10/18

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Week 10 DNA Structure & Function DNA Replication	• **Module 3 "Molecular Genetics" Labs:** 1. DNA/RNA Structure 2. DNA Isolation • **DUE SOON →** Work on Group Lab	10/25

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Week 11 Genes & Proteins	• **Module 3 "Molecular Genetics" Labs:** 1. Transcription, Translation & Mutations 2. DNA Profiling • **DUE: Group Project – Gene Therapy** *Due*	11/01
Week 12 Gene Expression Biotechnology & Genomics	• **Module 3 "Molecular Genetics" Labs:** 1. Gel Electrophoresis 2. Polymerase Chain Reaction 3. Rapid Diagnostic Testing	11/08
Week 13 Biotechnology & Genomics	• Assignment: Molecular genetics • Quiz: Molecular genetics	11/15
Week 14	• **DUE: Group Project – Gene Therapy** *Due*	11/22
Week 15	• FINAL EXAM • (Chapters 10 – 16) • Congratulations!! You made it!! Celebrate ☺	11/29

COURSE POLICIES:

1. You must log into Blackboard and access this course a minimum of 3 times per week.
2. Cheating of any type will not be tolerated.
3. Late assignments will not be accepted with a deduction for late penalty. Students will receive a zero for assignments not completed.
4. If you wish to drop this course, you must drop it administratively. If you do not drop you will receive an F for the course.
5. Internet usage- students are to use proper netiquette when participating in course email,
assignment submissions and online discussions

Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document

AI STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor.

Students are reminded that all submitted work must be their own, original work unless otherwise
specified. Students should contact their instructor with any questions as to acceptable use of AI /
ChatGPT in their courses.

Disabilities Statement

The Americans with Disability Act of 1990 and Section 504, Rehabilitation Act of 1973 are federal anti-discrimination statues that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the American with Disability Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)839-2018. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu)