Course Specifications

General Information

Course name	General Biology
Course number	STBI1301
Faculty	
Department	
Course type	Major Needs
Course level	1
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - Students will explain/describe the core concepts in Biology

2 - Students will develop critical thinking and analytical abilities

3 - Students will accelerate change in education using modern STEM pedagogies

Intended Learning Outcomes

Knowledge and Understanding	* 1- Identify the main characteristics shared by living systems, describe the word cell. * 2- Describe the characteristics of living systems, and what the cell needs to be "alive. * 3- Use pH meter, describe some of the properties of water, and relate them to hydrogen bonding, explain how waters shape and structure allows for hydrogen bonding between water molecules. * 4- Categorize the biological molecules (lipids, carbohydrates, proteins, and nucleic acids) according to their structure and function, explain the role of each biological molecule in specific metabolic processes * 6- Describe the structure and function of major and subcellular organelles, distinguish prokaryotic and eukaryotic cells according to their distinguishing features, classify different cell types (plant/animal tissues) and specify the function(s) of each, describe some cell modifications that lead to adaptation to carry out specialized functions (e.g., microvilli, root hair) * 7- Describe the structural components of the cell membrane, relate the structure and composition of the cell membrane to its function, explain transport mechanisms in cells (diffusion osmosis, facilitated transport, active transport), differentiate exocytosis and endocytosis * 10- To explain animal and plant forms and functions, organization of the body, regulating the body
Professional Skills	* 5- Construct a 3D model of a plant/animal/ bacterial cell using recyclable materials, Construct a cell membrane model from indigenous or recyclable materials, * 9- Construct a cell division (mitosis, meiosis) model from indigenous or recyclable materials, describe the stages of mitosis/meiosis given 2n=6, discuss crossing over and recombination in meiosis, explain the significance or applications of mitosis/meiosis, identify disorders and diseases that result from the malfunction of the cell during the cell cycle
General Skill	* 8- Explain oxidation/reduction reactions, determine how factors such as pH, temperature, and substrate affect enzyme activity

Course Contents

1 - This subject is designed to enhance the understanding of the principles and concepts in the study of biology, particularly life processes at the cellular and molecular levels. The science of biology, the nature of molecules, the chemical building blocks of life, biology of the cell, cell structure, membranes, cell – cell interactions, how cells divide, sexual reproduction and meiosis, animal and plant forms and functions, organization of the body, regulating the body,

Teaching and Learning Methods

1 - The flipped classroom inverts the traditional learning experience

2 - Lectures are shared outside of class time for individual review as homework, and classroom time is reserved for class discussion and interactive projects

3 - By shifting passive lecture material to an at-home setting, students can review those materials in the time and place that works best for their needs.

4 - They can also access all the foundational information in advance, so when they enter the classroom, they feel prepared and ready to participate in interactive learning activities.

5 - During class, teacher-guided discussions and activities require students to put the lecture materials into practice

6 - Classroom time used for group work, comprehension tests, in-depth application of the subject matter, or open time for individual assignments and for problem-solving and collaboration.

Students Assessment

Assessment Method	TIME	MARKS
Practical exam	60min	20
Homework assignments, quizzes, and models	30min	20
Midterm exams	60min	20
Final exam	120min	40

Books and References

Recommended books	G.B.; Raven, P.H. (2021): Biology, 12th edition, McGraw-Hill Higher Education, USA.