Exploring Life (Biology 1030)

4 Credit Hours

INSTRUCTOR

This course is taught by a variety of instructors.

True Blue Core:

Scientific Literacy – Disciplinary Knowledge in Natural Sciences; B2: Inquiry and Analysis

Students will systematically explore issues, problems, and objects, and works through the collection and analysis of evidence, identification of informed conclusions, and analysis of complex topic by breaking them down.

COURSE INFORMATION

Description

Biology 1030, Exploring Life, is specifically designed for nonmajors and seeks to provide students with understanding, experiences and skills that foster informed decisions on biological issues that affect their lives. The course includes class discussions, lectures, selected readings, and laboratory investigations.

Objectives

- ***Existing Knowledge***

The student will be exposed to various sub-disciplines of biology. The student will learn terminology used in the sub-discipline as well as applications of the sub-discipline in everyday life.

- ***Science as a Process***

The student will describe the "scientific method," also recognizing that there are multiple pathways in which scientists test ideas and analyze results of controlled experiments with basic statistical calculations.

- *Data Analysis*

Data will be presented to and utilized by students to evaluate the scientific support of biological explanations.

- ***Impact of Biology***

Students will critically analyze biological and scientific information. Students will determine its relevance and utilize it to make informed decisions.

- ***Physiology***

The student will learn about the normal function of living animals with emphasis on the normal function of humans.

Topics Covered

- Introduction
- Chemistry
- Origin of Life
- Cells
- Transport
- Thermodynamics, Chemical Reactions, and Energy
- Cell Respiration
- Photosynthesis
- Cell Division
- Genetics
- Organ Systems
- Nutrition and Digestion
- Circulatory System
- Respiratory System
- Reproductive System
- Ecosystems and the Biosphere

Prerequisites and Co-requisites

There are no prerequisites, and the co-requisite is the laboratory component of the course, BIOL 1031. **The laboratory information is on the 1031 D2L site**. Students earning an A in BIOL 1030/1031 and wishing to declare a major or minor in Biology may substitute BIOL 1030/1031 for BIOL 1110/1111 toward meeting the requirement for the major or minor.

COURSE MATERIALS

Required Textbooks

What is Life: A guide to Biology with Physiology by J. Phelan, 5th edition 2021 (ISBN:9781319360719). I teach from the textbook but shop for the best price

Supplementary Materials

Laboratory Manual: BIOL 1031 *Exploring Life Laboratory Manual, 12th Edition 2021-2022* (ISBN # 978-1-5339-3598-4), by MTSU Department of Biology. I teach lab from the lab book but shop for the best price

ASSESSMENT AND GRADING

Grading is dependent on the instructor.

Exams and Assignments are dependent on the instructor

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EXAMPLE SCHEDULE

Week:	***Topic:***	***Phelan Chapter***
1	Introduction	Chap. 1
2	Chemistry	Chap. 2
3	Molecules of Life	Chap. 3
4	Cell Origins, Cells	Chap. 4
5	Cells and Transport	Chap. 4
6	Energy	Chap. 5
7	Cell Respiration	Chap. 5
8	Photosynthesis	Chap.5
9	Cell Division	Chap. 8
10	Genes and Inheritance	Chap. 9
11	Organ System	Chap. 21
12	Nutrition and Digestion	Chap. 23
13	Circulation and Respiration	Chap. 22
14	Reproduction and Development	Chap. 26
15	Ecosystems and Communities	Chap.17

Biology 1031 Generic Laboratory Syllabus

Lab Instructor: This course is taught by a variety of instructors. This is a shortened syllabus.

Biology 1031 Laboratory Course Website: (https://elearn.mtsu.edu/)

True Blue Core:
This Lab meets the True Blue Core
Scientific Literacy – Disciplinary Knowledge in Natural Sciences; B2: Inquiry and Analysis

Students will systematically explore issues, problems, and objects, and works through the collection and analysis of evidence, identification of informed conclusions, and systematic analysis of complex topics.

Assignments for lab will be posted on your D2L Biology 1031 Lab web site: https://elearn.mtsu.edu/
(1) Login with MTSU username and password
(2) Select Biology 1031 Exploring Life Lab
(3) Go to Content page and read instructions posted

Dropbox Instructions: (1) Select 'Dropbox' from menu (2) select 'add file' and browse to find your file (3) select 'upload' (4) select 'submit' – a message will let you know if you were successful uploading the file

NEED HELP with D2L? Call MTSU Help Desk (615.898.5345) – open 7am to 9pm

Laboratory Manual: BIOL 1031 *Exploring Life Laboratory Manual, 13th Edition 2023-2024* (ISBN # 978-1-5339-4704-8), by the Department of Biology. [Do NOT buy a used copy]

Textbook: *What is Life: A guide to Biology with Physiology* by J. Phelan, 5th edition 2021 (ISBN:9781319360719). Multiple copies are on reserve at Walker library – at the RESERVE desk under 'All Instructors' tab.

Goal of Laboratory: To provide laboratory investigations which allow observations of fundamental characteristics of living forms and promote an appreciation of the nature of the science of biology.

Responsibilities: In order for the laboratory experience to be meaningful, you must carefully read the investigation before you come to class. Textbook readings are also included to provide additional information in the event the topic has not yet been discussed in lecture. A detailed outline of the labs conducted each week is provided (see Biology 1031 Lab Schedule). Note: lecture class (BIOL1030) policies may differ, and lecture schedule topics will not coincide with the lab schedule.

Attendance: Attendance in the lab is required and expected. The fact that a student is absent from a lab does not, in any way, relieve that student of the responsibility for the work covered or assigned during the absence.

Late to Lab: Quizzes are given at the beginning of lab and are picked up after 10 minutes. Late arrivals will have less time to complete the quiz. Late arrivals after the first 10 minutes will not be allowed to take the quiz and will result in a grade of "0" for that quiz. Quizzes can NOT be made up. If you miss a quiz or do badly on a quiz you can NOT make up a quiz.

In-lab Credit: In-lab credit is assigned based on in-lab reports that are handed in at the end of the lab. Failure to hand in in-lab in lab will result in a grade of zero

Check your grades on D2L: Your lab grades will be recorded weekly. It is your responsibility to check your grade and report inconsistencies to the instructor. Lab grades will not be amended after grades are submitted to the lecture instructor.

Student Code of Conduct: Cheating and plagiarism will not be tolerated. Your answers on individual assignments must be your own original thoughts and where applicable, all responses should be written in your own original words. Sharing work or copying and pasting directly from sources is plagiarism! Each offense results in a grade of "0."

Equipment Information: Goggles will be available to you in lab. You will be assigned a numbered microscope with a corresponding card of instructions for proper care and use of the microscope. Use this assigned microscope throughout the semester and report any problems to your lab instructor. Bring a basic calculator to lab with you each week.

Safety Regulations: Food, beverages, tobacco products and children are not permitted in the laboratory. You must wear shoes, without holes on top that cover your feet during lab. Any student breaking any portion of the safety contract shall be asked to leave the laboratory for that day and will earn a zero for in-lab credit for that lab. Inform your lab instructor about any medical or health conditions that may affect your work in the lab. Familiarize yourself with the location of exits, light switches, first-aid kits, eye washes and fire extinguishers. Broken glassware, slides, and razor blades must be placed in the proper disposal boxes. Preserved specimens, scraps, and fluids must be disposed of properly (see lab instructor). Cell phone use is NOT permitted during lab and phones/electronic devices must put away during lab.

Masking: You may wear a mask to class. It is optional. People with symptoms, a positive test, or exposure to someone with COVID-19 should wear a mask.

Disability needs: Do you have a disability that requires assistance or accommodation, or questions related to accommodations for note takers? Speak with me immediately. Contact the Disabilities and Access Center (615-898-2783) with questions about services.

Lab Week	Date	Laboratory Activity (Schedule subject to change – check weekly with instructor)	Assignments In Lab = 50% grade. Homework/Quizzes = 50% grade.
1		Orientation to Lab **Read Unit 1, Module 1**: Scientific Investigations Read Textbook: **Ch 1**	Week 1 In-Lab Due today **Homework #1 assigned.**
2		**Read Unit 1, Module 2**: Evaluating Science Articles **Read Unit 1, Module 3:** Microscopy Read Textbook: **Ch 1**	Week 2 In-Lab Due today **Homework #1 Due** **Quiz 1**
3		**Read Unit 2, Module 1:** Biological Molecules **Read Unit 2, Module 2**: Enzymes Read Textbook: **Ch 3 (3.1 – 3.14)**	Week 3 In-Lab Due today **Quiz 2**
4		**Read Unit 2, Module 3:** The Cell **Read Unit 2, Module 4:** Osmosis & Diffusion Read Textbook: **Ch 4 (4.1 – 4.11; 4.13 – 4.22)**	Week 4 In-Lab Due today **Quiz 3**
5		**Read Unit 3** Fermentation lab Read Textbook: **Ch 5 (5.12 & 5.17)**	Week 5 In-Lab Due today **Quiz 4**
6		**Read Unit 4, Module 1**: DNA Extraction **Read Unit 4, Module 2:** Eukaryotic Cell Cycle **Read Unit 4, Module 3:** Mitosis Read Textbook: **Ch 3 (3.15 - 3.16); Ch 8 (8.1 - 8.7)**	Week 6 In-Lab Due today **Homework #2 assigned** **Quiz 5**
7		**Read Unit 4, Module 4:** Cloning/Regeneration **Read Unit 4, Module 5:** Cancer **Read Unit 4, Module 6:** Meiosis Read Textbook: **Ch 8 (8.8 – 8.13)**	Week 7 In-Lab Due today **Homework #2 Due** **Quiz 6**
8		**Read Unit 5, Module 1:** Mendelian Genetics **Read Unit 5, Module 2:** Human Genetics Read Textbook: **Ch 9 (9.1 – 9.7, 9.10; & 9.13)**	Week 8 In-Lab Due today **Quiz 7**
9		**Read Unit 5, Module 3:** Biotechnology/DNA Fingerprint Read Textbook: **Ch 7 (7.1 - 7.3, 7.10)**	Week 9 In-Lab Due today **Quiz 8**
10		**Read Unit 6, Module 1:** Animal Reproduction **Read Unit 6, Module 2:** Plant Reproduction Read Textbook: **Ch 20 (20.4 - 20.6, 20.9, 20.11 - 13); Ch 26 (26.2, 26.4 & 26.7)**	Week 10 In-Lab Due today **Homework #3 assigned.** Quiz 9
11		**Read Unit 7,** Biological Diversity animals/plants Read Textbook**: Ch 13 (13.1-13.3); Ch 14 (14.1)**	Week 11 In-lab due today **Homework #3 Due** **Quiz 10**
Lab classes have officially ended, Your Final Lab Grade will be posted on D2L			

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Textbook: *What is Life: A guide to Biology with Physiology* by J. Phelan, 5th edition 2021 (ISBN:9781319360719).

Copies of the textbook are available in the Library at the Reserves Desk – look under "ALL INSTRUCTORS"

Note: NO shoes with OPEN TOES permitted in lab; goggles and gloves will be provided. Basic function calculators should be brought to all labs. Labs are 1 hour and fifty minutes long and NO food or drink permitted in laboratories, plan accordingly.