Dissection

Course Description

In this fascinating and hands-on course, 7th-12th grade students explore the intriguing world of anatomy through dissection. Students will delve into the structures and functions of various organisms, gaining practical skills in scientific observation, classification, and analysis. Through guided dissection activities, students will investigate animals such as earthworms, grasshoppers, and crayfish. They will learn to identify external and internal body parts, understand scientific taxonomy, and appreciate the intricate complexity of life forms. Safety protocols, proper tool usage, and research skills will be emphasized. Get ready to uncover the secrets hidden beneath the surface!

Prerequisites

No extensive prior knowledge is required.

Course Objective and Learning Outcomes

By the end of this course, students will be equipped with fundamental knowledge and practical skills in dissection, enabling them to explore and understand the intricate details of the biological world, thereby fostering a deeper appreciation for science and biological organisms, and promoting critical thinking in the biological sciences.

By the end of this course students should be able to:

- Identify and describe anatomical structures of various organisms.
- Perform dissection techniques with proficiency, using appropriate tools and methods.
- Compare and contrast anatomical features across different species.
- Engage in scientific inquiry, including formulating questions, developing models, and constructing explanations based on evidence.
- Collaborate effectively with peers on dissection projects and share findings.
- Discuss ethical considerations related to dissection and the use of specimens.

Modules (Phyla):

- Annelida (Earthworm)
- Arthropoda (Crayfish, Grasshopper)
- Chordata (Leopard frog, Perch, Rat, Shark, Snake)
- Cnidaria (Jellyfish)
- Echinodermata (Starfish)
- Mollusca (Clam, Squid)

Materials

The following course materials are required:

- Laboratory notebook
    - This notebook is essential for documenting experiments, organizing thoughts, and collaborating effectively.
    - Laboratory notebooks will be provided by Bright Minds.

The following course materials are optional:

- Personal set of colored pencils
    - Colored pencils allow you to (1) create clear, detailed, and colorful diagrams of scientific concepts, making them easier to understand and remember, (2) color-code notes and charts, helping organize information visually, making it easier to review and study, and (3) highlight key concepts or important data, drawing attention to crucial information, aiding in better retention.
    - A class set of colored pencils will be provided by Bright Minds.

Assessment and Evaluation

Additional details regarding these assessments and evaluations, along with a complete course schedule, will be provided in class.

- Homework Assignments
- Laboratory Reports
- Projects and Presentations
- Quizzes and Tests
- Final Exam

Expectations

These guidelines will help create a productive and safe learning environment where everyone can thrive and succeed in their studies.

Conduct

- Respectful Behavior
    - Respect your instructor, classmates, and classroom environment.
    - Listen attentively and follow instructions promptly.
    - Maintain a positive attitude about life and learning.
    - Refrain from disruptive behavior.
- Preparedness

    - Bring necessary materials to class (e.g., textbooks, notebooks, calculators, pencils).
    - Complete assignments on time.
    - Be punctual and ready to participate.
- Communication
    - Ask questions when you need clarification.
    - Participate in class discussions respectfully.
    - Inform the instructor of any issues or concerns.
- Technology
    - Electronic devices will be used for academic purposes only.
    - Cell phones will not be needed for class and are expected to be put away for the entirety of the class period, unless stated otherwise by the instructor.
- Safety
    - Follow all safety guidelines during laboratory activities.
    - Wear appropriate clothing and closed-toe shoes to class.
    - Wear PPE (personal protective equipment) as requested by the instructor.
    - Always wear close-toed shoes to the lab.
    - No eating, drinking, or unauthorized experiments in the lab.
- Academic Integrity
    - No cheating or plagiarism.
    - Collaborate ethically on group projects.
    - Cite sources properly in reports and assignments.

Performance

- Participation
    - Engage in class activities, discussions, and labs.
    - Work cooperatively in group settings.
    - Contribute meaningful input to group projects.
- Assignments
    - Submit homework, lab reports, and projects on time.
    - Ensure all work is neat, organized, and demonstrates thorough effort.
    - Seek help if you are having difficulty with the material.
- Laboratory Skills
    - Conduct experiments with precision and accuracy.
    - Record observations and data systematically.
    - Analyze results and draw logical conclusions.

NGSS Standards Alignment

Next Generation Science Standards

Science and Engineering Practices	
Asking questions and defining problems	X
Developing and using models	
Planning and carrying out investigations	X
Analyzing and interpreting data	X
Using mathematics and computational thinking	
Constructing explanations and designing solutions	X
Engaging in argument from evidence	X
Obtaining, evaluating, and communicating information	X

Crosscutting Concepts	
Patterns	X
Cause and effect	
Scale, proportion, and quantity	
Systems and system models	X
Energy and matter	
Structure and function	X
Stability and change	

Disciplinary Core Ideas	
LS1: From Molecules to Organisms: Structures and Processes: Understanding the hierarchical structure of tissues, organs, and organ systems.	X
LS4: Biological Evolution: Unity and Diversity: Comparing anatomical features to understand evolutionary relationships. *Note: Evolutionary relationships will not be discussed in this course.*	X