



**Department of Environmental Science**

**College of Science University of**

**Salahaddin Subject: general biology-**

**Practical Course Book - (Year 1)**

**Lecturer's name shakar jamal aweez**

**Academic Year: 2021 - 2022**

## Course Book

<b>1. Course name</b>	<b>General biology (Practical)</b>
<b>2. Lecturer in charge</b>	Shakar Jamal Aweez
<b>3. Department/ College</b>	<b>Environmental Science / Science</b>
<b>4. Contact</b>	e-mail:shakar.aweez@su.edu.krd Tel:009647503159767
<b>5. Time (in hours) per week</b>	<b>Practical: 9 hrs per week.</b>
<b>6. Office hours</b>	<b>3 hours per week.</b>
<b>7. Course code</b>	
<b>8. Teacher's academic profile</b>	<ul style="list-style-type: none"> <li>I am shakar Jamal aweez. I have MSc. in Soil Pollution. I get it during 2015 at Environmental Department in College of Science-Salahaddin University. In addition, I get Bachelor during 2009 at the biology department at koya university. I participated in different training courses such as, English course and Instruction source.</li> </ul>
<b>9. Keywords</b>	<b>Cell, Tissue. Body system, animals classification, photosynthesis</b>

**10. Course overview:**

The course will cover general **biology**, which is the science that study of life and living organisms, including their structure, function, growth, evolution, distribution, and taxonomy. Biology has many sub-disciplines unified by five so- called axioms of modern biology:

1. Cells are the basic unit of life
2. Genes are the basic unit of heredity
3. New species and inherited traits are the product of evolution
4. An organism regulates its internal environment to maintain a stable and constant condition
5. Living organisms consume and transform energy

Biology as a separate science was developed in the nineteenth century as scientists discovered that organisms shared fundamental characteristics. Biology is now a standard subject of instruction at schools and universities around the world, and over a million papers are published annually in a wide array of biology and medicine journals.

**11. Course objective:**

1. Provide information on the taxonomic diversity of plants, animals and micro-

organisms.

2. Understanding the binomial system of names for species.
3. methods for detecting species presence in the field and assessing species richness, determining the abundance of the species and interpreting community similarity and change in the context of environmental change.
4. Link theory, hypothesis, methods, data and field work.

## 12. **Student's obligation**

A student must read the lecture hand-out before the class. Three classes in-between the semester is devote for examination, each student must prepare him/her good. Therefore, each student must have three exam marks till the end of the course.

An absence from classes should be excused according to the general regulations (i.e. sick leave) soon after coming back to college otherwise the absence is recorded as an unexcused one, and marks were subtracted from the final grade. For each class, we recommend the students to take the lecture hand-out before attending the classroom.

The questions on the test will comprise a mixture of quantitative calculations and qualitative responses that provide interpretation of the results obtained. These will require the student to demonstrate of knowledge of ecological theory and may require some additional reading beyond the lecture material.

## 13. **Forms of teaching**

A student must read the lab lectures hand-outs before the class. In the class, the lectures are power-point present at the first couple of hours of the class, inconspicuous points are clear on whiteboard, difficult idioms and tough words are also clear for the students. Finally a slide of question mark is present in order the students to ask the teacher about inconspicuous points from each lecture. The lectures will be presented mainly in English language as well as Arabic and Kurdish language will be used if it's necessary in the Lab.

14. Assessment scheme

Grades are break down as follow:

First exam = 20 points Second

exam = 20 points

The mean of the two examinations will be taken. The final grade at the end of the year would be 25% of practical subject. In addition to 15% on Respecting Classroom Policy and quiz:

- Mean of two practical examinations: 20%
- Weekly quiz and attendance: 15%

15. Student learning outcome:

u Students will able to use of full range of sampling techniques currently available for invertebrate and vertebrate as well as plants in a terrestrial environment, as well as they will be able to explore techniques in the quantification of biodiversity and the measurement of abundance.

n Develop field skills such as surveying and monitoring.

Develop identification skills such as bacteria, fungi, protozoa, animals and plants.

16. Course Reading List and References:

1. Hunter and Gibbs (2007), *Fundamentals of Conservation Biology*.
2. Krebs, C.J. (1999). *Ecological Methodology*. (2<sup>nd</sup> Edition). Benjamin-Cummings.
3. Sinclair, A.R.; Fryxell, T. and Caughley, G. (2006) *Wildlife Ecology, Conservation and Management*. (2<sup>nd</sup> Edition). Blackwell Publishing.

17. The Topics:	Lecturer's name
18. Practical Topics (If there is any)	
Week1:course outline, lab safety rules.  Week 3:Types of cell(prokaryotic and eukaryotic cells). Week 4: Structure of eukaryotic cells (plant and animal	<b>Teaching staff:</b> Shakar jamal aweez

cells).

Week 5: Non-living organelles of plant cells.

Week 6: examination

Week 7: Cell division (metosis)

Week 8: Cell division (meosis)

Week 9: (Homeostasis) cellular transport.

Week 10: tissue

Week 11: Measuring the rate of photosynthesis

Week 12: Second examination

Week 13: Cellular respiration

Week 14: Classifying of organisms

Week 15: Archaea and Bacteria Protists and fungi

Week 16: Vascular and Non vascular plant

Week 17: Plant response

Week 18: Invertebrates, Sponges, Cnidaria and Ctenophores Week

19: Flatworms, Roundworms and Rotifers

Week 20: Mollusca and Annelida

Week 21: Arthropoda

Week 22: Vertebrate

Week 23: Mammals, animal behaviour

Lectures, 3 hours duration.

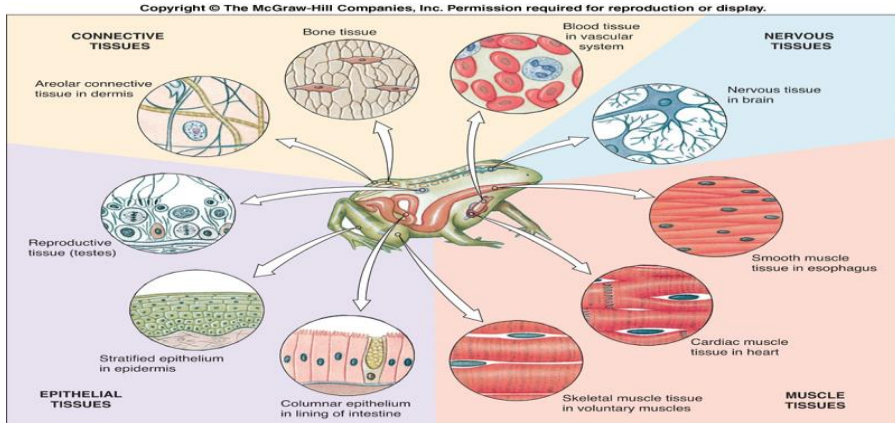
**19. Examinations:**

# Tissue

**Tissue:** An aggregation of cells and cell products of similar structure and embryonic origin that perform a common function

## Basic Tissue Types

- Epithelial
- Connective
- Muscle
- Nervous
- An aggregation of a functional unit



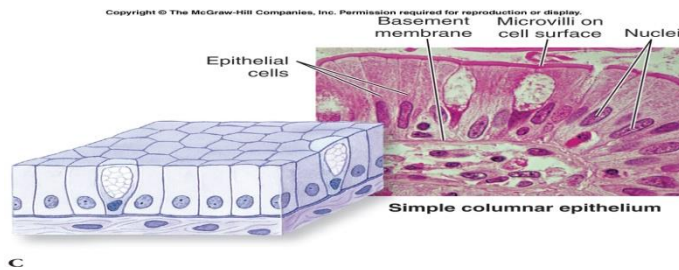
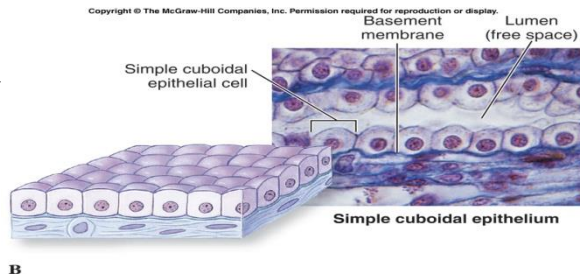
tissues organized into

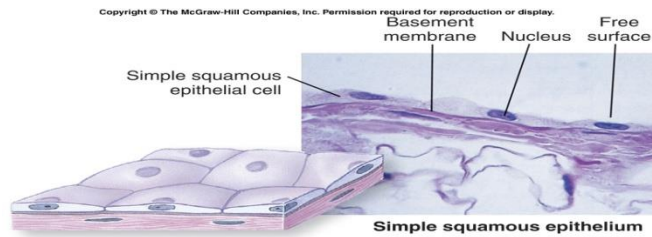
## Epithelial Tissue:

are formed by cells that cover the organ surfaces such as the surface of the skin, the airways, the reproductive tract, and the inner lining of the digestive tract. this tissue provides a barrier between the external environment and the organ it covers. In addition to this protective function, epithelial tissue may also be specialized to function in secretion, excretion and absorption. Epithelial tissue helps to protect organs from microorganisms, injury, and fluid loss

### Epithelial Types

- Simple squamous – inside blood vessels
- Simple cuboidal – lines ducts, ex. Kidney tub
- Simple columnar – lining of small intestine





**Connective Tissue:** Connective tissues are fibrous tissues. They are made up of cells separated by non-living material, which is called an extracellular matrix. This matrix can be liquid or rigid. For example, blood contains plasma as its matrix and bone's matrix is rigid. Connective tissue gives shape to organs and holds them in place. Blood, bone, tendon, ligament, adipose and areolar tissues are examples of connective tissues. One method of classifying connective tissues:

- Tissue that connects
  - Loose connective tissue
    - adipose (fat)
  - Dense connective tissue
    - cartilage
    - Bone
  - Vascular tissue
    - Erythrocytes: Red Blood Cells – carry oxygen
    - Leucocytes: White Blood Cells – part of the immune system

**Muscle Tissue :** Muscle cells form the active contractile tissue of the body. Muscle tissue functions to produce force and cause motion, either locomotion or movement within internal organs. Muscle tissue is separated into three distinct categories: smooth muscle, found in the inner linings of organs; skeletal muscle, typically attached to bones and which generates gross movement; and cardiac muscle, found in the heart where it contracts to pump blood throughout an organism.

- Smooth Muscle
  - Ex. Small intestine



- Skeletal Muscel

- Ex. Large muscles of body

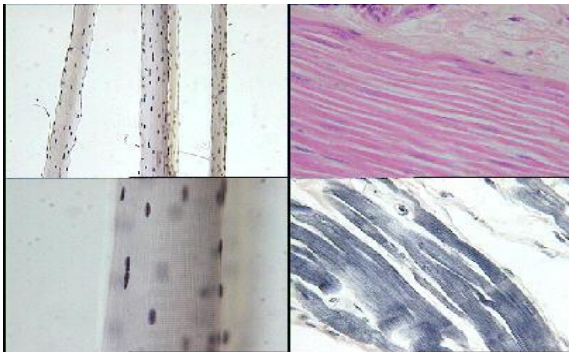
- Cardiac Muscle

- 

**Nervous Tissue:** Cells comprising the central nervous system and peripheral nervous system are classified as nervous (or neural) tissue. In the central nervous system, neural tissues form the brain and spinal cord.

- Includes Nerves, Spinal Cord, Brain

- Cells are called neurons



### **Zoology examination practice**

**Name:**

**Group:**

**Q1. Numerous types of microscope?**

**Q2. Write the name and their function of those parts of microscope?**

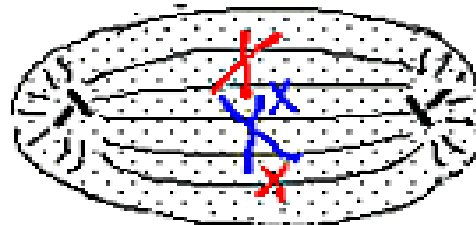
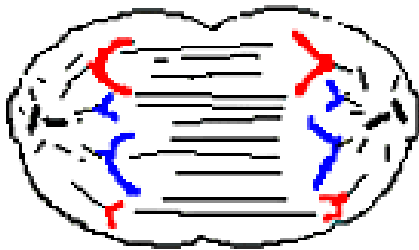


**Q3. Write the name of those phase of mitoses division?**

**Q4. Briefly write about each other?**

1-

2-



**Q5/. Write the name of tissue that cover those organ?**

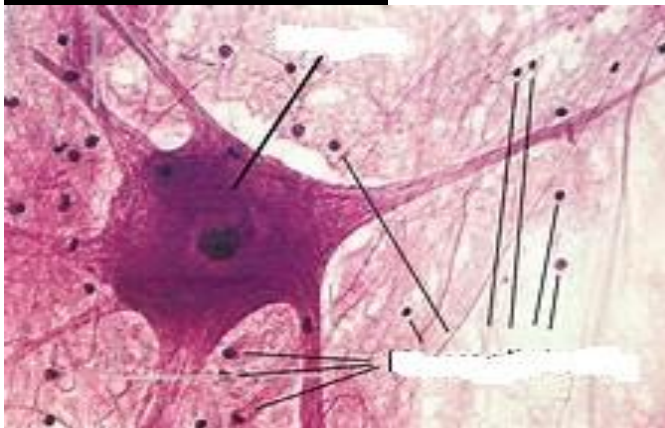
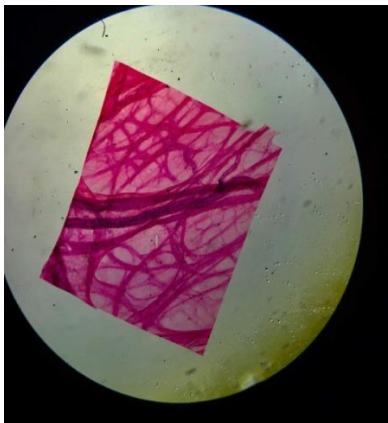
1. Skin
2. Inside blood vessels
3. Cartilage
4. Heart
5. Brain

**Q6. Rest**

**Q7. Write the name of those slide?**

**1.**

**2.**

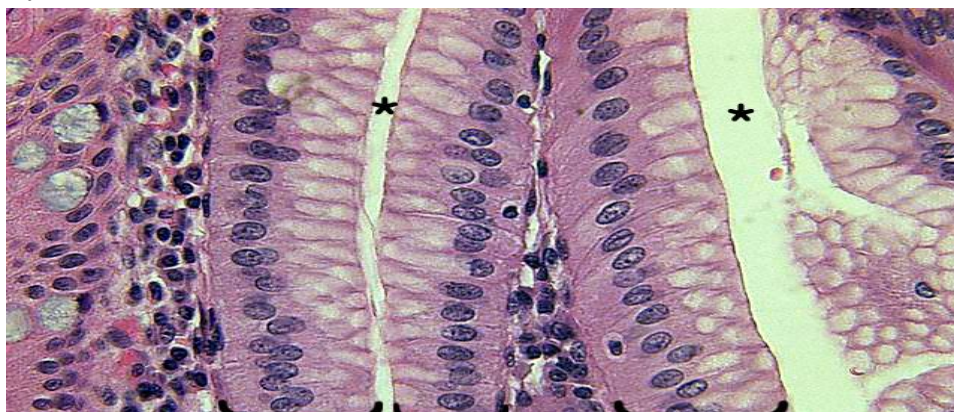




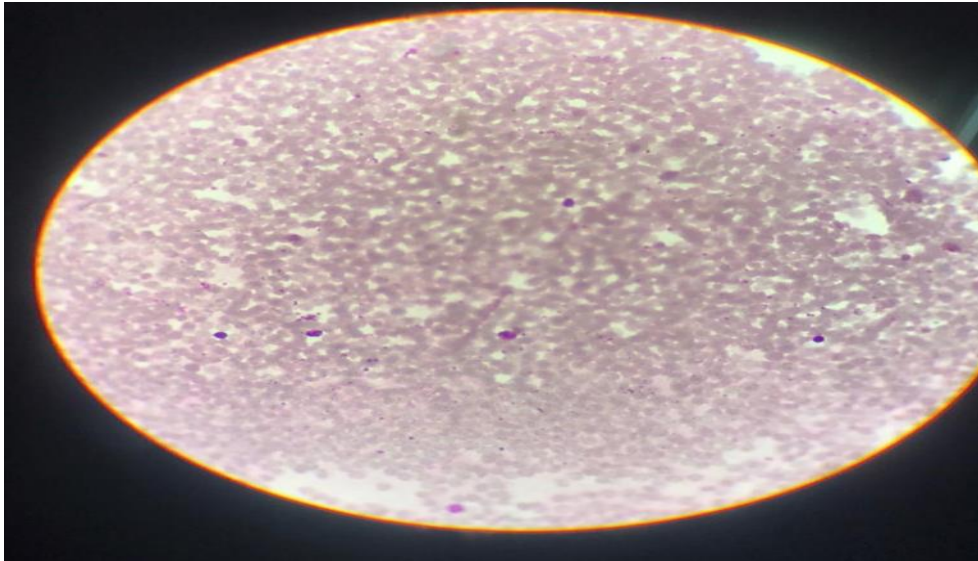
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**Q8. Write the name of the slide and lab of the following slide?**

1.



2.



**Q9. Define the following?**

- 1. Chromatid, 2. Left Atrium, 3. Body tube**

**Q10. Cardiac cycle included two parts?**