

**College of Vetrinary**

**University of Salahaddin–Erbil**

**Subject: (Cell Biology) Theory**

**Course Book – 1 Year**

**Lecturer's name: Dr. Ahmed Ibrahim Ahmed (PhD Microbiology)**

**Academic Year: 2022/ 2023**

**Course Book**

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| **1. Course name1.** | **Cell Biology** |
| **2. Lecturer in charge2.** |  **Dr. Ahmed Ibrahim Ahmed** |
| **3. Department/ College3.** | **College of Veterinary Medicine** |
| **4. Contact4.** | **e.mail: ahmed.ahmed1@su.edu.krd****Mobile tele: 07504047692** |
| **5. Time (in hours) per week5.** | **Theory: 2 hrs** |
| **6. Office hours6.** | **6 hrs** |
| **7. Course code7.** |  |
| **8. Teacher's academic 8. profile** | **I hold BVM-S(DVM) in Baghdad University 1990 and PG. Diploma in Poultry disease also I got MS.c in Microbiology in Hawler Medical University 2010 while My Ph.D. in Microbiology in Baghdad University 2017, I am Lecturer in Animal Resource Department/ Agriculture College/ Salahadin University** |
| **9. Keywords** | **Immunological determinations and Molecular Diagnosis, Gene engineering, Embryo Transfer, Nutritional biotechnology, and Modern Vaccines** |
| **10. Course overview****This lesson is designed to be an introductory lesson that will cover the recent** This course serves to introduce cell biology to undergraduate students majoring in the Biological Sciences, Cells are the simplest unit of life and serve as the building block of all multi-cellular organisms. The objective of the course is to introduce students to the complexities of structure and function of the major components of living cells. The lectures in this course will focus on cell structures and their functions. The information learned from this course will provide a solid knowledge base for future classes in Biochemistry, physiology, and Pharmacology. The lectures will include materials provided from the textbook as well as supplemental materials from outside resources, including videos and Posters |
| **11. Course objective****- Students understand and be able to describe the concepts of Cell Biology****- Students understand and are familiar with Cell Organelles Function** **- students be able to use a Microscopes to differentiated cell types****- students to be able how to extract DNA,****- Students learn how to be precise and precaution when performing a Pipetting techniques****-Students understand and are able how to Use Centrifuge for different porpose** **-Students understand how to obtain prepare skeleton of different small animal** |
| **12. Student's obligation****The students should be obligated attendance and completion of all techniques available in the laboratory as well as quizzes, monthly/final examinations, assignments, Poster and presentation** |
| **13. Forms of teaching**1- PowerPoint.2- Whiteboard.3- Pictures. 4- video5. field visit  |
| **14. Assessment scheme** * **Examination:**
* **1st exam. After 5 lectures**
* **2nd exam. After 10 lectures**
* **Repots at each end week, poster, Quiz**
* Mark distribution:

Monthly exam 50% [theoretical 15% inluded 3 %quiz 2%end week report + Practical35% Final exam 50%( theoretical 50% )= final mark 100% |
| **15. Student learning outcome:*** Students to understand the types of Cells and its structure and function information.
* Students to learn how to precisely perform techniques and precaution
* Students to be able to prepare to require material to get skeleton
* Students to be familiar with recently developed cell biology
* Students to understand how to choose a proper resourse to write poster on Cell biology
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| **16. Course Reading List and References:** Essential Cell Biology, 4 th edition, by Alberts, Bray, Hopkin, Johnson, Lewis, Raff, Roberts, and Walter |
|  Kitagawa, Y.; Matsuda, T. and Iijima. S. 1997. Animal Cell Technology: Basic and Applied Aspects. Volume 10. KLUWER ACADEMIC PUBLISHERS, NEWYORK, BOSTON, DORDRECHT, LONDON, MOSCOW. |
| **17. The Topics** | **Lecturer's name** |
| 1. Introduction and Cell Molecular biology
2. Cell growth
3. Cell Metabolism
4. Cell DNA Mutation
5. Cell genetic information
6. Cell protein synthesis
7. Cell DNA replication
8. DNA repairing

10. 1st Examination**13. 2nd Examination** | **Me at all lectures****Two hrs each lecture.** |
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| **18. Examinations** |  |
| ***1. Compositional:*** |  |
| ***Q: Write what you know about the gene cloned by the plasmid. (25 Marks)*** |  |
| —  | **You must write or drawing the figure or curve when it necessary.** |
| ***2. True or false type of exams:*** |  |
| ***Q2: Put the True (T) symbol for true sentences and Wrong(R) symbol for wrong sentences and correct the wrong sentences if found: (30 Marks)****1. The plasmid is extra DNA found only in virus.**2. Cosmid composed from plasmid and cos sequence of lambda**3. We can detect the antigen by ELISA methods.**4. Gene is the entire nucleotide sequence that is necessary for the synthesis of a functional polypeptide.**5. The Components of a Gene are only Promoter and Termination Signal.**6. mRNA: serves as the message in transcription.**7. Translation is the process of RNA guided DNA synthesis. Occurs in the Nucleus.**8. The mature mRNA is then transported out of the cytoplasm into the nucleus where it is translated.**9. Translation is the RNA guided synthesis of Proteins. Occurs mainly in the cytoplasm.**10. AUG is a start codon and makes the methionine in polypeptide chain.**11. The plasmid is extra DNA found only in virus.**12. In cloning process must cut the plasmid and target RNA with same restriction enzyme.**13. There are 64 codon, 50 of them make amino acid and 3 of them is stop codon.**14. tRNA: Joins together very big newly synthesized pieces of DNA called Okazaki fragments.**15. ELISA is the methods to detect the carbohydrates.****Answers****:**1. R. The plasmid is extra DNA found only in bacteria.**2. T.**3. T.**4. T.**5. R. The Components of a Gene are only Promoter RNA coding sequence and Termination Signal.**6. R. mRNA: serves as the message in Translation.**7. R. Translation is the process of RNA guided Protein synthesis. Occurs in the cytoplasm.**8. R. The mature mRNA is then transported out of the nucleus into the cytoplasm where it is translated.**9. T.**10. T.**11. R. The plasmid is extra DNA found only in bacteria.**12. R. In cloning process must cut the plasmid and target DNA with same restriction enzyme.**13. R. There are 64 codon, 61 of them make amino acid and 3 of them is stop codon.* |  |

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| *14.R. ligase: Joins together very big newly synthesized pieces of DNA called Okazaki fragments.**15.R. ELISA is the methods to detect the polypeptide.****3. Multiple choices:******Q3: Choosing the correct words to the following spaces:*** *(20 Marks)*Q1 A- Define the only four of the following terms*?* 1, Cytoplasm 2, Cytoskeleton 3, Plasma Membrane 4, Gap junction 5, ExocytosisQ2 choose the correct answer ?1. A chromosome consists of DNA and……………..a. Gene b. Lipids c. Proteins d. Carbohydrates2. Which of the following statements is true about the Golgi bodies?a. It is a sac-like organelle. b. It is located near the nucleus.c. It helps in carrying the particles throughout the cell. d. All of the above3. Protein synthesis takes place in which of the following cell organelle?a. Cell wall b. Ribosome c. Nucleus d. Cytoplasm4. Which of the following is known as the powerhouse of a cell?a. Mitochondria b. Cytoplasm c. Lysosome d. Nuclei5. Integral proteins are also known as…………………..a. Intrinsic proteins b. Glycosylated proteins  c. Transmembrane proteins d. Bilayer proteins*24. Histones protein rich in ------ and --------.**25. a: A and T, b: G and C, c: Lysine and Arginine, d: U and A.**26. About -------- bp of DNA wrapped around histone core particle.**27. a: 147, b: 189, c: 174, d; 137**28. Then short (10 to 12 nucleotides) RNA primers are synthesized by ---------**29. a: DNA primase, b: DNA polymerase, c: DNA Ligase, d: DNA primers.**30. Energy for synthesis comes from the removal of the two phosphates of the in coming -------.**31. a: nucleotide, b: nucleated, c: nucleosome, d: chromatin.**32. Okazaki Fragments is series of short segments on the ----------.**33. a: lagging strand, b: leading strand, c: Parental strand, d: Maternal strand.**34. tRNA: carries amino acids to the-----------.*35. *a: Ribosome, b: Cytoplasm, c: Nucleus, d: Mitochondria* |  |
| **20. Extra notes:**Another type of examinations:***Q5: Account for the following phrases: (25 Marks)****1- Using Skeleton description* *2- Posters to differentiate DNA structures need to take DNA photo.*Directorate of Quality Assurance and Accreditation به ڕێوه به رایه تی دڵنیایی جۆری و متمانه به خشین |  |
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| **19. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching; he/she has to be a professor, assistant professor, a lecturer).* |
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