Department of General Science

College of Basic Education

Salahaddin University-Erbil

Subject: Genetics

Second Semester

Course Book – *For example* (Year 2)

Dr. Gihan H. Hamad

Academic Year: 2023/2024

Course Book

1. Course name	**Genetics**
2. Lecturer in charge	**Gihan H. Hamad**
3. Department/ College	**General Science/Basic Education**
4. Contact	**e-mail:gihan.hamad@su.edu.krd** **Tel: (optional)**
5. Time (in hours) per week	**Theory: 2** **Practical: 0**
6. Office hours	**Availability of the lecturer to the student during the week**
7. Course code	
8. Teacher's academic profile	**1. B. Sc. (1998-1999).** **2. M.Sc.(2003).** **3. Assistant lecture (2003).**
9. Keywords:	**Genetics, mutation, chromosome, gene.**

10. Course overview:

Genetics is the study of genes, genetic variation, and heredity in organisms. It is an important branch in biology because heredity is vital to organisms' evolution. Gregor Mendel, a Moravian Augustinian friar working in the 19th century in Brno, was the first to study genetics scientifically.

11. Course objective:

Genetics

Studying the structure of DNA and RNA, and its types. To discuss the mechanism of DNA replication in prokaryotes and eukaryotes. To explain the protein synthesis machinery in prokaryotes and eukaryotes. Introducing to microbial genetics • Studying the regulatory mechanism of gene.

12. Student's obligation

Answer questioning and The participation of students in the class.

13. Forms of teaching

We use data-show with whiteboard and give a copy of my lecture about Genetics for all students.

14. Assessment scheme

First Examination: 30%
Report: 5%
Quiz: 5%

Final Examination: 60%

15. Student learning outcome:

By completing their studies, students earning the BS degree in Genetics are expected to have achieved the following skills and capabilities.

1. Comprehensive and detailed understanding of genetic methodology and how quantification of heritable traits in families and populations provides insight into cellular and molecular mechanisms.

2. Understanding the role of genetic mechanisms in evolution.

3. The ability to evaluate conclusions that are based on genetic data.

16. Course Reading List and References:

1. Griffiths AJ, Miller JH, Suzuki DT, Lewontin RC, Gelbart, eds. (2000). "Genetics and the Organism: Introduction". An Introduction to Genetic Analysis (7th ed.). New York: W.H. Freeman. ISBN 978-0-7167-3520-5.

2. "the definition of genetics". www.dictionary.com. Retrieved 25 October 2018.

3. Poczai P, Santiago-Blay JA (July 2022). "Themes of Biological Inheritance in Early Nineteenth Century Sheep Breeding as Revealed by J. M. Ehrenfels". Genes. 13 (8): 1311. doi:10.3390/genes13081311. PMC 9332421. PMID 35893050

4. Weiling F (July 1991). "Historical study: Johann Gregor Mendel 1822-1884". American Journal of Medical Genetics. 40 (1): 1–25, discussion 26. doi:10.1002/ajmg.1320400103. PMID 1887835

5. Poczai P, Santiago-Blay JA (October 2021). "Principles and biological concepts of heredity before Mendel". Biology Direct. 16 (1): 19. doi:10.1186/s13062-021-00308-4. PMC 8532317. PMID 34674746

6. Szabó AT, Poczai P (June 2019). "The emergence of genetics from Festetics' sheep through Mendel's peas to Bateson's chickens". Journal of Genetics. 98 (2): 63. doi:10.1007/s12041-019-1108-z. hdl:10138/324962. PMID 31204695. S2CID 174803150

7. Poczai P, Bell N, Hyvönen J (January 2014). "Imre Festetics and the Sheep Breeders' Society of Moravia: Mendel's Forgotten "Research Network"". PLOS Biology. 12 (1): e1001772. doi:10.1371/journal.pbio.1001772. PMC 3897355. PMID 24465180.

8. Poczai P (2022). Heredity Before Mendel: Festetics and the Question of Sheep's Wool in Central Europe. Boca Raton, Florida: CRC Press. p. 113. ISBN 978-1032027432. Retrieved 30 August 2022.

17. The Topics:	
Genetics 1. Introduction to Genetics 2. Mendelian Genetics i. Monohybrid Crosses ii. Dihybrid and Trihybrid Crosses iii. Mendel Modified: Incomplete Dominance, Lethal Alleles and Multipe Alleles 3. Extensions of Mendelian Genetics 4. Pedigrees and Probabilites 5. Mitosis and Meiosis 6. Gene Mutations and DNA Repair 7. Recombinant DNA Technology 8. Basic Principles of Heredity 9. Sex Determination and Sex-linked characteristics 10. Chromosome Mutations 11. Point Mutation number and Structural Mutation	
18. Practical Topics (If there is any)	
There is not practice.	

19. Examinations:

1. Compositional:

Define the following:

DNA, Autosome, Incomplete dominance.

20. Extra notes:

21. Peer review **پێداچوونەوەی هاوەڵ**