



COURSEBOOK AND INTRODUCTION

Dr. Salah Tofik Balaky

Mr. Ahmed Abdulwahab.

Course: Molecular Biotechnology

MA Code408

Semester 8: Week 1

Date 30/1/2024



Course program:

- Course title: Molecular Biotechnology 4th year.
- Number of credits 2hrs practical per week
- Lecturer: Dr. Salah Tofik Balaky and Mr. Ahmed (Lab)
- Course length 15 weeks (course program)
- Teaching methods (power point presentation)

Course Overview



Molecular biotechnology has largely helped scientists to understand the structure, function and regulation of genes.

The development of modern Molecular biotechnology is primarily based on the success of DNA technology.

Molecular Biotechnology is an interdisciplinary approach for applications to human health, agriculture, industry and environment.



Course objectives

Recombinant DNA and Technology in the production of Drugs

Recombinant DNA and Technology in the production of Enzymes and Vitamines.

Recombinant DNA and Technology in the production of Amino acids.

DNA sequencing and Transfer of genetic materials in bacteria.



Course Contents

1. Coursebook introduction, general procedure, and lab safety in DNA Manipulation.
2. DNA Extraction methods.
3. RNA Extraction Methods.
4. Restriction enzyme digestion and gel electrophoresis.
5. PCR.
6. RT-PCR.



Course Contents.....

7. Midterm Exam.

8. Gene expression analysis and cDNA generation and REST Program.

9. Proteomics and Protein Extractions and SDS Page.

10. 2D SDS Page.

11. Western Blotting.

12. Enzyme production.

13. Final Exam.



Student's obligation

- Attendance on time is an essential requirement for all students.
- The engagement of every student will be monitored, as Classroom participation is important
- Mobile phones must be turned off.



Examinations

- The exams will be held during the course.
- Theoretical and practical exams: one per semester.
- Final exam – Theoretical and practical
- Exams are composed of SCQ (single choice questions), blanks, true and false, short essays such as definitions and Diagrams



Examinations and Grading:

- Assessment grading (theory and practical):
- Exams 30%
- Quizzes and daily activity 30%
- Midterm total 60%
- Final exam: 40%.



References

- Applied Molecular Biotechnology The Next Generation of Genetic Engineering Edited by Muhammad Sarwar Khan.
- An Introduction to Molecular Biotechnology Fundamentals, Methods, and Applications, Edited by Michael Wink.
- Online Journal Articles Online Journal Articles.



Next Lecture

DNA Extraction Methods



Any questions or comments?