



COURSEBOOK AND INTRODUCTION

Dr. Salah Tofik Balaky

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 per week
- Lecturer: Dr. Salah Tofik Balaky (theory)
- Course length 15 weeks (course program)
- Teaching methods (power point presentation)



Course Overview

Molecular Biotechnology is the integrated use of biochemistry, microbiology and engineering sciences in order to achieve technological (industrial) application of the capabilities of microorganisms, cultured tissues or cells and parts thereof ”.

Thus, definition of Molecular biotechnology involves two common factors- First the use of biological agents and second, the product or service is generated for the well being of humans.



Course Objectives:

Upon successful completion of this course students will be able to understand:

- Meaning of recombinant DNA and Technology
- What are cloning vectors and how do they work
- Creation and introduction of recombinant DNA construct into the host cell.
- Applications of the production of Enzymes, Vitamines and Drugs.



Module Contents

- Introduction to Molecular Biotechnology
- Mutations and Mutagenesis
- Transcription and Translation
- Regulation of gene expression
- PCR.
- RT-PCR



Module Contents

- Recombinant DNA Technology.
- Molecular cloning in microorganisms.
- Proteomic techniques and their applications.
- Production of vaccines.
- Production of enzymes.
- Production of vitamins .
- 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.

Online Journal Articles Online Journal Articles



Next Lecture

Mutations and Mutagenesis



Next Lecture

Any questions or comments?