

Course Name: Biotechnology and Genetic Engineering

Course No. & Symbol: BCH 462

Credits: 4(2+2)

Pre-requisite: BCH 361

Time: Tuesday 1-5 PM

Course Description:

The main objective of this course is to introduce the modern and emerging approaches in Molecular Biotechnology and its applications in Biochemistry. The course is divided into four rotations, each with its own theoretical and practical sessions with emphasis on the theoretical basis of each technique, the actual working method, hands-on experience, pitfall and strengths of each technique.

Course Grading :

30 marks distributed as following:

10 marks : average of reports during the semester

5 marks : for the oral exam at the end of semester.

15 marks: for the final exam

Course Experiments include :

| Week | Title of the Experiments |
|-------------|---|
| 1 | <i>Plasmid Isolation and Purification</i> |
| 2 | <i>Competent Cells Formation and Transformation of competent Cells with DNA</i> |
| 3 | <i>Extraction and Purification of Bacterial proteins</i> |
| 4 | <i>SDS- Polyacrylamide Gel Electrophoresis</i> |
| 5 | <i>Western Blotting</i> |
| 6 | <i>ELISA</i> |
| 7 | <i>Quantitative Analysis of Antigene by Radial Immunodiffusion</i> |
| 8 | <i>Immuno-electrophoresis</i> |

References:

- Hanahan D. 1983. *Studies on transformation of Escherichia coli with plasmids.* *J. Mol. Biol.* 166:557-580.
- Southern E.M. 1975. *Detection of specific sequences among DNA fragments separated by gel electrophoresis.* *J. Mol. Biol.* 98:503-517.
- Sambrook, J., Fritsch, E.F. and Maniatis, T. (2001) *Molecular Cloning. A laboratory Manual. 3rd Edition.* Cold Spring Harbor Laboratory Press.
- Jeffrey H. Miller. *A short course in bacterial genetics.* Plainview, N.Y.: Cold Spring Harbor Laboratory Press, 1992. isbn:0879693495

Note:

All Student should be wear lab gown and gloves for safety inside the lab.