

Course contents for Advances in Protein Engineering

1. **Faculty:** FLSB
2. **Course Code:**
3. **Course Title:** Advances in Protein Engineering
4. **Number of Credits:** Two
5. **Course objectives:**

The main objective of this course is to demonstrate the advanced protein engineering techniques as a valuable tool to create highly efficient proteins for practical and therapeutic applications. It also provides novel insights on protein structure-function relationships and molecular evolution of the proteins. This course comprises class teachings, discussion on recent topics, latest paper presentations and certain hands-on experiences on DNA mutagenesis and protein purification techniques.

6. Minimum prerequisites for taking this course, if any:

Basic knowledge of Biochemistry, Molecular biology and Genetic engineering.

7. Course structure with units, if applicable:

- a. Introduction to protein engineering
- b. Protein structure and folding
- c. Protein expression in prokaryotic and eukaryotic cells
- d. Protein purification techniques
- e. Methods of mutagenesis and library creation
- f. High-throughput screening methodologies
- g. Directed laboratory evolution
- h. Rational protein designing: concepts, strategies and applications.

8. Reading suggestions:

- a. Protein Engineering: Principles and Practice by Jeffrey L. Cleland and Charles S. Craik, publisher-Wiley-Liss-A John Wiley & Sons, INC.
- b. Protein Engineering and Design by Sheldon J. Park and Jennifer R. Cochran, Publisher-CRC press.
- c. Protein Purification: Principle and Practice by Robert K. Scopes, Publisher- Springer.
- d. Latest research articles on protein engineering published in various journals

9. Evaluation:

Written Examination: 50% Marks
Presentations: 25% Marks
Quiz / Assignment: 25% Marks