



Indian Institute of Science

Department of Bioengineering



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Course Title:	Biology for Engineers
Course Code:	BE 206
Course Schedule:	AUG - DEC
Credits:	3:0
Course Coordinator:	Dr. Siddharth Jhunjunwala & Dr. Vaishnavi Ananthanarayanan
Pre-Requisites:	None
Eligibility:	Only for students enrolled in the M. Tech. or Ph.D. program at BE IISc

Description

The course provides an introduction to fundamental concepts in Biology for PhD students with little to no knowledge of Biology past 10th or 12th standard school curriculum. The course will cover the following topics: biomolecules, fundamentals of biochemistry, protein structure and function, basic molecular biology, genetics, and an introduction to the cellular architecture. A combination of theoretical concepts and basic experimental methodologies in biology will be discussed. In addition, an introduction to how cells form tissues will be covered, which includes lectures on classification of tissues. The concepts covered here will aid in the skill development required to study diverse problems in bioengineering.

Course Outcomes

Upon completion of the course, students will be able to:

1. Understand various chemical interactions between molecules in biological systems
2. Describe the structure and function of various biological molecules
3. Explain basic concepts in enzyme kinetics and protein interactions
4. Discuss different aspects of molecular biology including DNA replication, transcription and RNA translation
5. Demonstrate an understanding of Mendelian laws of inheritance
6. Describe cellular architecture
7. Understand fundamental concepts in tissue architecture

Resources

There is no prescribed textbook for this course. Course material will include lecture notes (not provided, but taken by students during the lecture), a few slide-handouts (provided), and classic papers in biology (link will be provided). In addition, the principle reference book is *Biology: concepts and connections* (Third Edition), by Campbell, Mitchell and Reece.