



Indian Institute of Science

Department of Bioengineering



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Course Title:	Drug Delivery: Principles and Applications
Course Code:	BE 210
Course Schedule:	Aug Semester
Credits:	3:0
Course Coordinator:	Prof. Rachit Agarwal
Pre-Requisites:	None
Eligibility:	Only for students enrolled in the M. Tech. or Ph.D. program at BE IISc

Description

This course will aim to introduce concepts of drug delivery for medical challenges. The course is designed to be modular, with each module focusing on the following topics: Diffusion and permeation of drugs in biological systems; Pharmacokinetics; Challenges and strategies for various drug delivery routes; Polymers; Drug delivery systems: polymer-drug conjugates, matrix based systems, reservoir and erodible systems; Nano and Micro-particles; Protein adsorption and tissue engineering; Immune response to biomaterials; Vaccine; Responsive and targeted delivery systems; Nanotoxicology and Regulatory pathways. Students are expected to work on a group project to propose a drug delivery application for an existing medical need.

Course outcomes

At the end of this course the students are expected to understand the requirements for various requirements and challenges in delivering drug for a particular application. They should also be rationally think and choose the best delivery system that is best suited for their current and future research..

Resources

1. Drug Delivery: Engineering Principles for Drug Therapy, W. Mark Saltzman, Oxford University Press, 2001
2. Drug Delivery: Fundamentals and Applications, Anya M. Hillery and Kinam Park, 2nd Edition, CRC Press, 2016