



MPHARM PHARMACEUTICAL BIOTECHNOLOGY

SEMESTER I COURSE OUTCOMES (COs)

The various courses under MPharm Pharmaceutical Biotechnology are designed to enable students to achieve the listed outcomes under each course.

PQA-MPB101T: MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

1. The theory and working of sophisticated analytical instruments for quality control of drugs and pharmaceuticals.
2. The analysis of various drugs in single and combination dosage forms.
3. Applications of various analytical techniques for drug analysis.

PBT-MPB102T: MICROBIAL AND CELLULAR BIOLOGY

1. Fundamental aspects of microbiology
2. Beneficial microorganisms to human
3. Microbial pathogenesis and epidemiology
4. Bacterial genetics

PBT-MPB103T: BIOPROCESS ENGINEERING AND TECHNOLOGY

1. Understand the basics of fermentation technology and design of fermenters
2. Scale up and scale down processing of fermentation technology
3. Bioprocessing of the industrially important microbial metabolites for the growth of
4. Use of microorganisms in industries and R & D organizations.
5. Understand fermentation process kinetics.

PBT-MPB104T: ADVANCED PHARMACEUTICAL BIOTECHNOLOGY

1. Understand and appreciate genetic engineering techniques in gene manipulation, rDNA technology and gene amplification.

2. Learn the latest technologies in the area of biotechnological products.
3. Understand the overview of pharmacogenomics.
4. Understand the concepts and newer developments in cell culturing including stem cells.
5. Learn the different stages involved in drug discovery and development.

PBT-MPB105P: PHARMACEUTICAL BIOTECHNOLOGY PRACTICAL I

1. Understand the importance of analytical techniques in identification and analysis of drugs and biological products.
2. Experiment that help in isolation, identification, estimation of microorganisms from various sources
3. Learn microbial techniques used in the analysis of pharmaceutical preparations.
4. Analyze the basic fermentation techniques of pharmaceutically important microbial products including their up and down stream process techniques.

PBT-MPL106S: SEMINAR IN PHARMACEUTICAL BIOTECHNOLOGY

1. Develop skills to gather, organize, deliver information, and defend a given topic in pharmaceutical biotechnology.
2. Learn to organize complex pharmaceutical biotechnology concepts using audio-visual aids.
3. Acquire communication and presentation skills.
4. Effectively answer the questions raised by peers and stand scientific scrutiny.
5. Develop a write-up on the subject of seminar presentation.
6. Cultivate a sense of upgradation of knowledge through self and continuous learning



MPHARM PHARMACEUTICAL BIOTECHNOLOGY

SEMESTER II COURSE OUTCOMES (COs)

The various courses under MPharm Pharmaceutical Biotechnology are designed to enable students to achieve the listed outcomes under each course.

PBT-MPB201T: PROTEINS AND PROTEIN FORMULATIONS

1. Basic structure of proteins
2. Various methods of purification of proteins
3. Peptides in drug development
4. Protein identification and characterization
5. Protein based formulations

PBT-MPB202T: IMMUNOTECHNOLOGY

1. Understand the basics of immunology and immune system.
2. Assess health problems with immunological background.
3. Develop approaches for the immune intervention of diseases.

Understand the concept of immunodiagnostics.

PBT-MPB203T: BIOINFORMATICS AND COMPUTATIONAL BIOTECHNOLOGY

1. Protein expression and its regulation in higher organisms
2. Cell communication, cell cycle and molecular basis of cancer.
3. Concepts for bioinformatics, data mining and data analysis.

Bioinformatics approaches to analyze proteins diversity and drug designing.

PBT-MPB204T: BIOLOGICAL EVALUATION AND DRUG THERAPY

1. Understand about the general concept of standardization of biologicals.

2. Understand the biological medicines in development of various diseases.
3. Learn the biological evaluation of drugs in vitro and in vivo.

Regulations governing the approval of biological products.

PBT-MPB205P: PHARMACEUTICAL BIOTECHNOLOGY PRACTICAL II

1. Impart the skills in isolation and analysis of biological macromolecules.
2. Apply experimental and analytical skills in use of modern biotechnological tools and cell culturing.
3. Learn the skill of using microorganisms to analyze antibiotics, vitamins, pharmaceutical preparations.
4. Analyze and comprehend the immunodiagnostic and pharmacokinetics of biological preparations

PBT-MPL206S: SEMINAR IN PHARMACEUTICAL BIOTECHNOLOGY

1. Develop skills to gather, organize, deliver information, and defend a given topic in pharmaceutical biotechnology.
2. Learn to organize complex pharmaceutical biotechnology concepts using audio-visual aids.
3. Acquire communication and presentation skills.
4. Effectively answer the questions raised by peers and stand scientific scrutiny.
5. Develop a write-up on the subject of seminar presentation.
6. Cultivate a sense of upgradation of knowledge through self and continuous learning



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PHA-MRM301T: RESEARCH METHODOLOGY AND BIOSTATISTICS

1. Know the various components of research design and methodology.
2. Appreciate advanced statistical techniques in solving the research problems.

MJC302P: JOURNAL CLUB IN PHARMACEUTICAL BIOTECHNOLOGY

1. Learn to understand and present complex research concepts using audio-visual aids.
2. Enhance communication and presentation skills.
3. Learn to effectively respond to the questions raised by peers.
4. Cultivate a sense of upgradation of knowledge through self and continuous learning

MPHARM – CHOICE BASED INTERDISCIPLINARY COURSES

The following electives are offered by the department to provide pharmaceutical research and development oriented knowledge in various topics such as

- PBT-001E: CLEAN ROOM CONCEPTS
- PBT-002E: BIOSIMILARS
- PBT-003E: PRINCIPLES OF GENE CLONING
- PBT-004E: TISSUE ENGINEERING