



MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY BATHINDA-151001 (PUNJAB), INDIA

(A State University Estb. by Govt. of Punjab vide Punjab Act No. 5 of 2015 and Approved u/s 2(f) & 12 (B) of UGC; Member AIU)

Department: **Pharmaceutical Sciences & Technology**

Program: **M. Pharmacy**

COs, POs, PSOs Mapping

Subject: Modern Pharmaceutical Analytical Techniques	Subject Code: <u>MPL101T</u>	Semester: <u>1st</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Chemicals and excipients						2
CO2	The analysis of various drugs in single and combination dosage forms	2		2			3
CO3	Theoretical and practical skills of then instruments			2			3

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low)- upto 30%

2. Moderate (Medium) – above 30%and upto70%

3. Substantial (High) – above 70%



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Department: **Pharmaceutical Sciences & Technology**

Program: **M. Pharmacy**

Subject: Advanced Pharmacology-I	Subject Code: <u>MPL102T</u>	Semester: <u>1st</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Discuss the pathophysiology and pharmacotherapy of certain diseases	2	2				2
CO2	Explain the mechanism of drug actions at cellular and molecular level	2	1				2
CO3	Understand the adverse effects, contraindications and clinical uses of Drugs used in treatment of diseases	2	2				3

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Department: **Pharmaceutical Sciences & Technology**

Program: **M. Pharmacy**

Subject: Pharmacological & Toxicological Screening Methods- I	Subject Code: <u>MPL103T</u>	Semester: <u>1st</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Appraise the regulations and ethical requirement for the usage of experimental animals.		2				2
CO2	Describe the various animals used in the drug discovery process and Good laboratory practices in maintenance and handling of experimental animals	2					3
CO3	Describe the various newer screening methods involved in the drug discovery process			3			3
CO4	Appreciate and correlate the preclinical data to humans	2	2				3

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Program: **M. Pharmacy**

Subject: Cellular and Molecular Pharmacology	Subject Code: <u>MPL104T</u>	Semester: <u>1st</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Explain the receptor signal transduction processes.	2					2
CO2	Explain the molecular pathways affected by drugs.			2			2
CO3	Appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process	2					3
CO4	Demonstrate molecular biology techniques as applicable for pharmacology		2				2

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Program: **M. Pharmacy**

Subject: Pharmacology Practical - I	Subject Code: <u>MPL105P</u>	Semester: <u>1st</u>
Credit: <u>6</u>	L T P <u>0 0 6</u>	Duration: <u>180 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Able to perform handling of experimental animals.				3		2
CO2	To study techniques of blood sampling, anesthesia and euthanasia of experimental animals.			1	2		2
CO3	To perform different functional observation battery tests.		2		3		1
CO4	To evaluate activity of compounds belonging to different classes of drugs.				2		2
CO5	Appraise the regulations and ethical requirement for the usage of experimental animals.				2		2
CO6	Able to understand the theoretical and practical skills of the instruments of Pharmacology laboratory.	3					2

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Subject: Advanced pharmacology- II	Subject Code: <u>MPL201T</u>	Semester: <u>2nd</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Explain the mechanism of drug actions at cellular and molecular level	2	2				2
CO2	Discuss the Pathophysiology and pharmacotherapy of certain diseases	2	1				2
CO3	Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases	2	2				3

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Subject: Pharmacological and toxicological screening Methods-II	Subject Code: MPL202T	Semester: <u>2nd</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Explain the various types of toxicity studies	1			3		3
CO2	Appreciate the importance of ethical and regulatory requirements for toxicity studies		2		2		2
CO3	Demonstrate the practical skills required to conduct the preclinical toxicity studies			2	2		3

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Subject: Principles of drug discovery	Subject Code: <u>MPL203T</u>	Semester: <u>2nd</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Explain the various stages of drug discovery		1	3			2
CO2	Appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery		2	3			2
CO3	Explain various targets for drug discovery.			3			3
CO4	Explain various lead seeking method and lead optimization		2	3			2
CO5	Appreciate the importance of the role of computer aided drug design in drug discovery		2	3			2

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Subject: Clinical Research and Pharmacovigilance	Subject Code: <u>MPL204T</u>	Semester: <u>2nd</u>
Credit: <u>4</u>	L T P <u>4 0 0</u>	Duration: <u>60 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	Explain the regulatory requirements for conducting clinical trial	2					3
CO2	Demonstrate the types of clinical trial designs						3
CO3	Explain the responsibilities of key players involved in clinical trials				3		2
CO4	Execute safety monitoring, reporting and close-out activities			2			3
CO5	Explain the principles of Pharmacovigilance				3		2
CO6	Detect new adverse drug reactions and their assessment	1					3
CO7	Perform the adverse drug reaction reporting systems and communication in Pharmacovigilance				3		3

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Subject: <u>Pharmacology Practical-II</u>	Subject Code: <u>MPL205P</u>	Semester: <u>2nd</u>
Credit: <u>6</u>	L T P <u>0 0 6</u>	Duration: <u>180 Hrs.</u>

COs	Statement	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	To appraise the regulations and ethical requirement for the usage of experimental animals.				3		3
CO2	To understand and evaluate different samples using bioassays.				3		3
CO3	To record and analyze the DRC, ECG and strength of unknown sample.			2			3
CO4	To demonstrate the practical skills required to conduct the preclinical toxicity studies.	3		2			3

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