Ph. : (0343) 243 2678/79
e-mail : bcrcp_dgp@yahoo.co.in
: www.bcrcp.ac.in

Approved by PCI & Affiliated to MAKAUT, WB and WBSCT&VE&SD
Dr. Meghnad Saha Sarani, Bidhannagar, Durgapur-713206, West Bengal (India)

PROGRAM OUTCOMES (PO): M. PHARM.

PO	KEY CONCEPT	EXPLANATION
PO1	**Research Ability**	An ability to independently carry out research and development work utilising modern tools and employing planning and problem analysis skills to solve practical problems
PO2	**Technical Communication**	An ability to write and present substantial technical documents / reports and communicate effectively
PO3	**Expertise Demonstration**	An ability to demonstrate a degree of mastery over the area of specialization in terms of pharmaceutical knowledge, learning aptitude, managerial and administrative skills, computational and informatics skills in academia, manufacturing, clinical and allied sectors
PO4	**Professional Leadership**	An ability to lead in terms of team building, planning, motivating and ethically executing professional responsibilities and establish professional identity in the society
PO5	**Environment & Sustainability**	An ability to comprehend the impact of the pharmaceutical solutions in societal and environmental contexts, and explore the knowledge of and need for sustainable development and apply the knowledge to solve such problems.

Ph. : (0343) 243 2678/79
e-mail : bcrcp_dgp@yahoo.co.in
: www.bcrcp.ac.in

Approved by PCI & Affiliated to MAKAUT, WB and WBSCT&VE&SD
Dr. Meghnad Saha Sarani, Bidhannagar, Durgapur-713206, West Bengal (India)

PROGRAM SPECIFIC OUTCOMES (PSO): INDUSTRIAL PHARMACY

PSO	KEY CONCEPT	EXPLANATION
PSO1	**F&D**	Apply the principles of drug delivery system in the development of eco-friendly and efficacious pharmaceutical dosage forms including NDDS and cosmeceuticals.
PSO2	**Unit Operations**	Able to plan, manage and carry out unit operations for environmentally sustainable manufacturing of pharmaceuticals and cosmetics.
PSO3	**Regulatory Compliance**	Able to prepare documents related to scale-up, technology transfer and filing process of IND, NDA & ANDA.
PSO4	**Modern tools**	Use of modern pharmaceutical tools, equipment, and software to conduct, analyze and interpret data as per the needs of pharmaceutical industries
PSO5	**Research Methodology**	Understand, plan and apply the concepts of research methodology in pharmaceutical product development and able to interact with scientific audience through writing in form of reports/thesis or presentations

COURSE OUTCOME
M. PHARM. INDUSTRIAL PHARMACY

NAME OF THE COURSE WITH CODE	COURSE OUTCOME
MIP 101 MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES	**MIP 101. CO1: Determine** the role of various drug excipients interaction.
	MIP 101. CO2: Apply the knowledge to undertake various analytical instrumental studies such as spectroscopic, separation science, thermal, biotechnological and crystallography-based studies
	MIP 101. CO3: Evaluate various results and interpretations of such instrumental techniques, solve any existing problems.
	MIP 101. CO4: Develop newer analytical methods by instrumental techniques.
MIP 102 PHARMACEUTICAL FORMULATION DEVELOPMENT	**MIP 102.CO1: Evaluating and analyzing** scheduled activities in a Pharmaceutical firm
	MIP 102.CO2: Interpretation of pre formulation studies of pilot batches of pharmaceutical industry.
	MIP 102.CO3: Understanding significance of dissolution and product stability.
MIP 103 NOVEL DRUG DELIVERY SYSTEMS	**MIP 103.CO1:** Able to **design** various novel drug delivery systems.
	MIP 103.CO2: Able to **select** drugs and polymers for the development of novel drug delivery systems.
	MIP 103.CO3: Able to **fabricate** targeted drug delivery systems.
	MIP 103.CO4: Able to **prepare** and **evaluate** different cosmetics and cosmeceuticals.
	MIP 103.CO5: Able to **develop** protein and peptide drug delivery systems.
MIP 104 INTELLECTUAL PROPERTY RIGHTS	**MIP 104.CO1: Understand** regulatory audit at manufacturing site and **learn** briefly about the regulatory agencies of different countries like USA, EU, Australia, South Africa, Brazil and India.
	MIP 104.CO1: Understand the importance of intellectual 2property rights and its protection, regulatory requirement for manufacturing, distribution and selling of drug in different countries.
	MIP 104.CO3: Understand what is CRO, reason for CRO, and factors to qualify as CRO.

NAME OF THE COURSE WITH CODE	COURSE OUTCOME
MIP 191 INDUSTRIAL PHARMACY PRACTICAL I	**MIP 191.CO1:** The students would be able to **identify** dosage forms and their manufacturing techniques and **practice** them
	MIP 191.CO2: The students would be able to **formulate** solid, liquid and semisolid dosage forms and **evaluate** them.
	MIP 191.CO3: The students would be able to **correlate** the theoretical knowledge with professional and practical need of pharmaceutical industry
MIP 181 SEMINAR/ASSIGNMENT	**MPT 181.CO1:** Students can able to **show** competence in identifying relevant information, defining and explaining topics under discussion.
	MPT 181.CO2: Students can able to **improve** their communication and presentation skill.
	MPT 181.CO3: Students can **engage** with works that are widely held to be significant in the field of pharmaceutical research.
MIP 201 ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS	**MIP 201.CO1:** To **develop** concepts of biopharmaceutics and ADME processes.
	MIP 201.CO2: To be able to **estimate** pharmacokinetic parameters using various mathematical models.
	MIP 201.CO3: To **understand** the application of bioavailability and bioequivalence studies in clinical studies.
	MIP 201.CO4: To be able to **develop** concepts of pharmacokinetic principles different types of drugs, biological and modified release products.
MIP-202 SCALE UP AND TECHNOLOGY TRANSFER	**MIP 202.CO1: Understand** the basics of pilot plant design and scale up different dosage forms with proper use of Materials, Methods and Machine.
	MIP 202.CO1: Understand concept of technology transfer from R&D to manufacturing site and the concept of different validation and qualification guidelines required during technology transfer.
	MIP 202.CO1: Understand hazard, its occurrence in industry and control measures.
MIP 203 PHARMACEUTICAL PRODUCTION TECHNOLOGY	**MIP 203.CO1:** Student can **apply** their knowledge to **develop** different dosage pharmaceutical forms.
	MIP 203.CO2: Students will be able to **choose** different advanced equipment and **apply** them for manufacturing various dosage forms
	MIP 203.CO3: Students will be able to **select** of different materials used in the packaging technology of pharmaceutical

NAME OF THE COURSE WITH CODE	COURSE OUTCOME
	preparations.
	MIP 203.CO4: Students can able to **formulate** parenteral production.
	MIP 203.CO5: Students will be able to **understand** and handle the scheduled activities in a Pharmaceutical firm.
MIP-204 ENTREPRENEURSHIP MANAGEMENT	**MIP 204. CO1:** The students will be able to **define** the Conceptual Framework of Entrepreneurship Management and The Role of enterprise in national and global economy
	MIP-204. CO2: Students will be able to **understand** Dynamics of motivation and concepts of entrepreneurship.
	MIP-204. CO3: Students can **compare** and **understand** Demands and challenges of Growth Strategies and Networking.
MIP 291 INDUSTRIAL PHARMACY PRACTICAL - II	**MIP 291.CO1:** The students would be able to **practice** various practical aspects of dosage form development
	MIP 291.CO2: The students would be able to **understand** and **appreciate** the influence of pharmaceutical additives on the performance of the drug products
	MIP 291.CO3: The students would be able to **formulate** and **evaluate** the quality of **s**olid, liquid and semisolid dosage forms
MIP 281 SEMINAR/ASSIGNMENT	**MPT 281. CO1:** Students can able to show competence in identifying relevant information, defining and explaining topics under discussion.
	MPT 281. CO2: Students can able to improve their communication and presentation skill.
	MPT 281. CO3: Students can engage with works that are widely held to be significant in the field of pharmaceutical research.
MPT 381 JOURNAL CLUB	**MPT 381. CO1:** To search articles from various scientific databases.
	MPT 381. CO2: To prepare a technical presentation for a small audience.
	MPT 381. CO3: To deliver a presentation and address related queries.
MPT 384 RESEARCH METHODOLOGY &	**MPT 384.CO1: Discuss** and **explain** different methods and technologies used to carry out research work**.**

NAME OF THE COURSE WITH CODE	COURSE OUTCOME
BIOSTATISTICS	**MPT 384.CO2: Assess** the basic principles and working of analytical instrument in carrying out research work.
	MPT 384.CO3: Implement the regulatory requirements and follow ethics while conducting clinical trials.
	MPT 384. CO4: Demonstrate expertise in carrying out statistical analysis of the research findings.
MPT 391 DISCUSSION/ PRESENTATION (PROPOSAL)	**MPT 391. CO1:** Students will be able to **categorize** relevant information for **defining** and **explaining** the topic for presentation.
	MPT 391. CO2: In terms of **summarizing** and organizing the whole methodology, students will be able structure their oral work and **composing** information.
	MPT 391. CO3: Build appropriate vocabularies with voice modulation, voice projection and pacing.
MPT392 RESEARCH WORK	**MPT 392.CO1: Develop** a structured presentation methodology to prepare presentation material and effective visual aids
	MPT 392. CO2: Students can able to percolate his knowledge to the audiences.
	MPT 392. CO3: The students can be able to Determine and develop personal style.
MPT 481 JOURNAL CLUB	**MPT 481. CO1:** To search articles from various scientific databases.
	MPT 481. CO2: To prepare a technical presentation for a small audience.
	MPT 481. CO3: To deliver a presentation and address related queries.
MPT 491 FINAL PRESENTATION	**MPT 491. CO1:** Students will be able to **categorize** relevant information for **defining** and **explaining** the topic for presentation.
	MPT 491. CO2: In terms of **summarizing** and organizing the whole methodology, students will be able structure their oral work and **composing** information.
	MPT 491. CO3: Students will be able to **build** appropriate vocabularies with voice modulation, voice projection and pacing.
MPT 492 RESEARCH WORK	**MPT 492. CO1:** The students would be able to **build** problem solving skills and **execute** them to research in the related fields

NAME OF THE COURSE WITH CODE	COURSE OUTCOME
	MPT 492. CO2: The students would be able to **design** plan of work, **execute** them and **interpret** the data to evaluate the work
	MPT 492. CO3: The students would be able to **write** their research reports constituting Introduction, Experimental Methods, Results & Discussion, Conclusion and References