INSTITUTE	**FACULTY OF PHARMACY**
PROGRAM	**MASTER OF PHARMACY (PHARMACEUTICS)**
SEMESTER	**2**
COURSE TITLE	**PHARMACEUTICS PRACTICAL-II**
COURSE CODE	**13MC0205**
COURSE CREDITS	**6**

Objective:

1 This course is designed to acquire practical skills in the area of advances in drug delivery systems.

Course Outcomes: After completion of this course, student will be able to:

1 Upon completion of the course, students shall be able to understand,
1. Understand formulation principles and techniques for microcapsules, Alginate beads, gelatin/albumin microspheres, liposomes/niosomes, and spherules, and their applications in drug delivery.

2 Apply advanced techniques to enhance drug formulation and performance, including solid dispersion, dissolution profiling, protein binding studies, bioavailability studies, IVIVC analysis, in vitro cell studies, DoE optimization, formulation data analysis, and computational modeling.

3 Develop and evaluate pharmaceutical products for skin and oral health, including creams, shampoo, toothpaste, and specialized formulations with herbal and chemical actives, considering formulation, stability, and efficacy.

Pre-requisite of course: Nil

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	12	0	0	20	100	30

Contents : Unit	Topics	Contact Hours
Total Hours		

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Practical-1** To study the effect of temperature change, non-solvent addition, and incompatible polymer addition in microcapsules preparation.	1

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
2	**Practical-2** Preparation and evaluation of Alginate beads.	1
3	**Practical-3** Formulation and evaluation of gelatin /albumin microspheres.	1
4	**Practical-4** Formulation and evaluation of liposomes/niosomes.	1
5	**Practical-5** Formulation and evaluation of spherules.	1
6	**Practical-6** Improvement of dissolution characteristics of the slightly soluble drug by Solid dispersion technique.	1
7	**Practical-7** Comparison of dissolution of two different marketed products /brands.	1
8	**Practical-8** Protein binding studies of a high protein-bound drug & poorly protein-bound drug.	1
9	**Practical-9** Bioavailability studies of Paracetamol in animals	1
10	**Practical-10** Pharmacokinetic and IVIVC data analysis by WinnolineR software.	1
11	**Practical-11** In vitro cell studies for permeability and metabolism.	1
12	**Practical-12** DoE Using Design Expert® Software.	1
Total Hours		**12**

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
20.00	25.00	25.00	15.00	15.00	10.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and the need of students. The teacher in addition to the conventional teaching method by the blackboard may also use any tools such as demonstration, role play, quiz, brainstorming, MOOCs etc.

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Instructional Method:

2 The internal evaluation will be done based on continuous evaluation of students in the laboratory and classroom.

3 Students will use supplementary resources such as online videos, NPTEL videos, MOOCs/ e-courses, virtual laboratories.

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