Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2019-2020

Course Handout Part II

Date: 06-Jan-2020

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : *PHA G 632*
Course Title : *Dosage Form Design*
Instructor-in-Charge :*PUNNA RAO RAVI*

Course Description:

A study of physical and chemical, pharmacological and biopharmaceutic factors involved in the design and stability of dosage forms; transport of drugs across biological membranes; absorption, distribution and elimination of drugs; formulation additives, closures and containers and sustained release dosage forms; microencapsulation; radio pharmaceuticals.

Scope and Objective of the Course:

This course deals with the preformulation studies and various physico-chemical and biopharmaceutical properties to be considered in the design of dosage forms of a drug. The mechanisms involved in the absorption and the factors affecting absorption of a drug from a dosage form are discussed. Biopharmaceutical classification system, the concepts of controlled release formulations and drug delivery systems like gastro-retentive, colon targeted, buccal/sublingual, nasal, ocular, transdermal and pulmonary drug delivery systems will also be covered.

The objective of the course is to provide the students the knowledge required to design of drug delivery systems administered through oral, buccal/sublingual, nasal, ocular, transdermal and pulmonary routes.

Textbooks:

1. Pharmaceutics: The Design and Manufacture of Medicines, ed: Michael E. Aulton. Third Edition, Churchill Livingstone (Elsevier, 2007).

Reference books

1. Physiological pharmaceutics: Barriers to drug absorption, ed: Neena Washington, Clive Washington and Clive G. Wilson. Second Edition. (Taylor and Francis, 2001)

Course Plan:

Lec.No.	Learning objectives	Topics to be covered	Chapter in the Text Book/Ref Book
1-4	Preformulation studies in design of dosage forms	Physical, Chemical and biological properties of drug and their importance in the design, manufacture & stability of	T1: Ch. 24

		dosage form.	
5-6	To understand the process of drug absorption	Drug absorption process, mechanisms involved and factors affecting the absorption of drug	T1:Ch. 20, 21, 22
7-9	To understand Biopharmaceutical Classification System (BCS).	What is BCS? Different classes of drugs. Experimental studies to classify a drug according to BCS	Lecture Notes
10-12	To understand In vitro in vivo correlation (IVIVC)	What is IVIVC? Different levels of IVIVC. Experimental studies to determine the level of correlation	Lecture Notes
13-17	To understand the design of oral drug delivery	Various physiological and anatomical factors affecting the absorption of drug through oral route. The formulation factors and manufacturing factors affecting absorption of oral formulations, Gastro-retentive drug delivery systems, Colon Targeted drug delivery systems.	R1: Ch 5, 6, 7 and Lecture Notes
18-20	To understand the design of buccal and sublingual drug delivery	Various physiological and anatomical factors affecting the absorption of drug through buccal and sublingual route. Formulations for buccal and sublingual route	R1: Ch 3 and Lecture Notes
21-23	To understand the design of nasal drug delivery	Various physiological and anatomical factors affecting the absorption of drug through nasal route. Formulations for nasal route	R1: Ch 9 and Lecture Notes
24-26	To understand the design of ocular drug delivery	Various physiological and anatomical factors affecting the absorption of drug through ocular route. Formulations for ocular route	R1: Ch 11 and Lecture Notes
27-29	To understand the design of pulmonary drug delivery	Various physiological and anatomical factors affecting the absorption of drug through pulmonary route. Formulations for pulmonary route	R1: Ch 10 and Lecture Notes
30-32	To understand the design of transdermal drug delivery	Various physiological and anatomical factors affecting the absorption of drug through transdermal route. Formulations for transdermal route. Permeability enhancement through transdermal route	R1: Ch 8 and Lecture Notes
33-38	To understand controlled release drug delivery systems (CRDDS)	What are CRDDS, disadvantages and disadvantages, different types/designs of CRDDS, factors affecting drug release from CRDDS and evaluation of CRDDS	T1: Ch 33 Lecture Notes

Evaluation Scheme:

EC No.	Evaluation component	Duration	Weightage	Date and Time	Nature of Component
1	Pre-Mid Term Assignment	60 min.	10	Will be announced in class	CB
2	Mid-Term Exam	90 min.	25	3/3 , 11:00- 12:30 PM	CB
4	Post-Mid Term Assignment	60 min	10	Will be announced in class	OB
5	Lab Sessions	-	20	Regular lab sessions	OB
6	Comprehensive	3 hrs.	35	04 / 05 AN	CB (25) +OB (10)

#CB - Closed book, OB - Open book. *: Topics, mode of evaluation and number will be announcedin the regular class or lab sessions.

Chamber Consultation Hour: To be announced in the class.

Notices: Notices pertaining to this course will be displayed **only on Pharmacy Department Notice Board.**

Make-up Policy: Make-up will be given only for **genuine** reasons. It is expected that students shall avoid misuse of this feature.

Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

INSTRUCTOR-IN-CHARGE