GUJARAT TECHNOLOGICAL UNIVERSITY

M. Pharm

SEMESTER: II

Subject Name: Phytopharmaceutical Product Development
Subject Code: MPM201T

Scope: This subject deals with the formulation and development of a phytopharmaceutical which covers preformulation aspects, various solid dosage forms, controlled drug delivery systems, novel drug delivery systems and cosmeceutical apsects.

Objectives: Upon completion of this course the student should be able to

1. Discuss and design preformulation study for a herbal product
2. Describe and compare various solid dosage forms and preparation method, as well as excipient requirements.
3. Discuss and analyse various controlled and targeted drug delivery systems for phytopharmaceuticals.
4. Describe and analyze role of various novel drug delivery systems in context to herbal products.
5. Understand and evaluate various topical preparations for phytochemicals including cosmetics.

Sr No	Course Contents	Total Hrs
1	**Dosage form consideration in preformulation studies** for solid , liquid, topical and other herbal formulations etc., Challenges in phytopharmaceuticals product development compared to modern medicines. **Preformulation studies with respect to herbal pharmaceuticals:** Molecular level, particulate level and bulk level properties of herbs and additives, solubilization techniques, drug –excipients compatibility studies, protocol for preformulation studies	14
2	**Solid dosage forms:** Recent advances in design of different solid dosage forms like tablet capsule, pellets granules etc. Excipients and Polymers Excipients types, Polymer type and their functionalities & role in herbal formulation development. Study of procedures like granulation, compression, coating, fluidization, lyophilization etc in context of herbal formulation and critical factors	10
3	**Concepts and systems design for controlled delivery:** Rate	12

	preprogrammed, Activation modulated and Feedback regulated drug delivery systems **Targeted drug delivery:** General concepts of active and passive targeting to different organs like skin, brain, eye, lung , stomach etc. *Design of* different types of controlled release therapeutic systems, safety & toxicity evaluation.	
4	**Herbal Novel Drug Delivery Systems:** Novel herbal formulations like microspheres, liposomes, phytosomes, niosomes, proniosomes, transferosomes, nanogels, emulgels, nanosuspensions, herbasomes, ethosomes. Formulation and characterization studies	12
5	Preparation and evaluation of topical preparations containing actives of herbal and natural origin: Hair growth formulations, Shampoos, Conditioners, Colorants & hair oils, Fairness formulations, vanishing & foundation creams, anti-sun burn preparations, moisturizing creams, deodorant, formulations for skin disorders.	12

REFERENCES:

1. Herbal Drugs Industry by R.D. Chaudhary
2. Novel drug delivery systems by Y W Chein
3. Controlled and novel drug delivery by N K Jain
4. Control drug delivery – concepts and advances by S P Vyas, and R K khar
5. Pharmaceutical Formulation The Science and Technology of Dosage Forms Edited by Geoffrey D. Tovey
6. Pharmaceutical Dosage Forms and Drug Delivery Third Edition: Revised and Expanded, by Ram I. Mahato and Ajit S. Narang, CRC press
7. Essentials of Pharmaceutical Preformulation by Simon Gaisford and Mark Saunders
8. Handbook of Preformulation Chemical, Biological, and Botanical Drugs Sarfaraz K. Niaz