PS506: GREEN CHEMISTRY
(Open Elective - I)

B.Pharm. III Year I Sem. **L T/P/ C**
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Course Objectives: To familiarize students about environment benign chemical synthesis. To make students familiarize with principles and importance of various green chemical synthesis. To provide adequate knowledge regarding green reactions, green solvents and other alternative green approaches. To impart adequate information regarding environment pollution, contributing factors and the concerns.

Course Outcomes: Upon completion of this course, the students should be able to: Explain the environment pollution factors. Understand the different greener approaches along with their principles.

UNIT - I
Introduction to green chemistry
Inception of green chemistry: history and development.
Principles of green chemistry: description with examples.
Synthetic approaches of green chemistry: in water, solvent less, microwave, ultrasonic, catalytic and synthesis.

UNIT - II
In water and solvent less organic reactions
In water reactions: principle and process involved in the Michael reaction and Wartz synthesis
Solvent less organic synthesis:
Alternative solvents used in green chemistry strategies

UNIT - III
Microwave and ultrasonic mediated reactions
Microwave reactions: principles and process involved in the Fries rearrangement, Diels Alder reaction and Metal halide reduction
Ultrasonic reaction: principle and process involved in the Strecker and Reformatsky reactions

UNIT - IV
Catalytic and solid supported reactions
Catalytic reactions: principle and process involved in the reactions catalyzed by metal catalysts, ionic liquids (Knovenegel ondensatin) and bio catalysts (Villeger reaction)
Solid supported reactions: principles and process
Alternative reagents used in green chemistry strategies.

UNIT - V
Greener synthesis of pharmaceuticals: Principle and procedure of the following synthesis
Nicotinic acid, Ibuprofen, paracetamol, Aspirin
Future trends in Green chemistry

REFERENCE BOOKS

1. Paul T Anastas, John Charles Warmer. Green chemistry: theory and practice. Oxford university Press, 1988
2. Alluwalia V.K,Green chemistry : environmentally benign reactions. 2nd edn,Ane Books Pvt Ltd, New Delhi, 2012
3. Alluwalia V.K, M. Kidwai, New trends in green chemistry. 2nd edn, Anamaya Publishers, New delhi, 2004.