



Polymers and Petrochemicals

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
CHM	428	Polymers and Petrochemicals	2	2	0	0	CHM 325

Objectives:

- This Course is designed to educate and train students in the fundamentals of polymer's chemistry and petrochemicals as well as providing hands on experience and opportunities to develop transferable skills through the training course.
- The course provides an ideal platform for students who aim to pursue their career in academia or industry. Description of the physical properties of different polymers will be one of the outcome, and combination with industrial process.

Syllabus:

An Introduction to Polymer Chemistry: Types of Polymers and Polymerizations, Nomenclature of Polymers, Applications of Polymers.

Step Polymerization: Reactivity of Functional Groups, Crosslinking, Methods of Synthesizing copolymers, Utility of copolymerization, Enzymatic polymerizations.

Radical Chain Polymerization: Nature of Radical Chain Polymerization, Initiation, Course of Polymerization, Molecular Weight Distribution, Polymerization of Dienes.

Reactions of Polymers: Graft Copolymers, Radical Graft Polymerization, Vinyl Macromonomers, Living Radical Polymerization, Anionic Graft Polymerization, Cationic Graft Polymerization, Block Copolymers.

Textbook:

Principles of Polymerization , George Odian, , John Wiley and sons Inc. Wiley Interscience, Fourt Edition, 2004, ISBN 0471-27400-3.

References:

1. Harry R. Allcock, Frederick W. Lampe and James E. Mark, Contemporary Polymer Chemistry, 3rd ed. Prentice-Hall (2003).
2. Fred W. Billmeyer, Textbook of Polymer Science, 3rd ed. Wiley-Interscience (1984).
3. Joel R. Fried, Polymer Science and Technology, 2nd ed. Prentice-Hall (2003).
4. Petr Munk and Tejraj M. Aminabhavi, Introduction to Macromolecular Science, 2nd ed. John Wiley and Sons (2002).

