

# GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: I

Plastic Engineering

Subject Name: **POLYMER BLENDS & ALLOYS (Major Elective-I)**

Sr.No	Course content
1.	Introduction to polymer blends & alloys – Definitions and nomenclature – reasons for making polymer blend – how to select blend components – preparation of alloys & blends – economy of blending.
2.	<b>Compatibilization and Reactive Blending:</b>  <b>Introduction</b> – compatibilization mechanisms – compatibilization methods – compatibilization by addition of copolymer reactive blending – future trends..
3.	<b>Rheology of Polymer Blends - Introduction –</b>  Miscibility and flow behaviour of polymer blends – Immiscible blends – Flow behaviour of immiscible and miscible polymer blends. Complex flow – processing of polymer blends – flow through a contraction.
4.	<b>Techniques for Studying Blends and Alloys –</b>  light microscopy – the microscope, micro structure – scanning electron microscopy – specimen preparation – application to polymer blends. Transmission electron microscopy - specimen preparation – application to polymer blends.
5.	<b>Thermal Analysis –</b>  Differential thermal analysis, Differential scanning calorimeter – Glass transition temperature.  <b>Other Techniques:</b>  Light scattering – X-ray scattering – spectroscopy

## Reference Books:

1. L.A. Utracki, Commercial Polymer Blends, Chapman & Hall, London, 1998.
2. R.P. Singh, C.K. Das, S.K. Mustafi, Polymer Blends and Alloys an Overview, Asian Books Pvt. Ltd., New Delhi, 2002.
3. R. Paul & Seymour Newman, Polymer Blends, Vol. 1 & 2, Academic Press, New York, 1978.