

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: I

Plastic Engineering

Subject Name: **Bio-Degradable Plastics (Minor Elective-I)**

Sr.No	Course content
1.	Introduction – Chemistry and biochemistry of polymer degradation – Enzymes chemical degradation initiates biodegradation – Hydrolysis of synthetic biodegradable polymers.
2.	Starch filled plastic – thermoplastic starch – starch based materials in the market – other additives for biodegradation.
3.	Photo-biodegradable plastics – need for degradable polymers – technical requirements of degradable polymers – Agricultural plastics – Packaging plastics – Control of biodegradation by means of antioxidants.
4.	Test methods and standards for bio-degradable plastics – Criteria used in evaluation of biodegradable plastics – Description of current test methods – Scanning test for ready biodegradability – Test for inherent biodegradability – Test for simulation studies – Other methods for assessing polymer biodegradability.
5.	Recycling technology for biodegradable plastics – Conventional recycling – Degradable complicate recycling – reprocessing polyethylene starch/film scrap – Economics in in-plant recycling.

Reference Books:

1. G.J.L. Griffin, Chemistry and Technology of Biodegradable Polymers, Blackie Academic Professional, 1994.
2. Gerald Scott & Dan Gilad, Degradable Polymers-Principles & Applications, Chapman & Hall, 1995.
3. Handbook of Biodegradable polymers – Abraham J. Domb, Joseph Kost & David M. Wiseman.
4. Polymer Photodegradation – Mechanism and experimental methods – Jain F. Rabek.