5th Semester	RPL5C001	Plastics Processing Technology	L-T-P 3-0-0	3 Credits

Module I:Injection Moulding(8 hours)

Introduction to Injection moulding –Principles- Types of Injection moulding-Process parameters - Mould cycle – Moulding Machine–Specifications - Construction and maintenance –Mould setup- machine start-up and shut down-process troubleshooting**.**

Module II:Extrusion Process(8 hours)

Basic principles of extrusion – Types of extruders, extruder parts-polymer flow mechanism, die entry effects and exit instabilities-melt fracture & Bambooing. Factors affecting the output of an extruder, process variables in extrusion-downstream equipment for the production of films, blown film, cast film/slot film, BO film, co extruded film. Tube/pipe-sizing take off equipment, extrusion coating, wire & cable covering

Module III: Blow Moulding & Rotational Moulding (9 hours)

Injection and extrusion blow moulding processes, accumulation blow moulding, processing parameters- materials requirements-blow moulding machine features and operation -faults, causes and remedies-parison programming, blow moulding of difficult articles like fuel tanks, odd shaped containers with handles, limitation in blow moulding.
Introduction-principle-process-machinery used-materials-moulds process parameters-merits & demerits of rotational molding.
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Module IV: Calendering & Thermoforming(8 hours)

Calendaring - principle and process description- types of calendar units -design of calendar roll, Heating and temp control, roll crown, roll crossing and roll bending - calendaring sheets and films, embossing, coating and lamination by calendar, comparison between calendaring and extrusion.
Basic principles and types of thermoforming processes, Thermoforming moulds and processing parameters—faults, causes and remedies.

Module V: Compression & Transfer Moulding (7 hours)
Introduction to Compression moulding- principles - Bulk factor and flow properties moulding materials, process variables-Curing time- Mould temperature and Pressure requirements-preforms and preheating- common moulding faults and their correction-Finishing of moulded product.

Fundamental principles of transfer moulding-advantages over compression moulding Equipment used- pressures requirements -Line pressures- Injection ram pressure clamping-Heating requirements-Moulding faults - causes and remedies

Books:

[1] Irvin I. Rubin,Injection Molding Theory & Practice, Wiley-Interscience.

[2] D.V. Rosato & M.G. Rosato,Injection Molding Hand Book Third Ed, Kluwer academic publishers.

A. Brent Strong, Plastics: Material & Processing, Third Ed., Prentice Hall.