SEMESTER: S7

POLYMERS IN CONSTRUCTION

Course Code	PEPOT758	CIE Marks	40
Teaching Hours/Week (L: T:P: R)	3:0:0:0	ESE Marks	60
Credits	3	Exam Hours	2 Hrs. 30 Min.
Prerequisites (if any)	None	Course Type	Theory

Course Objectives:

1. To impart the basic concepts of polymers in construction.

2. Develop knowledge on recent advances in construction using polymers.

SYLLABUS

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Module No.	Syllabus Description	Contact Hours
1	Plastics in Building and Construction, structural, secondary structural and Non-structural uses, Sand witch panel, piping, cables, cladding and profiles, insulation, sealant, gaskets and adhesives. Roofingand flooring systems, glazing and wall covering. Polymer coating, Materials, solvent based coatings, water-based coatings, curing techniques, Powder coatings, In tumescent coatings.	9
2	Polymers in civil engineering, geotechnical, roadways, pavements, drainage and erosion control systems, polymer concrete, FRP composites, bond strength models, strengthening of RC beams, RCslabs, RC columns, masonrywall and infills strengthening	9
3	Polymer foams, foam manufacturing technology, Thermoplastic foams, thermosetting foams, Special applications, ageing studies.	9
4	Polymer in repair, Injection grouting, patching, coating, sustainable construction, eco-design, recycling of scraps, flammability of polymer foams and composites.	9

Course Assessment Method

(CIE: 40 marks, ESE: 60 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Assignment/ Microproject	Internal Examination-1 (Written)	Internal Examination- 2 (Written)	Total
5	15	10	10	40

End Semester Examination Marks (ESE)

In Part A, all questions need to be answered and in Part B, each student can choose any one full question out of two questions

Part A	Part B	Total
• 2 Questions from each module. • Total of 8 Questions, each carrying 3 marks **(8x3 =24marks)**	• Each question carries 9 marks. • Two questions will be given from each module, out of which 1 question should be answered. • Each question can have a maximum of 3 sub divisions. **(4x9 = 36 marks)**	**60**

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Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Define the concepts of powder coating, sand witch panels, pipes and cables.	**K1**
CO2	Illustrate the properties of polymer sealants, gaskets and adhesives	**K2**
CO3	Develop the design of FRP composites and to strengthen RC slabs.	**K3, K6**
CO4	Analyse the role of polymers in sustainable development and ecology.	**K4**
CO5	Determine the polymer systems for various constructional requirements.	**K5**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

CO-PO Mapping Table:

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	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**2**	**1**									
CO2	**3**	**3**		**1**								
CO3	**3**	**3**			**2**							
CO4	**3**	**2**				**2**	**3**	**3**		**2**		**1**
CO5	**1**	**2**			**2**				**1**			

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Polymers in construction	Guneri Akovali	Rapra	2005
2	Text book of polymer Science	F W Billmeyer	Wiley international	1984
3	Polymers and Polymers in construction	R L Hollowa Thomas Telford	Rapra	1990

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Polymer composites in construction. 2000.	Halliwell, Sue M.	CRC,	2000.
2	Construction materials: Types, uses and applications	Hornbostel, Caleb.	John Wiley & Sons,	1991.
3	Polymers in Construction	Guneri Akoveli	Rapra review report	2004.

Video Links (NPTEL, SWAYAM…)	
Module	**Link ID**
1	https://www.humix.com/video/Heq3mzXBGju
2	https://www.humix.com/video/ac4dc5a933df62144aa840626a97908daf1e846b10cb55b884bc21d39253efd6
3	https://www.humix.com/video/TO4UejWBbWu
4	https://youtu.be/Y-B6g7nz4wU

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