

7th Semester	RBT7D004	Tissue Engineering	L-T-P 3-0-0	3 Credits
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Module-I:**(10 hours)**

Introduction to tissue engineering, Cells as therapeutic Agents with examples, Cell numbers and growth rates. current scope of development; use in therapeutics, cells as therapeutic agents, cell numbers and growth rates, measurement of cell characteristics morphology, number viability, motility and functions. Measurement of tissue characteristics, appearance, cellular component, ECM component, mechanical measurements and physical properties.

Module-II:**(10 hours)**

Tissue types and Tissue components, Tissue repair, Engineering wound healing and sequence of events. Basic wound healing Applications of growth factors: GF/angiogenesis, Basic properties, Cell-Matrix & Cell-Cell Interactions, telomeres and Self renewal, Control of cell migration in tissue engineering

Module-III:**(10 hours)**

Biomaterials: Properties of biomaterials, Surface, bulk, mechanical and biological properties. Scaffolds & tissue engineering, Types of biomaterials, biological and synthetic materials, Biopolymers, Applications of biomaterials, Modifications of Biomaterials, Role of Nanotechnology.

Books:

- [1] Bernhard O. Palsson, Sangeeta N. Bhatia, "Tissue Engineering" Pearson Publishers 2009.
- [2] Meyer, U.; Meyer, Th.; Handschel, J.; Wiesmann, H.P. Fundamentals of Tissue Engineering and Regenerative Medicine. 2009.
- [3] "Nanotechnology and Tissue engineering - The Scaffold", Cato T. Laurencin, Lakshmi S. Nair, CRC Press.