



**Course Title: Biomaterial Sciences**

**Course Code: LS205**

**Credit Units: 02**

L	T	P/S	Lab	TOTAL CREDIT UNITS
02	0	0	0	02

**Course Objectives:**

This course is designed to introduce students to the various classes of biomaterials in use and their application in selected subspecialties of medicine.

**Pre-requisites: Chemistry-I &II, Electrical sciences, Animal sciences-I**

**Student Learning Outcomes:**

- The student will be able to:
- distinguish various classes of biomaterials on the basis of properties, structure and function.
  - classify different types of biomaterials
  - explain interactions of biomaterials with biological system
  - discuss biocompatibility of biomaterials
  - describe the application of biomaterials in biological system.

**Course Contents/Syllabus- Theory:**

	Weightage (%)
<b>Module I</b>	<b>30</b>
<b>Introduction:</b>  Classification, Structure & Properties of Biomaterial	
<b>Module II</b>	<b>35</b>
<b>Interaction of different classes of material with biological system</b>  <b>Polymers used in biological systems, Hydrogels and others</b>	

Biocompatibility of biomaterials and degradation.	
<b>Module III</b>	<b>35</b>
<b>Biomaterial applications</b> <b>Nanobiomaterials and their applications</b>	

**Pedagogy for Course Delivery:**

Lectures:20

Tutorial:8

Presentation/ Seminar: 2

Class Test: 2

Total: 30

**Text & References:**

**Text Books:**

1. Biomaterials Science: An introduction to materials in Medicine; Buddy D. Ratner et al. 2012, 3rd edition, ISBN-13: 978-0123746269
2. Introduction to Biomaterials: Basic Theory with Engineering Applications; C. M. Agrawal, J. L. Ong, Mark R. Appleford, Gopinath Mani, 2014, Cambridge University Press, 07-Nov-2013, ISBN: 978-0-521-11690-9.
3. Biomaterials: PRINCIPLES and APPLICATIONS; JOON B. PARK, JOSEPH D. BRONZINO, CRC Press, ISBN 0-8493-1491-7

**Any other Study Material:**

- Research Papers