Biomaterials

Details of course:-

Course Title	Course Structure			Pre-Requisite
	L	T	P	
Biomaterials (BT334)	3	1	0	NIL

Course Objective:

To study the structure and characteristics of different types of biomaterials of natural and synthetic origin. This course will give an idea on the effective uses of these materials in medical science.

Course Outcome (CO):

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2. Differentiate various metallic implant material like stainless steel Co-based alloys,Ti-based alloys and their corrosion behaviour

3. Distinguish between different types of bioceramics, composite implant materials and learning mechanics of improvement of properties by incorporating different elements.

4. Classify of different polymeric implant material, and describing use of biodegradable polymers for medical purposes

5. Interret the biocompatibility of biomaterials by methods like blood compatibility Toxicity tests and In-vitro and In-vivo testing

S.No.	Content	Contact Hours
1	**Introduction:** Definition, requirements of biomaterials, Comparison of properties of some common biomaterials, effects of physiological fluid, biological responses, physical and surface properties.	8
2	**Metallic implant materials:** Stainless steel- Co-based alloys- Ti and Ti-based alloys, corrosion behaviour, Hard tissue and soft tissue replacement implant.	8
3	**Ceramic and composite implant materials:** Types of bioceramics, Importance of wear resistance, Composite implant materials- Mechanics of improvement of properties by incorporating different elements.	8
4	**Polymeric implant materials:** Classification, Viscoelastic behaviour, Biodegradable polymers for medical purposes, Synthetic polymeric membranes and their biological applications.	9