

**B.Tech. Biotechnology: Semester-VII**  
**BBT 704: BIOSENSORS**

Teaching Scheme	Examination Scheme
Lectures: 3 hrs/Week	Class Test -12 Marks
Tutorials: 1 hr/Week	Teachers Assessment – 6 Marks
Credits: 4	Attendance – 12 Marks
	End Semester Exam – 70 marks

### Course Objective

The course aims to build on previous study and, through team-based research, students have an idea of biosensors and their principle and working mechanism.

### Course Learning Outcomes

After completing the course, the student shall be able to:

- CO1: Biosensors and its types and their applications.
- CO2: Demonstrate knowledge and understanding of biosensors in medical biotechnology.
- CO3: Describe in detail the essential features of biosensors in molecular biology and biotechnology.

#### Unit 1: Biosensors

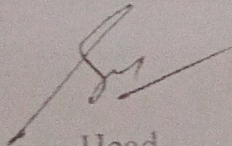
Definition, History, Principle and types of biosensors. Properties of biosensors, Design features of Biosensors, The Biological Component, Signal Transduction: Amperometric Biosensors, Potentiometric Biosensors, Detection of H<sup>+</sup> cation, Detections of NH<sub>4</sub><sup>+</sup> cation, Detection of CN<sup>-</sup> anion, Calorimetric biosensors, Optical Biosensors, Measuring the change in light reflectance, Measuring luminescence, Pizo-electric biosensors, Immunosensors,

#### Unit 2: Commercial examples of biosensors.

Biosensors markets- Opportunities and obstacles. Introduction to MEMS (Micro-Electro-Mechanical Systems). Applications of MEMS in Biotechnology and medicine. Fabricating MEMS and Nanotechnology


#### Unit 3: Biomedical sensors

Sensors and transducers: an overview, measurement systems, Classification of Biomedical sensors and transducers, who do we need Biomedical sensors and Transducers? Important Design considerations and system calibration, the future of Biosensors and Transducers, Sensing Layer: The importance of computers in sensors and Transducer technology. Biosensors and Transducers in modern health care solutions.




Head

Department of Biotechnology  
Invertis University, Bareilly (U.P.)



Dean  
Faculty of Science  
Invertis University, Bareilly (U.P.)



Registrar  
Invertis University  
Bareilly