



Sample Brief Course Description

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| Course title | Biosensors and measurements |
| Course code | BME 320 |
| College | Engineering |
| Department / Program | Biomedical Engineering |
| Year/ Level | 4/10 |
| Course Type | <p>A.</p> <p><input type="checkbox"/> University</p> <p><input type="checkbox"/> College</p> <p><input checked="" type="checkbox"/> Department</p> <p><input type="checkbox"/> Others</p> <p>b.</p> <p><input checked="" type="checkbox"/> Required</p> <p><input type="checkbox"/> Elective</p> |
| Credited Hours | 6 |
| Contact Hours | (LT: 4, LB: 4, TR: 0) |
| Pre-requisites (if any) | BME 240 ECE 242 |
| Co-requisites (if any) | --- |
| Course description | Topics include Fundamentals of medical instrumentations (sources of biomedical signals, basic medical instrumentation system, and performance of requirements of medical instrumentation system). Bioelectric signals and electrodes (origin of bioelectric signals, recording electrodes, electrodes for ECG, EEG, EMG, electrical conductivity of electrodes, Microelectrodes). Physiological Transducers (Definition, classification, performance characteristics, |



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| | Displacement, position and motion transducers, pressure transducer, temperature transducer, photoelectric transducer, optical fiber sensors and biosensors. |
| Course Main Objectives | <ol style="list-style-type: none">1. To introduce the field of medical sensors and an in depth and quantitative view of device design and performance analysis.2. To provide knowledge on the principle and operation of different medical transducers.3. To introduce the application of sensors and transducers in the physiological parameter measuring system. |
| Learning Outcomes | Knowledge and Understanding: <ol style="list-style-type: none">1. Identify the calibration procedure for the basic instruments involved in physiological parameter measurement.2. Demonstrate the appropriate sensor approach, which is most likely to meet a specific biosensor application. |
| | Skills:--- <ol style="list-style-type: none">1. Interpret the errors in measurement by analyzing the performance characteristics of the sensors.2. Apply the suitable design criteria for developing a medical sensor for a particular application.3. Develop advanced medical sensors based on the basic transduction principles. |
| | Values:--- <ol style="list-style-type: none">1. Communicate effectively on a team. |