Course Outline

Topics	Periods
Introduction to Biomedical Engineering, history, semantics in different countries. Medical Terminology, major organ systems, generation of bioelectrical potentials, a generalized medical instrument, system-transfer function. Measurement of flow, flow sensors, Measurements of the respiratory system, physiology and instruments. Body temperature and temperature sensors. Incubators: Physiology and instruments. Bioelectrodes and Biopotential (EMG and EEG). ECG (Eindhoven, Goldberger, Wilson), 3D Projection Cardiac rhythm interpretation with relationship to defibrillation and pacing. Bioinstrumentation amplifiers, noise, electrical field, shielding, driven right leg concept. Pumps: infusion, perfusion, insulin pumps, safety concepts Basic working concepts of diagnostic ultrasound, plain x-ray, CT, MRI, PET. Blood flow measurement by ultrasound, laser, and electromagnetic methods.	45