

Detailed Syllabus and Lecture-wise breakup

Topic (s)	Hours
Introduction and basic concept of point-of-care diagnosis, Analytical Chemistry with Biological applications and their mechanistic studies in diagnosis: thermodynamics, chemical kinetics, rate constant.	6 h
Nanobiomaterials: fundamental concept. Nanomaterials for early stage biomarker detection, synthesis and characterization of Nanoparticles and their use for Biosensors and Biodevices, Biofunctionalization of nanomaterials, beneficial properties of nanomaterials for diagnosis.	8 h
Basic tools used in diagnostics.	3 h
Signal amplification chemistry for higher signal-to-background ratios: Redox Cycling amplification methods, electrode surface modification with nanomaterials.	5 h
Lab-on-a-chip devices for biomedical diagnostics, Multiplex diagnostic microsystem development for rapid quantification, Non-Invasive approach, Printed bioelectronics.	6 h
New detection systems for POCT and integration of highly sensitive Biosensors to mobile devices: Wash-free detection, label-free detection, Lab-on-Printed circuit board, wearable biosensors, smart phone-based platform, disposable self-powered POCT Devices.	14 h
Device characterization and challenges.	3 h
Commercialization of biosensor and biodevices, environmental field monitoring, food safety, and security.	7 h