

LESSON PLAN

Branch: B.Tech in Biotechnology

Semester: 6th

Subject: BTPC3005 – Omics Tools and Techniques

Name of the Teaching Faculty: Dr. Subhasmita Panda

Week	Class Day	Theory Topics
1st	1st	Introduction to genomics
	2nd	Structural and functional genomics
	3rd	Comparative genomics
2nd	1st	Sanger sequencing
	2nd	NGS technologies
	3rd	Illumina, PacBio, Nanopore
3rd	1st	Genome assembly
	2nd	Annotation
	3rd	Gene prediction
4th	1st	Transcriptomics overview
	2nd	RNA extraction
	3rd	RNA quality control
5th	1st	Microarray
	2nd	qPCR
	3rd	RNA-Seq
6th	1st	RNA-Seq workflow
	2nd	Data analysis
	3rd	Differential expression
7th	1st	Proteomics introduction
	2nd	Protein separation
	3rd	2D electrophoresis
8th	1st	Mass spectrometry
	2nd	MALDI-TOF
	3rd	LC-MS/MS
9th	1st	Protein identification
	2nd	Quantification
	3rd	Protein interaction
10th	1st	Metabolomics basics
	2nd	Sample preparation
	3rd	Analytical techniques
11th	1st	NMR
	2nd	GC-MS
	3rd	LC-MS
12th	1st	Data processing
	2nd	PCA
	3rd	Clustering
13th	1st	Systems biology
	2nd	Omics integration
	3rd	Tools
14th	1st	Personalized medicine

	2nd	Drug discovery
	3rd	Toxicology
15th	1st	Challenges
	2nd	Ethics
	3rd	Big data
16th	1st	Revision
	2nd	Case study
	3rd	Discussion