INNOVATIVE TEACHING-LEARNING (PEDAGOGY) REPORT

Title of the Activity	**Analyzing Human Genome Data for Disease Prediction**
Subject	**BTE208, Biostatistics and Computation**
Department	**Biotechnology Engineering**
Academic Year	**2022-2023**
Name of the Faculty	**Dr. Muthu Sankar Aathi**
Objectives	To enable students to apply bioinformatics tools and techniques to analyze human genomic data, with the aim of identifying gene patterns associated with diseases, thereby reinforcing theoretical knowledge through practical, real-world data interpretation and problem-solving.
Course Outcomes Addressed	✓ **CO1:** Understand the fundamentals of bioinformatics, including its branches and applications across various industries – by engaging in real-world genome data analysis and understanding its use in healthcare. ✓ **CO2:** Differentiate between local and global alignment methods and understand substitution scoring matrices like PAM and BLOSUM – through analyzing gene sequences relevant to disease conditions. ✓ **CO3**: Understand the steps involved in constructing phylogenetic trees – by examining evolutionary relationships of disease-related genes.
Learning Outcome	✓ Apply bioinformatics concepts and tools to real genomic datasets. ✓ Perform sequence alignment and interpret the

	relevance of scoring matrices in disease gene identification. ✓ Construct and analyze phylogenetic trees to study gene evolution and its impact on disease. ✓ Conduct statistical analysis of gene expression data for disease prediction.