

## **BME356 Functional Genomics**

**Level:** 3

**Credit Units:** 5 Credit Units

**Language:** ENGLISH

**Presentation Pattern:** EVERY JULY

### **Synopsis:**

This course applies computational methods to understand the function of genes and proteins, large-scale measurement of gene expression, and mapping of protein structures and functions. Topics include the methods and algorithms for analysing gene expression data, basic concepts and techniques of protein analysis, the completed genomes and the tree of life.

### **Topics:**

- Bioinformatic Approaches to Gene Expression
- Microarray Data Analysis
- Protein Analysis and Proteomics
- Protein Structure
- Phylogeny and Comparative Genomics
- The Tree of Life and the Human Genome Project

### **Textbooks:**

by Jonathan Pevsner.: Bioinformatics and Functional Genomics (eTextbook) 3/E John-Wiley Blackwell.

ISBN-13: 9781118581728

**Learning Outcome:**

- Examine gene expression by applying computational approaches to gene expression measurement.
- Use the principles and algorithm design for microarray data analysis, using unsupervised machine learning algorithms.
- Illustrate the basic concepts of protein analysis and proteomics.
- Predict protein structure by applying comparative modeling.
- Analyze molecular phylogeny and evolution using phylogenetic trees.
- Discuss the study of genomes and how the tools of bioinformatics can elucidate the tree of life.

**Assessment Strategies (Evening Class):**

<b>Components</b>	<b>Description</b>	<b>Weightage Allocation (%)</b>
Overall Continuous Assessment	QUIZ 1	15
	TUTOR-MARKED ASSIGNMENT 1	15
Overall Examinable Components	Written Exam	70
<b>Total</b>		<b>100</b>