S.No.	Content	Contact Hours
1.	Introduction to Rehabilitation: Principles involved in the study of rehabilitation Engineering Rehabilitation Engineering Science and Technology Rehabilitation Engineering concepts in motor rehabilitation Engineering concepts in communication disorders.	**8**
2.	Orthopedic Prosthetics & Orthotics in Rehabilitation Technology Fundamentals, Applications, Summary.	**8**
3.	Sensory Augmentation & substitution Visual System. Auditory system. Tactual system.	**9**
4.	Rehabilitation Engg. Technologies: Principles of Application	**9**
5.	The Conceptual Framework. Education and quality assurance. Future development	**8**
Total		**42**

Books: -

S.No.	Name of Books/ Author/Publisher
1.	Biomedical Engineering Hand book Edited by Bronzino D.Joseph Publisher CRC Press (New York) Published in 1995.
2.	Hand book of B.M. Engg. by Kline Jacob Published by Academic Press (New York) Year of Publication 1988

SYSTEM BIOLOGY

Details of course: -

Course Title	Course Structure			Pre-Requisite
	L	**T**	**P**	
System Biology (BT411)	03	01	00	Nil

Course Objective:

To introduce the concept of systems biology an application in biomedicine

Course Outcome (CO):

1	Explain system biology and its importance in reshaping our understanding of biochemical pathways.
2	Analyze networking in systems biology and how perturbations affect the overall network.
3	Elaborate complex systems and their topological and network evolution models, differentiating between the types of biological networks.
4	Interpret Dynamical Systems by computation with MATLAB, and another Computational Model of the cell.
5	Integrated analysis of system biology by experimental design and discuss the issues of reproducibility.

S.No.	Content	Contact Hours
1.	**Introduction to Systems Biology ,** Flux Balance Analysis, Metabolic Control Analysis, Metabolic Network Reconstruction, Network structure analysis, Visual Representations and Notations for Systems Biology	**8**
2.	**Experimental Methods in Systems Biology** Scope and Overview, Biological Model Systems, Experimental Perturbations, Measuring Nucleic Acids and Proteins, Deep mRNA Sequencing, Mass Spectrometry-Based Proteomics, Flow and Mass Cytometry for Single Cell Protein Levels and Cell Fate	**10**
3.	**Network Analysis in Systems Biology** Introduction to Complex Systems, Topological and Network Evolution Models, Types of Biological Networks, Data Processing and Identifying Differentially Expressed Genes, Gene Set Enrichment and Network Analyses, Deep Sequencing Data Processing and Analysis, Principal Component Analysis, Self-Organizing Maps, Network-Based Clustering and Hierarchical Clustering, Resources for Data Integration	**8**
4.	**Dynamical Modeling Methods for Systems Biology** Introduction | Computing with MATLAB, Introduction to Dynamical Systems, Bistability in Biochemical Signaling Models, Computational Modeling of the Cell Cycle	**8**
5.	**Integrated Analysis in Systems Biology** Experimental design, Issues of Reproducibility, Kinetic Modelling Approach for Drug Development	**8**
Total		**42**

Books: -

S.No.	Name of Books/ Author/Publisher