1.	Evolutionary Analysis, Scott Freeman, John C. Hendon, Fourth Edition Pearson Education.
2.	Molecular Genetic Analysis of Populations, Hoelzel, 2nd Edition, Oxford University,
3.	Genetics -Principles and Analysis Hartl and Jones, 5th edition Jones and Barlet.,
4.	Genetics of Populations P W Hedrick, 2nd Edition, Jones & Bartlett
5.	Principles of Population Genetics Hartl & Clark, Third Edition, Sinauer Associates Inc.

BIOPOLYMERS

Details of course :-

Course Title	Course Structure			Pre-Requisite
	L	T	P	
Biopolymers (BT408)	03	01	00	Nil

Course Objective:

The objective of this course is to provide students with a fundamental understanding of biopolymers, including their synthesis, properties, and applications. Students will learn about the environmental impact and biodegradability of biopolymers, develop practical skills through hands-on experiments, and explore the latest advancements in the field. The course aims to integrate knowledge from various scientific disciplines to solve complex problems and foster critical thinking and research skills in the study of biopolymers.

Course Outcome (CO):

1 Develop the understanding of the basics of the biopolymers, bioplastics like starch based, cellulose based

2 Identify the classes of biodegradable polymer which can be natural, synthetic, and modified naturally

3 Identify mechanisms of improvement of properties by incorporating different elements

4 Compare bioplastics and bio composites, processing of bioplastics and biocompositers

5 List the uses of biomaterials for manufacture of plastic films, various types of films and application.

S.No.	Content	Contact Hours
1.	**Introduction:** Definition of Biopolymers and types of biopolymers, definition of bioplastics, Types of bioplastics, such as starch based, cellulose based plastics and some aliphatic polyesters (PLA, PHB), polyamides, Bio-Based Composites from Soybean Oil and Chicken Feathers, bio-derived	**8**

	polyethylene and genetically modified bioplastics. Environmental impact such as Bioplastics and biodegradation.	
2.	**Biodegradable polymer** classes, Natural biodegradable polymer, Synthetic biodegradable polymer and modified naturally biodegradable polymer. Non-biological and biological degradable polymer. Measuring of biodegradation of polymers- Enzyme assays, Plate test, Respiratory test, Natural environment, Field trial, Gas evolution test (CO2 & CH4)	**8**
3.	**Composite implant materials**: Mechanics of improvement of properties by incorporating different elements. Composite theory of fiber reinforcement (short and long fibers, fibers pull out). Polymers filled with estrogenic fillers (e.g. hydroxyapatite). Host tissue reactions.	**9**
4.	**Bioplastics and Bio composites processing and their applications:** Introduction of bioplastics and biocomposites, processing of bioplastics and biocomposites, applications of bioplastics and their composites- civil engineering, biomedical, automotives applications	**9**
5.	**Applications and manufacture of Bio Plastics** Use of Biomaterials for manufacture of plastic films, various types of films and applications; usage of biological friendly plastics in homes, industry, etc. with specific applications. Mixing of biomaterials with plastics: equipment details, process details etc.	**8**
Total		**42**

Books:-

S.No.	**Name of Books/ Author/Publisher**
1	Handbook of Biopolymers and Biodegradable Plastics, 1st Edition Properties, Processing and Application
2	Natural Polymers, Biopolymers, Biomaterials, and Their Composites, Blends, and IPNs, Sabu Thomas, Neethu Ninan, Sneha Mohan, Elizabeth Francis
3	Biopolymers: Biomedical and Environmental Applications By Susheel Kalia, Luc Avérous wiley

GENOMICS IN MEDICINE

Details of course :-

Course Title	**Course Structure**			**Pre-Requisite**
	L	**T**	**P**	
Genomics in medicine (BT410)	03	01	00	Nil