



University of Management & Technology
School of Science
Department of Life Science

BT-111 Classical Genetics

Lecture Schedule	Tuesday and Friday, 3:30 – 4:45 PM	Semester	Spring 2021
Pre-requisite	---	Credit Hours	3
Instructor	Dr. Mureed Hussain	Contact	Mureed.hussain@umt.edu.pk
Office	Adjacent 2S-46	Office Hours	See office window
Course Description	This course of Classical Genetics is designed to develop concepts of genetics, the molecular basis of heredity and principles of inheritance		
Expected Outcomes	After completing this course, students should be able to: 1. Understand the scope of genetics 2. Use the principles of Mendelian genetics to predict the progeny of crosses of known genotypes 3. Deduce parental genotypes based upon progeny ratios and use a pedigree and the laws of inheritance to calculate the risk of affected children in a specific mating		
Textbook(s)	1. Genetics by Strickberger, M.W. Latest edition, The Macmillan. Co.Ny 2. Modern Genetics by Ayala & Kiger. The Benjamin Cummings, Co. Inc. California, USA		
Grading Policy	<ul style="list-style-type: none">• Quizzes 15%• Assignment 20%• Mid-term exam 25%• Final Exam 40%		

Course Schedule

Week	Lecture #	TOPICS
1	1 2	Introduction; classification, the Nature of Genetic Material, scope and brief history of genetics
2	1 2	Mendelian inheritance; Laws of dominance, segregation, independent assortment
3	1 2	Punnett square, concept of monohybrid, dihybrid, back cross and test cross
4	1 2	Non-Mendelian inheritance; The Cytoplasm in Hereditary
5	1 2	The Maternal Effect, Extra Nuclear Inheritance, incomplete and codominance,
6	1 2	Gene interaction, epistasis and multiple alleles; ABO blood type alleles and Rh factor alleles in human,
7	1 2	Structure of Chromosomes, organization of gene and genome
8	1 2	Sex Linked Inheritance, Sex Determination in Drosophila & Man
9	1 2	Midterm Exam
10	1 2	Significant Features of Sex-Linked Inheritance, Linkage and crossing over
11	1 2	Definition, linkage groups, construction of linkage maps, detection of linkage, Pedigree analysis
12	1 2	Mutations, Chromosomal aberrations: Changes in the number of chromosomes

13	1	Aneuploidy and euploidy. Changes in the structure of chromosomes, deficiency, duplication, inversion and translocation,
	2	
14	1	Population genetics; Hardy Weinberg equilibrium
	2	
15	1	Modern perspectives in Genetics
	2	

Course Contents:

Introduction; classification, the Nature of Genetic Material, scope and brief history of genetics, Mendelian inheritance; Laws of dominance, segregation, independent assortment, Punnett square, concept of monohybrid, dihybrid, back cross and test cross, complete, Non-Mendelian inheritance; The Cytoplasm in Hereditary, The Maternal Effect, Extra Nuclear Inheritance, incomplete and codominance, Gene interaction, epistasis and multiple alleles; ABO blood type alleles and Rh factor alleles in human, Structure of Chromosomes, organization of gene and genome, Sex Linked Inheritance, Sex Determination in Drosophila & Man, Significant Features of Sex-Linked Inheritance, Linkage and crossing over: Definition, linkage groups, construction of linkage maps, detection of linkage, Pedigree analysis, Mutations, Chromosomal aberrations: Changes in the number of chromosomes. Aneuploidy and euploidy. Changes in the structure of chromosomes, deficiency, duplication, inversion and translocation, Population genetics; Hardy Weinberg equilibrium