Course Overview

Genetics

Course code :	LMT602
Course title:	Genetics
Level/semester:	**Sixth Semester**
PRECEDING COURSES:	**Basic Biochemistry , Principles of Microbiology , Medical Microbiology**
Credit hours:3	**Theoretical:** 3
	Practical: 0

Course Title : Molecular Diagnostics : Theory

UNIT	CONTENTS	HOURS
1	Introduction to Molecular Biology	1
2	Components and Structure of Nucleic Acids	1
3	Genes and Genome Complexity	1
4	The Nature of the Genetic Code	1
5	The Manipulation of Nucleic Acids: Basic Tools and Techniques -Isolation and separation of nucleic acids. -Nucleic acid blotting methods. -Nucleic acid hybridization. -Gene probe derivation and DNA labeling. -DNA cloning. -The polymerase chain reaction. -Nucleotide sequencing of DNA	7
6	Application of Molecular Diagnosis -Infectious diseases. -Genetic disorders. -Cancer. -Forensic medicine.	2
7	Human Genome Project	1
8	Future Development of DNA Technology and Molecular Diagnosis	1

Course Title Molecular Diagnostics (Practical):

UNIT	CONTENTS	HOURS
1	Contamination and Safety in Molecular Biology Labs	2
2	Introduction to Practical Molecular Biology -DNA and RNA structures. -Denaturation & renaturation (hybridization) of DNA. -Enzymes in molecular biology (restriction endonucleases, DNA & RNA polymerases, nucleases ، end-modification enzymes, and ligases.(-DNA cloning. -Setting up a molecular biology lab.	2
3	Preparation of DNA	2
4	Preparation of RNA	2
5	Preparation of Plasmid DNA	2
6	DNA Analysis by Restriction Enzyme Digestion and Southern Blotting	4
7	RNA Analysis by RNase Protection	4
8	RNA Analysis by RT-PCR	4
9	DNA Analysis by Polymerase Chain Reaction	4
10	RNA Analysis by Northern Blotting	4