

Department : **Clinical Laboratory Sciences**
Course Number : **CLS 453**
Course Title : **Medical Genetics**
Credit Hours : **2 + 1 = 3**

Course Description:

This course is designed to give a basic understanding of the theoretical and practical aspects of medical genetics. In addition to molecular medical genetics includes cytogenetics, DNA, RNA, mutation, mutation detection technique, PCR, cloning, population genetics and clinical genetics. In the practical applies all the technique used in medical genetics like gel electrophoresis, DNA extraction, PCR and bioinformatics.

CLS 453: Lectures Outline

Weeks	Subjects
1.	History of Genetics
2.	The Cell
3.	Cytogenetics (Chromosomes)
4.	DNA Structure and Function
5.	Mutation
6.	Mutation Detection Techniques
7.	PCR
8.	Cloning
9.	Population Genetics
10.	Clinical Genetics and Genetic Disorders
11.	Chromosomal disorders
12.	Single gene disorders
13.	Sickle Cell Anaemia & Thalassemia

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CLS 453: Laboratory Schedule

Weeks	Subjects
1.	Safety and Precautions in pre-PCR, PCR and post-PCR: avoiding contamination; how to handle DNA samples
2.	Buffer and Electrophoresis: <ul style="list-style-type: none">- TAE Stock Buffer- TBE Stock Buffer- Agarose Gel- Polyacrylamide Gel (PAGE)- Stains
3,4.	DNA Extraction RNA Extraction Tissue Extraction
5.	PCR Amplification Design Primers Reagents to be used (Kit) DNA Marker (Ladder)
6.	Bioinformatics: <ul style="list-style-type: none">- Database of Genes- Gene Bank- Gene Map
7-13.	Technique used after PCR <ul style="list-style-type: none">- Mutation Detection- SSCP- DHPLC- Restriction Enzymes- ARMS- ASO- Sequencing

Assessments:

First Mid Term Examination:	20
Second Mid Term Examination:	20
Final Practical Examination:	20
Final Theoretical Examination:	40

References:

Margaret W.Thompson, **Genetics in Medicine**, W B Saunders Co; 5th edition

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