SKILL ENHANCEMENT COURSES

SYLLABUS FOR THE

SUBJECT: MOLECULAR BIOLOGY & BIOCHEMISTRY

for the award of the Degree in

BACHELOR OF ARTS/ BACHELOR OF SCIENCE

(Offered under 3-year UG Degree Programme)

(Credit Based Grading System)
under NEP 2020

Batch: 2025–28

GURU NANAK DEV UNIVERSITY AMRITSAR

(ii) Syllabi are subject to change at the discretion of the authority.
Please visit the University website from time to time.

SCHEME

SKILL ENHANCEMENT COURSES

MOLECULAR BIOLOGY & BIOCHEMISTRY

SEC-I

Sr. No.	Course Code	Course Title	Credits L-T-P	Marks
1.		MEDICAL DIAGNOSTICS (THEORY)	2-0-0	50
2.		MEDICAL DIAGNOSTICS (PRACTICAL)	0-0-1	25

SKILL ENHANCEMENT COURSES

MOLECULAR BIOLOGY & BIOCHEMISTRY

(SEC-I)

MEDICAL DIAGNOSTICS

(THEORY)

Time: 3 Hours **L-T-P**

Credits: 2-0-0

Max. Marks: 50

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Medical Diagnostics and its applications in prevention of diseases: Introduction and importance of medical diagnosis, historical perspective of medical diagnosis, infectious (hepatitis and tuberculosis) and non-infectious diseases (diabetes and hypertension) – their types, causes, symptoms, diagnosis, prevention and role of diagnosis in prevention of diseases.

SECTION-B

Common tests in a clinical laboratory: Blood composition, Preparation of blood smear, Total and Differential Leucocyte Count (TLC and DLC) using Leishman's stain, Platelet count using haemocytometer, Erythrocyte Sedimentary Rate (ESR), Packed Cell Volume (PCV). Sputum, Urine and Stool diagnostic methods for analysis of physical characteristics and abnormal constituents.

SECTION-C

Diagnostic Imaging techniques: Basic principle and applications of X-Ray, CT scan, Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET) scan and Sonography

SECTION-D

Molecular Diagnostics: PCR, Multiplex-PCR, Real-time PCR, RFLP, DNA fingerprinting, Southern Blotting and Electrophoresis techniques. Basic principle and applications of these techniques in the diagnosis of diseases.

Recommend Books:

1. Kumar V, Abul K. Abbas AK, Jon C. Aster JC, Singh MK (2020).
2. Robbins and Cortan, Pathologic Basis of Disease X Elsevier Health Science; South ASIA edition.
3. Park, K. (2007), Preventive and Social Medicine, B.B. Publishers
4. Godkar P.B. and Godkar D.P. Textbook of Medical Laboratory Technology, II Edition, Bhalani Publishing House.
5. Cheesbrough M., A Laboratory Manual for Rural Tropical Hospitals, A Basis for Training Courses ¬ Guyton A.C. and Hall J.E. Textbook of Medical Physiology, Saunders
6. Prakash, G. (2012), Lab Manual on Blood Analysis and Medical Diagnostics, S. Chand and Co. Ltd.

SKILL ENHANCEMENT COURSES

MOLECULAR BIOLOGY & BIOCHEMISTRY

(SEC-I)

MEDICAL DIAGNOSTICS

(PRACTICAL)

L-T-P
Credits: 0-0-1
Max. Marks: 25

1. Determination of bleeding and blood coagulation time.
2. Measurements of Blood Pressure (normal & under stress).
3. Enumeration of RBC, WBC (TLC, DLC) using haemocytometer.
4. Estimation of Haemoglobin content of blood using Sahli's haemoglobinometer.
5. Determination of Erythrocytic Sedimentation Rate.
6. Detection of abnormal constituents in urine.
7. Blood platelet count by hemocytometer.
8. Clinical estimation of glucose, cholesterol by kits