

**Shree Manibhai Virani & Smt. Navalben Virani Science College, Rajkot
Autonomous**

Affiliated to Saurashtra University, Rajkot

DEPARTMENT OF BIOCHEMISTRY

Part III: SEC-II -CO-CURRICULAR COURSE

Medical Laboratory Techniques (MLT) - Semester III & IV

Regulations for Students Admitted From A.Y.2019-2020 and Onwards

ELIGIBILITY: Any undergraduate student can opt this course.

DURATION OF THE PROGRAMME

The programme shall extend over a period of one year comprising of two semesters. Each semester normally consists of 1 theory paper and 10-12 Practicals.

OBJECTIVES OF THE PROGRAMME

- It will expose students to the exciting and rewarding world of the medical laboratory.
- There are numerous opportunities for full- and part-time employment in both clinics and hospital laboratories.
- In addition, career opportunities exist in government, research and pathological laboratories.
- Emphasis is placed on becoming proficient in the collection of biological samples, performing biochemical tests, the use of laboratory equipment and fluency in medical terminology.

STRUCTURE OF THE PROGRAMME

Each COP-MLT programme shall have a curriculum comprising theory and practical courses with a specified syllabus. The curriculum of programme is a blend of theory courses and practicals. The medium of instruction and examinations shall be English except for courses on languages other than English.

EVALUATION

The evaluation shall generally comprise of Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) with percentage weightage as specified below

<i>Theory Courses</i>		<i>Practical Courses</i>	
Continuous Internal Assessment (CIA)	25%	Continuous Internal Assessment (CIA)	40%
Semester End Examination (SEE)	75%	Semester End Examination (SEE)	60%

GUIDELINES FOR THE PROGRAMME

1. Minimum 80% attendance is required, if not able to fulfil it then only by the permission of Programme Coordinator and the principal will be allowed to compensate in the next year.
2. Degree will be awarded only after receiving of the certificate.

ISSUE OF MARKSHEET AND DEGREE CERTIFICATE

The college shall publish the result after evaluation and with the recommendations of Result Passing Board at the end of each semester. On approval of the results by the Programme Coordinator, the candidate will be recommended for the award of the Certificate.

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DEPARTMENT OF BIOCHEMISTRY
Part III: SEC-II -CO-CURRICULAR COURSE
Medical Laboratory Techniques (MLT) - Semester I-II/ III –IV

19AECO15	Medical Laboratory Techniques (MLT)	120 hrs	01 credit
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SCHEME OF INSTRUCTION AND EXAMINATIONS

For Students Admitted From A.Y.2019-2020 and Onwards

Odd Semester							
Course Code	Course	Hrs. of Instruction/ week	Exam Duration (Hours)	Maximum Marks			Credits
				CIA	SEE	Total	
19AECO15	Hematology	2	3	10	30	40	0.5
19AECO15	Hematology Practicals	4	6	25	35	60	

Even Semester							
Course Code	Course	Hrs. of Instruction/ week	Exam Duration (Hours)	Maximum Marks			Credits
				CIA	SEE	Total	
19AECO15	Clinical Chemistry	2	3	10	30	40	0.5
19AECO15	Clinical Chemistry Practicals	4	6	25	35	60	

Medical Laboratory Techniques (MLT) Syllabus Odd Semester

19AECO15	Hematology	Theory 2 Hr/week
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Objective

To enable the students to

1. Develop the knowledge, attitudes and skills in the performance of clinical laboratory procedures needed to help the physician in the proper diagnosis, treatment, prognosis and prevention of diseases;
2. Develop skills in critical and analytical thinking to advance knowledge in Medical Technology/Clinical Laboratory Science and contribute to the challenges of the profession.

UNIT I Hematology **[4 Hrs]**

- Intracellular, extracellular and interstitial fluid.
- Introduction to blood
- Phlebotomy

UNIT II –RBC **[4 Hrs]**

- Structure and function
- Blood grouping and Rh incompatibility
- Process of erythropoiesis
- disorders of RBC and its counting

UNIT III WBC **[4 Hrs]**

- Classification and Functions of WBCs
- Clinical and pathological significance of WBC
- Differential count of WBC

UNIT IV Hemoglobin **[4 Hrs]**

- Hb –types and functions
- Synthesis of Hb
- Fate of Hb and its clinical significance

UNIT V Blood Coagulation **[4 Hrs]**

- Platelet structure and functions
- Coagulation cascade
- Bleeding disorder

19AECO15	Hematology Practicals	4 Hr/week
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Objective

To enable the students to

1. Achieve competency in routine clinical laboratory procedures
2. Utilize procedures to obtain and determine normal values and clinical significance of components present in blood.

List of Practicals:

1. Introduction to Hematology
2. Phlebotomy
3. Blood grouping
4. Hemoglobin Estimation
5. Measurement of blood pressure
6. Introduction to Neubaur Chamber
7. Total Count of RBC
8. Total Count of WBC
9. Introduction to differential WBC count
10. Bleeding Time and Clotting Time
11. Packed cell volume

Text Book

Godkar, P. B., & Godkar, D. P. (2006). Textbook of medical laboratory technology. Bhalani publishing house.

Reference Books

1. Waugh, A., & Grant, A. (2014). Ross & Wilson anatomy and physiology in health and illness. Elsevier Health Sciences.
2. Sembulingam, K., & Sembulingam, P. (2012). Essentials of medical physiology. JP Medical Ltd.

Medical Laboratory Techniques (MLT) Syllabus Even Semester

19AECO15	Clinical Biochemistry	Theory 2 Hr/week
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Objective

To enable the students to

1. Develop the knowledge, attitudes and skills in the performance of clinical laboratory procedures needed to help the physician in the proper diagnosis, treatment, prognosis and prevention of diseases;
2. Develop skills in critical and analytical thinking to advance knowledge in Medical Technology/Clinical Laboratory Science and contribute to the challenges of the profession

UNIT I Clinical Biochemistry laboratory Instrumentation [4 hrs]

- Importance of analyzer and different types of analyzer used in labs
- Various modes to operate the analyzer
- Importance of clinical chemistry

UNIT II Lipid biochemistry [4 hrs]

- Building blocks of lipids - fatty acids, glycerol, ceramide.
- Lipoproteins and their clinical significance
- Importance of lipid profile
- Atherosclerosis, Hyperlipidemia and Hypertriglyceridemia

UNIT III Renal Function Tests & Diabetes Mellitus [4 hrs]

- Brief Anatomy & Physiology of Kidney
- Renal Function Tests and its Clinical Significance

- Kidney disorders and dialysis.
- Types of Diabetes
- Clinical Significance of blood sugar level

UNIT IV Cardiac Function Test **[4 hrs]**

- Anatomy of heart and blood vessels.
- Importance of Cardiac function test: CK-MB and SGOT
- Cardiac disorders: Myocardial Infarction, Hypertension, congestive heart disease.

UNIT V Liver Function Tests **[4 hrs]**

- Types and Clinical Significance of Bilirubin
- Liver function test: Alkaline Phosphatase, Billirubin & SGPT]
- Liver disorders: fatty liver and Jaundice
- Types of Jaundice

19AECO15	Clinical Biochemistry Practicals	4 Hr/week
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Objective

To enable the students to

1. Achieve competency in routine clinical laboratory procedures
2. Utilize procedures to obtain and determine normal values and clinical significance of components present in blood.

List of Practicals:

1. Principle & Working of Semi Auto Analyzer
2. Estimation of Blood glucose
3. Estimation of bilirubin
4. Estimation of SGPT
5. Estimation of cholesterol
6. Estimation of Triglyceride
7. Estimation of CK-MB
8. Estimation of urea
9. Estimation of uric acid
10. Physical and chemical analysis of urine.

Text Book

1. Godkar, P. B., & Godkar, D. P. (2006). Textbook of medical laboratory technology. Bhalani publishing house.

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