Enclosure- IV

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 I & II

Regulations for Students Admitted From A.Y.2016-2017 and Onwards

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 12-13 Practicals.

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

Theory Courses		***Practical Courses***	
Continuous Internal Evaluation (CIE)	30%	Continuous Internal Evaluation (CIE)	40%
Semester End Examination (SEE)	70%	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

OBJECTIVES OF THE PROGRAMME-
Medical Laboratory Technician program will expose students to the exciting and rewarding world of the medical laboratory. The medical lab offers a unique combination of technical employment and the satisfaction of working with a diverse client population.

With the role of the medical technician expanding, 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 veterinary laboratories.

Emphasis is placed on becoming proficient in the collection of blood samples, performing ecgs, the use of laboratory equipment and fluency in medical terminology, while developing the professional attitude and demeanor needed for close patient contact. Excellent communication skills and good interpersonal skills are essential.

The theoretical and practical portions of this program are completed within a year. The compressed delivery format makes this program an ideal choice for those who wish to quickly enter the workforce.

SCHEME OF INSTRUCTION AND EXAMINATIONS

For Students Admitted From A.Y.2016-2017 and Onwards

Odd Semester							
Course Code	Course	Hrs. of Instruction/ week	Exam Duration (Hours)	Maximum Marks			Credits
				CIE	SEE	Total	
16UBCCOC1	Hematology	1	3	15	35	50	0.5
16UBCCOC2	Hematology Practicals	3	3	20	30	50	

Even Semester							
Course Code	Course	Hrs. of Instruction/ week	Exam Duration (Hours)	Maximum Marks			Credits
				CIE	SEE	Total	
16UBCCOC3	Clinical Chemistry	1	3	15	35	50	0.5
16UBCCOC4	Clinical Chemistry Practicals	3	3	20	30	50	

Medical Laboratory Techniques (MLT) Syllabus

Odd Semester

16UBCCOC1	Hematology	Theory 2 Hr/week

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]**

- Introduction to blood
- Phlebotomy

UNIT II –RBC **[4 Hrs]**

- Structure and function
- Process of erythropoesis
- disorders of RBC and its counting

UNIT III WBC **[4 Hrs]**

- classification and Functions of WBCs
- Clinical significance of total WBC count
- Differential count of WBC

UNIT IV Hemoglobin **[4 Hrs]**

- Hb –types, function and synthesis
- Fate of Hb and its clinical significance

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

- Platelet structure and function
- Coagulation cascade
- Bleeding disorder

16UBCCOC1	Hematology Practicals	2-3 Hr/week	

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. Hemoglobin Estimation
4. Introduction to Neubaur Chamber
5. Total Count of RBC & WBC
6. Introduction to differential WBC count

7. Identification and counting of neutrophils
8. Identification and counting of eosinoplil
9. Identification and counting of basophils
10. Identification and counting of monocyte
11. Identification and counting of lymphocyte
12. Bleeding Time and Clotting Time
13. 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

16UBCCOC2	Clinical Biochemistry	Theory 2 Hr/week

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 Profile [4 hrs]

- Types and Importance of lipid profile
- Clinical significance of lipoproteins
- Atherosclerosis and Hypertriglycredemia
- HDL and other lipoproteins

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

- Brief Anatomy & Physiology of Kidney
- Clinical Significance of Renal Function Tests
- Types of Diabetes
- Clinical Significance of increased blood sugar level

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

- Myocardial Infarction
- Importance of Cardiac function test
- CK-MB and its significance

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

- Types of Jaundice
- Bilirubin Extimation
- Clinical Significane of alkaline Phosphatase & SGPT

16UBCCOC4	Clinical Biochemistry Practicals	2-3 Hr/week

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 alkaline phosphatase
4. Estimation of bilirubin
5. Estimation of urea
6. Estimation of uric acid
7. Estimation of SGPT
8. Estimation of total protein- albumin
9. Estimation of cholesterol
10. Estimation of HDL
11. Estimation of Triglyceride
12. Physical, Chemical & Microscopic analysis of urine by manual and uristick method

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.