

AC- 29/3/2023

Item No-5.107



**Rayat Shikshan Sanstha's
KARMAVEER BHAURAO PATIL COLLEGE VASHI
(AUTONOMOUS COLLEGE)
Sector-15- A, Vashi, Navi Mumbai - 400 703**

Syllabus for S.Y.B.Sc. Medical Laboratory Technology.

**Technology Program: Medical Laboratory
Technology.**

**(Choice Based Credit, Grading and Semester
System with effect from the academic year
2023-2024)**

Rayat Shikshan Sanstha's
**Karmaveer Bhaurao Patil College Vashi Autonomous
College**

Syllabus

| Sr. No. | Heading | Particulars |
|----------------|---|---|
| 1 | Title of Course | S.Y.B.Sc. Medical Laboratory Technology |
| 2 | Eligibility for Admission | 12th Science and equivalent [of recognized Boards] |
| 3 | Passing Marks | 40% |
| 4 | Ordinances/Regulations (if any) | ----- |
| 5 | No. of Years/Semesters | One year/Two semester |
| 6 | Level | U.G. |
| 7 | Pattern | Semester |
| 8 | Status | Revised0 |
| 9 | To be implemented from Academic year | 2023-2024 |



Preamble

Medical Laboratory Technology is a branch of medical science responsible for performing laboratory investigations relating to diagnosis, treatment and prevention of disease. With this course, the basic aim is to provide students with knowledge and training that will enable them to work in various lab settings.

Educational Pedagogy:

The course design is based on NEP2020 guidelines where learner is given a choice to have vertical mobility while pursuing this program. His annualized credits earned will be banked to allow his subsequent year's enrollment. The three-year degree program is designed as –

- 1st year BSc with Certification in Phlebotomy
- 2nd Year BSc with Adv Diploma in Medical Lab Technology &
- 3rd Year BSc is with Degree in Medical Laboratory Technology.

The pedagogical design is based on the core objective of making students job ready and hence a lot of focus is given in learner's engagement through Industry based skilling in Hospitals.

As anyone who seeks admission in this program comes from non-healthcare background, the course starts with the Foundation Course which is more like a platform setting to make learner understand the topicalities and Dos and Don'ts of Healthcare Organizations.

Industry interface is divided into 3 phases of learning as –

- Observership – Objective is to see what is being taught in the class room through clinical sessions on the subject.
- On The Job Training – Objective is to learn the job skills by working with someone.
- Internship – Working independently, but under supervision as per defined job role.

Considering that the program needs to empower job readiness of learners, a lot of focus is kept in active engaging Life Skills workshops. These cover topics like Self Awareness, Objective setting, Team Work, Leadership Development, Time Management, Communication Skills, Interpersonal abilities etc.

Program also focuses in creating a better path for students to pursue their higher education opportunities in healthcare sector. As such special skill enhancing modules like Basic Life Support, Bed Side Care, Hospital Administration and Public Health etc. are included in the curriculum. This will help learners to get into PG programs like Masters in Hospital Management or Masters in Hospital Administration or Masters in Public Health.

As regards to the Core expertise of the program on Lab Technology, key subjects that get covered are –

- **Phlebotomy:**

Phlebotomy, which is the science of drawing blood, from various sites, e.g., veins, arteries & capillaries, is among the most common procedures in healthcare and a core component of diagnosis and laboratory analysis.

Estimates indicate that nearly 70% of medical decisions are based on laboratory results which often rely on phlebotomy to produce a blood sample ready for laboratory analysis. Despite the critical role of phlebotomy, there is an insufficient level of awareness among the Health Care Professionals about the International guidelines and understand the consequences to patients and their own safety from improper sample collection practices.

Poor Blood Collection Practices Introduce Serious Errors into Diagnosis and Laboratory Analysis.

- **Microbiology:**

The diagnostic microbiology laboratory procedures are essential for the diagnosis and treatment of infectious diseases. Microbiological pathogens are divided into bacteria, fungi, viruses, prions, and protozoa. Role of Microbiology is to isolate & identify the disease-causing micro-organism.

To train the students to conduct Antibiotic Sensitivity test to provide appropriate medical treatment (antibiotics) to the patients.

- **Hematology:**

Hematology concerns with the study of the cause, prognosis, treatment, and prevention of diseases related to blood.

It involves treating diseases that affect the production of blood and its components, e.g. blood cells, hemoglobin, blood proteins, bone marrow, platelets, blood vessels, spleen, the mechanism of coagulation & also blood parasites, e.g. Malaria

Such diseases might include hemophilia, blood clots (thrombus), other bleeding disorders, and blood cancers such as leukemia, multiple myeloma, and lymphoma.

- **Biochemistry:**

Biochemistry combines the two traditional disciplines of biology and chemistry. Biochemistry is the science of living matter.

Medical biochemistry teaches us about:

-The chemical components of the human body, e.g., carbohydrates and lipids; amino acids and proteins; nucleic acids (DNA and RNA), etc.

-The major chemical processes in the human body, Nutrition and mineral metabolism, Molecular genetics & Heredity

- **Clinical Pathology:**

This branch of Medical Laboratory Science deals with complete study of formation, the clinical significance of analyzing various body fluids, e.g., urine, stool, sputum, seminal fluid, CSF, pleural, peritoneal, pericardial & synovial fluids.

- **Histopathology & Cytology:**

Histopathology & Cytology provides a diagnostic service for cancer; it handles the cells and tissues removed from suspicious 'lumps and bumps', identify the nature of the abnormality. Histopathology is the examination of biological tissues in order to observe the appearance of diseased cells in microscopic detail.

Histopathology typically involves a biopsy, which is a procedure involving taking a small sample of tissue, processed by Histo-technologists and reported by the Pathologists

- **Immunology/serology:**

Different types of serologic tests are used to diagnose various disease conditions. Serologic tests have one thing in common. They all focus on proteins made by our immune system (antibodies)

Serological testing is very helpful in the diagnosis of certain bacterial, parasitic, and viral diseases, e.g., Typhoid, Dengue. Malaria, etc.

Serological testing has proved valuable mass-screening tool, as in the detection of diseases such as syphilis, HIV/AIDS, and epidemic and pandemic infectious diseases (e.g., influenza and coronavirus disease).

- **Blood Bank (Transfusion Medicine):**

A blood transfusion provides blood or blood components if patient has lost blood due to an injury, during surgery or have certain medical conditions that affect blood or its components. The blood typically comes from donors. Blood banks and healthcare providers ensure that the transfusions are a safe, low risk treatment.

The Transfusion Medicine Department is responsible for the collection and testing of blood to be given to patients (traditional "blood banking").

It also collects & processes hematopoietic stem cells for blood and bone marrow transplantation as well as the testing necessary for organ transplantation.

Key Objectives of this program:

- To implement NEP 2020 through this Vocational Skills development program
- Learners will inculcate right attitude, skills and knowledge to do the job role of Medical Laboratory Technologist as required by the industry.
- Program will also empower learners' abilities to pursue higher education in medical industry

After completing this program, learner will exhibit following skills and knowledge as Medical Laboratory Technologist:

- Demonstrate knowledge about the healthcare sector and diagnostic services
- Demonstrate the ability to perform clinical skills essential in providing basic diagnostic services such as Correctly collect, transport, receive, accept or reject and store blood /urine/stool and tissue samples.
- Conduct analysis of body fluids/ samples; Maintain, operate and clean Laboratory equipment; Provide technical information about test results
- Prepare and document medical tests and clinical results; etc.
- Demonstrate quality assurance in Laboratory works
- Practice infection control measures
- Demonstrate readily availability of medical and diagnostic supplies
- Demonstrate techniques to maintain the personal hygiene needs
- Demonstrate actions in the event of medical and facility emergencies
- Work as a medical laboratory professional with right attitude in any lab setting

Additionally, he will be developing following allied skills and knowledge through this program:

- CPR
- Care giver
- Basics on Hospital management
- Good communicator & allied health professional



Scheme of examination for Each Semester

Continuous Internal Evaluation: 40 Marks

Common Test 20 Marks & 20 Marks for Assignment, Projects, Group discussion, Open book test, online test etc. based on Units of each paper.

Semester End Examination: 60 Marks will be as follows –

| | | |
|----------------|---|---|
| I. | Theory: The Semester End Examination for theory course work will be conducted as per the following scheme. | |
| | Each theory paper shall be of two hours duration. | |
| | All questions are compulsory and will have internal options. | |
| | Q – I | Subject questions from Unit – I (having internal options.) 15 M |
| | Q – II | Subjective questions from Unit – II (having internal options.) 15 M |
| | Q – III | Subjective questions from Unit –III (having internal options.) 15 M |
| | Q – IV | Objective type questions based on all Units with equalweightage. 15 M |
| II. | Practical | The Semester End Examination for practical course work will be conducted as per the following scheme. |
| Sr. No. | Particulars of Semester End Practical Examination | Marks% |
| 1 | Laboratory Work | 80% |
| 2 | Journal | 10% |
| 3 | Viva | 10% |
| | TOTAL | 100 |

**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 3**

| Paper 1 [UGMLTC301]: Biochemistry-1 | | | | |
|--|-------------|---|----------------|---------------|
| Course Code | Unit | Topics | Credits | L/week |
| UGMLTC-301 | I | Important Biomolecules | 4 | 4 |
| | II | Metabolic factor | | |
| | III | Introduction of Laboratory Techniques | | |
| Paper 2: [UGMLTC302]: Microbiology-1 | | | | |
| UGMLTC-302 | I | Bacteriology | 4 | 4 |
| | II | Culturing of microorganisms | | |
| | III | Smear preparation and staining Methods | | |
| Paper 3: [UGMLTC303]: Hematology-1 | | | | |
| UGMLTC-303 | I | Hematopoietic system of body | 4 | 4 |
| | II | Hematological Diseases, different anemia's | | |
| | II | Hematological Test | | |
| Paper 4 [UGMLTGE301]: Serology | | | | |
| UGMLTGE-301A | I | Introduction of serology | 4 | 4 |
| | II | Serological reactions | | |
| | III | Serological Test | | |
| Paper 5: [UGMLTSEC301-A]:Skill Enhancement course (Hospital Management-1) | | | | |
| UGMLTSEC-301A | I | Principles of Management | 4 | 4 |
| | II | Organizations of supportive services in Hospital | | |
| | III | Organizations of Clinical services in Hospital | | |
| Semester 3 Practical | | | | |
| UGMLTCP-301 | | Practical in Standardization and Reagent Preparation | 2 | 2 |
| | | | 2 | 2 |
| UGMLTCP-302 | | Practical in Microbiology laboratory Techniques | 2 | 2 |
| UGMLTCP-303 | | Practical in Determination of routine Hematological Tests | 2 | 2 |
| | | | 2 | 2 |
| UGMLTGEP-301A | | Practical in Determination of Basic Serological Tests | | |

- We have designed special practical for this module to enhance allied healthcare professional skills of the learner



S.Y.Bsc. Medical Lab Technology

Semester 4

| Paper 1 [UGMLTC-401]: Biochemistry-2 | | | | |
|---|------|---|---------|--------|
| Course Code | Unit | Topics | Credits | L/week |
| UGMLTC-401 | I | Metabolism of carbohydrates, proteins and lipids | 4 | 4 |
| | II | General body profile test | | |
| | III | Special Profile testing in biochemistry | | |
| Paper 2: [UGMLTC402]: Microbiology-2 | | | | |
| UGMLTC-402 | I | Study of biochemical testing, different growth media | 4 | 4 |
| | II | Study of Gram-negative and Gram-positive bacteria's | | |
| | III | Study of Diagnosis of important Pathogens | | |
| Paper 3: [UGMLTC403]: Hematology-2 | | | | |
| UGMLTC-403 | I | Special Techniques in Hematology | 4 | 4 |
| | II | Bone Marrow examination | | |
| | II | Different type of leukemia | | |
| Paper 4 [UGMLT-GE401A]: Coagulation Studies | | | | |
| UGMLT-GE-401A | I | Hemostasis and coagulation factors | 4 | 4 |
| | II | Coagulation pathway | | |
| | III | Blooding Disorders | | |
| Paper 5[UGMLTSEC-401A]: Skill Enhancement course (Hospital Management-2) | | | | |
| UGMLTSEC-401A | I | Principles of Material Management | 4 | 4 |
| | II | Principles of Human resource Management | | |
| | III | Principles of Quality Management | | |
| Semester 4 Practical | | | | |
| UGMLTCP-401 | | Determination Body profile test | 2 | 2 |
| UGMLTCP-402 | | Study of Gram negative and positive bacteria's | 2 | 2 |
| UGMLTCP-403 | | Special Techniques in Hematology | 2 | 2 |
| UGMLT-GEP-401A | | Determination Routine coagulation Tests | 2 | 2 |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 3**

| Paper 1 [UGMLTC301]: Biochemistry-1 | | |
|--|--|---------------|
| Course Code | Title | Credit |
| UGMLTC 301 | Biochemistry | 4 |
| Unit I | 1. Important Biomolecules 1.1.1 Carbohydrate 1.1.2 Proteins 1.1.3 Lipids 1.1.4 Enzymes | |
| Unit II | 1. Metabolic factor 2.1.1 Water and mineral metabolism 2.1.2 Determination of Acid-base Balance and blood Gas 2.1.3 Study of hormones 2.1.4 Study of Vitamins | |
| Unit III | 1. Introduction of Laboratory Techniques 3.1.1 Beer-lambert's Law AND End point reaction method 3.1.2 Centrifugation ,Chromatography 3.1.3 Flurometry and Reflectance Photometry 3.1.4 Turbidimetry | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 3**

| Paper 2: [UGMLTC302]: Microbiology-1 | | |
|---|---|---------------|
| Course Code | Title | Credit |
| UGMLTC 302 | Microbiology-1 | 4 |
| Unit I | 1. Bacteriology 1.1.1 Introduction to bacteriology 1.1.2 Factors influencing the growth of bacteria 1.1.3 Sources and transmission of infection | |
| Unit II | 1. Culturing of microorganisms 2.1.1 Different types of culture- Media, Biochemical 2.1.2 Sterilization and Disinfection Techniques 2.1.3 Inoculation of culture media | |
| Unit III | 1. Smear preparation and Staining Methods 3.1.1 Smear preparation and Staining requirements 3.1.2 Gram Staining and Acid-fast Staining 3.1.3 Albert's Staining and Capsule Staining | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 3**

| Paper 3: [UGMLTC303]: Hematology-1 | | |
|---|--|---------------|
| Course Code | Title | Credit |
| UGMLTC-303 | Hematology-1 | 4 |
| Unit I | 1.Hematopoietic system of body 1.1.1 Hematopoietic a) Erythropoiesis b) Leukopoiesis c)Thrombopoiesis d)Hemoglobin 1.1.2 Complete blood count Hb, RBC, WBC, PLT, MCV, MCHC, MCH, RDW, Color index. 1.1.3 ESR Techniques | |
| Unit II | 1. Hematological Diseases, Different anemia's 2.1.1 Abnormal Hemoglobin and Hemoglobinopathies 2.1.2 Anemia and Thalassemia's 2.1.3 Leukemia's | |
| Unit III | 1. Hematological Test 3.1.1 Preparation of blood smear and staining 3.1.2 Examination of Reticulocyte count 3.1.3 Absolute Eosinophilia | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 3**

| Paper 4 [UGMLTGE301]: SEROLOGY | | |
|---------------------------------------|---|---------------|
| Course Code | Title | Credit |
| UGMLTGE-301 | SEROLOGY | 4 |
| Unit I | 1. Introduction of serology 1.1.1 Antigen 1.1.2 Antibody (Immunoglobulin) 1.1.3 Autoimmune diseases | |
| Unit II | 1. Serological reaction 2.1.1 Flocculation Test and Agglutination Test 2.1.2 Precipitin Test and Complement Fixation Test 2.1.3 Immunofluorescences Test and ELISA | |
| Unit III | 1. Serological test 3.1.1 Demonstration of antibody or antigen in the serum of host 3.1.2 Screening Procedure for TORCH 3.1.3 Demonstration of Tri-DOT Screening Test | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 3**

| Paper 5: [UGMLTSEC301-A]: Skill Enhancement course (Hospital Management-1) | | |
|---|--|---------------|
| Course Code | Title | Credit |
| UGMLT SEC-301-A | Hospital Management-1 | 4 |
| Unit I | 1. Principles of Management 1.1.1 What is management 1.1.2 Functions of management 1.1.3 Planning and staffing of management | |
| Unit II | 1. Organizations of supportive services in Hospital 2.1.1 Laboratory and Radiology services 2.1.2 Blood bank and Pharmacy services 2.1.3 Ambulance and Medical Records | |
| Unit III | 1. Organizations of Clinical services in Hospital 3.1.1 OPD and IPD(Wards) 3.1.2 Operation Theatres ,ICU, Cathlab 3.1.3 Dialysis units, Endoscopy, Emergency | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 3 Practical**

| Course code | Title | Credit |
|--------------------|--|---------------|
| UGMLTCP-301 | BIOCHEMISTRY-1 | 2 |
| | <p style="text-align: center;">Standardization and Reagent preparation</p> <ol style="list-style-type: none"> 1. Standardization of Glassware 2. Standardization of Distilled water 3. Primary Standard Preparation <ol style="list-style-type: none"> a) Na_2CO_3 b) HCL c) NaOH d) $\frac{2}{3}$ N H_2SO_4 4. Standardization of photometer 5. Reagent preparation | |
| UGMLTCP-302 | MICROBIOLOGY-1 | 2 |
| | <p style="text-align: center;">Microbiology laboratory Techniques</p> <ol style="list-style-type: none"> 1. Orientation to Diagnostic microbiology use and care of microscope 2. Equipment's in microbiology 3. Smear Preparation and Identification of micro-organism 4. Gram staining and Acid-fast staining 5. Albert's staining and India ink Preparation 6. Hanging drop Techniques 7. spore and Spirochete staining | |
| UGMLTCP-303 | HEMATOLOGY-1 | 2 |
| | <p style="text-align: center;">Routine Hematological Tests</p> <ol style="list-style-type: none"> 1. Preparation of Blood Smear examination 2. Staining Techniques 3. Complete blood count 4. Reticulocyte count 5. Absolute Eosinophilia 6. Determination of ESR Techniques 7. Screening for sickle cell anemia | |

| | | |
|-------------------------|--|---|
| | | |
| UGMLTGE 301A | SEROLOGY | 2 |
| | <p style="text-align: center;">Basic Serological Tests</p> <ol style="list-style-type: none"> 1. Demonstration of antibody or antigen in the serum of host 2. Identification of Salmonella group of organisms by Widal test 3. To perform VDRL and RPR Test 4. To perform RA, CRP and ASO Test 5. Screening Procedure for TORCH 6. Demonstration of Tri-DOT Screening Test 7. ELISA Techniques | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 4**

| Paper 1 [UGMLTC401]: Biochemistry-2 | | |
|--|--|---------------|
| Course Code | Title | Credit |
| UGMLTC 401 | Biochemistry-2 | 4 |
| Unit I | 1. Metabolism 1.1.1 Carbohydrates 1.1.2 Proteins 1.1.3 Lipids | |
| Unit II | 1. General body profile test 2.1.1 Kidney function test 2.1.2 Liver profile test 2.1.3 Lipids profile test | |
| Unit III | 1. Special profile testing in Biochemistry 3.1.1 Cardiac profile test and Thyroid profile test 3.1.2 PCOD ,PCOS profile and 3.1.3 Male and Female Fertility-checkup profile test | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 4**

| Paper 2: [UGMLTC402]: Microbiology-2 | | |
|---|---|---------------|
| Course Code | Title | Credit |
| UGMLTC 402 | Microbiology-2 | 4 |
| Unit I | 1. Study of biochemical testing, different growth media 1.1.1 Composition and Preparation of media 1.1.2 Biochemical Characteristic 1.1.3 Different media growth Characteristic of bacteria | |
| Unit II | 1. Study of Gram-negative and Gram-positive bacteria's 2.1.1 Gram-negative Bacilli, cocci 2.1.2 Gram-positive Bacilli, cocci 2.1.3 Case Study | |
| Unit III | 1. Study of Diagnosis of important Pathogens 3.1.1 Anaerobic Bacterial, Bacteroides, Clostridium, Treponema 3.1.2 Vibrio cholerae, H. influenza, B. pertussis, Nocardia, 3.1.3 Spirochaetes Leptospira, Borrelia, Actinomyces | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 4**

| Paper 3: [UGMLTC403]: Hematology | | |
|---|--|---------------|
| Course Code | Title | Credit |
| UGMLTC-403 | Hematology | 4 |
| Unit I | 1. special Techniques in Hematology 1.1.1Determination of serum iron and TIBC and Osmotic fragility 1.1.2 Preparation of Heinz bodies 1.1.3Preparation of LE cell, Lupus erythematosus | |
| Unit II | 1 Bone marrow examination 2.1.1 Bone marrow site of collection 2.1.2 Bone marrow smear Preparation 2.1.3Staining Methods. | |
| Unit III | 1.Different type of leukemia 3.1.1Acute leukemia 3.1.2 Chronic Leukemia 3.1.3 Leukemia Case Study | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 4**

| Paper 4 [UGMLT-GE401A]: Coagulation Studies | | |
|--|--|---------------|
| Course Code | Title | Credit |
| UGMLT-GE401A | Coagulation Studies | 4 |
| Unit I | 1.Hemostasis and coagulation factors 1.1.1 Mechanism of physiologic hemostasis 1.1.2 Coagulation cascade and Factor responsible of Hemostasis 1.1.3 Coagulation pathway a) Intrinsic pathway b) Extrinsic pathway c) Common pathway | |
| Unit II | 1.Coagulation Techniques 2.1.1 Bleeding Time (BT) and Clotting Time (CT) 2.1.2 Prothrombin Time (PT) 2.1.3 Activated Partial Thromboplastin Clotting Time (APTT) | |
| Unit III | 1. Bleeding Disorders 3.1.1 Platelet Function Defects 3.1.2 Disseminated intravascular coagulation (DIC) 3.1.3 Prothrombin Deficiency and Factor Deficiency | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 4**

| Paper 5[UGMLTSEC-401A]: Skill Enhancement course (Hospital Management-2) | | |
|---|--|---------------|
| Course Code | Title | Credit |
| UGMLT-SEC-401A | Hospital Management-2 | 4 |
| Unit I | 1. Principles of Material Management 1.1.1 what is Material Management 1.1.2 Purchasing, inventory, Records of store 1.1.3 Material Management cycle | |
| Unit II | 1 Principles of Human resource Management 2.1.1 Hospital Information systems (HIS) 2.1.2 Health records 2.1.3 Relevant case studies | |
| Unit III | 1. Principles of Quality Management 3.1.1 what is Quality 3.1.2 Lab NABH documentation 3.1.3 Lab NABH Inspection | |

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**S.Y.Bsc. Medical Lab Technology
Choice Based Credit
Semester 4 Practical**

| Course code | Title | Credit |
|---------------------|---|---------------|
| UGMLTCP-401 | BIOCHEMISTRY | 2 |
| | <p style="text-align: center;">Determination Body profile test</p> <p>1.Kidney function test 2.Liver profile test 3.Lipids profile test 4.Cardiac profile test 5.Thyroid profile test</p> | |
| UGMLTCP-402 | MICROBIOLOGY | 2 |
| | <p style="text-align: center;">Study of Gram negative and positive bacteria's</p> <p>1.Identification of Enterobacteriaceae 2.study of Staphylococcus, streptococcus 3Spirochetes 4 Gram negative and positive bacteria's-biochemical identification</p> | |
| UGMLTCP-403 | HEMATOLOGY | 2 |
| | <p>1.Determination of Osmotic fragility test 2.Preparation of LE cell, Lupus erythematosus 3.Preparation of Heinz bodies 4.Bone marrow examination</p> | |
| UGMLTGE 401A | Coagulation Studies | 2 |
| | <p style="text-align: center;">Determination of Routine coagulation Tests</p> <p>1.Bleeding Time (BT) 2.Clotting Time (CT) 3.Prothrombin Time (PT) 4.Activated Partial Thromboplastin Clotting Time (APTT)</p> | |

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References:

1. iTransform Handbook on Anatomy, Physiology
2. iTransform Handbook on Foundation Program
3. iTransform Handbook on Medical Terminologies
4. iTransform Handbook on Phlebotomy
5. Medical Laboratory Technology, Vol. 1,2,3, Chief editor: Kanai Mukherjee,CBS Publication
6. Text Book of Medical Laboratory Technology, by Mrinalini Sant,CBS Publication
7. Text Book of Medical Laboratory Technology, by P.B. Godkar,Darshan Godkar, vol. 1,2 Bhalani Publication.
8. Medical Laboratory Technology, Methods & Interpretation, by Ramnik Sood, Jaypee Publication
9. Histological Techniques, A Practical Manual By K. Laxminarayan, Bhalani Publication



A handwritten signature in blue ink, appearing to be "J. S. D." or similar.

HOD,
Department of Microbiology

