

**CURRICULUM
FOR
THIRD SEMESTER
OF
THREE-YEAR DIPLOMA COURSE
IN
MEDICAL
LAB
TECHNOLOGY**

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 301	Course Title : Clinical Microbiology-III
Semester : 3rd	Credits: 03
Hours per Week: 3 (L:3 T:0 P:0)	

COURSE OBJECTIVE

The students undergoing training of medical laboratory technology learn the techniques of collection of samples, their processing and identification of various pathogens like parasites and viruses by using different techniques. In addition to the above, students are given training in the use of safety measures while handling infected materials. The training is aimed at making the students competent to identify the causative parasites and viruses for microbial infections.

COURSE CONTENTS

- 1. Introduction to medical parasitology**
- 2. General characteristics, morphology, classification**
 - 2.1. Protozoa
 - 2.2. Helminthes
- 3. Laboratory Samples for detection of parasites Collection, transportation and processing of samples for detection of parasites in.**
 - 3.1. Blood
 - 3.2. Stool (Principle and Procedure of Concentration technique)
- 4. Giardia and Entamoeba histolytic**
 - 4.1. Morphology
 - 4.2. Life cycle
 - 4.3. Lab diagnosis
- 5. Ancylostoma and Ascaris lumbricoides**
 - 5.1. Morphology
 - 5.2. Life cycle
 - 5.3. Lab diagnosis
- 6. T solium, T saginata**
 - 6.1. Morphology
 - 6.2. Life cycle
 - 6.3. Lab diagnosis
- 7. Malarial Parasite (P. Vivax and P. Falciparum)**

- 7.1. Morphology
- 7.2. Life cycle
- 7.3. Lab diagnosis

8. Virology

- 8.1. Introduction
- 8.2. General Characteristics, Classification Structure of virus.

9. Medically important viruses

- 9.1. Rabies
- 9.2. Polio
- 9.3. HIV
- 9.4. HBV (Hepatitis 'B' virus)
- 9.5. HCV

10. Virological Samples

- 10.1. Collection
- 10.2. Transportation
- 10.3. Storage

COURSE OUTCOME

- Explain the role of medically important parasites.
- Explain the general characteristics of morphology classification of protozoa and helminthes
- Process blood and stool samples for parasitic detection.
- Explain the Life cycle and Lab. diagnosis of Giardia and Entamoeba histolytica
- Explain the Life cycle and Lab. diagnosis of Ancylostoma and Ascaris lumbricoides
- Explain the Life cycle and Lab. diagnosis of T solium, T saginata.
- Explain the Life cycle and Lab. diagnosis of Malarial Parasite (P. Vivax and P. Falciparum).
- Define the General Characteristics and Structure of virus.
- Explain the various Medically Important Viruses and their diagnosis and clinical importance.
- Collect various samples for virological study, their storage and transportation.

INSTRUCTIONAL STRATEGY

The teacher should lay emphasis on common names, morphology of helminith and blood parasites. The students should be shown diagrams/illustration/permanent fixed slides and audio-visual aids. The students should be made aware about medically important viruses, collection and cultivation of viruses.

RECOMMENDED BOOKS

1. Parasitology by KD Chatterjee; Chatterjee Medical Publishers, Kolkatta
2. Pledical Parasitology by Arora & Arora
3. An introduction to Medical Laboratory Technology by FJ Baker; Butterworth Heinemann Oxford
4. Text Book of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi
5. Textbook of Microbiology by Ananthanarayan and Panikar; Orient Longman, Hyderabad

6. Text Book of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House; Mumbai
7. Medical Laboratory Manual for Tropical Countries Vol. I and II by Monica Cheesbrough; Cambridge University Press; UK
8. Practical Book of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi
9. Medical Laboratory Science Theory and Practice by J Ochei and A Kolhatkar
10. Medical Laboratory Science by J. Achie and Kolhatkar, Tata McGraw Hill
11. Medical Laboratory Technology by Kanai Lal Mukherjee; Tata McGraw Hill Publishers, New Delhi

UNIT WISE TIME AND MARKS DISTRIBUTION

Unit No.	Time allotted (Hrs)	Marks Allotted (%)
1	02	04
2	04	08
3	07	18
4	04	08
5	04	08
6	05	08
7	06	12
8	04	08
9	09	18
10	03	08
Total	48	100

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 302	Course Title : Clinical Hematology-III
Semester : 3rd	Credits: 03
Hours per Week: 3 (L:3 T:0 P:0)	

COURSE OBJECTIVE

This subject aims to enable the students to carry out routine clinical laboratory investigation (blood, urine etc.). He/she should be able to provide technical help for selected sophisticated hematological techniques with adequate knowledge of various principles. The training in laboratory safety is also provided.

DETAILED CONTENTS

1. Red Cell Indices

- 1.1. MCV
- 1.2. MCH
- 1.3. MCHC
- 1.4. Definition, reference range, calculation and interpretation

2. Supravital stains:

- 2.1 Reticulocyte counting
- 2.2 Diagnostic importance
- 2.3 Principle, procedure of staining, calculation,
- 2.4 Reference values and interpretation

3. Absolute Eosinophil count

4. Anaemias

- 4.1. Definition and classification
- 4.2. Laboratory diagnosis of:
 - 4.2.1. Iron deficiency anaemia
 - 4.2.2. Megaloblastic anaemia
 - 4.2.3. Haemolytic anaemia including sickle cell anaemia
 - 4.2.4. Aplastic anaemia

5. Storage /preservation of blood specimens and mounting of blood films

6. Quality Assurance in Hematology

COURSE OUTCOME

- Explain importance of red cell indices and their calculations.
- Define supravital stains, their importance and perform the reticulocyte count.
- Perform the absolute eosinophil count.
- Explain Anemia with their classification.
- Store and preserve blood specimens /smears before and after processing

- Explain the importance of quality control.

INSTRUCTIONAL STRATEGY

Teachers should lay emphasis on concepts and principles while covering the subject contents. In the practical work, the students should be given opportunity to do practical work individually but under supervision.

Visits to hospital/medical colleges should be planned to demonstrate the processes. It is important to make use of models and audiovisual aids to show specific processes. Experts should be invited to deliver lectures on specific topics and share their experiences.

RECOMMENDED BOOKS

1. Medical Laboratory Technology Vol. 1 by KL Mukherjee; Tata McGraw Hill Publishing Company, New Delhi
2. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworths Heinemann, Oxford
3. Medical Laboratory Manual for Tropical Countries by Monica Cheesbrough; Cambridge University Press; UK
4. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai
5. Practical Haematology by J.V Decie; ELBS with Churchill Living Stone, UK
6. Medical Laboratory Science Theory and Practical by J. Ochei and Kolhatkar; Tata McGraw Hill Publishing Company Ltd., New Delhi
7. McGraw Hill Publishing Company Ltd., New Delhi

UNIT WISE TIME AND MARKS DISTRIBUTION

Unit No.	Time allotted (Hrs)	Marks Allotted (%)
1	07	15
2	07	25
3	02	05
3	27	35
4	02	10
5	03	10
Total	48	100

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 303	Course Title : Clinical Bio-Chemistry-III
Semester : 3rd	Credits: 03
Hours per Week: 3 (L:3 T:0 P:0)	

COURSE OBJECTIVE

The students are imparted basic training of theoretical and practical aspects in the field of clinical biochemistry. The students are made to learn the techniques of collection of clinical samples and their processing along with recording of data. The student will also obtain the basic knowledge of chemistry and metabolism of various metabolites which are routinely estimated in different diseases so that a clear understanding of the different tests is obtained. The students are also given basic training in safety measures, quality control and automation

DETAILED CONTENTS

1. **Diagnostic enzymes**
 - 1.1. Serum Amylase
 - 1.1.1. Principle and procedures of estimation
 - 1.1.2. Reference values
 - 1.1.3. Clinical importance
 - 1.2. Lipase
 - 1.2.1. Principle and procedures of estimation
 - 1.2.2. Reference values
 - 1.2.3. Clinical importance
2. **HbA1c (Glycosylated Haemoglobin)**
 - 2.1. Introduction
 - 2.2. Reference values
 - 2.3. Clinical importance
3. **Serum Calcium and Phosphorus**
 - 3.1 Principle and procedures of estimation
 - 3.2 Reference values
 - 3.3 Clinical importance
4. **Serum Electrolytes**
 - 4.1. Introduction
 - 4.2. Reference values
 - 4.3. Clinical importance
5. **Urinary Proteins and Creatinine**
 - 5.1. 24 hr. urinary proteins and creatinine estimation
 - 5.2. Reference values
 - 5.3. Clinical importance

6. Renal Function Tests (Renal clearance Tests)

- 6.1. Urea clearance Test
- 6.2. Creatinine clearance test
- 6.3. Their Clinical importance

COURSE OUTCOME

- Perform the estimation of Amylase enzyme.
- Perform the estimation of Lipase enzyme.
- Explain HbA1c and its Clinical importance.
- Perform the estimation of Calcium and Phosphorus.
- Define electrolytes and their clinical importance
- Perform the estimation of urinary protein examination.
- Define Renal clearance and will be able to the urea and Creatinine clearance test

INSTRUCTIONAL STRATEGY

Teachers should lay emphasis on concepts and principles while covering the subject contents. In the practical work, the students should be given opportunity to do practical work individually but under supervision.

RECOMMENDED BOOKS

1. A Procedure Manual for Routine Diagnostic Tests Vol. I, II and III by KL Mukherjee; Tata McGraw Hill Publishers, New Delhi
2. Practical Clinical Biochemistry by H. Varley; Heinmann Publishers, Oxford
3. A Text Book of Medical Laboratory Technology by P Godkar; Bhalani Publishers, Mumbai
4. Medical Laboratory Science, Theory and Practice by J Ochaie and A Kolhatkar, TataMcGraw Hill

UNIT WISE TIME AND MARKS DISTRIBUTION

Unit No.	Time allotted (Hrs)	Marks Allotted (%)
1	10	20
2	06	16
3	05	12
4	05	12
5	12	20
6	10	20
Total	48	100

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 304	Course Title : Histopathology-I
Semester : 3rd	Credits: 04
Hours per Week: 4 (L:4 T:0 P:0)	

COURSE OBJECTIVE

This part of the subject is aimed at introducing the students to the various types of tissue preparations and developing expertise in the students to cut very thin tissue sections from tissue blocks and facilitate visualization using various stains and dyes.

DETAILED CONTENTS

- 1. Introduction and definition of:**
 - 1.1 Histology
 - 1.2 Histopathology
 - 1.3 Biopsy
 - 1.4 Autopsy
 - 1.5 Autolysis
 - 1.6 Putrefaction
- 2. Preparation of Tissue (Different Methods of Preparation of Tissue)**
 - 2.1 Unfixed Tissue preparations
 - 2.1.1. Imprint methods – Impression Smears
 - 2.1.2 Teased preparation
 - 2.1.3 Squashed preparation
 - 2.1.4 Frozen section
 - 2.2 Fixed Tissue preparations (introduction only)
 - 2.2.1 Paraffin embedding
 - 2.2.2 Celloidin embedding
 - 2.2.3 Gelatin embedding
- 3. Reception of Specimen**
 - 3.1 Reception, recording, labeling and preservation of histological specimen
- 4. Fixation (Histological Specimens)**
 - 4.1 Classification of fixatives
 - 4.2 Composition of various fixatives
 - 4.3 Advantages and disadvantages
- 5. Processing (by Paraffin Technique)**
 - 5.1 Dehydration
 - 5.2 Clearing/Dealcoholization
 - 5.3 Infiltration and impregnation
 - 5.4 Paraffin embedding
- 6. Microtomy**
 - 6.1 Microtome and its types, Working principle, care and maintenance
 - 6.2 Microtome Knives

- 6.2.1 Various types of knives
- 6.2.2 Sharpening of knives
- 6.2.3 Honing technique
- 6.2.4 Stropping technique
- 6.3 Section Cutting
 - Rough cutting
 - 6.3.1 Fine cutting
 - 6.3.2 Use of tissue floatation bath
 - 6.3.3 Use of various adhesive media and lifting of sections to the slide
 - 6.3.4 Errors /cutting faults in sections and their remedies

7. Staining Theory of staining and Associated terms

- 7.1. Solvents
- 7.2. Mordants
- 7.3. Metachromasia
- 7.4. Progressive and regressive staining
- 7.5. Use of controls in staining and their significance
- 7.6. Routine Stain
 - 7.6.1. Haematoxylin and Eosin
 - 7.6.2. Principle and various steps of staining
 - 7.6.2.1. Deparaffinization
 - 7.6.2.2. Hydration
 - 7.6.2.3. Nuclear Staining
 - 7.6.2.4. Differentiation
 - 7.6.2.5. Blueing
 - 7.6.2.6. Counterstaining
 - 7.6.2.7. Dehydration
 - 7.6.2.8. Clearing and Mounting
 - 7.6.2.9. Results

8. Special stains

- 8.1. Principle, procedure and interpretation of different types of stains
 - 8.1.1. PAS (Periodic Acid Schiff's Reagent)
 - 8.1.2. Silver impregnation stain – Reticulin fibre
 - 8.1.3. Ziehl Neelson's – for AFB and Leprae
 - 8.1.4. Masson's trichrome stain
 - 8.1.5. Oil Red O – fat
 - 8.1.6. Gram's stain – Gram +ve and Gram –ve

9. Mountants

Various types of mounting media (aqueous, resinous) Advantages and Disadvantages

10. Decalcification

Process and Assessment of decalcification

11. Handling of Frozen Section

- 11.1. Reception and processing of frozen tissue
- 11.2. Frozen section cutting
- 11.3. Staining
- 11.4. Rapid H&E
- 11.5. Fat stain

11.6. Mounting of frozen section

12. Autopsy

Introduction to autopsy technique, Use of autopsy

13. Automation

Introduction of automatic tissue processor (Histokinette) and Automatic knife sharpener.

COURSE OUTCOME

On completion of this course students will be able to:

- Define and explain various terminologies used in histopathology.
- Perform the preparations of tissue by various methods.
- Work in reception room which include reception and labeling of histopathological specimen.
- Define and explain the fixative its types and perform the fixation.
- Process the tissues by paraffin technique.
- Work on various types of microtomes, section cutting and proper handling of their knives.
- Explain the theory of staining and Perform H & E staining.
- Perform special staining
- Use of various types of mounting media.
- Perform decalcification process
- Process frozen sections.
- Define Autopsy and its uses.
- To handle the automatic tissue processor.

INSTRUCTIONAL STRATEGY

Teachers should lay emphasis on concepts and principles while covering the subject contents. In the practical work, the students should be given opportunity to do practical work individually. Visits to hospital/medical colleges should be planned to demonstrate the processes. It is important to make use of models and audiovisual aids to show specific processes. Experts should be invited to deliver lecture on specific topics and share their experiences.

RECOMMENDED BOOKS

1. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworths Scientific, London
2. Carleton's Histological Technique by RAB, Drury, MADM (OXON), FRC Path, Northwick Paru Hospital, Harrow, Middlesex
3. Theory and Practice of Histological Technique by John D. Bancroft, Churchill Livingstone, London
4. Cellular Pathology Techniques by CFA Culling, Butterworths, London
5. Medical Lab Technology by Dr. Ramnik Sood, MD, Maulana Azad College, New Delhi

UNIT WISE TIME AND MARKS DISTRIBUTION

Unit No.	Time Allotted (Hrs)	Marks Allotted (%)
1	01	04
2	02	05
3	01	04
4	05	10
5	04	08
6	06	11
7	06	11
8	10	20
9	02	05
10	03	05
11	04	07
12	02	05
13	02	05
Total	48	100

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 305	Course Title : Transfusion Medicine -I
Semester : 3rd	Credits: 03
Hours per Week: 3 (L:3 T:0 P:0)	

COURSE OBJECTIVE

Blood transfusion has become a lifesaving procedure in modern medical sciences. To avoid any mistake, the students must understand to learn the blood bank procedures, such as ABO & Rh blood grouping carefully and accurately. He must also have an adequate knowledge of cross matching both major and minor procedures as well as selection of a suitable donor. He should be competent enough to collect blood and its long-term preservation for safe blood transfusion.

DETAILED CONTENTS

- 1. Introduction to Transfusion medicine (blood banking)**
- 2. ABO Blood Group System**
 - 2.1. Antigens and antibodies involved
 - 2.2. Principle and procedure of ABO blood grouping
 - 2.3. Various blood sub groups (A₁, A₂, A₁B, A₂B)
- 3. The Rh Blood Group System**
 - 3.1 Antigen and antibody involved
 - 3.2 Principle and procedure of Rh grouping
 - 3.3 Variant of D antigen (Du)
- 4. Anticoagulants used in blood bank**
 - 4.1 Types and composition of various anticoagulants
 - 4.2 Advantages and disadvantages of various anticoagulants
- 5. Criteria for selection of Donor**
 - 5.1. Selection of Donor
 - 5.2. Rejection of Donor
- 6. Blood Collection and storage**
 - 6.1 Blood collection procedure
 - 6.2 Transportation and storage
- 7. Infectious diseases and Screening of blood for transfusion:**
 - 7.1 MP
 - 7.2 VDRL
 - 7.3 HIV
 - 7.4 HbsAg
 - 7.5 HCV
- 8. Compatibility Testing (Cross Match)**
 - 8.1 Major
 - 8.2 Minor
 - 8.3 Coomb's (Direct and Indirect)
- 9. Various blood components (Packed cells, Fresh frozen plasma, Cryoprecipitate, PRP (Platelet rich plasma))**

- 9.1 Preparation
- 9.2 Preservation
- 9.3 Uses

COURSE OUTCOME

- Enumerate the role of Transfusion Medicine in health care.
- Explain and perform ABO group system.
- Explain and perform Rh group system.
- Explain the various types of anticoagulants and their use.
- Define the Criteria for selection/Rejection of donor.
- Collect the blood from donor and its storage.
- Perform the various screening tests for transfusion.
- Perform the coombs test.
- Perform Apheresis procedure (Separation of different blood components).

RECOMMENDED BOOKS

1. Introduction to Modern Lab Technology by FJ Baker, Butterworth, Heinemann PublishersOxford
2. Text book of Modern Lab Technology by Praful and Godker, Bhalani Publisher, Mumbai
3. Modern Lab Technology – A Procedure Manual for Routine Diagnostic Test by Kanai L.Mukerjee, Volume 1, Tata McGraw Hill Publishing, New Delhi
4. Modern Blood Banking and Transfusion Practices by Denise M Harmering, Jay PeeBrothers, New Delhi

UNIT WISE TIME AND MARKS DISTRIBUTION

Unit No.	Time allotted (Hrs)	Marks Allotted (%)
1	02	05
2	07	20
3	06	15
4	06	15
5	04	06
6.	03	06
7	10	15
8	05	10
9	05	08
Total	48	100

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 306	Course Title : Clinical Microbiology – III Lab
Semester : 3rd	Credits: 01
Hours per Week: 2(L:0 T:0 P:2)	

COURSE OBJECTIVE:

The students undergoing training of medical laboratory technology learn the techniques of collection of samples, their processing and identification of various pathogens like parasites and viruses by using different techniques. In addition to the above, students are given training in the use of safety measures while handling infected materials. The training is aimed at making the students competent to identify the causative parasites and viruses for microbial infections.

LIST OF PRACTICALS:

1. Collection and routine stool examination for detection of intestinal parasites
 - 1.1 Saline preparation
 - 1.2 Lugol's Iodine preparation
 - 1.3 Concentration methods
 - 1.3.1 Floatation method (saturated salt solution/zinc sulphate)
 - 1.3.2 Sedimentation method (formal ether)

2. Identification of following adult worms/cyst from preserved specimen/slides
 - 2.1 Tapeworm
 - 2.2 Roundworm
 - 2.3 Hookworm
 - 2.4 Giardia
 - 2.5 Entamoeba. hystolytica, E. Coli

3. Preparation of smear and identification of blood parasites
 - 3.1 Preparation of stains (Leishman, Giemsa Field)
 - 3.2 Preparation of thin and thick smears
 - 3.3 Staining of smears by Leishman, Giemsa Field
 - 3.4 Examination of smears for malarial parasite (P. vivax and P. falciparum)
 - 3.5 Demonstration of various stages of malarial parasite from stained slides

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 307	Course Title : Clinical Hematology-III Lab
Semester : 3rd	Credits: 01
Hours per Week: 2(L:0 T:0 P:2)	

COURSE OBJECTIVE:

This subject aims to enable the students to carry out routine clinical laboratory investigation (blood, urine etc.). He/she should be able to provide technical help for selected sophisticated hematological techniques with adequate knowledge of various principles. The training in laboratory safety is also provided.

LIST OF PRACTICALS:

1. Counting of Reticulocyte in blood
2. Absolute Eosinophil count
3. PBF for classification of anemia
4. Mounting of blood films
5. Calculation of Red cell indices
6. Hb, total RBC Count, TLC ,DLC ,PCV
7. Estimation of Total Sr iron , Sr. Ferritin Sr .Transferrin

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 308	Course Title : Clinical Biochemistry –III Lab
Semester : 3rd	Credits: 01
Hours per Week: 2(L:0 T:0 P:2)	

COURSE OBJECTIVE:

The students are imparted basic training of practical aspects in the field of clinical biochemistry. The students are made to learn the techniques of collection of clinical samples and their processing along with recording of data. The student will also obtain the basic knowledge of chemistry and metabolism of various metabolites which are routinely estimated in different diseases so that a clear understanding of the different tests is obtained. The students are also given basic training in safety measures, quality control and automation

LIST OF PRACTICALS:

1. Serum bilirubin estimation
2. Phosphorus estimation
3. Calcium estimation
4. Renal clearance tests
5. SGOT estimation
6. SGPT estimation
7. ALP estimation
8. ACP estimation
9. Total cholesterol estimation
10. Triglyceride estimation
11. Estimation of HDL and calculation of VLDL and LDL
12. Urinary protein and creatinine estimation (24 hr)
13. Estimation of serum amylase

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 309	Course Title : Histopathology–I Lab
Semester : 3rd	Credits: 01
Hours per Week: 2(L:0 T:0 P:2)	

COURSE OBJECTIVE:

This part of the subject is aimed at introducing the students to the various types of tissue preparations and developing expertise in the students to cut very thin tissue sections from tissue blocks and facilitate visualization using various stains and dyes.

LIST OF PRACTICALS:

- 1.** Reception of specimen, labeling and preserving the specimen
- 2.** Preparation of various smears by unfixed methods
 - 2.1 Imprint smears
 - 2.2 Teased smears
 - 2.3 Squashed smears
- 3.** Preparation of different fixatives with special emphasis on preparation of formaline based fixatives
- 4.** Preparation of paraffin blocks from various tissue pieces and labeling with emphasis on orientation
- 5.** Handling of microtome
- 6.** Sharpening of microtome knives
- 7.** Preparation of blocks for fine cutting
 - 7.1 Rough cutting
 - 7.2 Trimming
- 8.** Practice of fine section cutting
- 9.** Practice of lifting of sections on the slides
- 10.** Performing H&E staining on sections
- 11.** Mounting and labeling of tissue section using various mounting medias

PROGRAM : THREE YEAR DIPLOMA PROGRAM IN MEDICAL LAB TECHNOLOGY	
Course code : TC 310	Course Title : Transfusion Medicine-I Lab
Semester : 3rd	Credits: 01
Hours per Week: 2(L:0 T:0 P:2)	

COURSE OBJECTIVE:

Blood transfusion has become a lifesaving procedure in modern medical sciences. To avoid any mistake, the students must understand to learn the blood bank procedures, such as ABO & Rh blood grouping carefully and accurately. He must also have an adequate knowledge of cross matching both major and minor procedures as well as selection of a suitable donor. He should be competent enough to collect blood and its long-term preservation for safe blood transfusion.

LIST OF PRACTICALS:

1. Performing ABO blood grouping by following method:
 - 1.1 Direct
 - 1.2 Tube Test
 - 1.3 Indirect (reverse)
 - 1.4 Subgroup
2. Performing-Rh grouping by following techniques:
 - 2.1 Slide
 - 2.2 Tube technique
3. Performance of Coombs Test
 - 3.1 Direct
 - 3.2 Indirect
4. Cross Matching (compatibility testing)
 - 4.1 Major
 - 4.2 Minor
5. Preparation of anticoagulants
 - 5.1 ACD (Acid Citrate Dextrose)
 - 5.2 CPD (Citrate Phosphate Dextrose)
 - 5.3 CPDA (Citrate Phosphate Dextrose Adenine)
6. Malarial Parasite test by Thick and Thin smear preparation
7. VDRL Test
8. HIV Test
9. HbsAg Test
10. HCV Test
11. Preparation of platelet rich plasma and platelet poor plasma