Women Empowerment Animation And Training

FATIMA COLLEGE, Madurai - 625 018.

Ph. 2668016, 2669015, 96006 64011

COURSES UNDER WEAT PROJECT

S.No.	Course Name	Duration	Fees
1.	**DMLT** Diploma in Medical Lab Technology - (Lab Technician Course)	1 Year	10,000/-
2.	**CCCA** (Certificate Course in Computer Application) 1. M.S. Word 2. M.S. Excel 3. M.S. Powerpoint 4. Photoshop 5. HTML	6 Months (2 Hours)	2700/-
3.	**DTP** (Desktop Publishing) 1. M.S. Word 2. Photoshop 3. CorelDraw 4. M.S. Dos 5. Pagemaker	3 Months (1 Hour)	1700/-
4.	**TALLY 9.0**	3 Months (1 Hour)	3000/-
5.	**DIPLOMA IN APPAREL DESIGNING** 1. All types of garments 2. Hand Embroidery - 40 types of Stitches. 3. All types of Zamiki, Beads, Sequence, Stone, Mirror Work 4. Hand work, Ice Stick, Glass Painting, etc.	1 Year (2 Hours)	3750/-
6.	**MACHINE EMBROIDERY** All Types of Machine Embroidery Designs	3 Months (1 Hour)	2500 /-
7.	**TAILORING** (25 Types of Garments and Hand work)	6 Months (2 hours)	2800/-
8.	**TAILORING** Chudidhar, Blouse Only (Already for all those who know stitching)	1 Month (1 Hour)	800/-
	SPECIAL COURSES		
9.	1. Zardosi Work	(30 Hours)	1000/-
	2. Hand Embroidery	(30 Hours)	600/-
	3. Hand Work	(30 Hours)	600/-
	4. Doll Making	(30 Hours)	600/-
	5. Silk Thread & Kundan	(30 Hours)	600/-
	6. M.S. Word	(30 Hours)	600/-
	7. Photoshop	(30 Hours)	600/-
	8. Bakery	(30 Hours)	1000/-

Syllabus

GENERAL PRINCIPLES OF LABORATORY EQUIPMENT/WORKS

History of biological science and its technology.

Organization of Laboratory: Laboratory management and its place in patients' care and service.

Medical ethics and habits of scientific mind.

Basic Principle of specimen collection: Appropriate collection technique, patient education and Preparation, Patient or Site preparation, An awareness related to specimen Transport, Processing and Labeling.

Preservation, Storage and Transport of specimens: Preservation of microbial cultures, antigen, antisera, antibodies (immunoglobulin), Blood, Urine, Serum, Platelets and Plasma etc.

Protection of specimen transporter, protection of specimen processor.

Labeling and rejection of specimens: Requisitions, Source, Diagnosis/ History, Test required, Unacceptable specimens.

An approach to laboratory diagnosis: Processing of clinical samples, Prioritization during processing, Gross examination of the specimen, Direct Media (liquid, solid, semisolid), Specimen inoculation, estimation and detection.

Personal cleanliness and awareness of handling acids, Organic solvents, Inflammable materials, carcinogenic and corrosive chemicals, Infected materials, Phathogenic microorganisms and Viruses etc.

Preparation and cleaning of new and used glassware and process of decontamination.

Methods of disinfection and sterilization.

Knowledge of rapid and automation methods in diagnostic microbiology, Pathology and Biochemistry.

Instructions and precautions in Immunological and Serological work.

Safety regulation in health laboratories and safeguards against electrical and mechanical instruments.

Proper disposal of wastes.

Basic knowledge of Medical and Entomology: Arthropods as transmitters of pathogens, sources of pathogens, Transmitted by insects.

Knowledge about structure of Microscope, Care and proper handling of microscope and its components, Instructions while handling Microscope, Micrometry,

Different type of microscopes, Advantages of different types of microscopes (Fluorescent, Electron and Scanning Electron Microscope-SEM).

Care and use of Physical, Chemical, Analytical and Electrical balance.

Principle of Colorimeter. Use and care and maintenance.

Principles, Care, Maintenance and Use of common laboratory equipment and machines of the medical laboratories.

Elementary knowledge of Statistical evaluation.

Abbreviations and conversion factors: Mass, Length, Area, Volume, Unit, Temperature, Time and other abbreviations.

Emergence of quality control: (Internal & External).

Knowledge of releasing diagnostic reports.

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ANATOMY

1. Introduction of Anatomy and Histology, Elementary Histology of cell, Tissues of the body organs and system, Elementary Anatomy and Histology of :-

a)	***Skeletal System***	:	Development of bones, types of bones, Micro-anatomical and gross structure of bones, Osteology of human skeleton and various movements of joints.
b)	***Muscular System***	:	Structure and type of muscles in human body, important muscles and their group action.
c)	***Circulation System***	:	Structure of heart and blood vessels, Systemic circulation, pulmonary circulation, Portal circulation and coronary circulation.
d)	***Lymphatic System***	:	Lymph vessels, Lymph nodes and Lymphoid organs, their structure and functions.
e)	***Digestive System***	:	Gastrointestinal tract and associated glands (Salivery glands, Liver, Pancreas etc.)
f)	***Respiratory System***	:	Trachea, Lungs including other air passages.
g)	***Urinary System***	:	Kidney, Ureters and Urinary bladder etc.
h)	***Endocrine System***	:	Thyroid glands, Parathyroid glands, Adrenal glands and Pituitary glands.

i) ***Famale and Male roproductory organs and Systems.***

j) ***Skin and its appendages.***

k)	***Special sense organs***	:	Eye, Ear, Nose, Taste buds, Subcutaneous sense organs.
l)	***Nervous System***	:	Brain, spinal cord and peripheral nerves.

PHYSIOLOGY

1.	***Blood***	: Blood volume, composition and function of blood, hemopoesis, blood groups, body fluids.
2.	***Cardiovascular System***	: General plan of circulatory system, functioning of heart and blood vessels (arteries, arterioles, capillaries and veins), heart sound and E.C.G., nervous control of heart and blood vessels, regulations of blood pressure.
3.	***Respiratory System***	: Functional anatomy of respiratory system, mechanism of breathing and exchange of gases in the lungs. Regulation of respiration, Oxygen and carbondioxide carriage, anoxia, dyspnea, cyanosis, artificial respiration and pulmonary function test.
4.	***Gastrointestinal System***	: Alimentary canal and its various glands, digestion of food in mouth, stomach and small intestines, gastro-intestinal tract movements and absorption. Function of liver and liver function tests and metabolism.
5.	***Excretory System***	: Structure and function of kidney and Urinary bladder. Structure and function of skin.
6.	***Endocrine Glands***	: Endocrine glands and their function. Regulation of endocrine secretion.
7.	***Reproductive System***	: Physiology of male and female reproductive system.
8.	***Muscular System***	: Type of muscles, innervations of muscles, neuromuscular transmission, mechanism of muscular contraction.
9.	***Nervous System***	: Neurone and its function, spinal cord and reflex action, sensory end organs and sensory path ways, cerebral cortex and motor path ways. Maintenance of posture and locomotion, automatic nervous system, Physiology of vision, hearing test and olfaction.

BIOCHEMISTRY (CHEMICAL PATHOLOGY)

1. Organization of laboratory, General laboratory instructions, Manners and Methods, Maintenance of laboratory records, Release of laboratory reports.
2. Cleaning and washing of used and new glassware in Biochemistry laboratory.
3. Preparation of anticoagulants, Reagents, Solutions and Buffer Solutions, Glass distilled water and De-ionized water.
4. Collection and preservation of specimens.
5. **Basic Concept of Chemistry:**

   (i) Matters, Elements (Metals and Non-Metals), Modern periodic table, Compounds, Mixture, Properties of compound and mixture, Law of chemical combination, Concept of molecules, Ionization, Atoms, Atomic number, Mass number, Valency, Chemical bonding, Representation of chemical reactions, Factors that influence the speed of reactions, Chemical Equations, Balancing of chemical equation. Concept of important organic solvents used in Biochemistry laboratory.

   (ii) Symbol, Formula and Mole concept, Significance of mole.

   (iii) *Volumetric Analysis:* Acidimetry and Alkalometry, Oxidation-Reduction (Redox) titration, Precipitation titration, Concept of end point and equivalent point, Normal solution, Normality, Molarity, Equivalent weight, Basicity, Indicators, Range of pH indicators, salient features of ionic theory of acid base indicators.

6. Concept of carbohydrates, Fats, Lipids, Proteins, Amino acids, Vitamins, Salivery digestion, Gastric digestion and Intestinal digestion.

Investigations/ Exercises:

7. **Laboratory detection of a free inorganic and organic radicals of physiological importance:** Arsenic, Copper, Lead, Mercury, Chloroform, Alcohol, Morphine and clinical significance of these tests.
8. Process of determination of pH by means of indicators.
9. **Acidimetry and Alkalometry**: The titration (i.e., determination of concentrations) of free bases with a standard acid (Acidimetry) and the titration of free acids with a standard base (Alkalometry).
10. Estimation of chloride, Serum calcium, Sodium, Phosphate, Urinary calcium, Urinary protein, Chyle etc. and clinical significance of these tests.
11. Detection of Bile pigment (Bilirubin), Urobilin, Urobilinogen, Causes of absence of urobilinogen in urine, Causes of presence of excess urobilinogen in urine.

12. Preparation of protein free filtrates.

13. **Liver Function Test:**

(i) van den Bergh (VB) reaction (Bilirubin in blood) – Immediate direct reaction, Biphasic reaction, Indirect reaction,

(ii) Icterus Index,

(iii) Serum bilirubin (**King: Malloy & Evelyn method**),

(iv) Serum protein,

(v) Total serum protein, albumin and globulin (Biuret method)- Principle of the technique and clinical significance.

14. **Renal Function Test**:

Blood Urea : Estimation of blood urea by Diacetyl monoxide method, Significance and principle of test, Causes of lowered urea level (prerenal, renal, post renal), Causes of raised urea level.

Serum Creatinine (Alkaline Picrate method: **Jaffe's Picrate method**).

15. **Lipids:**

(i) Estimation of serum cholesterol (**Sacket's method**).

(ii) Estimation of cholesterol (Free, Total and Esterified- Principle and clinical significance of the test).

16. **Glucose Metabolism:**

(i) Estimation of blood sugar (fasting and postprandial) by Toluidine, Folin-Wu and glucose oxidase method, Principle of the method, interpretation and significance- Causes of raise in blood sugar, causes of hypoglycemia.

(ii) **Glucose Tolerance Test**: Interpretation, significance-Syne glycosuria, Causes of glycosuria (Renal, Alimentary, Glycosuria of pregnancy) without hyperglycemia, Causes of glycosuria with hyperglycemia.

17. **Cerebro Spinal Fluid (CSF):** Estimation and its clinical significance

(i) CSF, chloride estimation.

(ii) CSF, protein estimation.

(iii) CSF, sugar estimation.

18. How to release laboratory reports.

19. Implementation of quality control assurance scheme.

CLINICAL PATHOLOGY

1. **Organization of Laboratory**: Reception and recording of specimen, Maintenance of Laboratory records. Proper care of apparatus and equipment.
2. **Preparation of Anticoagulants and its uses**:
   - (i) EDTA, Sodium Citrate Solution, Heparin, Double oxalate, Sodium fluoride, Trisodium Citrate etc.
3. **Collection of Blood**:
   - (i) Methods for venous blood
   - (ii) Methods for capillary blood
   - (iii) Vacutainer (Vacuum Tube) Method
   - (iv) Arterial blood
   - (v) Serum & Plasma
4. **Urine Examination**:
   - (i) Collection of urine specimen
   - (ii) Preservation of urine specimen
     - (a) **Physical Examination** : Colour, Odour, Reaction, Specific Gravity
     - (b) **Urine concentration Test**
     - (c) **Examination of urine for abnormal constituents**: Proteinuria: Sulfosalicylic test (Composition of sulfosalicylic acid solution), Heat Method, **Heller's Method**.
     - (d) **Quantitative estimation of proteins in urine**
       - (i) Using Esbach's albuminometer
       - (ii) Albuminuria + Bence Jones protein (both)
       - (iii) Bence Jones protein
       - (iv) Causes of Proteinuria
     - (e) **Reducing substances in urine**: Sugars, Non-sugars, Glycosuria, Benedict's Semi-quantitative test and qualitative test.
     - (f) **Keytone Bodies:**
       - (i) Causes of Ketonuria, **Rothra's Test**, Heat Test
       - (ii) Urobilinogen, Causes of Urobilinogen in Urine (**Ehrlich Test** and its principle)
       - (iii) Bilirubin: **Fouchet's Test** and its principle
       - (iv) Bile salts: **Hay's Sulphur Test**
       - (v) Bile Pigment Test: **Smith's Test**

(g) **Test for Blood in Urine**:

(i) Causes of Hematuria

(ii) Causes of Hemoglobinuria

(iii) Benzidine Test

(iv) Orthotoluidine Test

(h) **Microscopic Examination of Urine**:

(i) Red Cells, Pus Cells, Epithelial Cells

(ii) *Crystals:* Uric Acid, Amorphous Urates, Crystalline Urates, Cystine, Phosphates, Amorphous phosphates, Calcium Carbonates

(iii) *Casts:* Hyaline Casts, Granular Casts, Cylindroids, Fatty Casts, Leucocyte Cell Casts, Red Cell Casts, Waxy Casts, Epithelial Casts.

(v) *Parasites:* Trichomonas, Ova of Schistosoma Hematobium, Microfilaria

(vi) *Malignant Cells* (**Giemsa Stain, Pap Stain**)

(vii) *Other Cells:* Spermatozoa, Yeast Cells

Parasitological Examination of Feces :

History of Protozoa and Helminths in brief

Association of Parasite and Host

Mechanism of disease production by parasites

(i) Microscopic Examination of protozoa, Trophozoites and Cysts

(ii) Microscopic Examination of Helminths (Nematodes, Cestodes, Trematodes)

(iii) Concentration Methods for Ova and Cysts

(iv) *Gross Examination of Stool:* Granular debris, Muscle Fibers, Fats, Elastic Fibers, Pus Cells, Epithelial Cells, Red Blood Cells, Crystals, Bacteria, Yeast and Moulds.

Examination of Sputum:

(i) Collection of Sample

(ii) *Macroscopic Examination*- Colour, Consistency, Odour and Granules

(iii) *Macroscopic Examination* (under cover slip preparation): Eosinophilic leucocytes, Curshmann's spirals, C-L crystals, Pus cells, Elastic fibers, Parasites, Asbestos bodies, Red Blood cells, Bacterial Macrophages, Yeast and Moulds.

(iv) **Ziehl- Neelsen's Method** for Acid-fast bacilli (AFB)

(v) Concentration method(**Petroff's Method**)

7. **Examination for Cerebrospinal Fluid (CSF)**

(i) Procedure for Lumbar puncture

(ii) *Gross evaluation of CSF:* Normal CSF, Yellow CSF, Fibrin Clot in CSF, Turbid, Opalescent Cobweb Coagulum.

(iii) *Physical Examination:* Appearance, Specific Gravity

(iv) Cell Count (Sulphosalicylic Test)

(v) *Biochemical Examination:* Sugar, Protein, Globulin (**Pandy's Test**), Chloride.

(vi) Method of Total and Differential Count

8. **Examination of Cavity Fluids:**

(i) Differentiation of Transudate and Exudate

(ii) Macroscopic Appearance, Specific Gravity

(iii) Microscopic Examination of Unstained and Stained Cells

(iv) Total and Differential Counts

(v) Protein and Sugar Test

(vi) **Pandy's test**

9. **Investigation of Gastric Function:**

(i) *Fractional Test Meal:* Preparation of patient, Introduction of **Ryle's Tube**, Preparation of Test Meal (**Gruel Test Meal**, Alcohol Meal)

(ii) Test for free and total acidity on fasting and post stimulation samples

(iii) Test for Occult blood, Bile, Starch, Mucus etc.

(iv) Microscopic Examination of Unstained and Stained preparation

10. **Seminal Fluid Analysis**:

(i) Clinical Significance

(ii) *Mode of Collection:* Quantity, Viscosity, Appearance, Reaction (pH)

(iii) Time of complete liquification

(iv) Giemsa, Basic fuchsin and Pap Staining

(v) Microscopic Examination, Sperm count, Motility (Normal, abnormal), Sperm Morphology

11. **Interpretation of results and method of writing diagnostic report.**

HISTOPATHOLOGY

Laboratory planning and management, the reception and recording of specimens, Cataloging and indexing, Maintenance of laboratory records.

Introduction and definition of tissue and cells.

Method of examination of tissue and cells (Fresh and fixed specimens): Testing technique, Squash technique, Impression smears.

Fixation of tissues : The aims and functions of fixatives, Classification and choice of fixatives.

Fixatives: Formal saline, Buffered formalin, Formal sublimate, Formal alcohol, Formal calcium, Zenker's fluid, Carnoy's fluid, Bouin's fluid, Clarke's fluid, Formal nitric acid, Advantages and disadvantages.

Tissue Processing: Impregnation with wax, Preparation of paraffin blocks. Paraplast Tissue met, Ester wax, Water soluble wax, Celloidin.

Section Cutting: Microtomes, Types of microtomes, Basic principle of microtome, Microtome Knives, Sharpening of Knives, Honing, Stropping and Care of microtome knives, Normal thickness of tissue section.

Technique of cutting paraffin embedded section, Mounting of sections.

Staining: Dyes and their character, Theory of staining, Types of staining (Vital, Histochemical, Histological, Fat staining), Basic staining (Harris's Hematoxylin and Eosin technique), PAS stain, van Gieson stain (Collagen and muscle cells), von Kossa silver nitrate, Selection of stains.

Decalcification: Technique, Selection of tissue, Fixation, Decalcification method.

Mounting of stained slides with Canada Balsam and DPX.

Museum techniques and preservation.

Safeguards against chemicals.

Safety in histopathology laboratory.

Histological method for Amyloid.

Knowledge, Maintenance and use of microtome, knives, embedding bath, tissue flotation bath, automatic tissue processor, vacuum embedding oven, hot plate, freezing microtome etc.

Quality control in histopathology laboratory (Internal and External).

The Study of Exfoliative Cytology:

Definition, Collection of specimens (normal and abnormal cells shed into various body cavities and aspirates from body organs).

Laboratory techniques: Presevation, Fixation, Preparation of smears, Staining (Papanicolaou, Sex chromatin staining) and microscopy.

Morphology of normal and abnormal cells, Diagnostic features and inference.

HÆMATOLOGY

1. Introduction of hematology, Composition of blood, Cellular and humoral components.
2. Maintenance of records of laboratory investigations, apparatus, equipment, glassware, reagents, etc.
3. Cleaning of glassware, Pipettes, ESR tubes and Counting chamber.
4. Sources of error in laboratory procedure, precautions, Advantage and disadvantage of tests, interpretation of results and their clinical significance.
5. Quality control in the laboratory.
6. Preparation of capillary pipettes, Reagents, Diluting fluids, Stains(Leishman's, Wright's Simon's, Giemsa, Supravital), buffer solution etc.
7. **Collection of blood specimen from patients**: Capillary, Artery and Venous blood.
8. Preparation of thin, thick and wet blood films, different stains for staining blood films.
9. Brief Knowledge about Anemia, Leukemia, Abnormalities of RBCs (RBCs and WBCs series), Thalassemia.
10. **Routine Examination, Estimation and Enumeration of blood cells :**

(A) Hemoglobin Estimation:

(i) The principle of **Sahli's Method** and procedure, disadvantages of the test,

(ii) Colorimetric method,

(iii) Hb cell counts and absolute values by hematology autoanalyzer.

(B) Normal and Abnormal Blood cell Morphology:

(i) **Total Leucocyte Count (TLC):** Principle, and method , interpretation, Sources of error, Significance of Leucocytosis and leucopenia.

(ii) **Red Cell Count (RBC):** Equipment, Procedure, Sources of error in RBC count, Interpretation of results and Clinical significance of polycythemia rubra vera

(iii) **Platelet Count (Direct and indirect):** Principle, Procedure, Interpretation of counts and clinical significance of Thrombocytopenia, Thrombocytosis, Pernicious anemia, Acute leukemia.

(iv) **Enumeration of Reticulocytes:** Staining solution, Procedure, Interpretation and Significance of high retic count, Low retic count, Retic correction of anemia.

(v) **Absolute Eosinophilic Count (AEC):** Equipment, Procedure, Interpretation of results, Significance of eosinophilic leukemia, Idiopathic hypereosinophilic syndrome, Tropical eosinophilia, Secondary causes of eosinophilia.

(C) Peripheral Smear and Differential Leucocyte Count (DLC):

(i) Peripheral smear (how to make), Sources of error, Fixation of smear, Staining of smear (Leishman's, Romanowsky, Giemsa Stain), Differential count of WBC including Arneth and Schilling counts.

(ii) *Evaluation :* Neutrophilia, Neutropenia, Lymphocytosis, Eosinophilia, Monocytosis, Basophilia.

(D) Red Cell Morphology and Anemia:

(i) Macrocytosis, Microcytosis, Target Cells, Sickle cells, Schistocytes (Fragmented cells), Burr cells.

(ii) *Evaluation of Anemia :* Macrocytic, Microcytic, Hypochromic, Dimorphic, Sickle cell, Normochromic, Normocytic, Thalassemia Major, Hemophilia.

(E) Hæmatocrit, Red cell Indices, Erythocyte Sedimentation Rate (ESR):

(i) *Packed Cell Volume (PCV) estimation :* Wintrobe's and Microhematocrit method. Its principle, Sources of error and precautions.

(ii) Mean Corpuscular Volume (MCV),

(iii) Mean Corpuscular Hemoglobin (MCH),

(iv) Mean Corpuscular Hemoglobin concentration (MCHC),

(v) *ESR Estimation :* Stages of sedimentation, Factors affecting ESR, Westergren's Method, its precautions and Advantages, Wintrobe's Method, Advantages and sources of error, Evaluation of ESR, Alterations in ESR.

(F) Hæmostasis:

(i) Bleeding Time (BT) and Clotting Time (CT): **Duke and Ivy method**, Precaution and Significance.

(ii) Determination of Prothrombin Time: Principle, Method, Precaution and Significance.

(G) Laboratory Investigations of Hæmoparasites:

(i) *Examination of blood for Malaria :* Vector, Asexual and Sexual life cycle, collection of specimen, preparation of peripheral blood smears, preparation of thick blood film, Staining (Leishman's, Giemsa), Examination of trophozoite stage, Schizont, Gametocyte stage, Malarial pigment and blood alterations in Malaria, Identification of P. falciparum and P. vivax.

(ii) *Examination of blood for Microfilaria :* Causes, Collection of blood, Unstained and stained preparation, Concentration method, Morphology, Procedure for counting microfilaria and calculation.

BLOOD BANKING / TRANSFUSION MEDICINE

Discovery of human blood groups.

Blood bank management and planning : Reception and recording of specimen, cataloging and indexing, Maintenance of blood bank records.

Principles of immunohematology : Introduction, Antigen-Antibodies, Immune response, Antigen-Antibody reactions, Reagents used in antigen-antibody reaction in vivo.

Blood Bank : Prevention, Decontamination, Disinfection and Sterilization.

Preparation and use of ACD (Acid Citrate Dextrose), EDTA, SAGM, Heparin, CPD-A1, CPD-A2 (Citrate Phosphate Dextrose), Normal saline, Antisera etc.

Inheritance of blood groups : ABO and Rh blood group.

Techniques for determination of various blood groups (Natural and Immune Antibody)

Sub groups of ABO blood group system and Bombay group.

Source of error in grouping and their elimination.

Selection and preparation of group sera.

Determination of Rh factors.

Titration of Rh antibodies to predict and detect Rh.

Coombs test compatibility : Direct and indirect method.

Compatibility testing (Cross matching) : Clinical significance, major cross matching, minor cross matching, cross matching by LISS(Low Ionic Strength Solution) method.

Hemolytic disease of new born (HDN) : Material, preparation of cell suspension, procedure, Expression of results.

Preservation and storage of blood, Platelets, plasma blood components etc.

Blood transfusion: Clinical significance, Collection, Donor selection, Procedure of venepuncture, Volume of blood collected from donor, Screening of donor (history, age, weight, Hb, pulse, BP, temperature, interval, registration), Post donation care, processing of blood, Separation of components, Blood group compatibility (ABO) in blood transfusion, Criteria for selecting and rejecting donors and other necessary precautions.

Disposal of wastes.

Routine investigations: VDRL, HIV I and II, Hepatitis A,B,C, Malaria, Microfilaria and ASO titre.

Biosafety and infection control in blood bank and medico-legal aspects.

Quality control in blood bank

MICROBIOLOGY

1. Organization and function of laboratory
2. Safety guidelines in laboratory and safe code of practice for a microbiology laboratory.
3. Implementation of quality assurance scheme (Inernal and External)
4. Method of cleaning glassware.
5. Treatment of contaminated materials.
6. **Method of collection, storage and transportation of specimens**: Sputum, Urine, Throat swab, Pus, Pus swab, Fecal samples, Blood clot, Serum, Tissues, Pleural fluid, Pericardial fluids, Aspirates, Joint fluids, Bronchial secretions, Exudates, Urethral discharge etc.
7. **Biohazard waste management**: Disposal options.
8. **Microbial control**: Disinfection and sterilization (Dry heat, radiation, filtration and chemical method).
9. **The growth and nutrition of bacteria**: Generation time, the lag and log phase (exponential phase), Stationary phase, Decline phase, Factors influencing growth, the nutritional requirements, Environmental Factors affecting growth.
10. **Morphology of bacteria**: Shape and group pattern of bacteria, Anatomy of bacterial cell, Cell wall (Gram negative and Gram positive),Capsule, Slime layer, Flagella, Fimbrie, Pili and Spores etc.
11. **Staining and use**: Commonly used acidic, basic and neutral stains, Simple staining, Differential staining-Gram staining, **Ziehl-Neelsen** staining (Hot and cold), **Albert** staining, **Wayson** staining, Negative staining (India ink preparation), **Hiss's** staining, **Schuffer and Fulton's** method of staining, Visualization of the morphology of the organism and their reactions to the chemical present in the stain.
12. **Bacteriological media and uses**: Liquid, Solid, Semisolid, Basal media, Differential media, Indicator media, Enriched media, Enrichment medium, Selective, Carbohydrates media, Transport medium and Solidifying agents (Agar, Gelatin), Prepation of media and Checking pH: Peptone water, Nutrient broth, Thioglycollate broth, Brain heart infusion broth, Nutrient agar, **Mueller-**

Hinton agar, **MacConkey** agar, Deoxycholate citrate agar (DCA), Thiosulphate Citrate Bile Salt Sucrose agar (TCBS), Blood agar, Blood tellurite agar, **Loeffler's** serum slope, **Lowenstein-Jensen** medium, CBTM (Carry-Blair Transport Medium) and Transport medium.

13. **Cultivation of bacteria**: Inoculation techniques-instrument for seeding bacteria, seeding a culture plate, seeding a liquid and solid media, subculture from a solid medium, inoculation of carbohydrates fermentation media, seeding semi solid media in test tubes, erobic incubation of cultures, creation of anerobic and microerophilic atmosphere, precaution about inoculation of culture media.

14. **Motility of bacteria**: Hanging drop preparation, **Cragie's** tube method, Coagulase test, Catalase test and Oxidase test bacteria.

15. **Media for biochemical characterization and identification of bacteria**: TSI (Tipple sugar Iron) agar, SIM (Sulphur Indole Motility), Glucose, Sucrose, Lactose, Mannitol, Maltose (fermentation of acid and gas production), Urease and citrate(**Simmon's**) utilization, Bile solubility test, Additonal test- Optochin and Polymixing B sensitivity test.

16. **Infection:** Classification of infection, Sources of infection, Transmission of infection, Factors Predisposing to microbial pathogenicity.

17. **Diseases caused by bacteria:** Gram positive cocci (Staphylococcus, Beta hemolytic streptococcus, S. pneumonie) Gram negative cocci (N. gonorrhea, N. meningitides), Non-spore forming Gram positive bacilli (Corynebacterium diphtheria), Spore forming Gram positive bacilli (Bacillus sublitis, B. anthracis, Clostridium tetani, C. perfringens); Mycobacteria, Gram negative bacilli (Escherichia coli, Klebsiella proteus, Citrobacter, Serratia, Pseudomonas, Salmonella, Shigella, Vibrio and Campylobacter.

18. **Antimicrobial susceptibility testing:** Procedure (Modified **Kirby-Bauer** method), Basic sets of drug for routine susceptibility tests, Quality assurance, Turbidity standard, Results and interpretation.

19. Preservation of microorganisms in artificial midia.

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EXERCISES / EXPERIMENTS

1. *Study of morphology of bacteria*

(i)	Gram's staining	:	Methods and interpretation.
(ii)	Capsule staining	:	Negative staining (India ink preparation)
(iii)	Spore Staining	:	Method and Interpretation
(iv)	Albert staining	:	Method and Interpretion
(v)	AFB staining	:	**Ziehl-Neelsen** (Hot stain) Method

2. Detect the motility of bacteria in a given culture by hanging drop preparation.
3. *Identification of unknown organism provided :* E coil, Klebsiella, Proteus, Serratia, Pseudomonas, Salmonella, Shigella, Streptococcus, Fecalies, staph aureus, S. pneumonia, N. gonorrhea.
4. *Antibiotic susceptibility testing :* Demonstration.

SEROLOGY

1. Greneral instruction for serological tests.
2. Preparation and preservation of sera, Antisera, Antigens, Antibodies (Immunoglobulins), Plasma, Blood etc.
3. Biosafety in serology laboratory and method of disposal of wastes.
4. *Study of principal types of antigen antibody reactions :* Introduction, Antigens, Antibodies (Immunoglobulins), Immune response : Primary and Secondary union, Antigen Antibody reaction, Effects of electrolytes , Factors effecting antigen antibody reactions , Precipitation, Flocculation, Agglutinations, Hetrophil agglutination, Hemagglutination, Reverse Passive Hemagglutination (RPHA), Complement fixation, Neutralization, Opsonization.
5. Enzyme Immuno Assay, Carrier Particle agglutination (Latex), Fluorescent antibody tests.
6. Preparation of physiological saline, 10% saline, Buffer solutions, VDRL antigen and buffer, Antigens for Widal test (O., H. and AH).
7. Quality Control Assurance (Internal and External).

DIAGNOSTIC SEROLOGY

A) *VDRL slide flocculation test for syphilis (qualitative and quantitative) :* Principle, Reagents and Materials, Specimen (Blood and CSF), VDRL Antigen and buffer, Preparation of Antigen emulsion, Test procedure, Reading and reporting of results in dilutions, Limitation of the test and precautions, Factors affecting VDRL test.

B) *Rapid plasma reagin (RPR) test for diagnosis of syphilis :* Principle, Specimen, Reagents and Materials, Test procedure (qualitative and quantitative), Interpretation of results, Limitation of the tests.

C) *Widal test for the diagnosis of enteric fever (qualitative and quantitative) :* Principle, Materials, Specimen, Test procedure-qualitative slide test, quantitative slide test and tube test, Interpretation of results, Precaution, factors affecting Widal test, Effect of past infection or typhoid vaccination and time of collection of blood samples.

D) *Latex agglutination test for the rapid detection of HBsAg (Australia Antigen) :* Principle, Malerials, Specimen, Test procedure, Precaution, Use of controls, Interpretation,Limitation of the tests.

E) Laboratory diagnosis of kala-azar (Napier Aldehyde test, Chopra Antimony Test).

F) Paul-Bunnell Test for diagnosis of infectious mononeucleosis.

COORDINATOR
WEAT PROJECT
FATIMA COLLEGE (Autonomous)
MILANGUDI,
MADURAI-625 018.

WEAT (Women Empowerment Animation and Training)
Fatima College, Mary Land, Madurai.

Course title: **DMLT**

Year: **2020 - 2021**

Course outcome

BIO-CHEMISTRY:

- To enable the students to analyze the Blood glucose, Blood urea, serum creatinine, serum cholesterol, serum total protein and serum Bilirubin. To operate the colorimeter, centrifuge and microscope.

HAEMATOLOGY

- To learn to collect the Blood sample from the patient. To detect the total RBC count, total WBC count, total platelet count,
- Differential WBC count, E.S.R. , P.C.V.,MCH, MCHC,MCV,C.I., clotting time, bleeding time.

BLOOD BANK

- To learn to detect the blood grouping, Rh Typing, cross matching, Bleeding the blood from the donar, selection of blood donar,screening test for blood donar.
- To learn about BIOPSY-Processing of tissue sample.Decalcification process,microtone,Exfoliative cytology- Paps smear-Paps staining,Museum

CLINICAL PATHOLOGY

- To learn urine Analysis-Physical Examination of urine- colour, odour,volume, PH, specific gravity. Chemical Eaxmination- sugar in urine. Protein in urine,ketone bodies in urine,Bile salts in urine, Bile pigments in urine, Urobilinogen in urine,Blood pigments in urine urinary deposits.

- FAECAL Examination- Physical examination and microscopical
- C.S.F (Cerebero spinal fluid) analysis.

HISTOPATHOLOGY

examination-OVA and cyst of worms- pin worm,hook worm,thread worm,tape worm, round worm,whip worm

- To learn about BIOPSY-Processing of tissue sample.Decalcification process,microtone,Exfoliative cytology- Paps smear-Paps staining,Museum
-
- techniques,Haematoxyllin and eosin staining.

MICROBIOLOGY

- To learn Microscope and its uses and handling of microscope.Bacteriology- classification of Bacteria –shape, temperature, motility ,flagella,spore,capsule. Media, types of media and its uses culturing the bacteria, identification of Bactria by staining- simple stain, grams stain,AFB stain, endospore stain,capsular stain,albert stain,
- Blood agar,macconkey agar, TCBS agar,nutrient agar,LJ medium, DCA plate,mullar hinton agar, caryblair medium.
- Antibiotic disc sensitivity test , hanging drop experiment.
- Types of streaking, Bio chemical confirmation test-IMVIC, catalase test, sugar fermentation and gas production test,starch hydrolysis.
- Mycology- Cryptococcus, candida.

SEROLOGY

- To learn antigen and antibody reactions,agglutination, precipitation, complement fixation test,treponema pallidum haemagglutination test,VDRL ,WIDAL,ELISA,RIA.

D.M.L.T. மதிப்பீடு

Name of the school:
பள்ளிக்கூடத்தின் பெயர்

Students
மாணவர்கள்

Attendance Register
வருகைப்பதிவேடு

வகுப்பு / Class ..... 20 ..... ஆண்டு / Year ..... மாதம் / JULY 21

Serial No. வரிசை எண்	Register No. பதிவு எண்	NAME பெயர்	Date of Birth பிறந்த நாள்	Date of Joining வகுப்பு மாறிய Or சேர்ந்த தேதி	Community ஜாதி	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Rema குறி
1		P. DIVYA				x	x			x	x	a	x	a			a	a	x	x	a			x	x		x	x			x	x	x	a	x		
2		K. DURGESHWARI				x	x			x	x	x	a	x			x	x	a	x	x			a	a		x	x			x	x	x	x	a		
3		P. KAUSALYADEVI				a	x			x	x	x	a	x			x	x	x	x	a			x	x		x	x			x	x	a	x	x		
4		A. MARIYAJEYAM				a	x			x	x	x	a	x			x	x	x	x	a			a	x		x	a			x	x	x	x	x		
5		S. MOHANA PRIYA				x	a			x	x	x	a	x			x	x	x	x	x			x	x		x	a			x	x	x	x	x		
6		R. PRIYA GEORGINA				x	x			a	x	x	a	x			a	x	x	x	x			x	x		x	x			x	x	x	x	x		
7		K. RITHINIKETHA				x	a			x	a	x	x	x	SATURDAY		a	x	x	x	x	SATURDAY		x	x		x	x			a	x	x	x	x		
8		K. SNEHA.				x	x			x	x	x	x	x	SUNDAY		a	a	x	a	x	SUNDAY		x	x		x	x	SATURDAY		x	x	x	x	a		
								SATURDAY																					SUNDAY								
								SUNDAY																													

COORDINATOR
WEAT PROJECT
FATIMA COLLEGE (Autonomous)
VILANGUDI,
MADURAI-625 018.

தினம் வந்தவர்கள் Pupils Those Who Attended All The Days	காலை / Morning	ஆஜர் ரோல்					
	மாலை / Evening	ஆஜர் ரோல்					

D.M.L.T 2020-2021

Aug

Name of the school:
பள்ளிக்கூடத்தின் பெயர்

Students
மாணவர்கள்

Attendance Register
வருகைப்பதிவேடு வகுப்பு / Class ..... 20 ..... ஆண்டு / Year ..... மாத

Serial No. வரிசை எண்	Register No. பதிவு எண்	NAME பெயர்	Date of Birth பிறந்த நாள்	Date of Joining வகுப்பு மாறிய Or சேர்ந்த தேதி	Community ஜாதி	1	2	3	4	5
1		P. DIVYA					X	X	X	X
2		K. DURGESHWARI					X	a	X	X
3		P. KAUSALYADEVI					X	X	X	X
4		A. MARIYAJEYAM.					X	X	X	X
5		S. MOHANAPRIYA					a	X	X	X
6		R. PRIYAGEORGINA					X	X	a	X
7		K. RITHINIKETHA					X	X	a	X
8		K. SNEHA.					X	X	X	X

SUNDAY

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Re
			X	X	X	X	X			X	a	X	a				X	a	X	X	X				a	
			a	X	X	X	a			X	X	X	X				X	X	X	X	a				X	
			X	a	X	a	X			X	X	X	a				X	X	X	X	X				X	
			X	X	X	a	a			X	X	X	X				X	X	X	X	X				X	
			X	X	a	X	X			X	X	X	X				X	X	X	a	X				X	
			X	X	X	a	X			X	X	X	a				X	X	X	X	a				X	
			X	a	X	X	X			X	X	X	X				X	X	X	a	X				X	
			a	a	X	a	X			X	X	X	X				X	X	X	X	X				X	

SATURDAY SUNDAY SATURDAY SUNDAY SATURDAY SUNDAY SATURDAY SUNDAY

COORDINATOR
WEAT PROJECT
FATIMA COLLEGE (Autonomous)
VILANGUDI,
MADURAI-625 018.

தினம் வந்தவர்கள் Pupils Those Who Attended All The Days

காலை / Morning — ஆஜர் ரோல்

மாலை / Evening — ஆஜர் ரோல்

Name of the school:
பள்ளிக்கூடத்தின் பெயர்

Students
மாணவர்கள்

Serial No. வரிசை எண்	Register No. பதிவு எண்	NAME பெயர்	Date of Birth பிறந்த நாள்	Date of Joining வகுப்பு மாறிய or சேர்ந்த தேதி	Community ஜாதி	1	2	3	4	5
1		P. DIVYA				X	X	X		
2		K. DURUGESWARI				X	X	a		
3		P. KAUSALYA DEVI				X	X	X		
4		A. MARIYA JEYAM				X	a	X		
5		S. MOHANAPRIYA				X	X	a		
6		R. PRIYA GEORGIANA				X	a	X		
7		K. RITHINIKETHA				X	X	X		
8		K. SNEHA.				X	X	X		

SATURDAY

SUNDAY

தினம் வந்தவர்கள் Pupils Those Who Attended All The Days

காலை / Morning — ஆஜர் ரோல்

மாலை / Evening — ஆஜர் ரோல்

D.M.L.T. 2020-2021

Attendance Register
வருகைப்பதிவேடு

SEP'21

வகுப்பு / Class ..... 20 ..... ஆண்டு / Year ..... மாதம் / Mo

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Remark குறிப்பு
X	X	X	X		X		X																			
X	X	X	a		X		X																			
a	X	X	X		X		X																			
X	X	X	X		X		X																			
X	a	X	X		X		X																			
X	X	a	X		X		X																			
X	X	X	a		X		X																			
X	X	X	a		X		X																			

SUNDAY

AIMLTA BOARD EXAM.

COORDINATOR
WEAT PROJECT
FATIMA COLLEGE (Autonomous)
VILANGUDI,
MADURAI-625 018.