DEPARTMENT OF ZOOLOGY

COURSE STRUCTURE & SYLLABI
(For the students admitted from year 2023-2024 onwards)

Programme: Career Oriented Porgramme (COP): Certificate Course in Medical Laboratory Technology

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JAMAL MOHAMED COLLEGE (AUTONOMOUS)
Accredited with A++ Grade by NAAC (4th Cycle) with CGPA 3.69 out of 4.0
(Affiliated to Bharathidasan University)
TIRUCHIRAPPALLI – 620 020

Career Oriented Porgramme (COP)

Certificate Course in Medical Laboratory Technology

Course Code	Course	Course Title	Total Hrs	Credit	CIA Mark	ESE Mark	Total Mark
23ZOCT1	Core - I	Human Anatomy, Physiology and Immunology	150	10	25	75	100
23ZOCT2	Core - II	General Laboratory Principles, Haematology, Biochemistry, Microbiology and Pathology	150	10	25	75	100
23ZOCT3P	Core - III	Laboratory Principles, Haematology, Biochemisty, Microbiology and Pathology - Practical - I	150	10	20	80	100
		Total	**450**	**30**	**70**	**230**	**300**

***Practical Examinations will be conducted at the end of the year**

Semester	Course Code	Course Category	Total Hours	Credits	Marks for Evaluation		
					CIA	ESE	Total
-	23ZOCT1	Core – I	150	10	25	75	100

Course Title	HUMAN ANATOMY, PHYSIOLOGY AND IMMUNOLOGY

Objective:

To promote an integrated approach to the study of various organs with their functions and Immune systems in man.

SYLLABUS		
Unit	**Contents**	**Hours**
I	**HISTOLOGY**: Cell, tissue, organs and organ system - Skeletal system - Osteology **GASTROINTESTINAL SYSTEM**: Alimentary canal and digestive glands - Function of liver and liver function tests	**30**
II	**RESPIRATORY SYSTEM**: Trachea, lungs including other air passages - Functional anatomy of respiratory system, mechanism of breathing and exchange of gases in the lungs. **MUSCULAR SYSTEM**: Structure of Sarcomere - Important muscles and muscle proteins - Innervation of muscles.	**30**
III	**LYMPHATIC SYSTEM**: Lymph vessels, lymph nodes and lymphoid organs - Structure and functions. **IMMUNE SYSTEM**: Antigen –Antibodies - Types of Immunity - Innate immunity and Acquired immunity - Factors involved in immunity - Immune Response - Pregnancy test – ELISA - Auto immune diseases.	**30**
IV	**EXCRETORY SYSTEM**: Structure and function of kidney, ureter, urinary bladder, skin and its derivatives. **SENSE ORGANS**: Eye, Ear, Nose, Taste buds and subcutaneous organs – Physiology of vision, hearing test and olfaction.	**30**
V	**NERVOUS SYSTEM**: Structure of Neuron and its function – Central, Peripheral and Autonomic nervous system. **ENDOCRINE SYSTEM**: Pituitary, Thyroid, Parathyroid, Adrenal glands and Gonads – Location and functions.	**30**

Text Book(s):

Medical Laboratory Technology, Procedure manual for routine diagnostic tests by Kani L Mukherjee and Swarajit Ghosh. 2nd Edition (Volume I - III) Mc Graw Hill Pub.(2010).

Reference Book(s):

1. Text Book of Practical Medical Lab Technology by Z. Navatha Rao, Rushi bookhouse, Vijayavada.
2. Text Book of Practical Medical Laboratory Technology by C.R. Maiti, New Central book agency (P) Ltd, Kolkata.
3. Manual for Medical Laboratory Technology by S. Raja, Anjana book house Chennai.
4. Text Book of Preventive and Social Medicine by K. Park, M/s Banarsidas Bhanot (Publishers), 1167, Prem Nagar, Jabalpur – 482001, India, 2009.

Course Coordinator: Dr. I Joseph A. Jerald

Semester	Course Code	Course Category	Hours	Credits	Marks for Evaluation		
					CIA	ESE	Total
-	23ZOCT2	CORE - II	150	10	25	75	100

Course Title	GENERAL LABORATORY PRINCIPLES, HAEMATOLOGY, BIOCHEMISTRY, MICROBIOLOGY AND PATHOLOGY

Objective:

To understand the application of laboratory and diagnostic medical instruments and to study different parameters of Human Blood

SYLLABUS		
Unit	**Contents**	**Hours**
I	**LABORATORY TECHNOLOGY AND BIO SAFETY PROCEDURES**: Introduction and scope – First Aid –Rules & Regulations, Safety Measures followed in Lab – maintenance of Records, samples and their collecting methods – Role of Anticoagulants and its types - Basic Instrumentation – pH meter, Autoclave, Incubator, Colorimeter – principles and working methodology.	**30**
II	**HAEMATOLOGY**: Component of Blood – Plasma and Serum - Blood Clotting factors – Blood coagulation - Collection of blood (Venous and Capillary) Preservation of blood – Importance of blood bank, anticoagulants used in blood bank - ABO Blood grouping - Rh typing - Blood transfusion	**30**
III	**BIOCHEMISTRY**: Metabolism – Digestion and Assimilation - Carbohydrates, Proteins, Lipids and Minerals – Sugar, Urea, Cholesterol, Phosphorous.	**30**
IV	**MICROBIOLOGY**: Classification and Morphology of bacteria - Culture media and their preparation - Culture techniques - Culture characteristics - Isolation of pure culture and maintenance of stock culture - Disinfection and sterilization	**30**
V	**CLINICAL PATHOLOGY**: Physical examination - Microscopic analysis of Urine – uric acid crystals - Urine sugar, protein, urea – pathological conditions – polyuria, haematuria.	**30**

Text Book(s):

Medical Laboratory Technology, Procedure manual for routine diagnostic tests by Kani L Mukherjee and Swarajit Ghosh. 2nd Edition (Volume I - III) Mc Graw Hill Pub.(2010).

Reference Book(s):

1. Text Book of Practical Medical Lab Technology by Z. Navatha Rao, Rushi bookhouse, Vijayavada.
2. Text Book of Practical Medical Laboratory Technology by C.R. Maiti, New Central book agency (P) Ltd, Kolkata.
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Semester	Course Code	Course Category	Hours	Credits	Marks for Evaluation		
					CIA	ESE	Total
-	23ZOCT3P	Core - III	150	10	20	80	100

Course Title	LABORATORY PRINCIPLES, HAEMATOLOGY, PATHOLOGY, BIOCHEMISTRY, MICROBIOLOGY AND PATHOLOGY – PRACTICAL - I

Objective:

To develop skill in handling clinical laboratory equipments; and to obtain a holistic knowledge on pathology, biochemistry, microbiology and haematology parameters

SYLLABUS		
Unit	**Contents**	**Hours**
	Experiments: 1. Collection and Processing of Specimen (Blood, Urine, Sputum 2. Sampling Handling and Disposal 3. Identification of Blood group and Rh type 4. Bleeding Time and Clotting time 5. Erythrocyte count 6. Leucocyte count and Differential count 7. Plasma and Serum preparation 8. Blood Glucose level – Fasting, Post Prandial (PP) 9. Blood Protein level – A/G ratio 10. Blood Cholesterol level 11. Media Preparation – (NA, MC) 12. Streaking techniques – Plating, Slant culture 13. Culture morphology – Gram positive and negative 14. Urine – Physical and Microscopic analysis 15. Urine Sugar and Urea	**150**

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