

**CMJ UNIVERSITY**  
SHILLONG, MEGHALAYA.  
Recognized by UGC

DETAILED SYLLABUS

**Under Graduate Diploma Program**  
**DMLT**  
**(Diploma in Medical laboratory Technology)**  
  
(YEARLY SYSTEM)

## **DMLT (DIPLOMA in Medical Laboratory Technology)**

**COURSE TITLE** : DMLT  
**DURATION** : 2 YEARS  
**TOTAL DIPLOMA MARKS** : 2600

### **FIRST YEAR**

<i>COURSE TITLE</i>	<i>Paper Code</i>	<i>MARKS</i>		
		THEORY	PRACTICAL	TOTAL
BASICS OF HUMAN ANATOMY	DMLT-110	100	100	200
BASICS OF MEDICAL PHYSIOLOGY	DMLT-120	100	100	200
PATHOLOGY	DMLT-130	100	100	200
COMPUTER SKILLS	DMLT-140	100	00	100
COMMUNICATION SKILLS	DMLT-210	100	00	100
BASICS OF BIOCHEMISTRY	DMLT-220	100	100	200
INTRODUCTION TO MICROBIOLOGY	DMLT-230	100	100	200
MS-OFFICE	DMLT-240	50	50	100

### **SECOND YEAR**

<i>COURSE TITLE</i>	<i>Paper Code</i>	<i>MARKS</i>		
		THEORY	PRACTICAL	TOTAL
PARASITOLOGY	DMLT-310	100	100	200
BACTERIOLOGY	DMLT-320	100	100	200
BODY FLUIDS & STOOL EXAMINATION	DMLT-330	100	00	100
CLINICAL LAB	DMLT-340	----	100	100
HISTOPATHOLOGY	DMLT-410	100	100	200
CYTOLOGY	DMLT-420	100	100	200
DIAGNOSTIC BLOOD SUGAR & CHOLESTEROL	DMLT-430	100	100	200
BIOCHEMISTRY TESTS	DMLT-440	---	100	100

**6 months internship in any Hospital or Nursing Home**

**Note:**

**Theory Paper:** 30% Continuous Internal Assessment and 70% University examination.

**Practical Paper:** 30% Continuous Internal Assessment and 70% University examination.

**Continuous Internal Assessment:**

- |  |                   |
|--|-------------------|
| 1) Two or three tests out of which minimum two Internal Assessment will be considered for Assessment | 60% of Continuous |
| 2) Seminars/Assignments/Quizzes Internal Assessment  | 30% of Continuous |
| 3) Attendance, class participation and behavior Internal Assessment                                  | 10% of Continuous |

## **FIRST YEAR**

**DMLT-110**

**BASICS OF HUMAN ANATOMY**

**Maximum Time : 3 Hrs.  
:70 %**

**University Examination**

**Total Marks : 100**

**Continuous Internal Assessment:30 %**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

### **COURSE CONTENTS**

Skeleton Structures of Bone, Vertebral Column, Upper Extremity, Lower Extremity, superior extremity, inferior extremity, ossification centers, bone of upper limb, radius and uina, surface marker of thorax abdomen, head and neck.

## **DMLT-110 P**

## **BASICS OF HUMAN ANATOMY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 110.

## **DMLT -120**

## **BASICS OF MEDICAL PHYSIOLOGY**

**Maximum Time : 3 Hrs.**

**University Examination**

**:70 %**

**Total Marks : 100**

**Continuous Internal Assessment :**

**30%**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

**General information:-** The cell, membrane potential, some common terms used in physiology.

**Blood:-** Red blood corpuscles, hemoglobin, the leucocytes, immunity, origin and function of lymphocytes, reticule endothelial system, the platelets, homeostasis, coagulation of blood, the plasma proteins, blood groups.

**Digestive system:-** introduction to digestive system. Elementary functional anatomical considerations, the salivary glands, the stomach and its secretion, pancreas, the bile, the small intestine, movement of the alimentary tract, gastrointestinal hormones, apud cells.

**Respiratory system:-** Functional anatomy, ventilation, control of ventilation, exchange of gases between the alveoli and pulmonary capillary blood, carriage of O<sub>2</sub> and CO<sub>2</sub> by the blood and their exchange at the tissue level, applied and environment physiology Defense mechanism. Changes with age.

## **DMLT -120**

## **BASICS OF MEDICAL PHYSIOLOGY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 120.

## **DMLT-130**

## **PATHOLOGY**

**Maximum Time : 3 Hrs.**

**University Examination**

**:70 %**

**Total Marks : 100**

**Continuous Internal Assessment :**

**30%**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

**The Cell in Health and Disease:-** Introduction to Pathology, Cellular Structure and Metabolism, Etiology and Pathogenesis of Disease, Intracellular Accumulations and Disorders of Metabolism, Amyloidosis, Degenerations and Cell Death.

**Inflammation and Healing, Immunity and Hypersensitivity, Infection and infestation:-** Inflammation-Acute and Chronic, Granulomatous Inflammation, Healing, immunity and Hypersensitivity, Infection and Infestation.

**Fluid and Haemodynamic Derangements:-** Derangements of Body Fluids and Electrolytes, Haemodynamic Disorders due to Deranged Blood Volume, Haemodynamic Disorders of Obstructive Nature, Ischaemia and Infarction.

**Growth Disorders and Neoplasia:-** Adaptive Disorders of Growth, General Aspects of Neoplasia, Etiology and pathogenesis of Neoplasia, Clinical Aspects of Neoplasia, Common Specific Tumours.

## **DMLT-130**

## **PATHOLOGY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 120.

## **DMLT-140**

## **COMPUTER SKILLS**

**Maximum Time : 3 Hrs.**

**University Examination**

**:70 %**

**Total Marks : 100**

**Continuous Internal Assessment :**

**30%**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

Hardware & Software: CPU, RAM, SSD, Operating Systems, System Softwares, Application Software. Inside Computers. Computer Systems.

Input-Output devices: Monitor, Keyboard, Mouse, System Unit, Printer, Scanner.

Storage devices : Floppy disk, Hard disk, Cartridge tape, CD-ROM

Printers : Dot-Matrix, Inkjet, Laserjet, Colour printer, High speed printer, Label printer, Plotters.

**PROGRAMMING LANGUAGE:-**Compiler, Assembly Language, Machine Language.

Graphical user interface : Windows 3x, Program manager, Main & accessories program groups, Multiasking.

## **DMLT-210**

## **COMMUNICATION SKILLS**

**Maximum Time : 3 Hrs.**

**University Examination :70 %**

**Total Marks : 100**

**Continuous Internal Assessment:30 %**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

Basic Skills: - Listening, Speaking, Reading and Writing.

Comprehension: - Reading Comprehension, Passages, Poems.

Listening Comprehension: - Talks, Reports, Poems

Writing Skills: - Paragraph Writing, Composition Writing, Report Writing, Application & Letter Writing

Grammar: - Simple, Compound and complex sentences, Co-ordinate clause (with, but or either-or, Neither-Nor otherwise or else), Subordinate clauses-noun clauses-as subjects object and complement: Relative Clauses (restrictive and non-restrictive clauses). Adverb clauses (open and hypothetical, Comparative Clauses

Simple present, progressive and present perfect, simple past, progressive and past perfect, indication of futurity, the passive (Sample present and past, present and past perfect and 'to' infinitive structure), Reported Speech: - (I) Declarative sentences, (ii) Imperatives (iii) Interrogatives –question, Yes/No Questions, Exclamation sentences, Modals (will, shall, should, would, ought to, have to/have got to, can, could, may-might and need), Verb structures (infinitives and gerundial)



**DMLT-220****BASICS OF BIOCHEMISTRY****Maximum Time : 3 Hrs.****University Examination****:70 %****Total Marks : 100****Continuous Internal Assessment :****30%****Minimum Pass Marks : 40%****A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

**B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

**COURSE CONTENTS**

**Basics of Biochemistry** :- Definition of solutions , Methods Of Expressing Concentration ; Dilution Problems ; Specific Gravity .

**DMLT-220 P****BASICS OF BIOCHEMISTRY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 220.

**DMLT-230  
MICROBIOLOGY**

**INTRODUCTION OF**

**Maximum Time : 3 Hrs.      University Examination :70 %**  
**Total Marks : 100      Continuous Internal Assessment : 30%**  
**Minimum Pass Marks : 40%**

**A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

**B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

**COURSE CONTENTS**

Structure, characteristics & classification of bacteria, viruses, fungi and protozoa. The handling and control of microorganisms. Basic principles of medical microbiology and immunology.

**DMLT-230P      INTRODUCTION OF  
MICROBIOLOGY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 230.

## **DMLT-240**

## **MS-OFFICE**

**Maximum Time : 3 Hrs.      University Examination :70 %**  
**Total Marks : 100      Continuous Internal Assessment : 30%**  
**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

### **COURSE CONTENTS**

**MS Word** : Creating documents, Formatting, Auto text, Auto correct, Tables, Page setup, Printing, Object linking & embedding, Spell check, Thesaurus, Mail merge, Word art, Clip art.  
setup.

**MS Excel** : Creating workbooks & worksheets, Formulas & functions, Linking workbooks & worksheets, Cell references, Formatting, Creating charts, Data lists, Page setup, Printing.

**MS Power Point** : Creating slides with different layouts and templates, Inserting charts, Tables, Organisation charts, Pictures, Running a screen show, Presentation

## **SECOND YEAR**

**DMLT-310**

**PARASITOLOGY**

**Maximum Time : 3 Hrs.  
:70 %**

**University Examination**

**Total Marks : 100  
30%**

**Continuous Internal Assessment :**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

### **COURSE CONTENTS**

**PROTOZOA:-Classification ; Malarial parasite ; Eishmania ; Amoeba ;  
Giardia ; Trichomonas**

## **DMLT-320**

## **BACTERIOLOGY**

**Maximum Time : 3 Hrs.**  
**:70 %**

**University Examination**

**Total Marks : 100**  
**30%**

**Continuous Internal Assessment :**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

Examination of specimen for microbiological investigations:- Examination of materials from sites normally sterile ; Examination of pus from Abscess and wounds .

## **DMLT-320 P**

## **BACTERIOLOGY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 320.

**DMLT -330      BODY FLUIDS AND STOOL  
EXAMINATION**

**Maximum Time    : 3 Hrs.      University Examination            :70 %  
Total Marks       : 100            Continuous Internal Assessment : 30%  
Minimum Pass Marks : 40%**

**A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

**B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

**COURSE CONTENTS**

Urine analysis :-Methods of collections, routine urine examination  
,microscopic examination , evaluation of renal function tests.

BODY FLUIDS :- Collection of c.s; physical examination ; chemical  
examination ; cell count ; bacteriological examination ; differential diagnosis .

Stool examination:- Normal appearance and composition ; collection of  
specimen ; physical examination ; microscopic examination ; protozoa ;  
Helminthic ova

## **DMLT -330 P      BODY FLUIDS AND STOOL EXAMINATION**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 330.

## **DMLT-340                      CLINICAL LAB**

In this lab session student will observe and test the sample of stool and urine for different diseases under the guidance of a supervisor.

## **DMLT-410    HISTOPATHOLOGY**

<b>Maximum Time</b>	<b>: 3 Hrs.</b>	<b>University Examination</b>	<b>:70 %</b>
<b>Total Marks</b>	<b>: 100</b>	<b>Continuous Internal Assessment</b>	<b>: 30%</b>
<b>Minimum Pass Marks</b>	<b>: 40%</b>		

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will compromise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

Histopathology techniques:-

Introduction : fixation of specimens before grossing ; grossing of specimens ; processing of tissue specimens ; Embedding of tissue specimen ; cutting of tissue specimen ; routine staining of procedures ; frozen sections .

## **DMLT-410 P**

## **HISTOPATHOLOGY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 410.

## **DMLT-420**

## **CYTOLOGY**

**Maximum Time : 3 Hrs.      University Examination :70 %**  
**Total Marks : 100      Continuous Internal Assessment : 30%**  
**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will compromise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

Introduction ; Fine needle aspiration cytology ; Papanicolou method for cytologic smears .

## **DMLT-420 P**

## **CYTOLOGY**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 420.



## **DMLT-430      DIAGNOSTIC BLOOD SUGAR & CHOLESTEROL**

**Maximum Time    : 3 Hrs.      University Examination      :70 %**  
**Total Marks      : 100      Continuous Internal Assessment : 30%**  
**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

### **COURSE CONTENTS**

Estimation of blood sugar and cholesterol:-Estimation of blood sugar; Glucose Tolerance test ; estimation of serum cholesterol

## **DMLT-430 P      DIAGNOSTIC BLOOD SUGAR & CHOLESTEROL**

The laboratory course will comprise of exercises on what is learnt in the theory classes of the same course i.e. DMLT 430.

## **DMLT-440**

## **BIOCHEMICAL TESTS**

**Maximum Time : 3 Hrs.**

**University Examination :70 %**

**Total Marks : 100**

**Continuous Internal Assessment : 30%**

**Minimum Pass Marks : 40%**

### **A) Instructions for paper-setter**

1. The question paper will be divided into two parts. Part-I will contain subjective questions. This part will carry 60% of the total marks.
2. Part-II will comprise of 10-15 short questions, which will cover the entire syllabus and will carry 40% of the total marks.

### **B) Instructions for the candidates**

1. Candidates are required to attempt Part-I as defined in the question paper and the entire part-II.
2. Use of non-programmable scientific calculator is allowed

## **COURSE CONTENTS**

Tests to Distinguish between aerobic and anaerobic breakdown of carbohydrate ; Fermentation reactions ; tests for specific breakdown products ; ability to use a specific substrate ; tests for specific breakdown products and amino acids ; tests for production of enzymes