2.1 COMMUNICATION SKILLS – II

L	T	P
3	-	2

RATIONALE

Interpersonal communication is a natural and necessary part of organizational life. Yet, communicating effectively can be challenging because of our inherent nature to assume, overreact to and misperceive what actually is happening. Poor communication or lack of communication is often cited as the cause of conflict and poor teamwork. In today's team-oriented workplace, managing communication and developing strategies for creating shared meaning are crucial to achieve results and create successful organizations. The goal of the Communicating Skills course is to produce civic-minded, competent communicators. To that end, students must demonstrate oral as well as written communication proficiency. These include organizational and interpersonal communication, public address and performance. The objectives of this subject are understanding how communication works, gaining active listening and responding skills, understanding the importance of body language, acquiring different strategies of reading texts and increasing confidence by providing opportunities for oral and written expressions

DETAILED CONTENTS

Section A

1. Grammar and Usage (15 Hrs)

1.1 Prepositions
1.2 Pronouns
1.3 Determiners
1.4 Conjunctions
1.5 Question and Question Tag
1.6 Tenses (Simple Present, Simple Past)

Section B

2. Reading Skills (15 Hrs)

Unseen comprehension passages (at least 5 passages).

3. Writing Skills (18 Hrs)

3.1 Writing Notice
3.2 Writing Circular
3.3 Writing a Memo
3.4 Agenda for a Meeting
3.5 Minutes of the Meeting
3.6 Telephonic Messages

3.7 Paragraph writing:
Simple and Current Topics should be covered.

LIST OF PRACTICALS

(Note: The following contents are only for practice. They should not be included in the final theory examination)

1. Listening Comprehension
1.1 Locating Main Ideas in a Listening Excerpt
1.2 Note-taking

2. Developing Oral Communication Skills
2.1 Offering-Responding to Offers
2.2 Requesting-Responding to Requests
2.3 Congratulating
2.4 Expressing Sympathy and Condolences
2.5 Expressing Disappointments
2.6 Asking Questions-Polite Responses
2.7 Apologizing, Forgiving
2.8 Complaining
2.9 Persuading
2.10 Warning
2.11 Asking for and Giving Information
2.12 Giving Instructions
2.13 Getting and Giving Permission
2.14 Asking For and Giving Opinions

INSTRUCTIONAL STRATEGY

Looking into the present day needs of effective communication in every field, it is imperative to develop necessary competencies in students by giving practical tips and emphasis on grammar, vocabulary and its usage in addition to practical exercises. The teacher should give report writing assignments, projects etc. while teaching this subject.

LIST OF RECOMMENDED BOOKS

1. Communicating Effectively in English, Book-I by Revathi Srinivas; Abhishek Publications, Chandigarh.
2. High School English Grammar and Composition by Wren & Martin; S. Chand & Company Ltd., Delhi.
3. Communication Techniques and Skills by R. K. Chadha; Dhanpat Rai Publications, New Delhi.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	15	30
2	15	35
3	18	35
Total	**48**	**100**

2.2 ORGANIC CHEMISTRY

L	T	P
3	-	2

RATIONALE

Diploma holders in Medical Laboratory Technology are supposed to know about the chemical properties of various materials. For this purpose, it is essential that they should be equipped with knowledge and skill covering topics like solutions, acids, bases and salts, electrolytes, ionization, organic chemistry such as hydrocarbons, alcohols, ethers, carbohydrates, lipids, proteins and enzymes etc., so as to enable them to perform various activities in a medical laboratory effectively.

DETAILED CONTENTS

1. Organic chemistry (02 hrs)

    1.1 Introduction and importance of organic compounds
    1.2 Comparison of organic and inorganic compounds
    1.3 Properties of carbon and Hydrogen

2. IUPAC Nomenclature of organic compounds (04 hrs)

    2.1 Hydrocarbons
    2.2 Alcohols and Ethers
    2.3 Aldehydes and Ketones
    2.4 Carboxylic Acids

3. Hydrocarbons (06 hrs)

    3.1 Preparation, properties and uses of saturated hydrocarbons
    3.2 Preparation, properties and uses of unsaturated hydrocarbons
    3.3 Sources of hydrocarbons
    3.4 Preparation, properties and uses of Halogen derivatives of hydrocarbons

4. Alcohols and ethers (05 hrs)

    General introduction, classification, preparation and properties and uses of:

    4.1 Methyl alcohol, Ethyl alcohol and glycerol
    4.2 Diethyl ether

5. Aldehydes and ketones (05 hrs)

General introduction, classification, properties and uses of:

5.1 Methanal and ethanal
5.2 Amines:
a) Structure of amines groups (primary, secondary and tertiary)
b) Important methods, preparation and properties

6. Carboxylic Acids (05 hrs)

General Introduction, classification, preparation, properties and uses of :

6.1 Methanoic acid
6.2 Ethanoic acid

7. Carbohydrates (06 hrs)

7.1. Definition
7.2. Composition, sources its importance
7.3. Classification
7.4. Estimation
7.5. Important monosaccharides, disaccharides, polysaccharides

8 Lipids (05 hrs)

8.1. Definition
8.2. Classification
8.3. Introduction to fatty acids, phospholipids, triglycerides,Cholesterol
8.4. Clinical importance of lipids

9. Proteins (05 hrs)

9.1. Definition
9.2. Classification
9.3. Compositon , molecular weight and hydrolysis
9.4. Name of various amino acids
9.5. Structure and properties of proteins
9.6. Clinical importance of proteins

10. Enzymes (05 hrs)

10.1 Definition
10.2 Classification
10.3 Chemical nature of enzymes
10.4 Properties of Enzymes
10.5 Factors affecting enzyme activity
10.6 Clinical Importance of Enzymes

LIST OF PRACTICALS

1. lodometric titrations
2. Oxidation reduction titrations
3. Acid-base titrations
4. Estimation of carbohydrates by benedicts methods
5. Estimation of proteins by acitic acid & Salphosalicylic acid test
6. Estimation of lipids by direct method

RECOMMENDED BOOKS

1. Modern's Abc of Chemistry Vol I and II by Dr. S.P.Jauhar, Modern Publishers, New Delhi

2. A textbook of Biochemistry and Clinical Pathology by Sukhdev Singh and Om Parkash

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks Allotted (%)
1	02	05
2	04	08
3	06	12
4	05	10
5	05	10
6	05	10
7	06	10
8	05	10
9	05	10
10	05	15
Total	**48**	**100**

2.3 ANATOMY AND PHYSIOLOGY - II

L	T	P
3	-	2

RATIONALE

The students are supposed to have basic knowledge of structure of body, their anatomical parts, physiological functions. After studying this subject, the students shall be able to understand various parts of body and their anatomical positions along with functions. Students are also supposed to have basic operational skill of E.C.G.

DETAILED CONTENTS

Theory

1. Nervous system (8 hrs)

    1.1 Central nervous system (brain and spinal cord)
    1.2 Peripheral nervous system (cranial and spinal nerves)
    1.3 The sense organs (eye, ear, tongue and nose); structure and functions

2. Muscular system (6 hrs)

    2.1 Brief description of skeletal, smooth and cardiac muscles
    2.2 Muscle fatigue

3. Circulatory system (14 hrs)

    3.1 Composition and functions of blood
    3.2 Anatomy and physiology of Heart
    3.3 Circulation of blood, Cardiac Cycle and Conducting System of Heart
    3.4 The blood pressure
    3.5 Arteries and viens- differences
    3.6 Lymph and lymphatic system

4. Endocrine system (10 hrs)

    Description of each endocrine gland its secretions and their effect on the body

5. Reproductive System (10 hrs)

    5.1 Male and female reproductive system
    5.2 The ovarian cycle and ovulation
    5.3 Fertilization

LIST OF EXPERIMENTS

1. Study of various parts of nervous system (brain and spinal cord) (demonstration from model)

2. Study of structure of eye and ear (demonstration from models)

3. Study of structural differences between skeletal, smooth and cardiac muscles (permanent mounts) through demonstration.

4. Study of various parts of circulatory system through demonstration.

5. Examination of stained blood film for blood cells

6. Estimation of blood pressure

7. Study of various parts of reproductive system (male and female demonstration from models and charts)

RECOMMENDED BOOKS

1. Anatomy and Physiology by Pears; JP Brothers, New Delhi

2. Anatomy and Physiology by Sears; ELBS, London

3. Basic Anatomy and Physiology by N Murugesh; Sathya Publishers, Madurai

4. Ross and Wilson Anatomy and Physiology by Anne Waugh and Kathleen JW Wilson; Churchill Living Stone; London

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks allotted (%)
1	8	16
2	6	12
3	14	30
4	10	20
5	10	22
Total	**48**	**100**

2.4 CLINICAL MICROBIOLOGY - II
(Bacteriology)

L	T	P
3	-	4

RATIONALE

The students undergoing training of medical laboratory technology learn the knowledge of basic morphology, staining, culture, biochemical characteristics and lab-diagnosis of pathogenic bacteria. In addition to this, they are also made aware about the examination of bacteria present in milk and water.

DETAILED CONTENTS

Theory

1. Bacteriology (26 hrs)

- General characteristics of bacteria - morphology, staining, culture, biochemical
- Characteristics and distribution of :-

1.1 Staphylococci
1.2 Streptococci and pneumococci
1.3 Enterobacteriacae - (E coli, Salmonella, Shigella)
1.4 Pseudomonas
1.5 Proteus
1.6 Vibrio Cholerae
1.7 Neisseria
1.8 Treponema Pallidium
1.9 Mycobacterium tuberculosis

2. Bacterial pathogenicity (06hrs)

2.1 Introduction of pathogenicity & infection.
2.2 Sources of infection
2.3 Mode of spread of infection
2.4 Types of infection

3. Nosocomial Infection (06 hrs)

3.1 Introduction
3.2 Common types and source of nosocomial infection
3.3 Control of nosocomial infections

4. Laboratory diagnosis of infectious diseases (10 hrs)

4.1 Respiratory tract infections (Throat Swab and Sputum sample)
4.2 Wound infections
4.3 Urinary tract infections
4.4 Enteric fever
4.5 Intestinal infection

LIST OF PRACTICALS

1. Collection, transportation of clinical samples, processing including culture of following clinical samples for identification of pathogens – Urine, Stool, Sputum, Throat swabs, Pus and Pus swabs, Blood, Skin, Eye and Ear swabs and CSF

2. Identification of known bacterial cultures of common pathogens.

INSTRUCTIONAL STRATEGY

The teacher should lay stress on general characteristics of bacteria, morphological features, nomenclature of bacterial for common use. The students should be made familiar with common names of bacteria and stress on correct use of bacterial pronunciation and spellings. The students should be taught with illustrations/audio-visual aids.

RECOMMENDED BOOKS

1. Textbook of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi

2. Practical Book of Medical Microbiology by Satish Gupta; JP Brothers, New Delhi

3. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth – Heinemann; Oxford
4. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai

5. Medical Laboratory Technology by Kanai Lal Mukherjee; Tata McGraw Hill, New Delhi
6. Medical Laboratory Manual for Tropical Countries Vol. I and II by Monica Cheesbrough; Cambridge University Press; UK

7. Text Book of Microbiology by Ananthanarayan and Paniker; Orient Longman, Hyderabad

8. Text book of Medical Microbiology by Cruckshiank Vol. I

9. Textbook of Medical Microbiology by Greenwood, ELBS

10. Medical Laboratory Science by Jockie and Kolhatkar, Tata McGraw Hill.

11. Text book of Microbiology by A. Chakraborty

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks Allotted (%)
1	26	50
2	06	15
3	06	15
4	10	20
Total	**48**	**100**

2.5 HAEMATOLOGY - II

L	T	P
3	-	4

RATIONALE

The training in haematology is imparted to enable the students to know the principle of tests, methodology of routine as well as advanced procedures being carried out in the laboratory by using routine as well as sophisticated instruments. Stress is also given in use of safety measures in the laboratory

DETAILED CONTENTS

Theory

1 Haemoglobinometery (12 hrs)

- 1.1. Formation of haemoglobin, function and its degradation
- 1.2. Types of haemoglobin
- 1.3. Various methods of estimation with specific reference to cyanmethaemoglobin method

2 Haemocytometery (18 hrs)

- 2.1. Various counting chambers
- 2.2. Methods of counting of RBC, WBC and platelets, their calculation and reference values.
- 2.3. Errors involved in haemocytometery and means to minimize them

3 Differential leucocyte counting (DLC) (06 hrs)

- 3.1. Preparation and staining of blood film
- 3.2. Performance of DLC
- 3.3. Normal values and significance of DLC
- 3.4. Blood cell morphology in health and disease (Peripheral blood film)

4 Quality Assurance in haematology such as accuracy, precision etc. (06 hrs)

5 Automation in haematology (06 hrs)

- 5.1. Various types of Blood cell counter
- 5.2. Principle and operation of the automated blood cell counters

LIST OF PRACTICALS

1. Preparation of peripheral blood film.

2. Preparation and standardization of stains (leishman and giemsa)

3. Preparation of thick and thin blood smear

4. Haemoglobin Estimation by Sahli's method, Oxy-Haemoglobin and Cyanmethaemoglobin method

5. Counting of RBC

6. Counting of WBC

7. Platelet counting

8. Absolute eosinophil counting

9. Study of morphology of normal RBC and WBC with the help of stained slide

10. To study abnormal morphology of RBC with the help of stained slide

11. To study abnormal morphology of WBC with the help of stained slide

12. To study abnormal morphology of platelet with the help of stained slide

RECOMMENDED BOOKS

1. Medical Laboratory Technology Vol. 1 by KL Mukherjee; Tata McGraw Hill Publishers, New Delhi

2. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth Heinmann, 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 JV Decei; ELBS with Curchill Living Stone; UK

6. Medical Laboratory Science Theory and Practical by J Ochei and A Kolhatkar, Tata McGraw Hill Publishing Company Ltd., New Delhi 2000 Ed.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks Allotted (%)
1	12	24
2	18	40
3	06	12
4	06	12
5	06	12
Total	**48**	**100**

2.6 CLINICAL BIOCHEMISTRY - II

L	T	P
3	-	4

RATIONALE

The students are imparted basic training of theoretical and practical aspects in the field of clinical biochemistry. The students are made to learn the technique 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

Theory

1. Blood glucose/ sugar estimation,screening test and glucose tolerance test (GTT) (12 hrs)
   - 1.1 Metabolism of Glucose
   - 1.2 Principle and methods of estimation
   - 1.3 Reference values
   - 1.4 Renal threshold
   - 1.5 Importance and Performance of ST/GTT
   - 1.6 Clinical importance of blood sugar, ST/GTT

2. Blood urea (8 hrs)
   - 2.1 Formation and excretion of urea
   - 2.2 Principle and procedures of different methods of urea estimation
   - 2.3 Reference values
   - 2.4 Clinical Importance

3. Serum Creatnine (4 hrs)
   - 3.1 Introduction, principle and procedure of various estimation methods
   - 3.2 Reference values
   - 3.3 Clinical importance

4. Serum proteins (8 hrs)
   - 4.1 Introduction
   - 4.2 Different methods of estimation including principles and procedures
   - 4.3 Reference values
   - 4.4 Clinical importance

5. Electrolytes and trace elements (8 hrs)

5.1 Introduction, principles and procedures of estimation of Na^+, K^+, Cl^-.
5.2 Reference values
5.3 Clinical importance

6. Uric Acid (4 hrs)

6.1 Introduction, principles and procedures of various estimation methods
6.2 Reference values
6.3 Clinical Importance

7. Quality Assurance in Biochemistry as per National Standards (4 hrs)

7.1. Internal quality assurance
7.2. External quality assurance

LIST OF PRACTICALS

1. Preparation of reagents (stock and working)
2. Estimation of blood glucose/sugar (Folin-Wu method, O-toluidine method and enzymatic method)
3. Performance of ST/GTT
4. Serum urea estimation
5. Serum creatnine estimation
6. Serum uric acid estimation
7. Plasma and serum protein estimation
8. Estimation of electrolyte levels of Na^+, K^+ and Cl^- by colorimetric method

RECOMMENDED BOOKS

1. A Procedure Manual for Routine Diagnostic Tests Vol. I and III by KL Mukherjee; Tata McGraw Hill Publishers, New Delhi
2. A Textbook of Medical Laboratory Technology by P Godkar; Bhalani Publishing House, Mumbai

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time allotted (Hrs)	Marks Allotted (%)
1	12	22
2	08	16
3	04	10
4	08	16
5	08	16
6	04	10
7	04	10
Total	**48**	**100**