

Anatomy

Year: First Year D.VOC.

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
2	-	-	70	-	15	15	-	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

Contents

Sr. No.	Topic	Weightage %	Teaching hours
1	Unit-1: Introduction, Terminology and Skeletal System: <ul style="list-style-type: none"> Define anatomical position; anatomical planes & its directional terms; positions; movements. Enumerate different sub-branches in Anatomy. Overview of human skeleton; types of bones with examples; types of cartilage with examples; structure and parts of a typical long bone; identify individual bones of the skeleton & their main structural features. Identify and classify the joints; describe the main types of joints & their movements in the body. 	25	18
2	Unit-2: Outline of Tissues and Muscular System: <ul style="list-style-type: none"> Differentiate between the various types of tissues. Classify the muscles based on different criteria, with examples. Identify major muscles of different regions of the body. 	8	6
3	Unit-3: Outline of Respiratory tract and Cardiovascular System: <ul style="list-style-type: none"> Identify and draw the organs of respiratory tract. Know the basic structural features of the organs of respiratory tract. Structures of heart; identify the major blood vessels. 	17	12
4	Unit-4: Outline of Gastrointestinal tract and Urinary System: <ul style="list-style-type: none"> Identify and draw the organs of the gastrointestinal tract. Know the basic structural features of the organs of gastrointestinal tract. 	17	12

	<ul style="list-style-type: none"> Identify and draw the organs of the urinary tract. Know the basic structural features of the organs of urinary tract. 		
5	Unit-5: Outline of Male Genital tract, Female Genital tract and Endocrine glands: <ul style="list-style-type: none"> Identify and draw the organs of the male genital tract. Know the basic structural features of the organs of male genital tract. Identify and draw the organs of the female genital tract. Know the basic structural features of the organs of female genital tract. Enumerate different endocrine glands. Identify location and basic function of different endocrine glands. 	17	12
6	Unit-6: Outline of Nervous System, Special senses and Instruments used in Anatomy: <ul style="list-style-type: none"> Describe the organization and identify major components of the nervous system. Enumerate the cranial nerves. Enumerate the special senses. Identify and draw the parts of eye and ear. Identify the main instruments and their functions. Understand the principles and technique of x-rays. Identify the main x-rays of the human body. 	16	12
	Total teaching hours for the academic year		72

Physiology**Year: First Year D.VOC.**

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
2	-	-	70	-	15	15	-	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

Contents

Sr. No.	Topic	Weightage %	Teaching hours
1	Unit-1: Outline of General physiology, Cell physiology: <ul style="list-style-type: none"> Structure of cell Cell organelles and functions Biomolecules of the cell Cellular transport mechanisms Membrane Potentials 	33	24
2	Unit-2: Outline of Blood: <ul style="list-style-type: none"> Composition of blood. Functions of blood. Body fluids and types of fluids compartments. Coagulation, Platelets and its functions, Anemia, Blood indices, Anti coagulation. ESR, WBC and its functions. Immunity. 	8	6
3	Unit-3: Outline of Cardiovascular System & Respiratory system: <ul style="list-style-type: none"> Structural organization of Cardiovascular System. Functions of Cardiovascular System. Cardiac Cycle, ECG, Blood Pressure, Cardiovascular Soak. Structural organization of Respiratory System. Transport of Gases. Normal Breathing, Abnormal Breathing. Applied Physiology. 	17	12
4	Unit-4: Outline of Digestion, Absorption & Excretory system: <ul style="list-style-type: none"> Structural organization of digestive system. Functions of digestive system. 	25	18

	<ul style="list-style-type: none"> • Movement of digestive system. • Applied physiology (Diarrhea and Vomiting). • Gross structural organization of excretory system. • Functions of Excretory system. • Regulation of body fluids. • Applied physiology (Dialysis). 		
5	Unit-5: Outline of Endocrine System: <ul style="list-style-type: none"> • Functions of Endocrine gland (pituitary, thyroid, parathyroid, adrenal, ovary, testicles). 	17	12
	Total teaching hours for the academic year		72

Biochemistry

Year: First Year D.VOC.

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
3	-	-	70	-	15	15	-	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

Contents

Sr. No.	Topic	Weightage %	Teaching hours
1	Unit-1: Introduction to Basic Biochemistry: <ul style="list-style-type: none"> • Introduction to Laboratory Apparatus • Introduction to Laboratory Instruments • Dilutions and Working Solutions • Safety and Precautions in a Biochemistry lab 	11	12
2	Unit-2: Fundamentals of Biophysical Chemistry: <ul style="list-style-type: none"> • Normality, Molarity, Molality, Percentage solutions, Mole fractions (simple numerical problems) • Dissociation of water, ionic product of water, concept of pH, pOH (Simple problems). Determination of pH using indicators and pH meter and derivation of mathematical expression of pH. • Dissociation of weak acids and bases. Meaning of K_a and pK_a values. • Buffers-buffer action, buffers in biological systems, Henderson-Hasselbalch equation with deviation (simple problems) 	11	12
3	Unit-3: Biomolecules - Carbohydrates and Lipids: <ul style="list-style-type: none"> • Classification of carbohydrates, ketoses and aldoses C3 to C6 series exemplified by one in each group (structure only) • Reactions and structure of glucose, fructose, sucrose, maltose and lactose. Mutarotation - Inversion of cane sugar. • Glycosides, polysaccharides - starch, cellulose, and glycogen - important structural features. General reactions of carbohydrates-oxidation, reduction, osazone formation. Mucopolysaccharides chondroitin sulphates, Heparin, Hyaluronic acid. • Classification of lipids, classification of fatty acids, Emulsification - Saponification - Glycerides. • Phospholipids- lecithin, cephalins, plasmalogens, phosphatidyl 	20	22

	inositides (indicate structure and function), cerebrosides, gangliosides, saponification number and acid number, iodine value, sterols-cholesterol- structure and two color reactions. Bile acids.		
4	Unit-4: Biomolecules – Proteins and Nucleic acids: <ul style="list-style-type: none"> Classification of amino acids, abbreviated names of amino acids(one letter, three letter), optical activity, UV absorption, zwitter ion and titration of amino acid, general reactions of amino acids – ninhydrin reaction, formol titration, van slyke method, transamination. Peptide nomenclature, Properties of the peptide bond. Steps in the synthesis of simple peptide (-NH₂ and COOH blocking –COOH activation and condensation, release of blocked group). Synthesis of peptide, hydrolysis of proteins and separation of amino acids. Proteins Structure, Classification and Properties. Solubility, isoelectric point, protein denaturation, isoelectric precipitation, salt effect, heavy metal precipitation. Structure of proteins - primary, secondary, tertiary and quaternary - forces stabilizing each level of structure. Purines, pyrimidines, ribose, deoxyribose, nucleoside structure, nucleotide structure, different types of RNA-mRNA, tRNA and rRNA- basic structural features, Action of DNAase, RNAase, secondary and tertiary structure of DNA-Watson and crick double helix model of DNA. 	20	22
5	Unit-5: Enzymes: <ul style="list-style-type: none"> Introduction to enzymes, apoenzyme, holoenzyme, prosthetic group, classification of enzymes, lock and key model, induced fit model, active site, enzyme specificity and types. Enzyme kinetics, factors affecting the velocity of enzyme action. Enzyme concentration, temperature, pH, substrate concentration. Derivation of MM equation and Km Value determination, its significance. LB plot, Enzyme inhibition, reversible and irreversible, competitive, non-competitive and uncompetitive inhibition, allosteric enzymes. Isoenzymes, Zymogen form of enzyme and its activation. Diagnostic importance of enzymes in LAB DIAGNOSIS 	18	18
6	Unit-6: Nutritional Biochemistry: <ul style="list-style-type: none"> Nutritional support with special emphasis on parental nutrition. Calorific value, Nitrogen Balance, Respiratory Quotient, Basal metabolic rate, Dietary Fibers, Nutritional importance of lipids, carbohydrates, proteins and vitamins. Fat and water soluble 	20	22

	<p>vitamins.</p> <ul style="list-style-type: none">• Functions and deficiency. Diseases (Structure of vitamins not needed). Co-enzyme form of the vitamins and their functions.• Constituents of Blood, types of blood cells, components of plasma, types of plasma proteins and functions.• Mechanism of blood clotting (Extrinsic and Intrinsic pathway).• Structure of hemoglobin.-Types of hemoglobin, sickle cell anemia.• Occupational hazards.		
	Total teaching hours for the academic year		108

Basic IT Skills**Year: First Year D.VOC.**

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
2	1	-	70	-	15	15	-	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

Contents

Sr. No.	Topic	Weightage %	Teaching hours
1	Unit-1: Computer Fundamentals : <ul style="list-style-type: none"> Definition, characteristics, Basic Applications of Computer. Components of Computer System - Central Processing Unit (CPU), VDU, Keyboard and Mouse, Computer Memory. Concepts of Hardware and Software, Types of software, input & output devices, storage devices. Practice exercises and demonstrations 	15	16
2	Unit-2: Windows Operating System: <ul style="list-style-type: none"> Definition, functions of an operating system, types of operating systems. Windows - Desktop, Start-menu, Control panel, Accessories, My Computer, My Documents, Recycle bin, Printer and Mouse settings. Maximizing, minimizing, restoring and closing of windows. Windows explorer, Folders and files - creation, deletion, rename cut, copy, paste Practice exercises and demonstrations 	11	12
3	Unit-3: Word Processing: <ul style="list-style-type: none"> Word Processing Basics, Opening Word Processing Package, Menu Bar, Using the Help, Using the Icons below Menu Bar. Opening and closing Documents, Save and Save as, Page Layout, Print Preview and Printing of Document. Text Creation and manipulation, Document Creation, Editing Text, Text Selection, Cut, Copy and Paste. Spell check, Thesaurus, Formatting the Text - Font and Size selection, Alignment of Text, Paragraph Indenting, Bullets and Numbering, Changing case. Table Manipulation - Draw Table, Changing cell width and height, 	20	22

	Alignment of Text in cell, Delete/Insertion of row and column, Border and shading, Mail Merge <ul style="list-style-type: none"> Practice exercises and demonstrations 		
4	Unit-4: Electronic Spread Sheet: <ul style="list-style-type: none"> Elements of Electronic Spread Sheet - Opening of Spread Sheet, Addressing of Cells, Saving Workbooks, Manipulation of Cells. Entering Text, Numbers and Dates, Creating Text. Page Layout - margins, orientation, size, print titles, View - Page Layout, Page break preview, Printing of Spread Sheet Number and Date Series. Editing Worksheet Data, Inserting and Deleting Rows, Column, Changing Cell Height and Width, Formatting cells, Sorting, filtering, Formulas, Chart, Function. Practice exercises and demonstrations 	20	22
5	Unit-5: Working with Presentations: <ul style="list-style-type: none"> Creating and viewing a presentation. Slide Design, Slide Layout, adding animations. Managing slide shows, Transition and Slide Timings, Automating a Slide Show. Printing Slides and Handouts. Practice exercises and demonstrations 	19	20
6	Unit-6: Introduction to Internet: <ul style="list-style-type: none"> Concept of Internet, Applications of Internet. Basics of internet, World Wide Web, Web Browsing softwares. Search Engines. E-mail - sending, receiving, forwarding and attaching files. Practice exercises and demonstrations. 	15	16
	Total teaching hours for the academic year		108

Communication Skills**Year: First Year D.VOC.**

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
2	-	-	70	-	15	15	-	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

Contents

Sr. No.	Topic	Weightage %	Teaching hours
1	Unit-1: Grammar: <ul style="list-style-type: none"> Adjectives, Degree of Comparison, Conjunctions, Sentence Structure, Tenses and Subject-Verb Agreement, Modal Auxiliaries. 	16	11
2	Unit-2: Vocabulary: <ul style="list-style-type: none"> Vocabulary on Doctors and Practitioners, words related to equipments used for pre - & post - operation, words related to hospital. 	12	08
3	Unit-3: Listening Skills: <ul style="list-style-type: none"> Types of Listening, Traits of good listener, Telephonic Conversation, Listening to Stories, Speeches by the leaders (Audio ± Video). 	18	13
4	Unit-4: Speaking Skills: <ul style="list-style-type: none"> Speaking: (a) To speak on a given topic for 2 minutes, (b) Cue Card (like IELTS exam) - To speak on a given topic using the prompts to guide you for 3 minutes. Presentation: Analyzing audience, Organizing Content, Importance of Non Verbal Communication, Presentation Task. Role Play, Oral Report, Picture Description 	18	13
5	Unit-5: Writing Skills: <ul style="list-style-type: none"> Dialogue writing, Paragraph writing-introductory, developmental, transitional and concluding paragraphs, linguistic unity, coherence and cohesion, descriptive, narrative, expository and argumentative writing. ITEP Writing Task 1: Write a short note to respond to a simple situation or topic (75 to 100 words), Inspection Notes. Letters (Requisition, Request, Order, Maintenance or Service, Acknowledgement, Follow - up, Complaint letter, Circular letters, 	18	13

	Interview letter, appointment letters, office notes, office orders, Sending Replies). <ul style="list-style-type: none"> • Report Writing, Email writing, Anecdotal records, Diary writing, • Reports on health problems, Précis Writing, Picture Description 		
6	Unit-6: Reading for Personality Development: <ul style="list-style-type: none"> • Comprehension Passages, Vision of Success, Vision of Career, Focus on Value, Design Solutions, Engage Deeply, Practice Imaginative Sympathy, Demonstrate Trust Behavior, Think in Enlightened Self Interest 	17	12
	Total teaching hours for the academic year		72

Clinical Laboratory: Anatomy**Year: First Year D.VOC.**

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
-	-	2	-	70	-	15	15	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

List of Practicals:

1. Axial bones and related joints
2. Appendicular bones and related joints
3. Skeletal muscles of the body
4. Respiratory organs
5. Heart and major blood vessels
6. Gastrointestinal organs
7. Excretory organs
8. Male genital (Reproductive) organs
9. Female genital (Reproductive) organs
10. Endocrine organs
11. Nerves of the body (Spinal nerves)
12. Brain and spinal cord
13. Cranial nerves and organs of special senses
14. Instruments used in anatomy
15. X- rays

Clinical laboratory: Physiology**Year: First Year D.VOC.**

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
-	-	2	-	70	-	15	15	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

List of Practicals:

1. Study of a compound Microscope
2. An introduction to experiments on Blood
3. Estimation of Hemoglobin
4. Determination of total Erythrocyte count
5. Determination of total Leukocyte count
6. Preparation of a peripheral blood smear and Determination of Leukocyte count
7. Determination of Bleeding time and clotting time
8. Determination of Blood groups
9. Determination of ESR
10. Determination of PCV

Clinical laboratory: Biochemistry**Year: First Year D.VOC.**

Teaching and Examination Scheme:

Teaching Scheme (Hrs./Week)			Examination Scheme					Total
L	T	P	External		Internal			
			Theory	Practical	Theory	*C.E.	Practical	
-	-	2	-	70	-	15	15	100

L-Lectures; T-Tutorial; P-Practical; C.E.-Continuous Evaluation

List of Practicals:

1. Familiarization with biochemistry laboratory (Students Lab, CCL), Do's & Don'ts
2. Organization of laboratory and safety precautions in laboratory and personal cleanliness and care with regards to infected materials and chemical burns. Quality assurance and disposal of wastes, cleaning of equipments and glassware.
3. Maintenance and use of refrigerator, deep freezers, incubators, ovens, water bath, autoclaves, centrifuges, anaerobic chambers, BOD incubators etc.
4. Maintenance and knowledge of various components of microscopes and applications of various types of balances. Usage and maintenance of balances.
5. Sample collection, preservation and transportation of various clinical samples.
6. Preparation of buffers, molar solutions, normal solutions and determination of pH of buffers.
7. Study of the general reactions of Carbohydrates Glucose, Fructose, Sucrose, Lactose, maltose, Starch.
8. Molisch's test, Benedict's test, Fehling's test, Barfoed's test, Bial's test, Phloroglucinol test, Hydrolysis test, Iodine test, Seliwanoff's test, Foulger's test, Osazone test.
9. Study of the general reactions of Proteins (Precipitation & Colour reactions) Albumin, Peptone, Casein, Gelatin
10. Reactions of Aminoacids- Tyrosine, Tryptophan, Methionine, Proline, Arginine, Cysteine, Cystine, Histidine.
11. Study of the general reactions of Normal Urine (Organic alone NPN)

12. Qualitative Analysis of any one of the given unknown Carbohydrates /Protein, amino acid , Normal Urine (NPN)
13. Abnormal Urine including sugar, protein, acetone, bile salts, bile pigments, blood, urobilinogen, chyle and microscopic examination for crystals, cells and casts.
14. Qualitative tests of urine: Abnormal constituents - Proteins (Coagulation test, sulfosalicylic acid test,), Sugars (Benedicts test), Hemoglobin / Blood (Benzidine test), Ketone bodies (Rothera test, Gerhardt's test), Bile pigments (Fouchet's test, Gmelin's test) and Bile salts (Hay's test).
15. Urine Reports

SKILL MODULE-1 SCOPIES AND CPR**Type of Course:** UG- D.VOC-Med.Sci.**Total duration of Skill Module:** 30hrs in 1ST Year d.voc Endoscopy**Teaching and Examination Scheme**

Teaching Scheme			Credit	Examination Scheme					TOTAL
LectHrs/week	Tut Hrs/Week	Clin.Hrs/Week		External Internal		External Internal			
				T	P	T	CE	P	
2	-	2	-	70	-	15	15	-	100

Lect- Lecture, Tut - Tutorial, Clin. - Clinical, T - Theory, P - Practical, CE - CE, T - Theory, P – Practical

Contents

SR.NO	TOPICS	WEIGHTAGE	HOURS
1	Endoscopy <ul style="list-style-type: none"> Review of anatomy and physiology of digestive system. Overview of endoscopy. Preparation of patient for endoscopy. Endoscopy coding guidelines. ASGE patient education. Colonoscopy <ul style="list-style-type: none"> Review of anatomy and physiology of digestive system. Overview of colonoscopy. Preparation of patient for colonoscopy. Guidelines for colonoscopy. ASGE patient education. 	50%	15

2	CPR <ul style="list-style-type: none">• Medical emergencies• Patient Assessment and Movement• Scene Assessment• Injuries and traumatic emergencies• Personal protective equipment• Responding to an emergency• Environmental emergencies• Bloodborne pathogens• Legal Issues and consent• First aid kit contents	50%	15
	Total teaching hours for the academic year	100	30

SKILL MODULE-2 PATIENT -STAFF SAFETY AND INFECTION CONTROL**Type of Course:** UG- D.VOC-Med.Sci.**Total duration of Skill Module:** 30hrs in 1 st Year d.voc Endoscopy**Teaching and Examination Scheme**

Teaching Scheme			Credit	Examination Scheme					TOTAL
LectHrs/week	Tut Hrs/Week	Clin.Hrs/ Week		External Internal		External Internal			
				T	P	T	CE	P	
3	-	2	-	70	-	15	15	-	100

Lect- Lecture, Tut - Tutorial, Clin. - Clinical, T - Theory, P - Practical, CE - CE, T - Theory, P – Practical

Contents

SR.NO	TOPICS	WEIGHTAGE	HOURS
1	Patient and staff safety <ul style="list-style-type: none"> Safe Patient Handling Exposure Control And Sharps Injury Prevention Program Slips, Trips And Falls Preventing Violence Rights Of Patient Personal Protective Equipments(Ppe) Prevention Of Needle Stick Injuries 	50	15
2	Infection control <ul style="list-style-type: none"> Introduction to infection prevention and control programmes Structure and function of infection prevention and control programmes Education of healthcare workers Audits in infection prevention and control Policy development in infection prevention and control Report writing in infection prevention and control Occupational health and safety programmes 	50	15
	Total teaching hours for the academic year	100	30

