MALLAREDDY VISHWAVIDYAPEETH

SCHOOL OF PUBLIC HEALTH, EMERGING HEALTH CARE SCIENCES AND TECHNOLOGY

Suraram X Roads, Jeedimetla, Hyderabad-500055
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PROGRAM

BACHELOR OF SCIENCE (B.Sc.)

SURGICAL LAPROSCOPHY TECHNOLOGY

2025-2029

MALLA REDDY VISHWAVIDYAPEETH

SCHOOL OF PUBLIC HEALTH, EMERGING HEALTH CARE SCIENCES AND TECHNOLOGY

Bachelor of Science in Surgical Laparoscopy Technology COURSE STRUCTURE

SEMESTER – I							
Sl. No.	**Category**	**Course Code**	**Name of the Subject**	**L**	**T**	**P**	**Credits**
1.	MC	BSL3710 101	HumanAnatomy-I	4	-	-	4
2.	MC	BSL3710 102	Human Physiology - I	4	-	-	4
3.	MS	BSL3710 103	Medical Biochemistry	4	-	-	4
4.	AEC	BSL3710 104	English and Communication Skills	2	-	-	2
5.	SEC	BSL3710 105	Basics of Computers	1	-	2	2
6.	MD	BSL3710 106	Sociology	2	-	-	2
7.	MC	BSL3710 101P	Human Anatomy - I Practical	-	-	4	2

8.	MC	BSL3710 102P	Human Physiology - I Practical	-	-	4	2
9.	VAC	BSL3710 107VA	Environmental Awareness	2	-	-	2
Total				**19**	**-**	**10**	**24**
Total Contact Hours				**29**			

II[nd] SEMESTER 1[st] YEAR

Sl. No.	**Category**	**Course Code**	**Name of the Subject**	**L**	**T**	**P**	**Credits**
1	MC	BSL3710201	Human Anatomy - II	4	0	0	4
2	MC	BSL3710202	Human Physiology - II	4	0	0	4
3	MS	BSL3710203	Pathology	2	0	0	2
4	MD	BSL3710204	Microbiology	3	0	0	3
5	SEC	BSL3710205	Introduction to Laparoscopy Surgery	3	0	0	3
6	VAC	BSL3710206VA	Stress Management	1	0	0	1
7	MC	BSL3710201P	Human Anatomy - II Practical	0	0	4	2
8	MC	BSL3710202P	Human Physiology - II Practical	0	0	2	1
Total				17	0	6	20

III[rd] SEMESTER II[nd] YEAR

SEMESTER – III							
Sl. No.	**Category**	**Course Code**	**Name of the Subject**	**L**	**T**	**P**	**Credits**
1	MC	BSL3710301	Surgical Anatomy	3	0	0	3
2	SEC	BSL3710302	Basics of Laparoscopic Procedures	3	0	2	4
3	MS	BSL3710303	Pharmacology	3	0	0	3
4	MD	BSL3710304	Health Care and Administration	2	0	0	2
5	AEC	BSL3710305	Medical Law, Ethics & Medical Records	3	0	0	3
6	MS		Biosafety and Biohazard Management	2		2	3
7	VAC	BSL3710306	Soft Skills & Development	1	0	0	1
8	SI	BSL3710307	Clinical Posting - I	0	0	12	6
9	SEC		AI in Healthcare: Foundation	1	0	0	1
Total				**18**	**0**	**14**	**23**
Total Hours				**31**	**0**	**30**	**23**

IVth SEMESTER IInd YEAR

Sl. No.	Category	Course Code	Name of the Subject	L	T	P	Credits
1	SEC	BSL3710401	Advanced Laparoscopic Techniques	3	0	2	4
2	MC	BSL3710402	Infection Control in Surgery	3	0	2	4
3	VAC	BSL3710403VA	Health and Well-being	1	0	0	1
4	SI	BSL3710404	Clinical Posting - II	0	0	20	10
5	SEC	BSL3710405	Seminar & Case Discussions	1	0	0	1
Total				8	0	24	20
Total Hours				32			

Vth SEMESTER IIIrd YEAR

Sl. No.	Category	Course Code	Name of the Subject	L	T	P	Credits
1	MC	BSL3710501	Laparoscopic Instrumentation	3	0	4	5
2	MC	BSL3710502	Quality Assurance in Laparoscopic Surgery	3	0	0	3
3	VAC	BSL3710503VA	Interpersonal Communication	1	0	0	1
4	SI	BSL3710504	Clinical Posting - III	0	0	20	10
5	SEC	BSL3710505	Seminar / Journal Club	1	0	0	1
Total				8	0	24	20
Total Hours				32			

VIth SEMESTER IIIrd YEAR

Sl. No.	Category	Course Code	Name of the Subject	L	T	P	Credits
1	MC	BSL3710601	Advanced Surgical Procedures	3	0	2	4
2	MC	BSL3710602	Robotic-Assisted Surgery	3	0	0	3

3	MS	BSL3710603	Research Methodology and Biostatistics	3	0	0	3
4	VAC	BSL3710604VA	Art of Being a Better Person	1	0	0	1
5	SI	BSL3710605	Clinical Posting - IV	0	0	18	9
Total				10	0	20	20
Total hours				30			

VIIth SEMESTER IVth YEAR

Sl. No.	Category	Course Code	Name of the Subject	L	T	P	Credits
1	SI	BSL3710701	Internship - I	0	0	40	20
2	RP	BSL371070	Project Work	0	0	2	1
Total				0	0	42	21
Total hours				42			

VIIIth SEMESTER IVth YEAR

Sl. No.	Category	Course Code	Name of the Subject	L	T	P	Credits
1	SI	BSL3710801	Internship - II	0	0	20	10
3	RP	BSL3710803	Project Work	0	0	20	10
Total				0	0	40	20
Total hours				40			

Semester	MD	AEC	VAC	SEC	MC	MS	SI	RP	Total Credits
I	2	2	2	2	12	4	0	0	24

II	3	0	1	3	11	2	0	0	20
1st Year Total	**5**	**2**	**3**	**5**	**23**	**6**	**0**	**0**	**44**
III	2	3	1	4	3	3	6	0	22
IV	0	0	1	5	4	0	10	0	20
2nd Year Total	**7**	**5**	**5**	**14**	**30**	**9**	**16**	**0**	**44**
V	0	0	1	1	8	0	10	0	20
VI	0	0	1	0	7	3	9	0	20
3rd Year Total	**7**	**5**	**7**	**15**	**45**	**12**	**35**	**0**	**40**
VII	0	0	0	0	0	0	20	1	21
VIII	0	0	0	0	0	0	10	10	20
Grand Total	**7**	**5**	**7**	**15**	**45**	**12**	**65**	**11**	**41**

SEMESTER-I **L/T/P/C**

HUMANANATOMY–I **4/-/-/4**

UNIT-I

GENERALANATOMY AND HISTOLOGY

1. Introduction to anatomy, anatomical terms, planes, axis.
2. General Anatomy:
    - Fascia
    - Muscles
    - Bones
    - Joints
    - Vessels
    - Nerve
3. General Histology:

- Epithelial
- Connective tissue
- Muscle
- Bone and cartilage
- Nerve and vessels
- Embryology

UNIT-II

UPPEREXTREMITY:

1. Osteology: Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
2. Muscles: Origin, insertion, nerve supply and actions. UNIT-III

BASIC ANATOMY OF UPPEREXTREMITY:

1. Joints: Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand.
2. Breast, pectoral region, axilla, cubital fossa, Arches of hand
3. Brachial plexus, nerves of upper extremity
4. Blood vessels and lymphatic drainage

UNIT-IV

CARDIOVASCULAR & RESPIRATORY ANATOMY

1. Thoracic wall
2. Anatomy of circulatory system
3. Heart: Anatomy of heart, blood Supply, nerve supply, conducting System and major blood vessels
4. Lungs: Basic Anatomy of lungs, bronchial tree, pleura, Broncho pulmonary segments, blood Supply and nerve supply
5. Diaphragm: Origin, insertion, nerve supply and action.
6. Intercostal muscles and Accessory muscles of Respiration: Origin, insertion, nerve supply and action
7. Basic anatomy of Ribs and sternum

UNIT-V

SYSTEMIC ANATOMY

1. Digestive system:
   - List the parts of the digestive system
   - Basic Anatomy of stomach, liver, gallbladder, spleen, pancreas, intestines.
2. Urinary system:
   - Basic Anatomy of kidney, urinary bladder
3. Endocrine system:
   - Position and hormones secreted by each organ
4. Genital system:
   - Basic anatomy of Male organs and female organs

RECOMMEMDEDTEXTBOOKS

1. Human Anatomy-Snell
2. Anatomy-Chaurasia, Volume-I,II &III
3. Neuro anatomy-Inderbir Singh
4. Human Anatomy-Kadasne, Volume-I,II&III
5. Neuro anatomy—Vishrsam Singh
6. Human Anatomy-Datta

HUMAN PHYSIOLOGY – I L/T/P/C

4/-/-/4

UNIT-I

GENERALPHYSIOLOGY

Cell:

1. Structure of cell membrane
   a) Fluid mosaic model
   b) Lipidbi-layer
   c) Functions of cell membrane
2. Transport across cell membrane

A. Basic mechanism of transport

a) Channel proteins

b) Carrier proteins

B. Methods of transport

a) Passive transport

b) Active transport

3. Body fluids

a) Intracellular fluid

b) Extracellular fluid

c) Body electrolytes

d) Regulation of body fluid volume

4. Homeostasis

a) Regulation of body function

b) Homeostatic regulatory mechanism

BLOOD:

1. Composition of blood &it's volume
2. Plasma
3. Hemopoiesis

a) Composition

b) Plasma protein

4. Erythrocytes

a) Normal count

b) Structure of RBC (shape &size)

c) Functions of RBC

d) Hemoglobin (Normal Value, Fate, Function)

e) Anemia& polycythemia

f) ESR&PCV

5. Leukocytes

a) Classification

b) Functions of leukocytes

6. Platelets
    a) Normal count
    b) Functions of thrombocytes
    c) Blood Coagulation
    d) Bleeding time &clotting time
7. Blood group
    a) ABO system
    b) Landsteiner's law
    c) ABO incompatibility
    d) Rh system
    e) Rh incompatibility& erythroblastosis fetalis
8. Blood transfusion
    a) Collection & storage of blood
    b) Precautions
    c) Cross matching
    d) Hazards of blood transfusion

NERVE:

1. Structure of a neuron
2. Classification of neurons
3. Electrical activity of neuron
    a) Resting membrane potential
    b) Action potential
4. Nerve Injury
    a) Types of nerve Injury
    b) Effect of nerve Injury
    c) Regeneration of damaged nerve fiber

UNIT-II

MUSCLE PHYSIOLOGY

1. Classification
2. Properties of skeletal muscle
3. Structure of skeletal muscle
    a) Sarcomere
    b) Sarco tubular system
    c) Neuro muscular junction& disease affecting it
4. Mechanism of muscle contraction
5. Functions of skeletal muscle
6. Types of muscle contractions
7. Red& white muscles
8. Rigor mortis, muscular dystrophy, altered muscle tone, muscle cramp, atrophy, EMG

UNIT-III

CARDIOVASCULAR SYSTEM

1. Structure of heart & blood vessels
2. Properties of cardiac muscle
3. Origin &spread of cardiac pulse
4. Cardiac cycle &heart sounds
5. Cardiac out put
    a) Related terms
    b) Regulation of cardiac output
    c) Circulatory shock
6. Pulse &Heart rate and it's regulation
7. Blood pressure
    a) Definitions

b) Factors controlling & Influencing BP

c) Regulation of BP

8. Regional circulation

a) Coronary circulation

b) Cerebral circulation

9. Normal ECG.

UNIT-IV

RESPIRATORYSYSTEM

1. Introduction, structure & function of RS

a) Upper respiratory tract

b) Lower respiratory tract

c) Respiratory membrane

2. Mechanism of breathing

a) Mechanics of breathing

b) Respiratory pressure change

c) Compliance

d) Surfactant

3. Respiratory volumes & capacities
4. Pulmonary ventilation& Dead space
5. Nervous &chemical regulation of respiration
6. Pulmonary function test-direct& indirect method

RECOMMENDED TEXT BOOKS

1. Text book on Medical Physiology-Guyton
2. Textbook of Physiology-AK Jain (for MBBS students)
3. Human Physiology-C.C. Chatterjee
4. Essentials of Medical Physiology -Sembulingam, K.
5. Comprehensive Textbook of Medical Physiology: Vol-1 & 2 - Pal, Gopal Krushna

6. Physiology: Prep Manual for Undergraduates- Joshi, VijayaD.

7. Practical Physiology -Joshi, VijayaD.

BIOCHEMISTRY

L-T-P-C

4-0-0-4

UNIT-I

CARBOHYDRATE CHEMISTRY

- Definition, general classification with examples
- Composition and functions of Monosaccharides, Disaccharides ani Polysaccharides
- Anomers, Epimers, Enantiomers, Mutarotation
- Glycosaminoglycans (mucopolysaccharides)

LIPID CHEMISTRY

- Definition, classification with examples.
- Classification and Functions of Fatty acids, Phospholipids, Lipoprotein
- Structure and functions of Cholesterol
- Sources and functions of Ket one bodies

UNIT-II

AMINOACIDCHEMISTRY

- Definition, Classification of amino acids with examples.
- Definition, Classification of proteins with examples
- Structural organization of proteins
- Biologically important peptides

NUCLEICACIDSANDNUCLEOTIDECHEMISTRY

- Composition and Functions of Nitrogen bases, Nucleosides, Nucleotides
- Structure and Functions of DNA
- Structure, Types and Functions of RNA
- Differences between DNA and RNA

UNIT-III

ENZYMES

- Definition, Classification of enzymes with examples
- Active site, Enzyme specificity.

- Factors affecting enzyme activity
- Enzyme inhibition
- Iso enzymes and their clinical significance - LDH, creatine kinase, ALP

VITAMINS

- Definition, Classification
- Fat soluble Vitamins-Sources, RDA, Functions and Deficiency.
- Water soluble Vitamins- Sources, RDA, Functions and Deficiency

UNIT-IV

INTERMEDIARYMETABOILISM

- Glycolysis
- TCA cycle
- B-oxidation of fatty acids (Palmitic acid)
- Ketone body formation and utilization Urea cycle

UNIT-V

MINERALMETABOLIS

- Definition, Classification. Sources, RDA, Functions and Deficiency of Calcium, Phosphorous, Iron, Sodium, Potassium

CLINICALBIOCHEMISTRY

- Normal and abnormal constituents of Urine and Blood and their clinical significance:
- Normal constituents:
- Organic: Urea, Uric acid, Creatinine
- Inorganic: Ca, phosphate, chloride, electrolytes
- Abnormal constituents:
- Glucose, Ketone bodies, Protein, Blood, Bile salts, Bile pigments

RECOMMENDED BOOKS

1. Essentials of Biochemistry by U. Satyanarayana.

2. Text book of Biochemistry for Medical students. DM Vasudevan

3. Integrated textbook of Biochemistry Volume-l and II. Indumathi.
4. Textbook of Biochemistry for Medical students. MN Chatterjee and Rana Shinde.
5. Harper's Illustrated Biochemistry.
6. Essentials of Biochemistry. Pankaja Naik

ENGLISH AND COMMUNICATION SKILLS **L/T/P/C**

2/-/-/2

UNIT 1: Sympathy (Poem) by Charles Mackay
Reading - Reading and its importance, techniques of effective reading. Writing - Paragraph Writing (Topic sentence, Supporting sentences, and Conclusion) Grammar - Parts of Speech (Parsing), Articles Vocabulary - Pain and Symptoms, and Common Illness **ELCS LAB** CALL LAB: Phonetics - Vowel Sounds (Monophthongs and Diphthongs) Listening - Introduction to listening, Purpose of Listening, and Barriers to effective listening ICS LAB: Speaking - Self-introduction and Introducing others, JAM

UNIT 2: A Birthday Letter by Jawaharlal Nehru
Reading - Skimming and Scanning Writing - Letter writing (Requests, Leave applications, Purchase letters, Letters in correspondence with medicalinsurance companies) Grammar - Phrase, Clause and Sentence; Prepositions Vocabulary - Body parts and diseases, Definitions / One-word substitutes **ELCS LAB** CALL LAB: Phonetics - Consonant Sounds Listening - Listening for gist and specific information ICS LAB: Speaking - Small talk, Narration of anecdotes

UNIT 3: The secret of work by Swami Vivekananda
Reading - Making inferences and predictions Writing - E-mail writing Grammar - Tenses, Reported speech Vocabulary - Food and lifestyle, Instruments and Equipment **ELCS LAB** CALL LAB: Intonation Listening - Listening and identifying facts and opinions ICS LAB: Speaking - Role Plays (OET) (Giving and taking instructions, Interacting with and explaining processes, conditions and instructions to the patients and their attenders,

UNIT 4: All the world's a stage (Poem) by William Shakespeare
Reading - Reading for explicit and implicit meaning Writing - Short essays: 2-Paragraph Essay, Thesis Statement Grammar - Subject-Verb agreement, Degrees of Comparison Vocabulary - Caring and Emotions, Medical Abbreviations and Acronyms **ELCS LAB** CALL LAB: Consonant Clusters Listening - Listen- Comprehend - Speak , Health Care ICS LAB: Speaking - Formal Discussions, Physical Description/Personality

TEXTBOOK:

English for nurses by Vijaya Laxmi Naidu. Nirali Prakashan. 2008.

RECOMMENDED BOOKS:

1. Practical English Usage by Michael Swan. OUP. 1995.
2. On Writing Well by William Zinsser, Harper Resource Book. 2001.
3. Cambridge English for nursing by Virginia Allum and Patricia Mc Garr. CUP. 2010.
4. English for nursing by Ross Wright and Bethany Cagnol. Pearson. 2001.
5. English for nursing-2 by Maris Spada Symonds and Ross Wright. Pearson. 2001.
6. Everyday English for International nurses by Joy Parkinson and Chris Brooker. Elsevier. 2004.

Oxford English for career Nurses by Tony Grice. Oxford University Press. 2007

BASIC COMPUTERS **L/T/P/C**

1/-/2/2

UNIT – I

Introduction to computers: -Definition of Computer-Characteristics of computer-Components of Computer Hardware – Input & Output devices- Memories– RAM and ROM–MB, GB their conversions – Software: Application Software and Systems software-Data and Information –Different computer languages- Number systems- Binary and decimal conversions.

UNIT – II

MS WORD: Typing text in MS Word– Manipulating text¬– formatting text–using different font sizes, bold, italic– bullets and numbering –Pictures, Aligning the text and justify–choosing paper size– adjusting margins– header and footer, inserting page no's in a doc–printing a file with options– using spell check and grammar– find and replace– mail merge – insert tables in a document.

UNIT – III

MS EXCEL: Creating MS Excel-Cell editing, using formulas and functions, manipulating data with excel– using sort function to sort numbers and alphabets– drawing graphs and charts using data in excel.

MS POWERPOINT: Slide transition and animation-slides with sounds– inserting clip arts–Pictures, tablesand graphs.

UNIT – IV

Introduction to Computer Networks: Introduction, Computer Network Devices(Hubs, Switches, Routers, Gateway, Bridge, Modems, Wireless Access Points, Firewalls & NIC), Types of computer Networks (LAN, MAN & WAN), Network Topologies (Star, Ring, Mesh, Tree, Hybrid Topologies), Internet Based Applications, Advantages & Disadvantages of Computer Networks, E-Mail, Components of E-Mail, Attaching Files in E-mail, Different Search Engines.

UNIT – V

Introduction to Artificial Intelligence & ML: History of AI, Sub Areas of AI, Applications of AI in Healthcare, Benefits of AI in Health Care, Challenges of AI in Healthcare, Introduction to Machine Learning, Applications of Machine Learning, Machine Learning Algorithms, Real world Machine Learning Use Cases.

RECOMMENDED BOOKS:

1. Computer Fundamentals by Goel, Anita Pearson
2. Computer Fundamentals : Concepts, Systems & Applications- 8th Edition by Priti Sinha, PradeepK., Sinha
3. MS-Office 2010 Training Guide by Prof. Satish Jain, M. Geetha
4. Computer Networks, Andrews S Tanenbaum, 5th Edition, Pearson Education
5. Artificial Intelligence : A modern Approach, Stuart J. Russell and Peter Norvig, Third Edition, PearsonEducation
6. Hands-on Machine Learning with Scikit-Learn, Keras, and TensorFlow, Aurelien Geron-Oreilly, 2ndEdition.

SOCIOLOGY

UNIT 1

1. Introduction*:*

a. Meaning- Definition, Nature and Scope of Sociology

b. Methods of Sociological Investigations, Case Study, Social Survey, Questionnaire and Interview methods.

c. Importance of its study with special reference to Health Care Professionals.

2. Social Factors in health and disease situations:

a. Role of Social factors in health

b. Role of social factor in illness

c. Decision making in taking treatment

UNIT-2

1. Socialization:

a. Definition and Meaning of Socialisation

b. Primary, Secondary and Anticipatory socialisation

c. Agencies of Socialisation

2. Social Groups*:*

a. Definition and Features of Social Group

b. Primary Social Group

c. Secondary Social Group

d. The role of Primary and Secondary Groups in Hospitals.

UNIT-3

1. Family*:*

a. The family, meaning and definition

b. Functions of family

c. Changing family patterns

d. Influence of Family on the individuals health, the effects of sickness in the family.

2. Community*:*

a. Rural community: meaning and features- Health problems of rural community.

Urban community: meaning and features – Health problems in urbanities

UNIT-4

1. Culture and Health:

a. Concept of Health

b. Concept of Culture

c. Cultural factors affecting Health and diseases

2. Social Change:

a. Meaning of social change

b. Factors of social change

c. Human adaptation and social change

d. Social planning and Health

UNIT-5

1. Social Problems*:*

a. Population explosion

b. Juvenile delinquency

c. Alcoholism

d. Unemployment

e. Poverty

f. Problems of women

2. Social Security*:*

Social security and social legislation

Recommended Books:

1. Principles of sociology C.N. Shankar Rao

2. Sociology for physiotherapy students - K.P Neeraja

HUMAN ANATOMY - I Practical **L/T/P/C**

-/-/4/2

GROSS SPECIMENS/SPOTTERS

UPPER EXTREMITY

- Identify the spotter- (Cross section of shoulder Joint, Elbow Joint, Wrist complex,Hand)
- Identify the bone- UPPER EXTREMITY BONES (Scapula, Clavicle, Humerus, Radius and Ulna, Carpals, Metacarpals and Phalanges) Including side determination
- Surface Anatomy of the Upper Extremity – UPPER EXTREMITY BONES AND MUSCLES
- Spotters of Blood vessels (Profunda Brachii, Brachial, Radial, Ulnar)
- Spotter of Nerves (Axillary, Musculocutaneous, Radial, Median, Ulnar)
- Gross Specimen of Heart, Lung
- Spotters of Bronchial tree, Bronchopulmonary segments

SYSTEMIC ANATOMY

- Gross Specimen/Spotter (Stomach, Liver, Gall Bladder, Spleen, Pancreas, Intestines,Kidney, Uterus)
- Cross section of Kidney

HUMAN PHYSIOLOGY - I Practical **L/T/P/C**

-/-/4/2

These practical's typically align with the theoretical aspects of physiology and help students apply concepts to real-world clinical scenarios. Key Areas Covered in Human Physiology for this semester includes the following.

- Determination of blood group, bleeding time and clotting time
- Estimation of haemoglobin concentration
- Peripheral pulse determination
- Auscultation of Heart sounds
- Determination of blood pressure
- Auscultation of breath sounds
- Assessment of respiratory rate

ENVIRONMENTAL AWARENESS **L/T/P/C**

2/-/-/2

Unit 1

1. Introduction to Environmental Awareness

2. What is environmental awareness?
3. The importance of environmental education.
4. Key environmental concepts: ecosystems, biodiversity, sustainability. Historical perspective on environmental awareness.

Unit 2

1. Earth's Ecosystems and Biodiversity
2. What are ecosystems?
3. Types of ecosystems: forests, oceans, wetlands, etc. Importance of biodiversity.
4. Threats to biodiversity: habitat loss, invasive species, climate change.

Unit 3

1. Pollution and Its Impact
2. Types of pollution: air, water, soil, noise, and light pollution. Causes and effects of pollution on health and ecosystems. Case studies of major pollution events.

Unit 4

1. Climate Change and Global Warming
2. The science of climate change.
3. Greenhouse effect and human contributions.
4. Impacts of climate change: rising temperatures, sea levels, extreme weather. Mitigation and adaptation strategies.

Unit 5

1. Resource Conservation
2. Renewable vs. non-renewable resources.
3. The importance of conserving water, energy, and other resources.

4. Techniques for conservation: recycling, energy efficiency, and water-saving practices.

Unit 6

1. Sustainable Agriculture and Food Systems
2. Environmental impact of conventional farming practices.
3. Sustainable agriculture: organic farming, permaculture, and agroecology. The role of diet in environmental sustainability.

Unit 7

1. Waste Management
2. Types of waste: municipal, industrial, hazardous, electronic. The 3 Rs: Reduce, Reuse, Recycle.
3. Landfills, incineration, and composting. Zero waste lifestyle.

Unit 8

1. Water Conservation and Management
2. The global water crisis: causes and consequences. Water management practices and policies.
3. The importance of clean water for all living organisms.

Unit 9

1. Environmental Policy and Legislation
2. Global environmental treaties: Paris Agreement, Kyoto Protocol. National environmental policies and regulations.
3. Role of NGOs, governments, and individuals in policy development.

Unit 10

1. Green Technologies and Innovations
2. Introduction to renewable energy sources (solar, wind, hydro, etc.). Electric vehicles and sustainable transportation.
3. Innovations in waste-to-energy and sustainable agriculture.
4. The Role of Individuals in Environmental Protection
5. How individual actions impact the environment.

6. Eco-friendly lifestyles: reducing waste, sustainable consumption, green travel. Community action and grassroots movements.

Reference Textbook

Environmental Science: A Global Concern" by William P. Cunningham & Mary Ann Cunningham

SEMESTER-II

HUMAN ANATOMY – II **L/T/P/C**

4/-/-/4

UNIT-I

BASIC ANATOMY OF LOWER EXTREMITY:

1. Osteology including features, side determination, clinical and applied anatomy of the following lower extremity bones Innominate bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.
2. Myology: Origin, insertion, nerve supply, action, function, clinical and applied anatomy

   · Gluteal Region

UNIT-II

BASIC ANATOMY OF LOWER EXTREMITY:

1. Arthrology: Joint structure, articulating components, relations, joint actions, Clinical and Applied Anatomy including Radiography
2. Hip Joint, Knee joint, Ankle joint, joints of the foot.
3. Femoral triangle, femoral canal and inguinal canal, Adductor canal, popliteal fossa, arches of foot
4. Lumbar plexus, Sacral plexus, Nerves of the Lower Extremity including cutaneous Nerves
5. Blood vessels and lymphatic drainage

UNIT-III

BASIC ANATOMY OF VERTEBRAL COLUMN AND PELVIC GIRDLE:

1. Types of vertebrae
2. Basic Structure and features of Cervical, thoracic, lumbar, sacral and coccygeal vertebrae
3. Muscles of Trunk and Abdomen
4. Core muscle Anatomy
5. Joints of vertebral column, structure and composition of intervertebral disc including the Radiography Evaluation
6. Basic Joint structure, articulating components, relations, joint actions, Clinical and Applied Anatomy including Radiography of Sacro- Iliac joint
7. Basic Structure of Innominate bone Pelvic girdle and muscles of the pelvic floor including Applied Anatomy

UNIT-IV

BASIC ANATOMY OF HEAD AND NECK:

1. Bones of the skull and face
2. Muscles of the face and neck

UNIT-V

BASIC NEURO ANATOMY:

1. General organization of Nervous System
2. Central Nervous System-Gross structure of Brain and Spinal Cord
3. Diencephalon- Gross structure of Thalamus, Hypothalamus and Basal Ganglia
4. Cerebro-Spinal Fluid
5. Spinal Cord- Segmental features, Laminae, Nuclei
6. Spinal nerves
7. Basic blood supply to brain and spinal cord with clinical and applied anatomy
8. Peripheral Nervous system
9. Cranial nerves- Applied Anatomy

RECOMMEMDED TEXT BOOKS

1. Human Anatomy – Snell
2. Anatomy- Chaurasia, Volume- I,II & III

3. Neuro anatomy -- Inderbir Singh
4. Human Anatomy – Kadasne, Volume- I, II & III
5. Neuroanatomy -- Vishrsam Singh
6. Human Anatomy – Data

HUMAN PHYSIOLOGY -II **L/T/P/C**

4/-/-/4

UNIT-I

NERVOUS SYSTEM-I

1. Introduction to nervous system - CNS, PNS and ANS
2. Neurotransmitters - Definition, fate of neurotransmitter, types
3. Synapse - Definition, type, structure, transmission of impulse across a synapse, properties.
4. Receptors and Sensation - Types of sensations, Classification of receptors, properties
5. Sensory System - Organization of the sensory system, sensory Homunculus
6. Pathophysiology of pain - Definitions, hyperalgesia and allodynia, deep pain, referred pain and its theories, management of chronic pain, endogenous opioid analgesic system
7. functions of various parts of brain in brief.

UNIT-II

NERVOUS SYSTEM-II

1. Spinal cord - Introduction, effects of complete transection of the spinal cord, effects of hemi section of the spinal cord (Brown-Sequard Syndrome)
2. Reflexes - Reflex action, reflex arc, classification, properties, types – superficial and deep reflexes
3. Regulation of tone, Posture and it's reflexes, Equilibrium and vestibular apparatus
4. Higher Functions - Learning, Memory, Speech

5. Autonomic Nervous System - Sympathetic division, Parasympathetic division, control of autonomic functions
6. Cerebrospinal fluid - Formation and circulation, composition, functions, applied aspect - Hydrocephalus, lumbar puncture

UNIT-III

SPECIAL SENSES:

1. Vision - Anatomy of eye, visual pathway, pupillary reflexes, dark adaptation, light adaptation, photosensitivity
2. Hearing - Anatomy of ear, auditory pathway, tests for hearing - Watch test, Rinne's test, Weber's test, deafness, Audiometry
3. Taste and Smell: Taste sensations, taste pathway, olfactory pathway

ENDOCRINOLOGY:

1. Hormones - Definition, types, functions
2. Secretion, regulation, function and applied aspect of Hypothalamus, Pituitary Gland, Thyroid Gland, Parathyroid Gland, Pancreas, Adrenal Gland.

UNIT-IV

REPRODUCTIVE SYSTEM:

1. Sex determination and differentiation & it's abnormalities, puberty, importance of sex hormones
2. Female reproductive system - Internal & external genital organs, Oogenesis, Structure of egg, Follicle development, ovulation, menstrual cycle, menopause
3. Male reproductive system - Testes, accessory sex organs, Spermatogenesis, structure of sperm
4. Physiology of pregnancy - Fertilization, Implantation, Placenta (formation, function, hormones), maternal changes during pregnancy, pregnancy tests, infertility

UNIT-V

GASTROINTESTINAL SYSTEM:

1. Physiological stages of digestion
2. Liver function

EXCRETORY SYSTEM:

1. Kidneys-structure & function

2. Urine formation (to exclude concentration and dilution)

3. Juxtaglomerular apparatus

4. Fluid and electrolyte balance – Na, K, H2O

5. Renal circulation

6. Applied physiology: Types of bladders

RECOMMENDED TEXT BOOKS

1. Text book on Medical Physiology – Guyton

2. Textbook of Physiology – A K Jain

PATHOLOGY **L/T/P/C**

2/-/-/2

1. Cellular adaptation, Cell injury & cell death. -

- Introduction to pathology.
- Overview: Cellular response to stress and noxious stimuli. Cellular adaptations of growth and differentiation.
- Overview of cell injury and cell death.
- Causes of cell injury. Mechanisms of cell injury.
- Reversible and irreversible cell injury.
- Examples of cell injury and necrosis.

2. Inflammation:

- General features of inflammation Historical highlights
- Acute inflammation
- Chemical mediators of inflammation Outcomes of acute inflammation Morphologic patterns of acute inflammation Summary of acute inflammation
- Chronic inflammation

Immunity disorders. -

- General features of the immune system Disorders of the immune system

3. Infectious diseases. -

- General principles of microbial pathogenesis viral infections.
- Bacterial infections-Rheumatic heart disease.

- Fungal infections.
- Parasitic infections.

4. Neoplasia. -

- Definitions Nomenclature.
- Biology of tumor growth benign and malignant neoplasms Epidemiology.
- Carcinogenic agents and their cellular interactions Clinical features of tumors.

5. Environmental and nutritional disorders. -

- Environmental and disease.
- Common environmental and occupational exposures Nutrition and disease.
- Coronary artery disease.

RECOMMENDED TEXTBOOK:

Pathology, Harsh Mohan e. Basic Pathology by Robbin

MICROBIOLOGY **L/T/P/C**

3/-/-/3

1. Morphology -

- Classification of microorganisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria.

2. Growth and nutrition. -

- Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic bacteriology.

3. Culture media. -

- Use of culture media in diagnostic bacteriology, antimicrobial sensitivity test.

4. Sterilization and Disinfection. -

- Principles and use of equipment of sterilization namely hot air oven, autoclave, and serum inspissate, pasteurization, antiseptic and disinfectants.

5. Immunology. -

- Immunity, vaccines, types of vaccine and immunization schedule, principles, and interpretation of common serological tests namely Widal, VDRL, ASLO, CRP, RF & ELISA.
- Rapid tests for HIV and HBsAg (excluding technical details).

6. Systematic Bacteriology. -

Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (excluding classification, antigenic structure, and pathogenicity),

Staphylococci, Streptococci, Pneumococci, Gonococci, Meningococci, C. diphtheriae, Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, E. coli, Klebsiella, Proteus,

Vibrio cholerae, Pseudomonas & Spirochetes.

Parasitology. -

Morphology, life cycle, laboratory diagnosis of following parasites: E.histolytica, Plasmodium, tape worms, Intestinal nematodes.

7. Mycology. -

- Morphology, diseases caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi

8. Virology. -

- General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.

RECOMMENDED TEXT BOOKS:

1. Microbiology, Ananthanarayan and Paniker's,
2. CP. Baveja. Textbook of Microbiology for nurses.

A textbook of Microbiology-Chakraborty

INTRODUCTION TO LAPROSCOPIC SURGERY

UNIT I - Introduction to Laparoscopic Surgery

- History and evolution of laparoscopic surgery

- Definition and principles of minimally invasive surgery
- Comparison with open surgery
- Indications and contraindications for laparoscopy
- Advantages and disadvantages of laparoscopic surgery

UNIT II – Laparoscopic Instruments and Equipment

- Basic laparoscopic instruments: graspers, scissors, dissectors, clip applicators, etc.
- Laparoscope and video system (camera, light source, monitor)
- Insufflator and CO_2 gas system
- Electrosurgical and energy devices
- Care, sterilization, and maintenance of instruments

UNIT III – Patient Preparation and Operative Setup

- Preoperative assessment and patient selection
- Positioning of the patient for laparoscopic procedures
- Sterile technique and preparation of the surgical team
- Port placement and trocar insertion techniques
- Insufflation and pneumoperitoneum – principles and precautions

UNIT IV – Basic Laparoscopic Surgical Procedures

- Diagnostic laparoscopy
- Laparoscopic appendectomy
- Laparoscopic cholecystectomy
- Laparoscopic tubectomy
- Laparoscopic adhesiolysis

UNIT V – Complications and Safety in Laparoscopy

- Common complications: bleeding, infection, injury to organs
- Prevention and management of complications
- Conversion to open surgery: when and why

- Patient safety and ergonomics for the surgeon
- Postoperative care and follow-up

Practical (Lab-Based / OT Observation & Simulation)

- Identification and handling of laparoscopic instruments
- OT setup and sterile draping
- Hands-on training with simulators: port insertion, knot tying
- Observation of basic laparoscopic procedures in OT
- Troubleshooting equipment issues

REFERENCE BOOKS

1. **"Laparoscopic Surgery – Principles and Procedures"** *Author:* Dr. R.K. Mishra

   Edition: 1st Edition

   Publisher: Jaypee Brothers Medical Publishers

   Year: **2011**

2. **"Fundamentals of Laparoscopic Surgery"**

   Author/Editor: Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)

   Year: **2016***(Includes SAGES FLS Program Materials & Manuals)*

3. **"Textbook of Practical Laparoscopic Surgery"** *Author:* Dr. R.K. Mishra

   Edition: 2nd Edition*Publisher:* Jaypee Brothers Medical Publishers *Year:* **2015**

4. **"Minimal Access Surgery"** *Author:* Alfred Cuschieri *Edition:* 1st Edition *Publisher:* Springer

   Year: **1999**

5. **Recent Guidelines and Protocols from WHO and SAGES**

   - **WHO Surgical Safety Checklist** – *Updated:* **2021**

     SAGES Clinical Practice Guidelines – *Latest revision:* **2023** *(Available online at sages.org and who.int*

HUMAN ANATOMY PRACTICAL – II **L/T/P/C**

-/-/4/2

GROSS SPECIMENS/SPOTTERS

SPINE, PELVIS AND LOWER EXTREMITY

- Identify the spotter- Osteology- Identify the bone, LOWER EXTREMITY BONES (Innominate bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges.) Including side determination, Spinal Segments, Vertebrae (Cervical, Thoracic, Lumbar, Sacral and Coccyx), Pelvis and Innominate Bones
- Surface Anatomy of the Spine and Lower Extremity –Atlas, Axis, C-7 vertebrae, Spinous and Transverse process of vertebra, Locate the Innominate bone, ASIS and PSIS, Coccyx, Sacrum, Greater Trochanter, Condyles of femur, Patella, Tibial

Tubercles and condyles, Shin Bone, Tarsal bones, Malleoli

- Arthrology- (Cross section of Hip Joint, Knee Joint, Ankle Joint, Joints of Foot, Pelvic Joints, Joints of Spine, Intervertebral Joints, Facet Joints, Sacro-Iliac Joints)

NEURO-ANATOMY IDENTIFY THE SPOTTER

- Cross Section of the Skull

SYSTEMIC ANATOMY

- Gross Specimen/Spotter (Brain and Spinal Cord)

HUMAN PHYSIOLOGY PRACTICAL – II **L-T-P-C**

-/-/2/1

- Examination of superficial sensations
- Examination of deep sensations
- Examination of cortical sensations
- Examination of reflexes
- Cranial nerve examination
- Examination of Balance and coordination

STRESS MANAGEMENT L/T/P/C

Unit 1

- Introduction to Stress and Its Effects Definition of stress: Eustress vs. Distress Types of stress: Acute vs. Chronic
- The biology of stress (fight-or-flight response, hormones)
- Short-term and long-term effects on physical and mental health The role of perception

and coping mechanisms

Unit 2

- Identifying Stressors and Personal Stress Responses
- Internal vs. external stressors (work, relationships, environment) Identifying stress

patterns (thoughts, behaviours, physical reactions) Emotional regulation and its role in stress management

- The Stress Process: How stress develops and escalates

Unit 3

- Coping Strategies and Stress Relief Techniques
- Problem-focused vs. emotion-focused coping
- Cognitive Behavioral Therapy (CBT) techniques for stress
- Relaxation techniques (deep breathing, progressive muscle relaxation) Time

management and organization as stress-relief tools

- Developing a personal coping plan

Unit 4

- Lifestyle Changes for Managing Stress The role of physical activity and exercise

Sleep hygiene and its connection to stress Nutrition and its impact on mental health Social support and healthy relationships Mindfulness and meditation practices

Unit 5

- Stress Management at Work and School
- Managing work and school stress: Time management, prioritization Dealing with

high-pressure environments and deadlines

- Building resilience and avoiding burnout
- The importance of taking breaks and practicing self-

Unit 6

- Building Long-Term Stress Resilience
- Resilience theory and how to bounce back from adversity Developing a growth

mindset to handle challenges Building emotional intelligence to cope with stress Integrating stress management into daily life

RECOMMENDED TEXTBOOKS:

Stress Management: From Basic Science to Best Practice" by C. L. Cooper and Philip L. Merritt

SEMESTER-III

L/T/P/C

SURGICAL ANATOMY **3/-/-/3**

UNIT I: Introduction to Surgical Anatomy

- Importance and scope of surgical anatomy in laparoscopy
- Anatomical terminology and body planes
- Surface anatomy landmarks relevant to laparoscopic entry
- Cavities of the body: thoracic, abdominal, pelvic
- Peritoneal cavity: parietal and visceral layers

UNIT II: Abdominal Wall & Inguinal Region

- Layers of the abdominal wall
- Inguinal canal and associated structures
- Types of hernias: direct, indirect, femoral
- Anatomical basis for laparoscopic hernia repair
- Blood vessels and nerves of the abdominal wall

UNIT III: Gastrointestinal Tract Anatomy

- Esophagus to rectum: anatomical features and relations
- Stomach and small intestine (duodenum, jejunum, ileum)
- Large intestine: cecum, colon, rectum
- Vascular supply and lymphatic drainage
- Clinical relevance in cholecystectomy, appendectomy, colectom

UNIT IV: **Hepatobiliary & Pancreatic Anatomy**

- Liver anatomy: lobes, segments, vasculature
- Gallbladder and biliary tree
- Pancreas: parts, ducts, relations
- Surgical anatomy relevant to cholecystectomy and pancreatic surgery

UNIT V: **Pelvic & Retroperitoneal Anatomy**

- Pelvic organs: bladder, uterus, ovaries, rectum
- Pelvic spaces and peritoneal reflections
- Ureter and vascular relations
- Retroperitoneal organs and access points in laparoscopy
- Anatomy relevant to gynecological and colorectal laparoscopy

REFERENCE BOOKS

1. Richard S. Snell – *Clinical Anatomy by Regions*, 11th Ed., Wolters Kluwer, 2024
2. Richard L. Drake et al. – *Gray's Anatomy for Students*, 5th Ed., Elsevier, 2024
3. Lee J. Skandalakis – *Surgical Anatomy and Technique: A Pocket Manual*, 5th Ed., Springer, 2023
4. John E. Skandalakis – *Skandalakis' Surgical Anatomy*, 2nd Ed., Springer, 2022
5. Robert Trelease – *Netter's Surgical Anatomy Review P.R.N.*, 4th Ed., Elsevier, 2023

BASICS OF LAPAROSCOPIC PROCEDURES

L/T/P/C

3/-/-/3

UNIT I: Introduction to Laparoscopy3/-/-/3

- Definition and scope of laparoscopy
- Historical development of laparoscopic surgery
- Basic differences between open surgery and laparoscopic surgery
- Indications and contraindications
- Advantages and disadvantages

UNIT II: Laparoscopic Equipment and Instruments

- Basic laparoscopic tower components:
  - Camera
  - Light source
  - Insufflator
  - Monitor
- Trocars and cannulas
- Hand instruments: graspers, scissors, dissectors
- Electrosurgical units (monopolar/bipolar)
- Sterilization and maintenance of equipment

UNIT III: Operating Room Setup and Safety

- Pre-operative preparation of the patient
- OT layout for laparoscopic surgery
- Positioning of patient and surgical team
- Pneumoperitoneum: gases used (CO_2), Veress needle vs open (Hasson) technique
- Ergonomics and safety measures for surgical staff
- Troubleshooting common equipment issues

UNIT IV: Basic Laparoscopic Surgical Techniques

- Port placement and triangulation
- Instrument handling and coordination
- Depth perception and hand-eye coordination
- Tissue dissection, suturing, and knot tying (overview)
- Specimen retrieval techniques
- Common complications and their management

UNIT V: Common Diagnostic and Therapeutic Procedures

- Diagnostic laparoscopy
- Laparoscopic cholecystectomy
- Laparoscopic appendectomy
- Laparoscopic sterilization (tubal ligation)
- Laparoscopic hernia repair (overview)

REFERENCES

1. *Fundamentals of Laparoscopic Surgery – SAGES Manual*
    - Publisher: SAGES (Society of American Gastrointestinal and Endoscopic Surgeons)
2. *Laparoscopic Surgery: Principles and Procedures – Dr. R.K. Mishra*
    - Publisher: Jaypee Brothers Medical Publishers
3. *Minimally Invasive Surgery – Text and Atlas – Dr. R.K. Jain*
    - Journal of Minimal Access Surgery (JMAS)
        - Publisher: Indian Association of Gastrointestinal Endo Surgeons (IAGES)
    - SAGES Guidelines
        - Published by: SAGES (USA)
        - Updated Regularly: Most recent clinical guidelines from 2021–2024

Access via: https://www.sages.org/publications/guidelines/

PHARMACOLOGY L/T/P/C

3/-/-/3

UNIT-I

General Pharmacology

a) Absorption, distribution, metabolism and elimination of drugs,

b) routes of drug administration.

c) Adverse reactions to drugs.

d) Factors modifying drug response

UNIT-II

Autonomic nervous system & Peripheral nervous system

a) Sympathetic nervous system - sympathomimetics, sympatholytics

b) Parasympathetic - Cholinergics, Anticholinergics Drugs

c) Skeletal muscle relaxants

d) Local anaesthetics

UNIT-III

Central nervous system

a) Drug therapy of various CNS disorders like epilepsy, depression.

b) Non-steroidal anti-inflammatory drugs

c) General anesthetics

AUTOCOIDS

a) Histamine and anti histaminics

UNIT-IV

Cardiovascular system

a) Drug therapy of hypertension, shock, angina, cardiac arrhythmias

b) Diuretics

c) Coagulants and anticoagulants, antiplatelet drugs

d) Hypo-lipidemics

Gastrointestinal and respiratory system

a) Drug treatment of peptic ulcer

b) Drug therapy of bronchial asthma

UNIT-V

Hormones

a) Drug therapy of Diabetes

b) Corticosteroids

c) Chemotherapeutic agents - b-Lactam Antibiotics, fluoroquinolones, aminoglycoside, tetracyclines, chloramphericol

PRACTICALS

a) Study of laboratory animals and their handling (a. Frogs, b. Mice, c. Rats, d. Guinea pigs, e. Rabbits).

b) Study of laboratory appliances used in experimental pharmacology.

c) Study of use of anesthetics in laboratory animals.

d) Effects of skeletal muscle relaxants using rota-rod apparatus.

e) Effect of drugs on locomotor activity using actophotometer.

f) Anticonvulsant effect of drugs by MES and PTZ method.

g) Study of local anesthetics by different method

RECOMMENDED BOOKS:

1. Padmaja Uday kumar - Pharmacology for Dental & Allied Health Sciences - 4th edition, 2017.
2. Joginder Singh Pathania, Rupendra Kumar Bharti, Vikas Sood-Textbook of Pharmacology for Paramedical Students 2019
3. KD Tripathi- Essentials of Pharmacology - 8th edition, 2018.
4. HL Sharma & KK Sharma - Principles of Pharmacology - 3rd edition, 2017.

MEDICAL LAW, ETHICS AND MEDICAL RECORDS **L/T/P/C**

3/-/-/3

MEDICAL LAW

UNIT-I

- Medical ethics - Definition - Goal Scope
- Introduction to Code of conduct

UNIT-II

- Basic principles of medical ethics Confidentiality Malpractice and negligence - Rational and irrational drug therapy

UNIT-III

- Autonomy and informed consent - Right of patients
- Care of the terminally ill- Euthanasia

UNIT-IV

- Organ transplantation
- Medico legal aspects of medical records-Medico legal case and type-Records and

document related to MLC-ownership of medical records-Confidentiality Privilege communication Release of medical information - Unauthorized disclosure retention of medical records - other various aspects.

- Professional Indemnity insurance policy

UNIT-V

-
- Development of standardized protocol to avoid near miss or sentinel events Obtaining an informed consent

RECOMMENDED BOOKS:

1. Law relating to medical negligence and compensation- Dr. K.P.D.A. Prabakar & Dr. J.Paulraj Joseph-2023
2. A textbook of medical jurisprudence and toxicology-Justice K Kannan -25 edition-1" edition-2016
3. Law the doctor must know-Hitesh J Bhatt & Geetebdra Sharma-2017

4. Law on medical negligence and legal remedies-Dr. Annu Bahl Mehra & Harshit Kiran-2022

RECORD KEEPING

- Balancing Individual and Community Interests.
- Ethics and Health Promotion.

UNIT-V

- Role of Human Rights in Public Health
- Ethics of Beath Promotion and Disease Prevention

RECOMMENDED BOOKS:

1. Ethics and Public Health Archana Rani Sahoo & Patitapahan Das-2017
2. Public Health, Ethics and Equity-Sudhir Anand, Fabienne Peter and Amartya Sen-2006
3. Nursing and healthcare ethics-Robinson & Doody-6 edition-2022
4. Ethics- William K. Frankena 2 edition-2015

SOFT SKILLS DEVELOPMENT L/T/P/C

1/-/-/1

UNIT 1

- Introduction to Soft Skills
- Definition of soft skills vs. hard skills
- The importance of soft skills in the workplace

Key soft skills: communication, teamwork, adaptability, problem-solving, leadership, etc.
Activities: Icebreakers, group discussions on soft skills in the workplace

Assignment: Self-assessment on current soft skills

UNIT 2

Communication Skills

- The communication process: sender, message, receiver, feedback Active listening techniques
- Body language and non-verbal cues Effective speaking: tone, clarity, and pacing Email and phone communication etiquette

Activities: Role-playing scenarios (e.g., client interaction, conflict resolution) Assignment: Practice active listening and send an email incorporating effective communication principles.

UNIT 3

Emotional Intelligence (EQ)

- What is emotional intelligence? (Self-awareness, self-regulation, motivation, empathy, and social skills) Recognizing and managing your emotions
- Understanding others' emotions and building empathy Developing emotional resilience

Activities: Emotional intelligence quizzes, group discussion on handling emotions in stressful situations

Assignment: Journaling emotional responses and reflection on EQ practices.

UNIT 4

- Teamwork and Collaboration Roles and dynamics within teams Effective communication in teams Conflict resolution in teams
- Building trut and fostering a collaborative environment

Activities: Team exercises, problem-solving tasks, and brainstorming sessions Assignment: Work on a team project or task, and present it in class.

UNIT 5

Conflict Resolution

- Sources of conflict (miscommunication, differing priorities, etc.)
- Conflict resolution strategies (e.g., negotiation, mediation, compromise) The role of

active listening in resolving conflicts

- Managing personal emotions during conflict

Assignment: Reflect on a personal or professional conflict and propose a resolution strategy.

UNIT 6

- Time Management and Personal Organization
- The importance of time management in personal and professional success

Prioritization techniques (e.g., Eisenhower Matrix, ABCDE method)

- Tools for time management (digital calendars, to-do lists, Pomodoro technique) Setting SMART goals
- Managing procrastination and avoiding distractions

Activities: Time-blocking exercises, goal-setting workshop

Assignment: Create a personal time management plan and track daily productivity for a week.

UNIT 7

- Leadership and Influence
- Types of leadership (e.g., transformational, transactional, servant leadership) Leading

by example: qualities of effective leaders

- Building and maintaining team morale The art of persuasion and influence

Activities: Leadership style assessment, group discussions on leadership challenges
Assignment: Write a reflection on a leader you admire and why.

UNIT 8

- Public Speaking and Presentation Skills
- Overcoming fear of public speaking
- Structuring a presentation (opening, body, conclusion) Effective use of visual aids

(PowerPoint, etc.)

- Engaging the audience through storytelling, eye contact, and body language

Activities: Group presentations, peer feedback sessions, impromptu speaking exercises
Assignment: Prepare and deliver a short presentation (5-7 minutes) on a topic of choice.

Reference Textbook

The 7 Habits of Highly Effective People" by Stephen R. Covey

CLINICAL POSTING- I **L/T/P/C**

-/-/12/6

Students enrolled in the **B.Sc. Surgical Laparoscopy Technology** program will participate in **Clinical Postings – I** during their initial exposure to real-time surgical environments. These postings will be conducted in the **Operation Theatres (OTs)** of affiliated teaching hospitals, focusing primarily on **Minimally Invasive and Laparoscopic**

Surgery Units. The goal is to familiarize students with the **surgical ecosystem**, sterile practices, equipment handling, and team dynamics essential to laparoscopic procedures.

Under direct supervision of OT mentors and surgical staff, students will **observe and assist** in basic perioperative workflows including patient positioning, preparation of instruments, equipment connectivity, and assisting in port placement or camera handling where permitted. Each student must maintain a **Clinical Logbook for,** documenting:

- Daily observations
- Surgical procedures observed or assisted
- Instrumentation used
- Reflections and learning outcomes

This diary is **mandatory** and will contribute to the internal assessment through evaluation of engagement, attentiveness, professional conduct, and documentation quality.

Core Practical Skills Covered in Postings – I

1. Sterile Techniques and OT Protocols

- Learn proper gowning, gloving, and hand-washing techniques
- Maintain sterile field during laparoscopic procedures
- Understand OT layout, zoning, and equipment sterilization protocols

2. Laparoscopic Equipment Familiarization

- Identify and assist in handling of laparoscopic instruments: trocar, cannula, camera system, light source, insufflator, etc.
- Understand the basic setup of a laparoscopic tower and CO_2 insufflation system

3. Patient Positioning and Preparation

- Learn correct methods of patient positioning for laparoscopic surgeries (e.g., Trendelenburg, lithotomy)

- Understand pre-operative skin preparation and draping procedures

4. Basic Scope Handling and Camera Navigation (Observation)

- Observe principles of laparoscopic camera movement and orientation
- Understand role of camera assistant and importance of steady visualization

5. OT Workflow and Team Coordination

- Engage in communication with surgeons, scrub nurses, and anaesthetists
- Observe and document the surgical time-outs, safety checks, and role distribution

AI in Healthcare: Foundation

Category: Skill Enhancement Course (SEC) | **L-T-P:** 1-0-0 | **Credits:** 1

Course Objectives

- · Explain fundamental artificial intelligence concepts, machine learning principles, and health data types without complex mathematics.
- · Identify and examine major clinical, diagnostic, public health, and operational AI use cases across the healthcare ecosystem.
- · Evaluate AI performance metrics, clinical validation strategies, algorithmic bias, and limitations of medical AI tools.
- · Apply ethical, legal, regulatory, and human-in-the-loop principles to ensure patient safety and privacy in AI deployment.
- · Demonstrate practical competency with no-code AI platforms to formulate a realistic solution for a discipline-specific healthcare challenge.

Course Outcomes: On completion, students will be able to:

- · **CO1:** Explain core AI concepts (machine learning, deep learning, NLP, generative AI) and their applications across healthcare systems in plain language.
- · **CO2:** Identify and describe major healthcare use cases of AI, including diagnostics, clinical decision support, drug discovery, public health surveillance, and hospital operations.
- · **CO3:** Critically evaluate AI tools by interpreting performance measures (accuracy, sensitivity, specificity) and recognizing bias and data-quality limitations.
- · **CO4:** Apply ethical, legal, and regulatory principles (privacy, consent,

fairness, accountability, transparency) to healthcare AI implementation.

- · **CO5:** Use no-code AI tools responsibly to design and propose realistic AI solutions for discipline-specific healthcare challenges.

Graduate Attributes Addressed: GA1 (Disciplinary & Interdisciplinary Knowledge), GA2 (Critical Thinking & Problem Solving), GA3 (Digital & Technological Literacy), GA5 (Effective Communication), GA7 (Ethical Reasoning & Professional Integrity), GA9 (Entrepreneurship & Innovation Mindset), GA10 (Lifelong Learning & Self-Directed Growth)

Unit I: Introduction to AI and Health Data

- · Fundamental definitions and scope: What AI is and isn't; distinguishing AI, Machine Learning (ML), and Deep Learning (DL)
- · Basic principles of how machines learn patterns from data without advanced mathematics
- · Structure and taxonomy of health data: Electronic Health Records (EHR), medical imaging, genomics, and wearable sensor streams
- · Health data quality, data curation, and the principle of "garbage in, garbage out" in healthcare algorithms
- · **Practical/Hands-on Session:** Building and training a simple medical/healthcare image classifier using no-code platforms (e.g., Teachable Machine)

Unit II: AI Applications Across Healthcare Domains

- · Medical imaging applications in radiology, digital pathology, and ophthalmology
- · Clinical Decision Support Systems (CDSS), symptom checkers, and patient risk prediction models
- · Natural Language Processing (NLP) for unstructured clinical notes, voice recognition, and EHR documentation
- · Generative AI, LLMs, drug discovery workflows, public health surveillance, hospital operations, and AI-enabled telemedicine
- · **Practical/Case Demo Session:** Case demonstrations and critical group discussion on real-world AI deployment in clinical settings

Unit III: Evaluating AI Performance, Bias, and Validation

- · Interpreting performance metrics in plain clinical terms: accuracy, sensitivity, specificity, and false positives/negatives
- · Understanding overfitting, model generalizability across diverse patient populations, and performance degradation
- · Clinical validation frameworks, clinical trials for AI algorithms, and black-box explainability/interpretability
- · Identifying algorithmic bias, data representation gaps, and evaluating fitness-for-purpose
- · **Practical/Tutorial Session:** Critical appraisal exercise evaluating and critiquing a published AI tool's clinical claims

Unit IV: Ethics, Law, and Healthcare AI Governance

- · Patient data privacy, consent frameworks, and regulatory awareness (HIPAA, GDPR, and India's DPDP Act)
- · Algorithmic fairness, health equity, and preventing bias against vulnerable patient demographics
- · Clinical liability, accountability when AI systems err, and Software as a Medical Device (SaMD) regulatory oversight
- · Human-in-the-loop principles and maintaining practitioner oversight in automated healthcare decision-making
- · **Practical/Interactive Session:** Ethical dilemma role-play and decision-making scenario analysis

Unit V: Responsible Practice and Capstone Project

- · Prompt engineering techniques for generative AI tools (e.g., ChatGPT, Claude) in clinical and academic contexts
- · Managing AI hallucinations, fact-verification protocols, and ethical academic/professional use
- · Tracking fast-moving AI developments and future trajectories in medical technology
- · **Practical/Capstone Presentation:** Group formulation, design pitch, and presentation proposing a realistic AI solution to a domain-specific healthcare problem

Recommended Readings

Key Textbooks & Reference Books

1. **Topol, E.** (2019). *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. Basic Books.
2. **Bohr, A., & Memarzadeh, K.** (Eds.). (2020). *Artificial Intelligence in Healthcare*. Academic Press.
3. **Agrawal, A., Gans, J., & Goldfarb, A.** (2018). *Prediction Machines: The Simple Economics of Artificial Intelligence*. Harvard Business Review Press.

Regulatory Reports & Ethical Guidelines

1. **World Health Organization.** (2021). *Ethics and governance of artificial intelligence for health: WHO guidance*. Geneva: World Health Organization.
2. **Ministry of Law and Justice, Government of India.** (2023). *The Digital Personal Data Protection Act, 2023 (DPDP Act)*. Gazette of India.
3. **U.S. Food and Drug Administration (FDA).** (2021). *Artificial Intelligence/Machine Learning (AI/ML)-Based Software as a Medical Device (SaMD) Action Plan.*

Online Interactive & No-Code Resources

1. **Google Teachable Machine:**
   `[https://teachablemachine.withgoogle.com/](https://teachablemachine.withgoogle.com/)`
2. **Orange Data Mining (Visual Programming & Interactive Workflows):**
   `[https://orangedatamining.com/](https://orangedatamining.com/)`
3. **WHO / ITU Focus Group on Artificial Intelligence for Health (FG-AI4H) Resources:**
   `[https://www.who.int/initiatives/cih](https://www.who.int/initiatives/cih)`

SEMESTER- IV **L/T/P/C**

3/-/2/4

ADVANCED LAPAROSCOPIC TECHNIQUES

UNIT I: Principles of Advanced Laparoscopic Surgery

- Review of basic laparoscopic techniques
- Application of physics in laparoscopy: gas laws, pressure dynamics
- Thermal energy and tissue interaction
- Role of insufflation pressure in hemodynamics and respiratory function
- Principles of ergonomics and surgeon fatigue prevention
- Role of laparoscopic simulators and virtual reality in skill development

UNIT II: Advanced Laparoscopic Procedures – GI & Solid Organs

- **Laparoscopic Hernia Repair**
  - TEP and TAPP: detailed anatomy, steps, mesh placement, fixation
- **Laparoscopic Fundoplication**
  - Nissen, Toupet, and Dor procedures
  - Esophageal dissection and hiatal repair
- **Laparoscopic Splenectomy & Adrenalectomy**
  - Indications, vascular control techniques
  - Patient positioning and trocar placement
- **Laparoscopic Bariatric Procedures (Intro)**
  - Laparoscopic sleeve gastrectomy
  - Roux-en-Y gastric bypass (overview)

UNIT III: Urological & Gynecological Advanced Techniques

- **Laparoscopic Nephrectomy**
  - Transperitoneal vs retroperitoneal approach
  - Renal hilum dissection
- **Pyeloplasty and Ureteric Reimplantation**

- Anderson-Hynes technique

- **Laparoscopic Hysterectomy Variants**
  - TLH, LAVH, LSH

  - Uterine manipulation, vault closure
- **Laparoscopic Myomectomy**
  - Enucleation techniques, hemostasis strategies
- **Laparoscopic Endometriosis Surgery**
  - Adhesiolysis, excision vs ablation

UNIT IV: Laparoscopic Suturing, Anastomosis & Dissection

- Instruments for suturing: needle drivers, knot pushers
- Needle angles and tissue planes
- Hands-on training protocols (dry lab, wet lab)
- Circular staplers, linear staplers: safety and use
- Dissection in retroperitoneal spaces and lymph node removal

UNIT V: Intraoperative & Postoperative Complications

- Recognition and management of:
  - Major vessel injury
  - Bowel injury
  - Ureteric injury
- Management of port-site bleeding and hernia
- Conversion to open laparotomy: signs and decision-making
- Antibiotic protocols, thromboembolism prevention, DVT prophylaxis

REFERENCE BOOKS & RESOURCES

1. SAGES Manual of Advanced Laparoscopic Surgery – *Camran Nezhat et al.*, Springer, 2012
2. Textbook of Laparoscopic Surgery – *R.K. Mishra*, Jaypee Brothers Medical Publishers, 2010 (1st Edition)
3. Operative Techniques in Laparoscopic Surgery – *C. Daniel Smith et al.*, Lippincott Williams & Wilkins, 2012
4. Endoscopic Surgery Atlas – *Phillips & Carroll*, Elsevier, 2008
5. Recent Articles from Journal of Minimal Access Surgery (JMAS) –

Published by Indian Association of Gastrointestinal Endo Surgeons (IAGES), ongoing since 2005–Present

(Access through https://www.jmas.in)

6. Videos & Tutorials from:
    - IRCAD (France) – Training materials and video library available from 2001–Present

(Website: https://www.ircad.fr)

    - EAES (European Association for Endoscopic Surgery) – 1993–Present

(Website: https://eaes.eu)

    - Johnson & Johnson – Ethicon Institute of Surgical Education – Educational programs available since early 2000s–Present

(Website: https://www.ethicon.com)

UNIT VI: Innovations & Future of Laparoscopic Surgery

- **Robotic Surgery**
    - Comparison: conventional vs robotic
    - Docking, console operation, instrument articulation
- **SILS & NOTES**
    - Access, technique, pros and cons
- **Augmented Reality and Image-Guided Surgery**
- **Artificial Intelligence in MIS (Minimally Invasive Surgery)**
    - AI in planning, intraoperative decision-making

- **Training Modules and Global Certifications**
    - FLS (Fundamentals of Laparoscopic Surgery), SAGES, EAES, IRCAD

INFECTION CONTROL IN SURGERY L/T/P/C

3/-/-2/-4

UNIT I: Introduction to Surgical Infections

- Definition and classification of infections
- Sources and modes of transmission in the surgical setting
- Hospital-acquired (nosocomial) infections
- Types: surgical site infections (SSI), catheter-associated infections, etc.
- Chain of infection and factors influencing infection risk

UNIT II: Aseptic Techniques and Sterilization

- Medical asepsis vs surgical asepsis
- Principles of hand hygiene: routine, antiseptic, and surgical scrub
- Disinfection: levels, methods, and agents
- Sterilization methods:
    - Autoclaving
    - Ethylene oxide
    - Plasma sterilization
    - Dry heat and chemical sterilant
- Packaging, storage, and shelf life of sterile items

UNIT III: Infection Prevention in Operation Theatre (OT)

- OT zoning and traffic control
- Air handling and HEPA filtration systems
- Cleaning protocols: daily, terminal, and between surgeries
- Waste segregation and disposal in OT
- Preoperative patient skin preparation

- Surgical team preparation: gowning, gloving, mask use

UNIT IV: Surgical Site Infection (SSI) Management

- CDC classification of SSIs: superficial, deep, and organ/space
- Risk factors and preventive strategies
- Role of prophylactic antibiotics: timing and selection
- Postoperative wound monitoring and dressing techniques
- Surveillance and reporting systems

UNIT V: Infection Control Policies & Regulatory Guidelines

- Standard precautions and transmission-based precautions
- Needle stick injury and post-exposure prophylaxis (PEP)
- Biomedical Waste Management Rules (India, 2016)
- NABH, JCI, WHO surgical safety checklist
- Infection control committees and audits in hospitals

UNIT VI: Antimicrobial Stewardship and Emerging Challenges

- Rational use of antibiotics in surgical settings
- Antibiotic resistance: MRSA, VRE, CRE
- Biofilm formation and its surgical implications
- Global strategies against AMR (Antimicrobial Resistance)
- Role of infection control nurse and surgical technologist

PRACTICAL'S / DEMONSTRATIONS

- Surgical hand washing techniques (7-step WHO method)
- Sterilization equipment demo (autoclave, ETO)
- OT cleaning protocol observation
- Biomedical waste segregation exercise
- Use of PPE and donning/doffing procedures

REFERENCES

1. Manual on Infection Prevention and Control – WHO

was published in November 2016 World Health Organization. & January 2018 World Health Organization.

2. CDC Guidelines for Infection Control in Surgical Practice

A more recent comprehensive update, the "Guideline for the Prevention of Surgical Site Infection (2017)", was issued in 2017 CDC+1JAMA Network.

- Additionally, the *"Strategies to prevent surgical site infections in acute-care hospitals: 2022 Update"* was published in 2023 CDC.

3. Hospital Infection Control Guidelines – NCDC India

The National Guidelines for Infection Prevention and Control in Healthcare Facilities, by NCDC (Ministry of Health & Family Welfare, Government of India), were released in January 2020 ncdc.mohfw.gov.in+1.

4. Basics of Infection Control in Surgery – Elsevier

This fourth edition was published in print February 2019 (online March 2019) Oxford Academic.

5. Practical Manual of Hospital Infection Control – Mehta & Jaggi

HEALTH AND WELL-BEING L/T/P/C

1/-/-/1

UNIT 1

1. Introduction to Health and Well-being
2. Overview of health and well-being concepts
3. Dimensions of health: Physical, mental, social, and emotional The impact of lifestyle choices on health

UNIT 2

1. Physical Health and Fitness
2. Importance of physical activity for overall health
3. Types of exercise: Aerobic, strength, flexibility, and balance Creating a personal fitness plan

UNIT 3

1. Nutrition and Healthy Eating
2. Basics of nutrition: Macronutrients and micronutrients Healthy eating habits and food groups
3. Impact of nutrition on physical and mental health

UNIT 4

1. Mental Health and Emotional Well-being
2. Understanding mental health: Definitions, stigma, and myths Key aspects of emotional well-being
3. Building emotional resilience

UNIT 5

1. Stress Management Techniques Understanding stress and its effects on health Mindfulness and relaxation techniques
2. Time management for stress reduction

UNIT 6

1. Sleep and Recovery
2. Importance of sleep for physical and mental health Sleep hygiene and healthy sleep habits
3. Impact of sleep deprivation on overall well-being

UNIT 7

1. Social Health and Relationships
2. The role of social connections in well-being
3. Healthy relationships: Communication, boundaries, and support Community involvement and social well-being

UNIT 8

1. Substance Use and Addiction
2. The impact of alcohol, tobacco, and drugs on health Understanding addiction and treatment options Preventive measures and harm reduction strategies

UNIT 9

1. Chronic Diseases and Prevention
2. Common chronic diseases (e.g., diabetes, heart disease) Risk factors and lifestyle modifications for prevention Screening, early detection, and health monitoring

UNIT 10

1. Building Healthy Habits
2. The psychology of habit formation
3. Strategies for adopting and maintaining healthy habits Overcoming barriers to healthy behaviour changes

Reference Textbook

Health and Wellness" by S. L. Kaskutas & K. A. A. Nielson

CLINICAL POSTINGS - II **L/T/P/C**

-/-/20/10

Advanced OT Protocols & Safety

- Reinforcement of OT discipline and sterility
- Advanced handwashing and gowning techniques
- WHO surgical safety checklist implementation
- Time-out procedures and risk minimization

II: Role of Surgical Assistant

- Positioning the patient for specific surgeries
- Draping techniques
- Assisting in instrument handling and maintaining aseptic flow
- Managing suction, retraction, and camera during minimally invasive surgeries

III: Instrument Handling and Sterilization

- Handling specialized instruments (laparoscopic, orthopaedic, gynaecological, etc.)
- Disinfection & sterilization: Autoclave, ETO, plasma sterilizers
- Inspection and maintenance of surgical instruments
- Safe disposal of sharps and contaminated materials

IV: Assistance in Specific Surgeries

- Observing and assisting in General Surgery
- Exposure to Laparoscopic Surgery setup and procedure
- Basics of assisting in Obstetrics & Gynaecology, Urology, ENT, and Orthopaedic cases
- Documentation of procedure notes and patient records

V: Preoperative and Postoperative Responsibilities

- Preoperative equipment and instrument checklist
- Postoperative care and shifting of patient
- Assisting in dressing and wound management
- Disinfection of the OT environment after procedures

SEMESTER- V **L/T/P/C**

3/-/4/5

LAPAROSCOPIC INSTRUMENTATION

UNIT 1: Introduction to Laparoscopic Instruments

- History and evolution of laparoscopic instruments
- Differences between open surgery and laparoscopic instrumentation
- Overview of hand instruments used in laparoscopy
- Advantages and limitations

UNIT 2: Laparoscopic Equipment and Setup

- Laparoscopic tower components: Monitor, Camera, Light Source, Insufflator, Electrosurgical Unit
- CO_2 Insufflation system and Veress needle
- Energy sources: monopolar, bipolar, ultrasonic
- Endoscopic light cables and cold light sources

UNIT 3: Hand Instruments and Specialized Tools

- Trocar and cannula system (various sizes and types)
- Graspers, Dissectors, Scissors, Clip appliers
- Needle holders, Suction-irrigation devices
- Morcellators and stapling devices

UNIT 4: Sterilization and Maintenance

- Cleaning, disinfection and sterilization protocols
- Handling delicate optical and electronic instruments
- Common errors in instrument care and troubleshooting
- Maintenance schedule and inventory management.

UNIT 5: Safety Protocols and Recent Advances

- Safety protocols while handling electric and thermal instruments
- Instrument failure and hazard prevention
- Innovations in laparoscopic instrumentation: Robotic-assisted tools, articulating instruments
- Overview of single-port laparoscopy and NOTES (Natural Orifice Transluminal Endoscopic Surgery)

REFFRENCE BOOKS

1. Textbook of Laparoscopic Surgery – Dr. R.K. Mishra, 4th Edition, 2019
2. Fundamentals of Laparoscopic Surgery – SAGES Manual, Springer, 2018
3. Laparoscopic Surgery: Principles and Procedures – Dr. R.K. Mishra, Jaypee Brothers, 2020
4. Operative Techniques in Laparoscopic Surgery – C. Daniel Smith, Wolters Kluwer, 2016
5. Minimally Invasive Surgery – Text and Atlas – R.K. Jain, CBS Publishers, 2021
6. Manual of Endoscopic and Laparoscopic Surgery – R. Saidi & S. Mehta, CRC Press, 2017
7. Atlas of Laparoscopic and Robotic Urologic Surgery – Jay T. Bishoff, Elsevier, 2022
8. Recent articles from:
    - Journal of Minimal Access Surgery (JMAS) – Ongoing (check latest issues: 2020–2025)
    - SAGES Guidelines – www.sages.org/guidelines
    - Videos & Tutorials from IRCAD, EAES, Johnson & Johnson Ethicon Training, 2020–2025

PRACTICALS

1. **Identification and naming** of basic and advanced laparoscopic instruments
2. **Assembling and disassembling** laparoscopic tower components
3. **Handling and positioning** of trocars and cannulas
4. **Demonstration** of CO_2 insufflation using Veress needle and trocars

5. **Use of graspers, scissors, and needle holders** in box trainers/simulation labs
6. **Instrument sterilization techniques**: Autoclaving, ETO sterilization, disinfection
7. **Practice on simulators** for depth perception and ambidexterity
8. **Care and storage** of laparoscopic instruments
9. **Observation or assisting** in live or recorded laparoscopic surgeries for understanding instrument use

L /T/P/C

QUALITY ASSURANCE IN LAPAROSCOPIC SURGERY **3/-/-/3**

Unit I: Foundations of Quality Assurance in Surgery

- Concepts and principles of quality assurance in surgical practice
- Objectives and benefits of QA in healthcare systems
- Accreditation and certification standards (e.g., NABH, JCI, ISO)
- Introduction to surgical audits and outcome analysis

Unit II: QA in Laparoscopic Equipment and Setup

- Quality control of laparoscopic tower components: camera, monitor, insufflator, light source
- Setup and calibration of equipment for optimal visualization and safety
- Validation of reusable and disposable laparoscopic instruments
- Preventive maintenance schedules and documentation of equipment use

Unit III: QA in Operative Workflow

- Standard Operating Procedures (SOPs) in laparoscopic surgical workflows
- Use of surgical safety checklists (pre-op, intra-op, post-op)
- Sterilization cycle validation and record keeping
- Adverse event reporting and near-miss documentation

Unit IV: Surgical Team Dynamics and Safety

- Role of teamwork in maintaining quality surgical outcomes
- WHO Surgical Safety Checklist: structure and implementation
- Team briefings, debriefings, and safe communication protocols
- Avoidance and management of human errors

Unit V: Quality Indicators and Continuous Improvement

- Monitoring surgical outcomes: infection rates, conversion rates, mortality/morbidity
- Root cause analysis (RCA) of complications
- Establishing and analyzing surgical quality indicators
- Internal audit systems and feedback loops

REFERENCE BOOKS

1. The SAGES Manual of Quality, Outcomes, and Patient Safety – L. Michael Brunt, Nathaniel Soper – 2012
2. Fundamentals of Laparoscopic Surgery – SAGES Manual – 2019
3. Quality and Safety in Surgery – Atul Gawande, William Runciman – 2014
4. Textbook of Laparoscopic Surgery – R.K. Mishra – 4th Edition – 2021
5. WHO Surgical Safety Checklist Implementation Manual – World Health Organization – 2016
6. Sterilization, Disinfection & Infection Control in Hospitals – Shrinivas an – 2018 Clinical Audit in Surgical Practice: Principles and Practice – Michael R. Hall – 2013

INTERPERSONAL COMMUNICATION **L/T/P/C**

1/-/-/1

Unit 1

- Introduction to Interpersonal Communication
- Overview of interpersonal communication theory.
- Key principles: sender, message, receiver, feedback, noise. Importance of

communication in daily life.

Unit 2

- Verbal Communication
- The role of language in communication.
- Choosing words carefully: Clarity, precision, and ambiguity. Influence of culture and

context on verbal communication.

Unit 3

- Non-Verbal Communication
- Body language, facial expressions, and gestures. Space, posture, and touch in communication.
- The role of non-verbal cues in conveying emotions Unit 4
- Listening Skills
- Types of listening: Active, passive, reflective. Barriers to effective listening.
- Developing empathy through listening.

Unit 5

- Self-Disclosure and Relationship Development The importance of self-disclosure in relationships. The Johari Window model.
- How self-disclosure affects trust and intimacy.

Unit 6

- Conflict in Interpersonal Communication Types of conflict: Productive vs. destructive. Conflict management styles.
- Strategies for resolving conflict in healthy ways.

Unit 7

- Cultural and Gender Differences in Communication
- Cultural influences on communication styles. Gender communication differences.
- Strategies for effective cross-cultural communication.

Unit 8

- Communication in Close Relationships
- Communication patterns in romantic relationships, family, and friendships.
- Managing expectations and maintaining healthy communication in intimate relationships.

Unit 9

- Communication in the Workplace
- Interpersonal communication in professional settings.
- Navigating professional relationships and maintaining boundaries. Communication and leadership.

Unit 10

- Digital Communication
- The role of technology in interpersonal communication. The impact of social media on

relationships.

- Pros and cons of digital communication tools.
- The Ethics of Communication
- Ethical dilemmas in communication.
- Honesty, transparency, and privacy in conversations. Balancing openness with respect

for others' boundaries.

Reference Textbook:

"Interpersonal Communication: Everyday Encounters" (Author: Julia T. Wood, 9th

CLINICAL POSTINGS – III **L/T/P/C**

-/-/20/10

I. Independent Surgical Assistance Skills

- Performing scrubbing, gowning, and gloving independently
- Pre-surgical preparation of OT and patient
- Active assistance in minor and major surgeries
- Managing instrument trolleys and suction arrangements

II. Exposure to Specialized Surgical Departments

- Surgical experience in departments like:
  - Cardiothoracic Surgery
  - Neurosurgery
  - Urology
  - Endosurgery
  - Paediatric Surgery
- Learning department-specific OT setup and protocol

III. Intraoperative Crisis Management

- Handling intraoperative complications: bleeding, hypotension, etc.

- Protocol for equipment or instrument failure during surgery
- Participating in emergency preparedness drills

IV. Surgical Documentation and Case Presentation

- Documenting OT records:
  - Consent forms
  - Surgical notes
  - Instrument checklists
- Presenting at least **two complete case studies** under supervision

V. Interdisciplinary Collaboration & Ethics

- Coordination with anaesthesiologists, nurses, and surgical team
- Understanding surgical ethics and patient rights
- Ethical handling of biomedical waste and patient data

VI. Laparoscopic and Robotic Surgery Assistance

- Participating in at least 3 laparoscopic surgical cases
- Observation of robotic-assisted surgeries (if available)
- Understanding port placement, CO_2 insufflation, camera navigation
- Support in robotic instrument docking and undocking procedures

VII. **Expected Learning Outcomes:**

By the end of Clinical Posting – III, students will be able to:

- Assist confidently in a range of surgeries
- Demonstrate deep understanding of OT safety and equipment
- Manage intraoperative scenarios responsibly
- Communicate and collaborate as an integral OT team member
- Maintain complete documentation for surgical procedures

THE SEMINAR / JOURNAL CLUB **L/T/P/C**

1/-/-/1

The Seminar / Journal Club course is designed to enhance students' abilities in literature review, critical analysis of research articles, scientific presentation, and peer-to-peer academic discussion.

It begins with an introduction to scientific communication, emphasizing the importance of research in surgical sciences, the structure of scientific articles in the IMRAD format, and the concept of journal indexing and impact factors.

Students are trained in literature search and selection techniques using online databases such as PubMed, Scopus, and Google Scholar, along with methods to identify relevant journals in surgery and allied health sciences, and to interpret abstracts, keywords, and references effectively.

The course integrates regular Journal Club activities, including weekly group discussions on selected journal articles, student-led presentations highlighting key points of chosen papers, and peer review sessions involving debates on methodology, results, and conclusions. In parallel, students develop seminar presentation skills by selecting topics relevant to Surgical Assistance, structuring PowerPoint presentations, and improving both verbal and non-verbal communication abilities.

To promote reflective and outcome-based learning, students maintain a reflective journal for each presentation they attend or deliver, engage in self-assessment, receive faculty feedback, and participate in collaborative group activities to strengthen critical thinking. By the end of the course, students will be competent in reading and analysing scientific literature, confident in public speaking and academic presentations, updated with current advancements in surgery and healthcare, and capable of applying critical and collaborative thinking in professional contexts.

L/T/P/C

SEMESTER- VI **3/-/2/4**

ADVANCED SURGICAL PROCEDURES

UNIT I: Pre-operative Procedures & Patient Preparation **3/-/2/4**

- Preoperative evaluation and work-up
- Informed consent and risk assessment
- Patient positioning and skin preparation
- Instrument trolley preparation
- Aseptic techniques and sterilization review

UNIT II: General Surgical Procedures

- Hernia repair techniques

- Appendectomy (open and laparoscopic)
- Cholecystectomy
- Haemorrhoidectomy and fistulectomy
- Wound closure and dressing techniques

UNIT III: Orthopaedic and Neurosurgical Procedures

- Bone fracture fixation techniques
- Arthroscopic procedures basics
- Craniotomy assistance
- Spine surgeries (discectomy, laminectomy)
- OT protocols for ortho/neuro surgery

UNIT IV: Urology and Gynaecology Surgical Techniques

- TURP and cystoscopy
- Hysterectomy (abdominal, vaginal, laparoscopic)
- Oophorectomy
- Caesarean Section (C-Section)
- Role of surgical assistant in urology and GYN

UNIT V: Emergency and Trauma Surgery

- Trauma life support principles

1. Operative Techniques in Surgery – Michael W. Mulholland – 2nd Edition – 2020
2. Textbook of Gynaecology – D.C. Dutta – 9th Edition – 2018
3. Textbook of Obstetrics – D.C. Dutta – 10th Edition – 2020
4. Advanced Trauma Life Support (ATLS) Student Course Manual – American College of Surgeons – 10th Edition – 2018

Practical Component (Labs & OT Exposure):

- Instrument identification and handling
- Draping and sterile field management
- Assisting during actual surgeries under supervision
- Wound closure simulation
- Emergency drills and response training

- Abdominal exploration and splenectomy
- Thoracotomy basics
- Haemostasis control
- OT preparation for emergency procedures

REFERENCE BOOKS

5. Bailey & Love's Short Practice of Surgery – Norman S. Williams, P. Ronan O'Connell – 28th Edition – 2022
6. Sabiston Textbook of Surgery: The Biological Basis of Modern Surgical Practice – Courtney

M. Townsend Jr. – 21st Edition – 2021

7. Schwartz's Principles of Surgery – F. Charles Brunicardi – 12th Edition – 2022
8. Fundamentals of Surgical Practice – Andrew Kingsnorth, Aljafri A. Majid – 3rd Edition – 2011
9. Atlas of General Surgery – Courtney M. Townsend Jr., Mark Evers – 2020
10. Manual of Orthopaedics – Marc F. Swiontkowski – 8th Edition – 2020

/T/P/C

ROBOTIC-ASSISTED SURGERY **3/-/0/3**

UNIT I: Introduction to Robotic Surgery 3/-/0/3

- History and evolution of robotic-assisted surgery
- Comparison with conventional laparoscopic surgery
- Benefits and limitations of robotic surgery

UNIT II: Robotic Systems and Instruments

- Components of a robotic surgical system
- Robotic arms, console, and vision system
- Energy devices used in robotic surgery

UNIT III: Operating Room Setup and Safety Protocols

- Role of the surgical assistant in robotic OR
- Docking and troubleshooting
- Patient positioning and access ports
- Ergonomics and safety checks

UNIT IV: Clinical Applications(NEED MORE TO ADD)

- Robotic-assisted urology (e.g., prostatectomy)
- Robotic gynaecological surgeries
- General and colorectal robotic procedures
- Paediatric robotic applications

UNIT V: Future of Robotic Surgery and Ethics

- Advancements in AI and telesurgery
- Ethical considerations
- Cost-effectiveness and global impact

REFERENCE BOOKS

1. *Robotic Surgery* – Peter Kim
2. *Atlas of Robotic Urologic Surgery* – Vipul Patel
3. *Minimally Invasive Robotic-Assisted Surgery* – Klaus Stefan Püschel

RESEARCH METHODOLOGY AND BIOSTATISTICS L/T/P/C

3/-/-/3

1. INTRODUCTION TO RESEARCH METHODOLOGY

- Meaning of research
- Objectives of research
- Motivation in research
- Types of researches and research approaches
- Criteria for good research
- Problems encountered by researchers in India

2. IDENTIFYING RESEARCH PROBLEM

Research problem:

- Statement of research problem
- Statement of purpose and objectives of research problem
- Necessity of defining problem

Testing of hypothesis:

- What is hypothesis
- Basic concepts concerning testing of hypothesis
- Limitations of testing of hypothesis

3. ETHICAL ISSUES IN RESEARCH

- Introduction to research ethics
- Ethical principles
- Ethics and ethical code
- Animal research ethics
- Making ethical decision
- Components of ethical research plan

4. RESEARCH DESIGN

- Meaning of research design
- Need for research design
- Features of good research design

5. BASIC CONCEPTS OF BIOSTATISTICS

Introduction:

- Definition and characteristics of statistics
- Importance of study of statistics
- Branches of statistics
- Statistics and health sciences
- Descriptive and inferential statistics
- Variables and their types

Tabulation of data:

- Basic principles of graphical representations
- Types of diagrams- histograms, frequency polygons, smooth frequency

polygon, cumulative frequency curve, non- probability curve

Measures of central tendency:

- Need for measure of central tendency

- Definition and calculation of mean- ungrouped and grouped
- Definition and calculation of Median
- Definition and calculation of mode
- Comparison of mean, median, and mode

Probability and standard deviation:

- Meaning of probability or standard deviation
- The binomial distribution
- The normal distribution
- Divergence from normality- skewness and kurtosis

6. TYPES OF DATA

- Qualitative data
- Quantitative data

7. RESEARCH TOOLS AND DATA COLLECTION METHODS

Measurement and scaling techniques:

- Measurement in research
- Scales in research sources of error in measurements
- Technique of developing measurement tools
- Meaning of scaling and its classification
- Important scaling techniques

Methods of data collection:

- Collection of primary data
- Collection of data through questionnaires and schedules
- Differences between questionnaires and schedules

8. SAMPLING METHODS

Sampling fundamentals:

- Need for sampling, and some fundamental definitions
- Important sampling distributions

Sampling design:

- Criteria for selecting procedure

- Implications for sampling design
- Steps in sampling design
- Different types of sampling designs

9. DEVELOPING A RESEARCH PROPOSAL

- Introduction to Research Proposal
- Selecting a Research Problem
- Review of Literature
- Formulating Research Objectives and Hypotheses
- Research Questions
- Theoretical or Conceptual Framework
- Research Design and Methodology
- Sampling Techniques and Sample Size
- Data Collection Methods
- Data Analysis Plan
- Ethical Considerations
- Limitations and Delimitations
- References and Bibliography
- Appendices (e.g., consent forms, tools, questionnaires)

RECOMMENDED BOOKS:

1. Methods in biostatistics by Mahajan
2. Research methodology by C R Kothari
3. Textbook of biostatistics by Sundar Rao
4. Textbook of biostatistics and research methodology by U. Satyanarayana

ART OF BEING A BETTER PERSON **L/T/P/C**

1/-/-/1

UNIT 1

- Introduction to Being a Good Human
- Defining "goodness" and ethical living
- Overview of moral philosophies: Utilitarianism, Deontology, Virtue Ethics The role of

self-awareness in personal growth

Activity: Reflective journaling on what "being good" means to you. UNIT 2

- The Power of Empathy
- Understanding empathy vs. sympathy
- The science behind empathy and its benefits for social connections Techniques for

cultivating empathy in everyday life

Activity: Empathy-building exercises and discussions.

UNIT 3

- Emotional Intelligence (EQ)
- What is Emotional Intelligence? (Self-awareness, self-regulation, motivation,

empathy, and social skills) The role of EQ in personal and professional relationships

- Strategies to improve emotional intelligence

Activity: Self-assessment of emotional intelligence and EQ development exercises.

UNIT 4

- Compassion and Kindness
- The science of kindness: How kindness benefits us and others
- Practicing kindness in small, everyday actions
- Overcoming barriers to kindness (e.g., stress, biases, indifference)

Activity: "Random Acts of Kindness" challenge.

UNIT 5

- Personal Integrity and Honesty
- The importance of integrity in personal and professional life Consequences ofdishonesty and lack of integrity
- How to align actions with values

Activity: Case study discussion on ethical dilemmas and decision-making.

UNIT 6

- Building Positive Relationships
- Communication skills for healthy relationships Setting boundaries and respecting

others' boundaries Conflict resolution and forgiveness

Activity: Role-playing scenarios to practice healthy communication.

UNIT 7

- Responsibility and Accountability
- The concept of personal responsibility in life Accountability in both personal and

community contexts How to take ownership of mistakes and learn from them Activity: Reflect on past mistakes and plan for growth.

UNIT 8

- Contributing to the Community and Society
- The role of individuals in building strong communities Volunteering, activism, and

social responsibility

- The impact of small, positive actions on a larger scale

Activity: Brainstorming session on potential ways to contribute to the local community.

UNIT 9

- Practicing Gratitude and Contentment
- The psychological and emotional benefits of gratitude Practicing contentment in a

consumer-driven world Techniques for cultivating a mindset of abundance Activity: Gratitude journal and daily reflection.

UNIT 10

- Living with Purpose and Meaning
- Discovering personal values and purpose
- The intersection of passion, skills, and service Creating a life plan that aligns with core

values Activity: Create a personal mission statement.

UNIT 11

- Overcoming Negative Traits: Greed, Anger, and Envy The psychology behind negative emotions and traits How greed, anger, and envy affect our well-being
- Strategies for managing and transforming negative emotions

Activity: Mindfulness meditation and reflection exercises.

UNIT 12

- Bringing It All Together: A Life of Goodness Review of key learnings from the

course Creating a vision for continuous personal growth

- How to maintain a positive and ethical life in a challenging world

Activity: Final reflection paper or presentation on how students will apply the course's principles to their life.

Reference Textbook

How to Win Friends and Influence People" by Dale Carnegie

The Seven Habits of Highly Effective People" by Stephen R. Covey

CLINICAL POSTING- IV **L/T/P/C**

-/-/18/9

In the Fourth and final phase of clinical training for the B.Sc. Surgical Laparoscopy Technology program, students transition towards independent and supervised assistance in complex surgical environments, demonstrating cumulative skills gained throughout the course. This posting focuses on consolidation of competencies, exposure to advanced surgical specialties, and preparation for professional practice.

During this phase, students will actively participate in high-complexity laparoscopic and open surgical procedures, including oncological, vascular, transplant-related, and multi-specialty surgeries. Emphasis is placed on independent preparation of the operating theatre, complete instrumentation setup, strict adherence to quality assurance protocols, and rapid troubleshooting of technical or equipment-related issues. Students will also be involved in perioperative patient management, anaesthesia support, haemostasis techniques, and post-operative monitoring in critical care settings.

An important aspect of Clinical Posting – IV is engagement with surgical audits, documentation of quality indicators, and participation in morbidity and mortality review meetings. Students are expected to maintain accurate operative records, contribute to case discussions, and apply ethical and legal considerations in surgical practice. The posting also fosters leadership skills through mentoring of junior students and effective coordination with the multidisciplinary surgical team.

SEMESTER VII

L/T/P/C

-/-/40/20

INTERNSHIP – I

Clinical Posting Areas:

- General Surgery
- Orthopaedic Surgery
- Gynaecology & Obstetrics
- Urology
- ENT & Ophthalmology
- Emergency & Trauma OT
- Robotic-Assisted Surgeries (if available)
- Sterilization and CSSD

Duties & Responsibilities:

- Pre-operative and post-operative care
- Assisting during surgeries under supervision
- Handling of surgical instruments and consumables
- Infection control practices
- Maintaining case files and observation records
- Adherence to professional ethics and conduct
- Time management and coordination with OT teams

Assessment Criteria:

- Logbook Maintenance
- Departmental Supervisor Evaluation
- Case-Based Viva
- Report Submission
- Final Practical Evaluation by External Examiner

SEMESTER VII

L/T/P/C

-/-/40/20

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Clinical Posting Areas:

- General Surgery
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- Case-Based Viva
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- Final Practical Evaluation by External Examiner

SEMESTER VIII

L/T/P/C

- /-/20/10

INTERNSHIP – II

Clinical Posting Areas:

- Cardiothoracic Surgery
- Neurosurgery
- Laparoscopic & Endoscopic Surgeries
- Organ Transplant Units (Liver/Kidney)
- Robotic Surgery (Advanced exposure)
- Surgical ICU / Recovery Room
- Anaesthesia and Patient Monitoring

Duties & Responsibilities:

- Assisting independently under senior supervision
- Participation in emergency and trauma cases
- Operating sterilization units and managing surgical logistics
- Surgical charting, documentation, and discharge summaries

PROJECT - **L/T/P/C**
-/-/2/1