GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT (GITAM)

(Deemed to be University)

VISAKHAPATNAM | HYDERABAD | BENGALURU

Accredited by NAAC with A^+ Grade.

Regulations and Syllabus of

UPMED01: B.SC. ANAESTHESIA TECHNOLOGY

(w.e.f. 2022-23 admitted batch)

B.Sc. ANAESTHESIA TECHNOLOGY

(Effective from 2022-23 admitted batch)

1.0 ADMISSIONS

Admissions into B.Sc. Paramedical (Specialization in Anesthesia Technology) program of GITAM (Deemed to be University) are governed by GITAM (Deemed to be University) admission regulations.

ELIGIBILITY CRITERIA

Eligibility:

Qualified in Intermediate or 10+2 equivalent examinations with 60% Aggregate marks in Physics, Chemistry, Biology and English or APOSS (Open school intermediate) with GPA 5.5 or equivalent.

About the course:

An anesthesia technology professional assists in the administration and monitoring of anaesthesia technology and has extensive knowledge of anesthesia techniques, instruments, supplies, and technology. Anesthesia technology professionals are mainly employed by hospitals or operating theatre suites but can be found in other areas of clinical practice including emergency departments, intensive care units (ICU), and day surgery clinics. Anaesthesia Technology Professionals work as a member of a multi-disciplinary team that includes doctors, nurses, and support staff.

Course Administration

The course is delivered in 6 semesters with each semester dealing with prescribed subjects.

- All subjects are mandatory for the student. The student is trained in both theory and practical/clinical aspects of the course. Student is assessed by formative and summative assessment every semester.
- There will be one internal exam before the semester-end exam. Candidates should score a minimum of 35% marks theory and practical internal assessment examination separately to be eligible to appear in the University exam in that subject.
- A candidate shall be declared to have passed in the concerned subject, if he fulfils the following criteria
    - He / She secured 35% marks in the internal assessment and
    - (a) He / She secured 40% marks in theory and
      (b) 50% marks in practicals & viva and

(c) 50% marks in theory, practical &viva put together in each subject separately. Course objectives and learning outcomes are specified leading to clarity on what a student wouldbe able to do at the end of the program.

STRUCTURE OF THE PROGRAM

The Program consists of

i. Foundation Course (FC)
ii. Core Courses - Compulsory (C)
iii. Discipline Specific Electives (DSE)
iv. Generic Electives (GE)
v. Internship/ Project/ Training (Detailed Report to be submitted in the prescribed format)

Each academic year consists of two semesters. The curriculum structure of the BSc Paramedical program and the contents for various courses offered are recommended by the Board of Studies concerned and approved by the Academic Council.

MEDIUM OF INSTRUCTION

The medium of instruction (including examinations and project reports) shall be English.The method of instruction shall comprise classroom lectures, guest lectures, demonstrations, presentations, role-play, group discussions, seminars, class tests, case analysis, situational analysis, practical training etc.

ATTENDANCE REQUIREMENTS

- A candidate must have not less than 75% attendance in theory and 80% in practicals separately.
- Candidates should score a minimum of 35% marks theory and practical internal assessment examination separately to be eligible to appear in the University exam in that subject.
- There will be one internal exam before the semester-end exam.
- Internal marks will be considered for eligibility for the semester exam but will not be added for the semester exam.

EVALUATION:

CONTINUOUS ASSESSMENT AND EXAMINATIONS

- There will be one internal exam before the semester-end exam.
- Candidates should score a minimum of 35% marks theory and practical internal assessment examination separately to be eligible to appear in the University exam in that subject.
- Internal marks will be considered for eligibility for the semester exam but will not be added for the semester exam.

EXAMINATION DURATION AND PATTERN

a. Anatomy, Biochemistry & Physiology, Microbiology, Pathology, Pharmacology, General Medicine, General Surgery & Parent Department-
   100 marks each
   60 marks theory
   40 marks (Practical 30marks + viva 10marks)

(Community Medicine, English, Psychology, EVS, Computer carries 40 marks each (No Practicals, only Theory). Community Medicine (third & Fourth Semester will be for 50 Marks – 30 Marks Theory & 20 Marks Practicals)

b. Pattern of question paper
c. 60 marks paper Duration: 2 ½ Hours
   1 Q Essay (1x 10m = 10 marks)
   2 Q to 5 Q Short notes (total 4 Q, 4 x 5 m = 20 marks)
   6 Q to 15 Q very short notes (total 10 Q, 10 x 3m = 30marks)
d. 40 marks paper Duration: 2 hours
   1 Q Essay question (1 x10 m = 10 marks)
   2 Q to 4 Q - Short notes (3 Q x 5 = 15marks)
   5 Q to 9 Q - Very short notes (5 Q x 3 m = 15marks)
e. 30 Marks Paper Duration: 1 ½ Hours
   1 Q Essay (1x 10m = 10 marks)
   2 Q to 3 Q Short notes (total 2 Q x 5 m = 10 marks)
   4 Q to 8 Q very short notes (total 5 Q x 2m = 10marks)

Criteria for the following subjects have exam at the college level only:

- Soft skills, First aid, Biotechnology and medical Physics, Patient Care. These subjects are included in the semester exam and the candidates shall be declared as passed only when they secure 35% marks in the internal exam.

<u>Community Medicine:</u>

- The theory exam to be conducted in 3rd and 4th semesters, theory along with practicals in the 3rd& 4th semester.

- **PAPER SETTING:**

- Paper setting, paper valuation and practical examination is done by internal examiners from the 1st to 5th semesters.
- In the 6 th semester paper setting will be done by concerned subject experts. Paper valuation and practical examination will be conducted but 2 examiners – one internal and one external examiner.

- **Criteria for Examiner:**

- Professor or Associate Professor or Assistant Professor with minimum of 4 years of teaching experience after post-graduation.
- Parent Department Subjects semester exams will be conducted from the 3rd semester onwards.
- **Subjects for 1st semester exam**
  - Anatomy
  - Physiology
  - Biochemistry
  - EVS
  - English
  - Psychology
  - Computers

2nd Semester Exam

Anatomy

Physiology

Biotechnology & medical physics

Grace Marks: Maximum 5 marks can be awarded to one subject provided he passed all the other subjects, or these 5 marks can be split for maximum 2 subjects. Provided the candidatehas passed rest of the subjects.

- Qualifying marks to pass the semester exam.
- A candidate shall be declared to have passed the examination if.
  - He / She secured 35% marks in the internal assessment.
  - Anatomy, Physiology & Biochemistry (a) He / She secured 40% marks in theory. (b) 50% marks in practicals & viva (c) 50% marks in theory, practical &viva put together in each subject separately.
  - For Community Medicine, EVS, English, Psychology, computer He/ She should secure minimum 50% marks in theory.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1	To impart knowledge and skill in accordance with the requirement in basic medical sciences and paramedical specialty as relevant
PEO 2	To impart training required to carry out necessary investigative procedures. accurately to facilitate proper diagnosis and prognosis of diseases
PEO 3	To train the student to perform routine as well as special investigative. procedures in the concerned paramedical specialty
PEO 4	To impart knowledge and practical training required to operate and maintain. all equipment used in the concerned specialization
PEO 5	To impart knowledge about communication skills, basic research skills, professionalism, and ethical aspects required in various health care. settings for effective delivery of health care

PROGRAMME OUTCOMES (POs)

PO1	To prepare a cadre of healthcare technologists who can effectively assist senior health professionals in the delivery of quality health services.
PO2	To prepare skilled paramedical human resources for all levels of the healthcare delivery system from primary to tertiary care level.
PO3	To train the students to carry out necessary procedures accurately and to facilitate proper diagnosis and prognosis of diseases.
PO4	To enable to perform routine as well as special investigative procedures in the concerned paramedical specialty.
PO5	To develop knowledge and skill in accordance with the demand in the field of paramedical specialty as applicable.
PO6	To enable to operate and maintain all types of equipment used in the concerned specialization.
PO7	To make capable to support advanced testing activities and Research.
PO8	To enable to work as Supervisor/Trainer/Teacher in the field of Paramedical sciences.
PO9	To enable to communicate and interact effectively with non-clinical and clinical persons in various healthcare environments
PO10	To be able to present oneself in an ethical and professional manner
PO11	To equip the paramedical staff with modern skills and knowledge to bring them at par with other national and international standards
PO12	Students who complete these programs will be able to work in both an individual and team environment

PROGRAM SPECIFIC OUTCOMES (PSOs)

At the end of course the student will be able to:

PSO1	Demonstrate ability to prepare and maintain Operation Theatre
PSO2	Assist the anesthesiologists with all procedures in the conduct of anesthesia
PSO3	Handle and maintain all equipment and monitors used in anesthesia.

PSO4	Knowledge of all pharmacological agents used in anesthesia
PSO5	Provide Basic Life Support and Advanced Life Support
PSO6	Prepare the operation theatre for the conduct of various types of anesthesia
PSO7	Follow infection control policies and procedures in the operation theatre
PSO8	Assist in intra-operative anesthesia care and technical support
PSO9	Demonstrate skills and knowledge to assist anesthetists in handling emergencies outside OT Room
PSO10	Monitoring of Patients in Post Anesthesia Care Unit.
PSO11	Assist in the management of critically ill patients in ICU
PSO12	Maintain a safe, healthy, and secure working environment.

STRUCTURE OF THE PROGRAMME

Semester-wise Structure

SEMESTER-I

S. No	Cours eCode	Course Title	Course Category
1	ANAT1001	ANATOMY – I	C
2	BCHE1001	BIOCHEMISTRY – I	C
3	PSGY1001	PHYSIOLOGY – I	C
4	LANG1141	ENGLISH	FC
5	PSYC1031	PSYCHOLOGY	FC
6	CSCI1301	COMPUTER BASICS	FC
7	ENVS1051	ENVIRONMENTAL SCIENCE	FC

SEMESTER-II

S. No	CourseCode	Course Title	Course Category
1	ANAT1011	ANATOMY – II	C
2	PSGY1011	PHYSIOLOGY – II	C
3	BTSC1041	BIOTECHNOLOGY & MEDICAL PHYSICS (Only Internal exam, no university exam)	FC

SEMESTER-III

S. No	Course Code	Course Title	Course Category
1	PHCG2001	PHARMACOLOGY - I	C
2	MIBG2001	MICROBIOLOGY - I	C
3	PATH2001	PATHOLOGY - I	C
4	CMED2001	COMMUNITY MEDICINE & SOFT SKILLS	C
5	NURS2001	BASICS OF PATIENT CARE (No UniversityExam)	FC
6	ANST2001	ANAESTHESIA TECHNOLOGY - I	C

SEMESTER - IV

S.No	Course Code	Course Title	Course Category
1	PHCG2011	PHARMACOLOGY - II	C
2	MIBG2011	MICROBIOLOGY - II	C
3	PATH2011	PATHOLOGY - II	C
4	CMED2011	COMMUNITY MEDICINE	C
5	ANST2011	ANAESTHESIA TECHNOLOGY - II	C

SEMESTER- V

S. No	Course Code	Course Title	Course Category
1	GMED3001	GENERAL MEDICINE - I	C
2	GSUR3001	GENERAL SURGERY-I	C
3	ANST3001	ANAESTHESIA TECHNOLOGY - III	C
4	ANST3011	ANAESTHESIA TECHNOLOGY - IV	C

SEMESTER-VI

S.No	Course Code	Course Title	Course Category
1.	ANST3031	ANAESTHESIA TECHNOLOGY - V	C
2.	ANST3041	ANAESTHESIA TECHNOLOGY - VI	C
3.	ANST3051	ANAESTHESIA TECHNOLOGY - VII	C

ANAT1001: ANATOMY-I
Semester- I
(With effect from 2022-23 admitted batch)

INTRODUCTION:

Anatomy deals with the structural organization of the human body. Anatomy forms the basis for the practice of medicine. Students need core knowledge of human anatomy as they venture into the clinical domain. The department of anatomy is committed to providing quality education for students by its fully equipped facilities. Cadaveric dissections & specimens, histology slides, and VARIOUS models provide the ideal environment to learn anatomy during the 1st year of their course.

COURSE OBJECTIVES:

- The objective of this subject is to provide an outline of anatomy to improve the students understanding of the technical and diagnostic procedures used, with special emphasis on applied aspects.

SYLLABUS

LEARNING OUTCOMES:

After completion of the course at the end of 1st year, the first semester, the student must be able to know the following:

a. INTRODUCTION OF ANATOMY & CELL, TISSUES

1. Anatomical terminology
2. Name the cell organelles.
3. Types of Cell divisions
4. Classification of bones
5. Parts of long bone
6. Blood supply of long bone.
7. Classification of muscles
8. Cardiac muscle.

b. INTRODUCTION TO HISTOLOGY & LUNGS

1. Classify of Epithelium.
2. Type of Cartilages.
3. Histology of bone
4. Different Parts of the Pleura.
5. Describe The Surfaces, Borders And The Mediastinal Surface Of The Lungs.
6. Relations of right lung
7. Relations of left lung
8. Bronchopulmary segment of lung
9. Costo diaphragmatic recess
10. Hilum of lung
11. Histology of lung

c. HEART & BLOOD VESSELS

1. Describe the external feature of heart with a labelled diagram.
2. Mention the openings of right atrium.
3. Briefly on Internal features of heart
4. Types of circulation
5. Aorta & its branches
6. Coronary circulation
7. Chambers of the heart &its vessels
8. Papillary muscle

d. LIMBS

1. Bones of Upper limb

2. Carpal bones

3. Name the muscles of Upper limb

4. Bones of Lower Limb

5. Tarsal bones

6. Median cubical vein

7. Name of nerves of lower limb

8. Name of the nerves of upper limb

9. Mention the arteries of upper limb.

10. Mention the arteries of lower limb.

11Name the muscles and nerve of back of thigh

12. Deltoid muscle

13. Gluteus maximum

COURSE OUTCOMES:

- Explains knowledge on the basic anatomy of various regions like limbs, thoracic and abdominal viscera, osteology, neuroanatomy, endocrine system, basic radiology which provides a foundation in completion of the course.
- Explain the anatomy and functions of various Tissues and cells, an organization of a cellular system.
- Understand the functioning of lungs, heart, and blood vessels.

References:

1. BD Chaurasia: Handbook of general anatomy
2. Textbook of Anatomy & Physiology by InduKhurana&Arushi
3. Textbook of Anatomy & Physiology by PR Ashalatha& G Deepa
4. Textbook of Anatomy & Physiology by Ashalatha N Nandedkar, Vijay D Joshi &Sadhana – 3rd edition

BCHE1001: BIOCHEMISTRY-I
Semester-I
(With effect from 2022-23 admitted batch)

INTRODUCTION:

Biochemistry deals with the structures, bonding, functions, and interactions of biological macromolecules, such as proteins, nucleic acids, carbohydrates, and lipids. They provide the structure of cells and perform many of the functions associated with life. Biochemistry focuses on understanding the chemical basis which allows biological molecules to give rise to the processes that occur within living cells and between cells, in turn relating greatly to the understanding of tissues and organs, as well as organism structure and function.

Course Objectives:

- Students must understand the basic principles of Biochemistry and the biochemical processes that take place in the human body and their applied aspects.

Syllabus: **THEORY – 40HRS , PRACTICAL -20HRS**

CONTENT	
Cell biology	1. Recall the structure and functions of the cell and cell membrane. 2. Explain various types of absorptions. 3. List intracellular organelles and mention their functions. 4. Explain cytoskeleton
Carbohydrate Chemistry	1. Define carbohydrates, classify carbohydrates with examples, explain glycosidic bond. 2. Illustrate structure, composition, sources, properties and functions of monosaccharides, disaccharides, oligosaccharides, and polysaccharides. 3. Explain glycosaminoglycan (mucopolysaccharides)
Lipid Chemistry	1. Define and classify lipids. 2. Define, classify and list properties & functions of Fatty acids, Triacylglycerol, Phospholipids, cholesterol. 3. Elaborate essential fatty acids and their importance. 4. Explain Lipoproteins: definition, classification, properties, sources and function and ketone bodies
Amino -acid Chemistry	1. Define and classify amino acids. 2. Define peptides and explain peptide bonds, list the biologically important peptides. 3. Define and classify proteins, enumerate functions of proteins.
Enzymes	1. Define and classify with examples, active site, cofactor, proenzyme. 2. List the factors affecting enzyme activity. 3. Define enzyme inhibition and talk about its significance. 4. Define isoenzymes, enzymology (clinical significance of enzymes)
Nucleotide and Nucleic acid chemistry	1. Show nucleotide composition and list functions of free nucleotides in body. 2. Compare between DNA & RNA, explain structure and functions of DNA & RNA (tRNA, rRNA, mRNA)
Carbohydrate Metabolism	1. Illustrate glycolysis-aerobic, anaerobic, citric acid cycle, substrate phosphorylation. 2. Elaborate glycogen metabolism -glycogenesis, glycogenolysis, metabolic disorders of glycogen, gluconeogenesis, Cori cycle. 3. Summarize hormonal regulation of glucose, glycosuria, diabetes mellitus
Lipid Metabolism	1. Explain lipid metabolism-lipolysis, oxidation of fatty acids. 2. Explain lipogenesis- Denovo synthesis of fatty acids, chain elongation, desaturation, triacylglycerol synthesis, fat metabolism in adipose tissues. 3. Elaborate ketone body metabolism: formation(ketogenesis), utilization(ketolysis), ketosis, Rothera's test.

	4. Summarize cholesterol metabolism: synthesis, degradation, cholesterol transport. 5. Define Hypercholesterolemia, list its effects, causing agents common hyperlipoproteinemia. 6. Explain about fatty liver
Amino acid and protein metabolism	1. Define Catabolism of amino acids- transamination, deamination 2. Illustrate fate of ammonia, transport of ammonia, Urea cycle 3. Outline the specialized products formed from amino acids
Vitamins	1. Define vitamins and classify them according to solubility. 2. List the sources, Coenzyme forms, functions, Recommended Dietary Allowance (RDA) 3. Tell about digestion, absorption and transport, deficiency, and toxicity of individual vitamins
Mineral metabolism	1. Define minerals and list the sources for mineral and their Recommended Dietary Allowance 2. Tell about digestion, absorption, transport, excretion of various minerals. 3. List the functions and disorders of individual minerals – Calcium, phosphate, iron, magnesium, fluoride, selenium, molybdenum, copper
Acid-base balance	1. Define acids, base and pH. 2. Define buffers and describe buffer systems of the body (bicarbonate buffer system) 3. Elaborate about the role of lungs and kidneys in acid-base balance. 4. Acid base disorders
Water & Electrolyte balance	1. Illustrate the water distribution in the body. 2. Tell about body water, water turnover. 3. Explain about regulation of water balance, role of ADH and thirst centre 4. Define osmolarity. 5. Illustrate distribution of electrolytes 6. Explain about electrolyte balance: Role of aldosterone, renin angiotensin system and ANF
Hemoglobin Chemistry & Metabolism	1. Briefly describe the normal structure and function of Hemoglobin. 2. Hemoglobin's thesis and breakdown. 3. List out the important abnormal hemoglobin's and their effect
FUNCTION TESTS	1. Describe the biochemical functions of kidney and the principal Renal Function Tests 2. Describe the biochemical functions of liver and the principal Liver Function Tests 3. Briefly describe the Thyroid function tests
PRACTICALS	1. Lab safety 2. Glass ware 3. Centrifuge 4. Sample Collection 5. Urine Analysis – Normal constituents 6. Blood Chemistry– Glucose Estimation, Estimation of Urea, Creatinine 7. Demonstration – Lipid profile, Electrolytes 8. Demonstration – Liver Function Tests 9. Demonstration – Thyroid Function Tests 10. Case based clinical biochemistry and interpretation of reports 11. Spotters

COURSE OUTCOMES:

At the end of this course student should be able

1. To know the properties, classification, and metabolism of carbohydrates
2. To know the properties, classification, and metabolism of proteins
3. To know the properties, classification, and metabolism of lipids
4. To know the properties, classification, and metabolism of nucleic acids
5. To know the properties, classification and metabolism of enzymes and vitamins

References:

1. Concise textbook of Biochemistry DM Vasudevan 2nd edition
2. Essentials of Biochemistry U Satyanarayana, U Chakrapani 2nd edition
3. Essentials of Biochemistry and ocular biochemistry S Ramakrishnan

PSGY1001: PHYSIOLOGY-I
Semester-I
(With effect from 2022-23 admitted batch)

INTRODUCTION

Physiology is the study of functions and mechanisms in a living system. physiology focuses on individual organs, cells, and biomolecules carrying out the chemical and physical functions in a living system. The physiological state is the condition of normal function, while the pathological state refers to abnormal conditions, including human diseases.

Course Objective

- Understand the basic physiological functions of different organs and parts of the human body and important applied aspects.

SYLLABUS:

1 - Cell physiology

1. Describe the structure and functions of cell.
2. Describe the functions of the cell organelles.
3. Briefly describe the types of transport across cell membrane and carrier systems.

2 - Blood

1. Describe the normal composition of human blood and its functions.
2. Describe the normal plasma proteins & their functions.
3. Describe the structure and functions of RBC and hemoglobin.
4. Describe the process of Erythropoiesis.
5. Describe the Structure, production, & functions of WBCs
6. Describe the structure, production & functions of Platelets.
7. Describe the Types of blood groups and their importance,
8. Describe the Mechanism of coagulation.

Immunity

1. Define immunity and describe the types of immunity.
2. Classify antigen & antibodies.
3. Describe T cell immunity & B cell immunity.

3 - Digestive system

1. Briefly describe the Physiological anatomy of G.I.T and its functions.
2. Briefly describe the composition and functions of Saliva.
3. Briefly describe the physiological anatomy of the stomach and the composition, functions of gastric juice.
4. Briefly describe the functions of pancreas, and the composition & functions of pancreatic juice.
5. Briefly describe the functions of liver and gall bladder and the Composition, and functions of bile juice.

4 - Respiratory system

1. Describe the physiological structure and functions of Respiratory tract.
2. Describe the Mechanics of respiration and its regulation!
3. Describe the Fundamentals of oxygen and CO2 transport in blood.
4. Describe the lung volumes, spirometry & their importance.

5 - Cardiovascular system

1. Describe the gross structure of heart and the normal circulation of blood.
2. Describe the cardiac cycle.
3. Describe the normal arterial pulse wave and the normal heart rate, and factors increasing and decreasing it.
4. Describe normal Blood pressure and its regulation,
5. Describe the normal Heart sounds.
6. Describe the normal ECG and its importance.

6 - Muscle & nerve & neurology

1. Describe the physiological structure of muscle tissue and its types.
2. Describe the parts of neuron and their functions, and the synapse and its function.
3. Describe the action potential, its basis, refractory period, latent period, etc. and neuromuscular transmission.
4. Describe briefly the autonomic nervous system and the functions and effects of the sympathetic and parasympathetic nervous systems.
5. Describe the physiological anatomy of the brain and functions of different lobes.
6. Describe briefly the structure and functions of spinal cord
7. Briefly describe the subdivisions of brain stem and their functions.
8. Briefly describe the special senses and their pathways – vision, audition (location & taste)
9. Describe the normal EEG,
10. Briefly describe the CSF formation, circulation, properties, composition and functions.

Course Outcomes:

1. Explain the anatomy, physiology and functions of various Tissues and cell, organization of cellular system.
2. Explain Hematopoietic and lymphatic system homeostatic and its altered physiology.
3. Explain the anatomy and Physiology of the cardiovascular and respiratory system and its disorders.
4. Explain the anatomy and Physiology of digestive, nervous, urinary, and reproductive systems and their disorders.
5. Describe the Physiology of muscle contraction and its disorders.

References:

1. Textbook of physiology for BDS AK Jain 6th edition
2. Textbook of physiology for BDS Sembulingam 3rd edition
3. Physiology in nutshell by AK Jain 5th edition
4. Manual of practical physiology for BDS AK Jain 4th edition
5. Handbook of human physiology Vidyaratan 7th edition

LANG1141: ENGLISH
Semester-I
(With effect from 2022-23 admitted batch)

INTRODUCTION:

The course is a unified approach to enhance language skills of learners with an aim to hone their social skills and to increase their employability. The course is designed to acquaint the learners with the necessary LSRW (Listening/ Speaking / Reading/ Writing) skills It enables the learners improve their communication skills which are crucial in an academic environment as well as professional and personal lives.

COURSE OBJECTIVES

1. Understand and communicate in simple English, written and verbal.
2. Understand and practice the basic principles of English grammar.
3. Comprehend and summarize a given English essay/paragraph.
4. Understand common English terms used in the medical/ health care field.

SYLLABUS

1. Basic English Grammar 2hrs
2. Grammar - 8 parts of speech. Structure of sentence. Sentence writing. Paragraph writing. 8 hrs Summarizing / precis writing. Reading & comprehension (a small paragraph followed by questions)
3. General English Vocabulary & Use of dictionary 2hrs
4. Common Medical Terminology 2hrs
5. Spoken & Written English 2hrs
6. Listening & Reading skills 2hrs
7. English comprehension & summarizing & inference 2hrs
8. Writing skills - Questions based on prescribed prose/ poetry, letter, Summary, Case history, Medical Report, Documentation, Note taking 8rs
9. Verbal communication - discussion & summarizing. Taking minutes of meeting Writing the minutes. 2hrs

Prescribed Prose

1. Leo Tolstoy	How much land does a man need?
2. O' Henry	The Last Leaf
3. Frank Stockton	The Lady or the Tiger

Prescribed Poetry

1. William Shakespeare	The Seven Ages of Man
2. Robert Frost	The Road not Taken
3. John Milton	On his Blindness

COURSE OUTCOMES

By the end of the course, the learners will be able to:

- Think critically, analytically, creatively and communicate confidently in English in social and professional contexts with improved skills of fluency and accuracy.
- Write grammatically correct sentences employing appropriate vocabulary suitable to different contexts.
- Comprehend and analyze different academic texts.
- Make notes effectively and handle academic writing tasks such as Paragraph writing and Essay writing.
- Effectively handle formal correspondence like e-mail drafting and letter writing.

Reference Books:

1. Arosteguy, K.O. and Bright, A. and Rinard, B.J. and Poe, M. A Student's Guide to Academic and Professional Writing in Education, UK, Teachers College Press, 2019
2. Raymond Murphy, English Grammar in Use A Self-Study Reference and Practice Book for Intermediate Learners of English: Cambridge University Press;2019
3. Peter Watkins, Teaching and Developing Reading Skills: UK, CUP, 2018
4. DeepthaAchar et al. Basic of Academic Writing. (1and 2) parts New Delhi: Orient BlackSwan. (2012& 2013).
5. Kumar S and Lata P, Communication Skills: New Delhi Oxford University Press, 2015

CSCI1301: BASICS OF COMPUTERS

Semester-I

(With effect from 2022-2023 admitted batch)

INTRODUCTION:

Computer science spans theoretical disciplines (such as algorithms, theory of computation, and information theory) to practical disciplines (including the design and implementation of hardware and software). It deals with concepts regarding the architecture of a computer, commonapplication software and uses of computers in everyday life.

Course Objectives:

1. To build necessary concepts regarding the architecture of a computer
2. To develop an understanding of the common application software.
3. To understand the uses of computers in everyday life.

SYLLABUS:

Theory:

1. Describe and identify the principal components of a computer.
2. Define the various terms used in computer – hardware/software / operating system.
3. Describe the functions and uses of computers including in health care.
4. Mention the common types of files including Word documents, Spreadsheets (Excel) and Presentations (PowerPoint) and their uses.
5. Basic Network connecting
6. Explain the uses of the internet and email.
7. Collaborative work using Google suite of applications / Microsoft Office 365 Practical / Demonstration –
8. Demonstrate use of a computer for common purposes
9. Demonstrate methods for Data storage & retrieval and making folders.
10. Perform functions like date/time setting or changing, change display settings, Installing. removing programs etc.
11. Understand and Use MS Word / Word Document program.
12. Prepare a properly formatted, spell-checked document in Word Document including insertion of images and tables and take a print-out/mail as an attachment, and convert to pdf (portable document format)
13. Understand and Use MS Excel / Data spreadsheet.
14. Prepare a proper Excel document (spreadsheet) with given data and sort out data, insert / delete cells, etc., use formula bar for common functions like calculate mean etc, convert to pictorial format like bar / pie diagram, etc.
15. Prepare and use computer-based presentations like PowerPoint with appropriate fonts and colors including insertion of images, videos etc.
16. Prepare an appropriate file like excel to enter patient data and retrieve it.
17. Use the facility of Mail Merge between Excel to a Word document.
18. Sending customized email to selected members
19. Prepare a patient report and take a printout.

20. Prepare a database of patient info and lab results for storage and later retrieval.
21. Communicate by e-mail including opening email account.
22. Demonstrate use of search engines / google search etc. for academic information.

LEARNING OUTCOMES:

At the end of the training program, the student would be able to

1. Classify various components of the computer.
2. Experiment with the various application software of Microsoft Office suite.
3. Make use of collaborative applications over the internet.

COURSE OUTCOMES:

At the end of the course student is expected to

1. Know about the concept and architecture of a computer.
2. To understand the common application software.
3. To understand and apply the uses of computers in everyday life.

References –

1. Introduction to Computers by Peter Norton (McGraw Hill Education)
2. Mastering Excel: A Problem-Solving Approach by James Gips (John Wiley and Sons)
3. SAMs Teach Yourself Computer Basics in 24 hours.

ENVS1051: ENVIRONMENTAL SCIENCE
Semester-I
(With effective from 2022-23 admitted batch)

INTRODUCTION:

The course enables the students to adapt eco-centric thinking and actions rather than human-centric thinking on natural resources, their utilization and conservation. The course also focuses on the importance of ecosystems, biodiversity and their degradation led to pollution. This course helps in finding solutions through application of control measures to combat pollution and legal measures to achieve sustainable development.

Course Objectives:

1. To impart knowledge on environment and ecology.
2. To familiarize learners about different types of pollution and its measures to control.
3. To introduce learners about natural resources.

SYLLABUS

UNIT-I - INTRODUCTION TO ENVIRONMENT AND ECOLOGY 06 Hours

Definition of environment, ecology and ecosystem. Components of environment. Natural and man-made changes on environment and disasters.

UNIT-II - POLLUTION AND ITS ABETMENT 10 Hours

Air pollution-primary air pollutants, origin, control measures, air quality norms. Land pollution, types of land pollution-their sources, control measures. Solid waste disposal measures. Water resources. Types of water pollution, control measures. Water quality standards. Noise pollution, control measures, acceptable noise levels. Radiation-types, sources of radiation, biological effects of radiation.

UNIT-III - NATURAL RESOURCES 04 Hours

Conventional and non-conventional energy resources, energy conservation. Role and uses of forests, effects of deforestation. Wildlife conservation. Forest conservation Act.

COURSE OUTCOMES

After the completion of this course student will be able to

- List components of environment
- Recall natural and man-made environment disaster.
- Demonstrate air pollution control measures.
- Summarize solid waste disposal measures.
- Explain radiation and its biological effects.
- Identify conventional and non-conventional energy resources.

REFERENCES:

1. Erach Bharucha. Textbook of environmental studies for undergraduates Courses-Universities Press, India Private Limited. 2019.
2. Kaushik A and Kaushik C.P. Perspectives in Environmental Studies. New Age International Publishers Edition-VI. 2018.
3. McKinney M.L., Schoch R.M., Yonavjak L. Mincy G. Environmental Science: Systems and Solutions. Jones and Bartlett Publishers. 6th Edition. 2017.
4. Botkin D.B. Environmental Science: Earth as a Living Planet. John Wiley and Sons. 5th edition. 2005.
5. Benny Joseph. Textbook of Environmental Studies 3rd edition, McGraw Hill Publishing company limited. 2017

PSYC1031: PSYCHOLOGY
Semester-I
(With effect from 2022-23admitted batch)

INTRODUCTION:

Health in its broadest sense includes physical and mental health. Health workers in recent years have become interested in dealing with mental health problems in general health centers. Mentalillnesses have been shown to be common, occurring in all societies and in all sections of the population, causing immense suffering and disability.

COURSE OBJECTIVE

The objective of this course is:

- To enable the student to enlist common mental health issues encountered in general health care settings.

SYLLABUS:

Unit I

Behaviors that Cause Concern – Violent Behavior and Aggression; Confusion and Agitation; Suicide; Seizures; Disturbances Among the Elderly.

Unit II

Symptoms that are Medically Unexplained – Multiple Physical Complaints; Fear and Panic;Sleep Problems; Fatigue; Loss of a Body Function.

Unit III

Problems Arising from Loss and Violence – Trauma; Intimate Partner Abuse; Sexual Assault; Bereavement.

Unit IV

Problems in Childhood and Adolescence – Learning Disturbances; ADHD; Child Abuse; Misbehavior; Enuresis; Depression in Adolescents.

Unit V

Mental Health in Other Contexts – Reproductive Health; Health of Prisoners; Refugees;Disasters; Caring for Carers.

Learning Outcomes

The course enables the student to:

- ✓ Identify psychological distress states in the general health setting.
- ✓ Distinguish between psychotic and non-psychotic disorders.

Course Outcomes:

The course enables the student to:

- Identify abnormal mental health conditions in the general health setting thatrequire health professionals' attention.
- To understand the symptoms that distinguish between psychotic and non-psychotic disorders.
- Be able to apply their knowledge and provide help to persons under distress dueto calamities caused by man and nature.
- To analyse different abnormal conditions in children during developmental stages
- To evaluate abnormal behaviors observed in persons experiencing unusualcontexts.

References

1. Goldberg, D.P. (1992). Common Mental Disorders: A Bio-Social Model. London: Routledge.
2. Helzer, J.E. &Hudziak, J.J. (2002). Defining Psychopathology in the 23st Century: DSM V and Beyond. Washington DC: American Psychiatric Publishing Inc.
3. Pilgrim, D. (2014). Key Concepts in Mental Health. London: Sage.
4. Patel, V. (2003). Where there is No Psychiatrist. A Mental Health Care Manual. Glasgow: Gaskell.
5. International Journal of Mental Health
6. Community Mental Health Journal

ANAT1011: ANATOMY – II SEMESTER

(With effect from 2022-23)

INTRODUCTION:

Anatomy deals with the structural organization of human body. Anatomy forms the basis for the practice of medicine. Students need core knowledge of human anatomy as they venture into the clinical domain. The department of anatomy is committed to provide quality education for students by its fully equipped facilities. Cadaveric dissections & specimens, histology slides and VARIOUS models provide the ideal environment to learn anatomy during the 1st year of their course.

COURSE OBJECTIVES:

- The objective of this subject is to provide an outline of anatomy to improve the students understanding the technical and diagnostic procedures used, with special emphasis on limbs, thoracic and abdominal viscera, osteology, neuro anatomy, endocrine system, basic radiology.

SYLLABUS:

LEARNING OUTCOMES:

After completion of the1st year course -at the end of second semester, the student must be able to know the following:

a. Neurology

1. Mention any four cranial nerves
2. Surfaces & Lobes of cerebrum
3. Parts of Hind brain
4. Cranial nerves
5. Parts of brain stem and cranial nerves attached to it
6. 6.Coverings of Brain
7. Broca's area
8. White fibers of cerebrum

b. Gastrointestinal Tract

1. Briefly describe the location, surfaces, lobes, relations, and blood supply of Liver?
2. Porta hepatis
3. Parts &Blood supply of stomach
4, Differences between Small& Large Intestine
5. Ligaments of Liver
6. Appendicitis

c. Excretory & Reproductive systems

1. Name the components of female reproductive system and Describe uterus and its supports.
2. Internal structure of kidney
3. Visceral Relations of kidney
4. Nephron
5. Coverings of Testis
6. Parts of Fallopian tube
7. Layers of scrotum
8. Spermatic cord
9. Male urethra &its parts

d. Endocrine system & others

1. Name the Endocrine glands and explain the morphology and blood supply of Thyroid gland.
2. Adenohypophysis
3. Dwarfism
4. Adrenal medulla
5. Diabetes mellitus
6. Blood supply of Thyroid gland
7. Islets of Langerhans
8. Goiter
9. Endocrine part of Pancreas

COURSE OUTCOMES:

- This course is aimed to make the student to gain knowledge in basic anatomy of various regions like limbs, thoracic and abdominal viscera, osteology, neuro anatomy, endocrine system, basic radiology which provides foundation in completion of the course.
- Enable to understand about the Gastrointestinal Tract, location, surfaces, lobes, relations, and blood supply of Liver.
- Enables to understand about the Endocrine glands and explain the morphology and blood supply of Thyroid gland.

References:

1. Anatomy and physiology –Vijaya D Joshi, Ashalatha N Nandedkar, Sadhana S Mendhurwar
2. Anatomy and physiology- InduKhurana and Arushi Khurana
3. Human anatomy &physiology for nursing -Mahindra Kumar Anand&MeenaVerma
4. Understanding human anatomy & physiology- William Davis(McGraw Hill)

PSGY1011: PHYSIOLOGY-II

SEMESTER-II

(With effect from 2022-23 admitted batch)

INTRODUCTION

Physiology is the study of functions and mechanisms in a living system. physiology focuses on individual organs, cells, and biomolecules carry out the chemical and physical functions in a living system. Physiological *state* is the condition of normal function and this course helps in understanding the functions of endocrine system, renal physiology and reproductive physiology.

Course Objectives:

- To know about functions and physiological anatomy of endocrine system - Thyroid, Adrenal, Parathyroid, Pituitary glands and Pancreas.
- To impart knowledge related to physiological structure of kidney and the nephron and its functions.
- To understand about reproductive system, process and methods of determination of ovulation.
- To know about types of joints, the structure and formation of cartilage and the structure and formation of bone.

SYLLABUS

1 - Endocrine system

1. Describe the physiological anatomy of Thyroid gland, functions, and its applied physiology.
2. Describe the physiological anatomy of Adrenal gland, functions, and its applied physiology.
3. Describe the physiological anatomy of Parathyroid gland, functions, and its applied physiology.
4. Describe the physiological anatomy of Pancreas, its functions, and its applied physiology.
5. Describe the physiological anatomy of hypothalamus and the Pituitary gland, their functions, and its applied physiology.

2 - Excretory system

1. Describe the physiological structure of kidney and the nephron and its functions.
2. Describe the GFR and factors affecting GFR.
3. Describe the Substances absorbed and secreted from renal tubules.
4. Describe the various Renal function tests.
5. Briefly describe the Urinary bladder and its functions and the physiology of micturition Skin.
6. Describe the Structure and functions of skin.

3 - Reproductive system

1. Describe the Physiology of Puberty
2. Describe the process of menstruation, normal menstrual cycle, menarche, andmenopause.
3. Briefly describe the process of Ovulation and methods of determination of ovulation.
4. Briefly describe the normal physiology of pregnancy and mention the diagnostic tests for pregnancy and their physiological basis.
5. Briefly describe the functions of placenta and pregnancy diagnostic tests.
6. List out the Contraceptive methods in male and female.
7. Describe the Spermatogenesis

4 - Bone & Joints

1. Describe the types of joints, the structure and formation of cartilage and the structure and formation of bone.

PRACTICALS

HAEMATOLOGY

1. Estimate Hemoglobin in given blood sample.
2. Estimate bleeding time & clotting time.
3. Measure ESR of given blood sample.
4. Perform RBC count of given blood sample.
5. Perform WBC count of given blood sample.
6. Perform a differential WBC count of the given sample.
7. Calculation of blood indices
8. Determine blood group of a given sample.

CARDIOVASCULAR SYSTEM

1. Measure pulse rate, heart rate
2. Measure BP
3. Measure weight and height and calculate Body Mass Index
4. Demonstrate examination of heart – inspect JVP, localize apex beat, look for any abnormal pulsations, percuss cardiac dullness, auscultate heart for normal sounds
5. Record an ECG

RESPIRATORY SYSTEM

1. Measure respiratory rate & temperature.
2. Demonstrate examination of respiratory system – inspect the chest for symmetry, movements, localize apical impulse and trachea, measure chest expansion, percuss the chest for lung resonance, liver dullness, auscultate lungs for breath sounds.
3. Perform spirometry in a given individual and interpret the values.

CENTRAL NERVOUS SYSTEM

1. Demonstrate examination of the cranial nerves
2. Demonstrate examination of the motor system – bulk, tone, power of different groups of muscles, coordination, gait
3. Assist in the recording of an EEG
4. Demonstrate the various sensory and motor reflexes - abdominal, plantar, biceps, triceps, supinator, knee, ankle.
5. Demonstrate examination of sensory system – fine touch, pain, vibration

Course Outcomes:

- At the end of this course the student will be able to To understand the physio log anatomy Thyroid, Adrenal, Parathyroid, Pituitary glands and Pancreas and their applied aspects.
- To understand physiological structure and functioning of kidney and the nephron.
- To understand about the physiology of reproductive system and applied aspects
- To know about the types of joints, the structure and formation of cartilage and the structure and formation of bone.

References:

1. Textbook of physiology for BDS AK Jain 6th edition
2. Text book of physiology for BDS Sibling 3rd edition
3. Physiology in nutshell by AK Jain 5th edition
4. Manual of practical physiology for BDS AK Jain 4th edition
5. Handbook of human physiology Vidyaratan 7th edition

BTSC1041: BIOTECHNOLOGY &MEDICAL PHYSICS

SEMESTER-II

(With effect from 2022-23 admitted batch)

INTRODUCTION:

The human body generates a variety of voltages which are usually very small. When basics of physics and technology get applied to the living things, we name it as Biotechnology which helps the medical personnel or physicians to make a better diagnose of the problem in a patient and provide the appropriate treatment. Biomedical engineering is the application of knowledge and technologies to solve the problem of the living system.

Course Objectives:

- The course is aimed to make the student to understand the principles of medical physics and biotechnology as applicable to health care and practice them in their respective speciality.
- Know about how to use various electronic instruments to record and interpret the overall wellbeing of the human system.
- Understand about the various sensors and transducers used to acquire and record the Bioactivity of a human beings.

SYLLABUS:

Units & Measurement (1-2hrs)

1. Define speed velocity, Work, Energy, Power & their units.
2. Define the law of Conservation of energy.
3. Describe briefly the Energy changes in human system.

Heat (1-2hrs)

4. Define Energy& temperature.
5. List out methods for Measurement of temperature & scales & instruments.
6. Describe briefly Use of heat & cold in medicine–incl. heat therapy/ cryosurgery etc.

Bioelectric potentials (3)

7. Describe briefly about Electric potentials innerve & neuron.
8. Describe briefly about Electric potentials in heart, Brain, Muscle

Electricity &Magnetism in Medicine (2)

9. Describe briefly Basic Principles of electricity, units, measurement, voltage/current etc.
10. Describe briefly the Basic principles of magnetism.
11. List out the Applications of electricity in medicine–incl. electric shock in cardiology,psychiatry etc.
12. DescribebrieflytheroleofLowfrequencyelectricity&magnetisminmedicine

13. List out import ant Electrical hazards– types, effects, physiological effects Electromagnetic radiation–properties, interference (1) Sound & Ultrasound (2-3)
14. Describe briefly the General properties of sound & ultrasound.
15. Describe the role and uses of Ultrasound in medicine.
16. Describe briefly Doppler effect Light (2)
17. Describe briefly the Basic properties of light.
18. Describe briefly the important properties & Applications of visible light/infrared. /ultraviolet/ lasers in medicine Physical principles underlying Blood flow–(1hr)
19. Describe briefly about laminar flow & turbulent flow.
20. Describe briefly the Bernoulli principle.

Electronics in biomedical applications (4-5)

21. Describe briefly about Insulators &conductors, Transformers, Motors,
22. Describe briefly about Batteries, Electric power generation, power supply/UPS/voltagestabilizers.
23. Describe briefly about Power supply circuits–transformer/rectifier/filter/regulator.
24. Describe briefly about Materials–Resistive/Dielectric/Magnetic/Piezoelectric materials& their uses Components– (5-6)
25. Describe briefly about resistors/capacitors/inductors.
26. Describe briefly about Semi-conductors–diodes/transistors/film circuits/integratedcircuits.
27. Describe briefly about Amplifiers–voltage amplifiers/power amplifiers/feedback in amplifiers/operational amplifiers/
28. Describe briefly about Input impedance, output impedance, gain, noise.
29. Explain about Distortion, differential amplification.
30. Describe briefly about Oscillators and Filters and Modulators–DemodulatorsComponents– (6-7)

31. Describe briefly about Display devices–lamps/LED/oscilloscope.
32. Describe briefly about recording devices.
33. Describe briefly about Process controllers.
34. Describe briefly about Digital electronics.
35. List out the Bioactivity monitoring instruments.
36. Describe briefly about Transducers–pressure, temperature, velocity, flow, vibration.
37. List out the Electrodes–different types & application.
38. Describe briefly about Amplifiers & application in medicine.
39. Describe briefly about the principles of averaging & signal analysis.
40. List out the common methods of Trouble shooting & analysis of medical instrumentation.

Course Outcomes:

After completing this course, the student should be able to

- Get acquainted with the principals involved in using various electronic instruments to record and interpret the overall wellbeing of the human system.
- Know about Electric potentials and their origination.
- Understand the applications of electricity in medicine.
- Explain about the various sensors and transducers used to acquire and record the Bioactivity of a human being.
- Know the common methods of Trouble shooting & analysis of medical instrumentation.

References:

1. Leslie Cromwell, Biomedical Instrumentation and Measurement, Prentice Hall of India,New Delhi, 2007.
2. Joseph J.carr and John M. Brown, Introduction to Biomedical Equipment Technology, John Wileyand sons, New York, 4th Edition, 2012
3. Khandpur R.S, Handbook of Biomedical Instrumentation, , Tata McGraw-Hill, New Delhi, 2nd Edition, 2003.
4. D. Patranabis, Principles of Industrial Instrumentation', Tata McGraw-Hill Publishing, 1976.
5. D.P. Kothari, I. J. Nagrath, "Basic Electronics", McGraw Hill Education (India) Private Limited, 2014.
6. John G. Webster, Medical Instrumentation Application and Design, John Wiley andsons, NewYork, 1998.
7. M.Arumugam, 'Bio-Medical Instrumentation', Anuradha Agencies, 2003.
8. Robert Boylestad and Louis Nashelsky, "Electronic Devices and Circuit Theory" PHI; 8th Edition.2001.

PHCG2001 - PHARMACOLOGY:

SEMESTER-III

(With effect from 2022-23 admitted batch)

INTRODUCTION:

Basic drug effect, classification of drugs acting on nerves, heart, blood pressure, respiratory system, gastrointestinal system, kidneys, hormones, musculoskeletal system and analgesics etc., Common drugs- effects and side effects and drug interactions.

COURSE OBJECTIVES:

- This course will cover general pharmacology with special emphasis on common drugs used, route of administration, types of formulations, dose and frequency of administration, side effects and toxicity, management of toxic effect, drug interaction, knowledge of chemical and trade names, importance of manufacture and expiry dates and instructions about handling each drug.

SYLLABUS

Theory

S.No	System	Topic	No. of hours
1.	General Pharmacology	Introduction PharmacokineticsPharmaco dynamics Pharmaco vigilance	1 2 2 1
2.	Autonomic Nervous System & Skeletal Muscle Relaxants	Parasympatheticdrugs Sympathetic drugs	5
3.	Autacoids	Prostaglandins,Histamines, antihistamines RAAS	1 1
4.	Cardiovascular System & Blood	Drugs used inAngina. Anti- hypertensives Anticoagulants Thrombolytics Antiplatelets Hematinic	5
5.	Renal System	Diuretics	2
	Total Hours		**20**

PRACTICAL

S.No	Topic	No. of hours
1.	Spotters – Sources of drugs, Dosage forms, drug administration devices, photographs of scientists, adverse drug reactions	3
2.	Case based discussion of Pharmacotherapyor Side effects	7
	Total Hours	**10**

COURSE OUTCOMES:

At the end of course, students should know about

1. Pharmacokinetics and pharmaco dynamic principles of drugs
2. Drugs acting on autonomic nervous system.
3. Drugs modulating autacoids.
4. Drugs used in cardiovascular and hemodynamic disorders.
5. Drugs acting on renal system.

References:

1. Essence of Pharmacology by K.D. Tripathi

2. Pharmacology and Pharmacotherapeutics by Satoskar

3. Textbook of Pharmacology for Allied Sciences – Padmaja Uday Kumar

MIBG2001 – MICROBIOLOGY:

SEMESTER-III

(With effect from 2022-23 admitted batch)

INTRODUCTION:

The goal of teaching Microbiology is to provide understanding of the natural history of infection and diseases in order to deal with the Etiology, pathogenesis, Pathogenecity, laboratory diagnosis, treatment control and prevention of these infections and infectious diseases.

COURSE OBJECTIVES:

1. Plan and interpret Laboratory investigations for diagnosis of infectious diseases and correlate the clinical manifestations with the etiological agent.
2. Perform simple laboratory test which help to arrive at rapid diagnosis.
3. Understand methods of disinfection and sterilization and their application to control and prevention of hospital acquired infections.

SYLLABUS:

Theory – 25hrs & Practical 15 hrs

S.No	Topic	Hours
1.	Introduction of brief history of Microbiology	1
2.	Historical Aspect Relationship of Micro-organism to men	1
3.	Micro-organism in Disease and Health Requirement	1
4.	Uses of common Laboratory equipment Incubator, Hot Air Oven, Water Bath Anaerobic Jar, Centrifuge, Autoclave Microscope	2
5.	Glassware: Description of Glassware, its use, handling and care	1
6.	Sterilization: Definition Classification and General Principal of Sterilization Autoclave – its structure, functioning, control and indicator Definition Types Mode of Action Uses	2
7.	Collection, Transportation, and processing of clinical samples for Microbiological Investigations	1
8.	Antibiotic susceptibility testing	1
9.	Universal precautions	1
10.	Bacteriology: Definition Bacteria – General characteristics of Bacteria Classification	1
11.	Morphology of Bacteria Structure of Cell, Capsule, Flagella, and Spore Growth	2
12.	Physiology of bacteria	1
13.	Staphylococci and Streptococcal infections	2
14.	Meningococci and Gonococci	2
15.	Gram negative bacterial infections	1
16.	Tetanus and gas gangrene	2
17.	Tuberculosis	1
18.	Leprosy	1
19.	H. influenza	1
	Total hours	25

S.No	Practical	Hours
1.	Microscopy	1
2.	Care of glassware and sterilization practices	2
3.	Media pouring	1
4.	Slide preparation	1
5.	Smear preparation	1
6.	Hanging drop	1
7.	Simple staining	2
8.	Gram stain	2
9.	Acid fast stain	2
10.	Disinfection	2
11.	Total hours	15

COURSE OUTCOMES:

- Knowledge about the association of Micro-organisms in Disease and HealthRequirement and the common pathogens of medical importance
- Know about the commonly used Microbiology Laboratory equipment and the cleaningof glassware.
- Know about Collection, Transportation, and processing of clinical samples forMicrobiological Investigations
- Knowledge about Sterilization and Disinfection practices
  - Development of skills of Media pouring
  - Slide and Smear preparation
  - Performing Staining techniques in Microbiology (Simple staining, Gram's staining,AFB staining)

References:

1. Ananthanarayan and Paniker's Textbook of Microbiology – 10th edition
2. Textbook of Microbiology C P Baveja

PATH2001 – PATHOLOGY:

SEMESTER-III

(with effect from 2022-23 admitted batch)

INTRODUCTION:

The goal of teaching Pathology is to provide comprehensive knowledge of the causes and mechanisms of the duties in order to enable to achieve complete understanding of the natural history and clinical manifestation of the diseases.

COURSE OBJECTIVES:

1. To describe the rationale and principles of technical procedures of diagnostic laboratory tests.
2. To know about basic diagnostic tests and correlate with clinical and morphological features of diseases.
3. To learn about commonly used bedside tests on blood, urine and other relevant samples.

SYLLABUS:

Unit –I

- Cell injury and death
- Shock

Unit – II

- Inflammation – Acute and chronic inflammation

Unit – III

- Neoplasia

Unit – IV

- Malignancies – Thyroid, breast, stomach, kidney, prostate, ovary, cervix, endometrium, lung, bone, and soft tissue, skin.

Unit – V

- Hematology –
- Anemia – Iron deficiency anemia, Megaloblastic anemia, Aplastic anemia
- Polycythemia
- Leukemia

COURSE OUTCOMES:

1. At the end, the students shall be able to describe the rationale and principles of technical procedures of diagnostic laboratory tests.
2. Interpret diagnostic laboratory test and correlate with clinical and morphological features of diseases.
3. Perform simple bedside tests on blood, urine and other biological fluid samples.

References:

1. Pathologic basis of disease – Robbins & Cotran 10th edition
2. Pathology – Harshmohan 8th edition
3. Textbook of Pathology for Allied Health Sciences – Ramdas Nayak
4. Textbook on Pathology for DMLT and Paramedical courses – Dr. I.Clemen
5. Essentials of Clinical Pathology – Shirish. M. Kawthalkar 2nd edition

CMED2001 – COMMUNITY MEDICINE:

SEMESTER-III

(With effect from 2022-23 admitted batch)

INTRODUCTION:

The art and science of application of technical knowledge and skills to the delivery of health care to given community, designed in collaboration with related professionals as well as human and social science on one hand and the community on the other hand. Preventive medicine is science and art of preventing disease, prolonging life and promoting physical and mental health and efficacy.

COURSE OBJECTIVES:

- To orient the students with national health programmes
- To learn categories and coding of hospital waste and their disposal methods.
- To know various occupational health hazards and prevention and control of them.
- To make the students aware of tabulation of data, measuring mean and SD

SYLLABUS:(Total 100 marks- (60 theory and 40 practical)

Concepts of disease:

1. Describe natural history of disease with diagram.
2. Determinants and dimensions of health
3. Multifactorial causation of disease
4. Epidemiological triad
5. Explain concepts of prevention and modes of intervention with examples
6. Risk factors and risk groups
7. Iceberg phenomena of disease
8. Screening of diseases.

General epidemiology

1. Describe various tools of measurement in epidemiology (rate, ratio, proportion) and measures of morbidity (incidence, prevalence etc).
2. Classification of epidemiological methods and explain briefly each method

Nutrition

1. Classify foods and nutrients and describe concept of balanced diet.
2. Describe the common vitamin deficiency disorders and their preventive measures.
3. Outline the common nutritional problems in India and their prevention –Protein Energy Malnutrition, Anaemia
4. Describe role of nutritional factors in hypertension, diabetes, cardiovascular disorders and cancer
5. Food sanitation, food fortification, food adulteration
6. Nutritional assessment.

Occupational Health:

1. List out the important occupational hazards and preventive measures.
2. Enumerate benefits under ESI act.

Environment and health: Water borne diseases, methods of water purification at household level, Collection of water samples, transport and bacteriological analysis.

Soft Skills, Health Education& communication - Methods with examples., Principles

Practical:

1. Nutrition spotters
2. Growth chart
3. Occupational health spotters
4. Biostatistics: Types of data, Descriptive statistics,
5. Sensitivity, specificity, Positive predictive value, Negative predictive value of a diagnostic test

COURSE OUTCOMES:

- This course is aimed to make the student to understand national health programs, hospital waste management, occupational health hazards prevention and control of occupational diseases and calculation of measures of central tendency and diagrammatic representation of data.

References:

1. Park's Textbook of Preventive and Social Medicine – 26th edition
2. Statistics and Research: Mahajan

NURS2001 – BASICS OF PATIENT CARE:
SEMETER-III
(With effect from 2022-23 admitted batch)

INTRODUCTION:

This course develops knowledge and skills basic to patient care undergoing radiographic procedures. Topics include patient communication, patient assessment, and safety of patient and healthcare provider in the health care facility. Focus extends to include proper body mechanics and patient positioning to promote comforting for patient. Basics of infection control and methods of medical asepsis were focused on especially when dealing with patients undergoing certain invasive procedures. Finally describe and perform basic procedures like injections, Ryle's tube, Foley's catheterization, taking blood samples, wound dressing etc.

COURSE OBJECTIVES:

1. Students will gain understanding of the fundamental concepts of patients care while in the hospital or undergoing a special procedure.
2. Students will become familiar with some procedures relevant to patient condition
3. Students will Be able to provide certain basic procedures and identify symptoms of altered cognition.
4. Students will be able to relate them to patient overall health and well being.
5. Relationship between certain procedures, radiographic procedure, and patient overall health will be emphasized.

SYLLABUS:

LEARNING OUTCOMES:

The main Intended Learning Outcome (ILO) that is measured throughout this course is "Critical Thinking." This ILO is conceptually defined as "a cognitive process that aims at using the rational and logical examination of ideas for the purposes of understanding, problem solving, and decision-making." Critical thinking will facilitate the process of teaching/ learning, which is originally a change in thinking or behavior.

I- Caring

II- Communication

III- Critical thinking

IV- Therapeutic intervention

V - Leadership

VI- Employer's satisfaction

Unit No.	Learning objectives	Content
I	Describe the principles of care of bedridden patient	Care of a bedridden patient - Patient assessment - Assessing personal concerns of patient - Assessing physiological needs - Assessing current physical status
II	Describe the basicprinciples of communication	Communication with patients and attendants - Communication skills - Communication with patients - Special circumstances in communication - Patient education - Communication with patient's families - Dealing with death and loss
III	Describe and demonstrate techniques to maintain patient hygiene	Patient hygiene - Cycle of infection - Body's defence against infection - Infectious diseases - Maintaining hygiene
IV	Describe and practice infection control measures in the ward andICU	Infection control measures in the ward and ICU - Microorganisms - Cycle of infection - Hand Washing - Preventing disease transmission
V	Describe and record vital data and basic clinicalparameters	Vital data and basic clinical parameters -Assessment of body temperature: sites,equipment's and techniques, special considerations - Assessment of pulse: Sites, location,equipment's and technique, special consideration - Assessment of respirations: technique,special Consideration Recording of vital signs
VI	Describe and demonstrate how to monitor patients	Patients monitoring Assessing personal concerns of patient - Assessing physiological needs - History taking - Physical assessment
VII	Describe the principles of patient safety	Patient safety - Patient transfer - Restraints and immobilization - Accidents and incident reports - Fire hazards - Other common hazards

VIII	Describe and demonstrate the principles of cleaning, disinfection and sterilization in the hospital wards/ ICU	Principles of cleaning, disinfection and sterilization in the hospital wards/ ICU - Hand washing: simple, hand antisepsis and surgical antisepsis (scrub) - Isolation: source and protective -Sterile packs - Surgical scrubbing - Gowning and gloving -Sterilization - Fumigation - Autoclaving
IX	Describe the common routesfor drug administration	Common routes of drug administration and precautions to be taken -Assess the patient's condition - Recognize different definitions associated with pharmacology. - Recognize various classifications of drugs. - Identify the ten rights of drug administration. - List out common routes and methods of drug administration - Perform venipuncture using appropriate universal Precautions
X	Describe and perform basicprocedures	Basic procedures like -Injections, -Ryle's tube, -Foley's catheterization, -Taking blood samples, -Wound dressing,
XI	Describe and demonstrate documentation ofpatient related data	Documentation of patient related data in the case sheet records. -History taking data sheet - Documentation: Purpose of Recording and reporting, Communication within the Health Care Team, - Types of records; ward records, medical/nursing records, Common Record-keeping forms, - Computerized documentation
XII	Describe and demonstrate useof basic hospital equipment	Use of basic hospital equipment

COURSE OUTCOMES:

1. Perform basic infection control practices in the Healthcare setting.
2. Use effective skills to draw blood and accurately label tubes.
3. Perform basic procedures using advanced technique and interpretation.
4. Perform basic patient care skills.
5. Communicate with a diverse patient population using written and oral communication and listening skills in interactions.

References:

1. Ehrlich, R., A., McCloskey, E. D., & Daly, J., A. (2004). *Patient Care in Radiography with an Introduction to Medical Imaging.* Mosby: An Affiliate of Elsevier. Sixth edition.

2. Adler, A., M., & Carlton, R., R. (2007). *Introduction to Radiologic Sciences and Patient Care*. Saunders: Elsevier. Fourth edition

3. Torres, L.,S. (1989). *Basic Medical Techniques and Patient Care for Radiologic Technologists*. J. B.Lippincott Company: Philadelphia. Third Edition.

ANST2001 -ANAESTHESIA TECHNOLOGY – I:

SEMESTER-III

(With effect from 2022-23 admitted batch)

INTRODUCTION:

B.Sc. Anesthesia technology is a course designed to provide in depth knowledge and impart skills for working as an assistant to the consultant anesthesiologist as well as to assist in preparation of operation theatre before and during on elective or emergency surgery. This course introduces the basic anatomy and physiology of various systems in relation to anesthesia, commonly used drugs and anesthesia equipment.

COURSE OBJECTIVES:

- To introduce students with Anatomy and physiology of Respiratory system cardio vascular system and nervous system.
- To learn various inhalational anesthetic drugs
- To know about equipment used in the operation theatre.
- To learn about procedures like IV cannulation and catheterization

SYLLABUS:

1. **History of Anesthesia**
2. **Respiratory system:** Anatomy of respiratory track

   Larynx movement of vocal cord, cord palsies, tracheal and bronchial anatomy.
   Bronchospasm
   Physiology of breathing, work of breathing, Broncho pulmonary
   segment'sPulmonary function tests.
3. **Cardiovascular system:**

   Anatomy of heart, its chambers
   Cardiac output determinants
   ECG
   Hypotension, hypertension, Cardio pulmonary resuscitation, Myocardial infarction.
4. **Nervous System:**

   Anatomy of brain and spinal cord, Cerebra spinal fluid, raised intracranial pressure-methods of reduction.
5. IV fluids, electrolytes.
6. Blood transfusion.
7. Drugs:

a. Antisialogogues
b. Sedatives
c. Narcotics
d. H2 blockers
e. Local anesthetics
f. Emergency drugs
g. Cardiovascular drugs.

8. **Medical gas supply**- Compressed gas cylinders, color coding, Cylinder valves, pin index, Gas piping system, Recommendations for GAS PIPING SYSTEM, ALARMS AND SAFETY DEVICES, Liquid Oxygen
9. **Anesthesia equipment:**
   Endotracheal tubes, Laryngeal mask airways, Airways.
10. **Monitoring- ECG, Pulse oximetry, capnography.**
11. **Humidification: role and need, equipment.**
12. **Procedures:** Intravenous cannulation, IV fluid preparation**.**

COURSE OUTCOMES:

At the end of this course the learner will be able to

1. Get familiarized with commonly used anesthetic drugs.
2. Understand the working of basic anesthesia equipment
3. Perform procedures like IV cannulation and catheterization.

References:

a) Lees synopsis of anesthesia- 14th edition
b) Morgan and Mikhail – clinical anesthesia – 6th edition
c) Equipment drugs and waveform in Anesthesia – practical manual – Kumar P- 2nd edition
d) Anesthesia manual for operation theatre technicians – A A Ahanatha pillai – 1st edition
e) Short textbook of anesthesia – Ajay Yadav – 6th edition

SEMESTER: IV

S. No	Course Code	Course Title	Course Category
1	PHCG2011	PHARMACOLOGY - II	C
2	MIBG2011	MICROBIOLOGY - II	C
3	PATH2011	PATHOLOGY - II	C
4	CMED2011	COMMUNITY MEDICINE - IV	C
5	ANST2011	ANAESTHESIA TECHNOLOGY - II	C

PHCG2011 – PHARMACOLOGY:

SEMESTER-IV

(with effect from 2022-23 admitted batch)

INTRODUCTION:

Basic drug effect, classification of drugs acting on nerves, heart, blood pressure, respiratory system, gastrointestinal system, kidneys, hormones, musculoskeletal system and analgesics etc., Common drugs- effects and side effects and drug interactions.

COURSE OBJECTIVES:

- This course will cover general pharmacology with special emphasis on common drugs used, route of administration, types of formulations, dose and frequency of administration, side effects toxicity, management of toxic effect, drug interaction, knowledge of chemical and trade names, importance of manufacture and expiry dates and instructions about handling each drug.

SYLLABUS:

Theory – 20hrs & Practical 10 hrs

Theory

S. No	System	Topic	No. of hours
1.	Central Nervous System	Sedatives Antiepileptics Drugs used in Parkinsonism. General AnestheticsLocal Anaesthetics Opioids NSAIDs	1 1 1 2 1 1 1
2.	Respiratory System	Drugs used in Bronchial. Asthma	1
3.	Gastrointestinal System	Anti Emetics Drugs for peptic ulcer	1 1
4.	Endocrine System	Antidiabetic drugs Antithyroid drugs Drugs acting on Uterus	1 1 1
5.	Chemotherapy	Antibiotics Antiviral drugs	5 1
	Total Hours		**20**

Practical

S. No	Topic	No. of hours
1.	Spotters – Sources of drugs, Dosage forms, drug administration devices, photographs of scientists, adverse drug reactions	3
2.	Case based discussion of Pharmacotherapy or Side effects	7
	Total Hours	**10**

COURSE OUTCOMES:

At the end of course, students should know about

1. Drugs acting on central nervous system.
2. Drugs used in treatment of bronchial asthma.
3. Drugs used as anti-emetics and in peptic ulcer diseases.
4. Drugs used in the treatment various endocrine disorders.
5. Chemotherapeutic drugs.

REFERENCES:

1. Essence of Pharmacology by K.D. Tripathi
2. Pharmacology and Pharmacotherapeutics by Satoskar
3. Textbook of Pharmacology for Allied Sciences – Padmaja Udaykumar
4. Pharmacology for Nurses Tara V.Shanbhag, 2nd edition

MIBG2011 – MICROBIOLOGY:

SEMESTER-IV

(with effect from 2022-23 admitted batch)

INTRODUCTION:

The goal of teaching Microbiology is to provide an understanding of the natural history of infection and diseases in order to deal with the Etiology, pathogenesis, Pathogenicity, laboratory diagnosis, treatment control and prevention of these infections and infectious diseases.

COURSE OBJECTIVES:

1. Plan and interpret Laboratory investigations for diagnosis of infectious diseases and correlate the clinical manifestations with the etiological agent.
2. Perform simple laboratory test which help to arrive at rapid diagnosis.
3. Understand methods of disinfection and sterilization and their application to control and prevention of hospital acquired infections.

SYLLABUS:

S.No.	Topic	Hours
1.	Immunology: Antigens and antibodies	1
2.	Antigen and antibody reactions	1
3.	Hypersensitivity	1
4.	Immunohematology	1
5.	Autoimmunity	1
6.	Virology: Introduction to viruses and lab diagnosis of viral infections	1
7.	Common viral infections	1
8.	HIV	1
9.	Hepatitis viruses	1
10.	Dengue virus	1
11.	Rabies virus	1
12.	Parasitology: Definition General Characteristics ofParasite Classification of Parasite Mode of transmission	2
13.	Entamoeba histolytica and protozoan diarrhealpathogens	1
14.	Malarial parasites	1
15.	Helminths	1
16.	Cysticercosis	1
17.	Mycology: Common mycological infections and labdiagnosis	1
18.	Candida	1
19.	Superficial fungal infections	1
20.	Systemic mycosis, cryptococcus	1
23.	Opportunistic mycoses	1
22.	Infection control and prevention	1
23.	Good laboratory practices	1
24.	Safe infusion practices	1
25.	Safety in laboratory	1
	Total Hours	25

Theory – 25hrs & Practical 15hrs

S.No	Practical	Hours
1.	Microscopy	1
2.	Specimen collection and Handling	1
3.	Sputum examination	1
4.	Stool examination	2
5.	Slide preparation staining and examination	2
6.	Serology	1
7.	Virology	1
8.	ELISA	1
9.	ICT Tests	1
10.	Gram staining	2
11.	Acid fast staining	2
12.	Total hours	15

COURSE OUTCOMES:

- Knowledge about the Basics of Immunology
- Know about the Common viral infections and their Specimen collection and Handling
- Know about the Common parasitic infections and their Specimen collection and Handling
- Know about the Common fungal infections and their Specimen collection and Handling.
- Knowledge about Good laboratory practices, Safe infusion practices and Safety inlaboratory
- Knowledge about the commonly performed serological tests in the diagnosis of variousdiseases.
- Knowledge about the commonly performed Rapid diagnostic tests in the diagnosis of variousdiseases.

REFERENCES:

1. Ananthanarayan and Paniker's Textbook of Microbiology – 10th edition
2. Textbook of Microbiology C P Baveja

PATH2011 – PATHOLOGY:

SEMESTER-IV

(With effect from 2022-23 admitted batch)

INTRODUCTION:

The goal of teaching Pathology is to provide comprehensive knowledge of the causes and mechanisms of the duties to enable to achieve complete understanding of the natural history and clinical manifestation of the diseases.

COURSE OBJECTIVES:

1. To describe the rationale and principles of technical procedures of diagnostic laboratory tests.
2. To know about diseases of Haematology, GI tract respiratory system, cardiovascular system and endocrinology.

SYLLABUS:

Unit –I

- Hematology – Lymphoma
- Kidney - Glomerulonephritis, CKD, Tumors

Unit – II

- Thyroid – Goitre, Tumors
- Heart – Myocardial Infarction, Rheumatic Fever, Hypertension

Unit – III

- Infections – Abscess, TB, HIV/AIDS, Amebiasis, Malaria, Meningitis, UTI

Unit – IV

- Lung – Asthma, COPD
- Liver - Hepatitis

Unit – V

- GIT – Peptic Ulcer Disease, Gastritis

COURSE OUTCOMES:

1. To impart knowledge on various common infectious diseases with its lab diagnosis and Hematological malignancies.
2. Make student familiar with predisposing factors, etiopathogenesis, morphology and complications of common diseases of kidney, lung, liver, git, heart and thyroid.
3. To demonstrate few special staining techniques and body fluid analysis.
4. To acquire knowledge about handling of tissue specimens, histopathology techniques, automated processors and few specimens and slides in histopathology

References:

6. Pathologic basis of disease – Robbins & Cotran 10th edition
3. Pathology – Harshmohan 8th edition
4. Textbook of Pathology for Allied Health Sciences – Ramdas Nayak
5. Textbook on Pathology for DMLT and Paramedical courses – Dr. I.Clemen
6. Essentials of Clinical Pathology – Shirish. M. Kawthalkar 2nd edition

CMED2011 - COMMUNITY MEDICINE:
SEMESTER-IV

(with effect from 2022-23 admitted batch)

INTRODUCTION:

The art and science of application of technical knowledge and skills to the delivery of health care to given community, designed in collaboration with related professionals as well as human and social science on one hand and the community on the other hand. Preventive medicine is science and art of preventing disease, prolonging life and promoting physical and mental health and efficacy.

COURSE OBJECTIVES:

- To orient the students with levels of health care, primary health centre and community health centre.
- To understand about ethics in professionalism.
- To know acts like PCPNDT, Organ transplantation etc.
- To make the students aware of tabulation of data, measuring mean and SD

SYLLABUS: (Total 100 marks- (60 theory and 40 practical)

Infectious diseases epidemiology:

1. Define terms- infection, contamination, infectious disease, contagious disease, communicable disease, epidemic, endemic, sporadic, pandemic, zoonotic, nosocomial, iatrogenic, eradication, control, surveillance, incubation period, isolation, quarantine.
2. Dynamics of disease transmission in terms of chain of infection, direct &indirect transmission, mode of disease transmission.
3. Methods of control with examples
3. Immunization, Types of immunity, types of vaccines, immunization schedule cold chain, AEFI
5. Disinfection, properties of ideal disinfectant, types, examples, recommended disinfecting procedures. Disinfection and sterilization at health care centre level.
6. Epidemiology of Communicable diseases: TB, HIV, Tetanus, Rabies, vector borne diseases (Malaria, Dengue), food poisoning, Acute Diarrhoea, Acute Respiratory Infections

7 non-communicable diseases: Risk factors for NCDs, Epidemiology, preventive measures for Hypertension, Diabetes, Cardiovascular Diseases, obesity, accidents.

8. Epidemiology and preventive measures of common cancers
9. National Health Programs:
    A) National Tuberculosis Elimination Program
    B) National Vector Borne Disease Control Program
    C) National AIDS Control Program

D) RCH , nutritional programs, UIP,

10. Primary health care- definition, principles of primary health care
13. Primary health centre- functions, staff pattern.
14. Biomedical waste management: Biomedical waste – Sources, hazards, categories &coding, disposal
15. Principles of medical ethics and common ethical issues, medical negligence, Consumer Protection Act
16. Demography and Family planning:

Factors influencing population growth, Birth rate, death rate.

Methods of contraception –Types, mechanism of action, advantages, disadvantages, side effects

Sources of health information -Census, SRS, Registration of births and deaths.

Practical:

1. Hand washing technique
2. Communication skill – Gather, ICTC-Provider initiated, Client initiated.
3. Biomedical waste management spotters
4. Family planning spotters.

COURSE OUTCOMES:

After completing this course, the student should be able to

1. Understand levels of health care and elements & principles of primary health care
2. Know about functions of PHC and CHC
3. Understand and apply measures of central tendency and dispersion.
4. Understand and apply statistical tests related to diagnosis.

References:

1. Park's Textbook of Preventive and Social Medicine – latest edition
2. Statistics and Research: Mahajan 9th edition
3. Sunderlal textbook of preventive and social medicine 6th edition
4. Suryakanha Recent advances in community medicine 6th edition

ANST2011 - ANAESTHESIA TECHNOLOGY:
SEMESTER-IV

(with effect from 2022-23 admitted batch)

INTRODUCTION:

B.Sc. Anaesthesia technology is a course designed to provide in-depth knowledge and impart skills for working as an assistant to the consultant anaesthesiologist as well as to assist in the preparation of operation theatre before and during elective or emergency surgery. The course introduces pre-anaesthesia check-ups before surgery, basic knowledge regarding various equipment used in the operation theatre and sterilization procedures of operation theater.

COURSE OBJECTIVE:

- To introduce students with pre anaesthesia checkup ASA Standardization
- To learn about basic knowledge regarding Anaesthesia machine breathing systems vaporizers and ambu bag.
- To know about drugs used in operation theatre.
- To learn about fumigation procedures in OT.

SYLLABUS:

LEARNING OUTCOMES:

1. Able to assist in Pre-Anaesthetic check-up and ASA standardization.
2. Basic knowledge of anaesthesia machine and various aids used in the conduct of anaesthesia
3. They will know about all pharmacological agents used in the conduct of anesthesia.

    1. Pre anesthesia check-up, ASA Standardization.: Consent, pre anesthesia orders, general physical assessment, and investigations.
    2. Anesthesia machine- basic knowledge.
    3. Breathing Systems
    4. Soda lime- composition, indicators.
    5. Vaporizers – types, Hazards, maintenance, filling and draining, etc.
    6. Oxygen delivery devices, Oxygen toxicity.
    7. Suction apparatus.
    8. Ambu bag
    9. Ventilators- basics.
    10. Drugs-
    a. Induction agents
    b. Inhalational agents

c. Muscle relaxants
d. Reversal agents
e. Bronchodilators
f. Diuretics
g. Oxytocin, methergin
h. Miscellaneous- Antibiotics, Heparin, Insulin, analgesics and NSAIDs.

11. OT cleaning, fumigation.
12. Autoclave, instrument sterilization.
13. Regional anaesthesia- spinal and epidural anesthesia
14. Procedures: Preparation for Central venous line, arterial line.

COURSE OUTCOMES:

1. Able to understand how to assess a patient posted for surgery.
2. Acquire knowledge regarding the various equipment and pharmacological agents used in the conduct of anaesthesia

REFERENCES:

1. Lees synopsis of anesthesia- 14th edition
2. Morgan and Mikhail – clinical anesthesia – 6th edition
3. Equipment drugs and waveform in Anesthesia – practical manual – Kumar P- 2nd edition
4. Anesthesia manual for operation theatre technicians – A A Ahanatha pillai – 1st edition
5. Short textbook of anesthesia – Ajay Yadav – 6th edition

ANAESTHESIA TECHNOLOGY
SEMESTER V

Anaesthetic Techniques in Regional & General Anaesthesia Including Complications:

Pre - Anaesthetic Orders

Patient - Informed consent
- Npo
- Premedication – advantages, drugs used.
- Special instructions – if any

Machine - Checking the machine.
- 02, N2O, suction apparatus Laryngoscopes, et tubes, airways
- Things for IV accessibility
- Other monitoring systems

Drugs - Emergency drugs
- Anaesthetic drugs

Intra-operative Management

1. Confirm the identification of the patient.
2. Monitoring – minimum (ISA standards)
3. Noninvasive & Invasive monitoring
4. Induction – drugs used.
5. Endotracheal intubation
6. Maintenance of anaesthesia
7. Positioning of the patient
8. Blood/Fluid & electrolyte balance
9. Reversal from anaesthesia – drugs used.
10. Transferring the patient
11. Recovery room - set up.
    i. things needed.
    ii. problems
12. Post operative complications & management.

Regional Anaesthesia

i. Introduction
ii. Indication
iii. Contraindication
iv. Check list
v. Procedure

vi. Complications

vii. Management

viii. Spinal

ix. Epidural

x. Nerve Block

Medical Diseases Influencing choice of Anesthesia:

1. Ischemic Heart Disease Risk factors: Medications Acute MI

   Anaesthesia for IHD cases. Post op management
2. Valvular Heart Disease

   Mitral stenosis: Anaesthetic problems

   Mitral Regurgitation: Aortic stenosis. Aortic regurgitation.
3. Congenital Heart Disease

ASD : VSD : Tetralogy of Fallot, PDA

4. Hypertension: Drugs Anaesthesia for hypertensives

Hypertensive crises. Complications

5. Pericardial Disease: Pericardial Effusion; Cardiac Tamponade
6. Aneurysm Of Aorta; Types, Treatment
7. Chronic Obstructive Pulmonary Disease. Bronchiectasis.
8. Acute Respiratory Failure.
9. Diseases of CNS – Cerebral Edema& Its Management Ocular Trauma.
10. Diseases of Liver And Biliary Tract Liver Functions. Liver Function Tests, Hepatitis Jaundice, Types; Cirrhosis; Hepatorenal Syndrome
11. Diseases of Git :Peptic Ulcer : GI Bleeding OesophagealVarices
12. Renal Disease Functions of Kidney Function Tests Renal Failure Anaesthesia for renal failure patients.
13. Water Electrolyte & Acid Base Disturbances Distribution of Body Water, Dehydration Hyperkalemia, Hypokalemia. Sodium, Calcium Acid Base Disturbances – Types And Treatment.
14. Endocrine Disease : Diabetes Mellitus ,Thyroid Dysfunction – Thyrotoxicosis, Hypothyroidism Adrenal Gland Dysfunction, Diabetes Insipidus.
15. Obesity
16. Anaemia.

Complications in Anaesthesia :

1. **Minor Sequelae**
    - Nausea & vomiting
    - Sore throat
    - Laryngeal granuloma
    - Neurological complications
    - Awareness
    - Vascular complications
    - Trauma to teeth
    - Headache
    - Backache
    - Ocular complications.
    - Auditory complications
2. **Major Catastrophes**
    - Mortality
    - Causes of death
    - Cerebral damage
    - Prevention.

Intensive Care

- Monitoring and diagnostic procedures in ICU
- Central venous access
- ECG monitoring
- Invasive hemodynamic monitoring

General care of patient in ICU

- Eye, GI tract
- Bladder, skin
- Case of mechanically ventilated patient
- Tracheostomy, humidification
- Vascular lines – arterial, venous line
- Radiography
- Physiotherapy – chest physiotherapy

Anesthetic consideration in

a) Endocrine disease: Pheochromocytoma

b) Renal disease:Urolithiasis, TURP

ANAESTHESIA TECHNOLOGY
Sixth Semester:

Anaesthesia for specialities - I

Introduction: Importance of different specialities of anaesthesia:

Cardiac Anaesthesia:

1. NYHA classification
2. Arrhythmias
3. Angina
4. Dyspnea
5. Special investigations
    - Echocardiography
    - Angiography
    - Premedication
    - Setting up of monitoring system
    - Monitoring – invasive and non-invasive
    - Getting ready for the case
    - Induction of cardiac patient, precautions to be taken
    - Cardiopulmonary bypass
    - Weaning of EPB
    - Transferring the patient to ICU
    - Care to be taken
    - ICU management

II. Thoracic Anaesthesia:

1. Pulmonary function tests: Bedside and Laboratory spirometry
2. Preoperative preparation
3. Premedication
4. Pre anaesthetic evaluation
5. Checklist
6. Induction/intubation
7. Double lumen tubes
8. Lop-monitoring

9. Pain management
10. Extubation
11. ICU management
12. Chest tube management

III. Neuro Anaesthesia :

1. Glasgow coma scale
2. Pre anaesthetic evaluation
3. Premedication
4. Special investigation – i. CT , ii. Angiography, iii. MRI
5. Check list
6. Induction of a patient armored endo trachea tube.
7. Positioning in neuro surgery
8. I.C.P monitoring
9. Air embolism
10. Reversal of the patient
11. Transferring to I.C.U / ward

Anaesthesia For Specialities– II

I. Geriatric Anaesthesia:

1. Physiological changes in ageing
2. Diseases of aging
3. Pre anaesthetic evaluation
4. Nervous system
5. Geriatric pharmacodynamics/pharmacokinetics
6. Postoperative nervous system dysfunction
7. Anaesthesia for Trauma & Shock
8. Resuscitation
9. Preop investigation/assessment
10. Circulatory management
11. Management of anaesthesia
12. Rapid sequence induction
13. Lop monitoring

14. Other problems

II. Obstetric Anaesthesia:

1. Differences between a pregnant and a normal lady
2. Risks for anaesthesia
3. Precautions to be taken
4. Check list
5. Regional vs general anaesthesia
6. Induction / maintenance
7. Resuscitation of the new born, APGAR score
8. Reversal and extubation
9. Emergencies – Manual removal of placenta
    - A.P.H and P.P.H
    - Ruptured uterus
    - Ectopic pregnancy

III. Pediatric Anaesthesia:

1. Theatre setting
2. Check list
3. Pac
4. Premedication – modes
5. Induction
6. Intubations-securing the ett
7. Lop-management monitoring
8. Reversal &extubation – problems
9. Transferring/IC management
10. Pain management

Regional, Daycare, Outside the OR :

I. Regional Anaesthesia :

1. History
2. Introduction
3. Contraindication
4. Check list

5. Procedure
6. Complications
7. Subarachnoid block
8. Epidural block
9. Nerve blocks

II. Day Care Anaesthesia :

1. Special features
2. Set up
3. Advantages/Disadvantages
4. Complications
5. Future

Anaesthesia Outside the O.R :

6. Situations
7. Cath lab
8. Radiology and Imaging Science Technology natural calamities
9. E.C.T
10. Features
11. Shortcomings and Complication

LIST OF BOOKS
DEPARTMENT OF ANAESTHESIA

Reference Books:

1. Morgan and Mikhail's Clinical Anesthesiology
2. Dorsch and Dorsch's Understanding Anesthesia Equipment
3. Wylie Churchill-Davidson's A Practice of Anesthesia
4. Drugs & Equipment in Anesthetic Practice by A.K Paul
5. Step by Step Regional Anesthesia by A.K Paul
6. Essentials of Anaesthesiology by A.K Paul