

MOHAN BABU UNIVERSITY

Sree Sainath Nagar, Tirupati – 517 102



MBU
MOHAN BABU
UNIVERSITY

DREAM. BELIEVE. ACHIEVE

SCHOOL OF PARAMEDICAL, ALLIED AND HEALTH CARE SCIENCES

B.Sc. Respiratory Therapy

CURRICULUM AND SYLLABUS
(From 2022-23 Admitted Batches)

FULLY FLEXIBLE CHOICE BASED CREDIT SYSTEM (FFCBCS)



MBU MOHAN BABU UNIVERSITY

Vision

To be a globally respected institution with an innovative and entrepreneurial culture that offers transformative education to advance sustainability and societal good.

Mission

- ❖ Develop industry-focused professionals with a global perspective.
- ❖ Offer academic programs that provide transformative learning experience founded on the spirit of curiosity, innovation, and integrity.
- ❖ Create confluence of research, innovation, and ideation to bring about sustainable and socially relevant enterprises.
- ❖ Uphold high standards of professional ethics leading to harmonious relationship with environment and society.

SCHOOL OF PARAMEDICAL ALLIED AND HEALTH CARE SCIENCES

Vision

To be the global center of excellence for paramedical and allied health science education, research, innovation, incubation, consultancy and public service.

Mission

- ❖ Inspire the experts of paramedical and allied health sciences of tomorrow to take on the public health challenges of our society.
- ❖ Train the students with fundamental knowledge of paramedical and allied health sciences, skills set and positive attitude for creating innovative solutions to serve industry and community through congenial learning environment with contemporary academic programs, state of the art infrastructure facilities and community health programs.
- ❖ Facilitate budding paramedical and allied health science experts with the best research-innovation-incubation-start-up ecosystem to realize their fullest potential for sustainable businesses.
- ❖ Encourage faculty and staff to excel in their respective domains of expertise and demonstrate the best of their abilities by way of continuing education, research support and consultancy.

B.Sc. Respiratory Therapy

Program Outcomes

On successful completion of the Programs, the graduates of B.Sc. Respiratory Therapy will be able to:

- PO1. Knowledge:** Study and apply concepts, theories, and practices of health care system to gain fundamental knowledge.
- PO2. Analysis:** To identify, analyze and evaluate various experiences and perspectives using knowledge of paramedical & Allied Health sciences for substantiated conclusions.
- PO3. Development;** Individual or teamwork skills to support shared goals with the interdisciplinary healthcare team to improve societal health
- PO4. Tools & Techniques:** To create, select, and apply appropriate techniques, resources and modern tools with an understanding of the limitations in Health care system.
- PO5. Environment and Sustainability:** Understand the impact of Health care professionals in environmental contexts and demonstrate the knowledge for sustainable development.
- PO6. Ethics and Society:** Apply the ethical principles of health care practices for sustainable development of society
- PO7. Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, to manage projects and finance in multidisciplinary settings.
- PO8. Effective Communication:** Communicate effectively on Paramedical & allied Health care activities with the treating patient, community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO9. Entrepreneurship:** Entrepreneur and leadership skills to practice independently as well as in collaboration with the interdisciplinary healthcare team.
- PO10. Life-long learning:** Adapt to the changes and advancements in technology and engage in independent and lifelong learning

B.Sc. Respiratory Therapy

Basket Wise - Credit Distribution

S. No.	Basket	Credits (Min. - Max.)
1	SCHOOL CORE	60-80
2	PROGRAM CORE	80-110
3	PROGRAM ELECTIVE	10-36
4	UNIVERSITY ELECTIVE	3-12
TOTAL CREDITS		Min. 195

School Core (60-80 Credits)

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22DF102001	Medical Terminology and Record Keeping	4	1	2	-	6	-
22DF102002	Introduction to Quality and Patient Safety	4	1	2	-	6	-
22CS102402	Basic Computers and Information Sciences	3	-	2	-	4	-
22DF105001	Biomedical Waste Management	-	1	2	-	2	-
22LG101406	Professional English	2	-	-	-	2	-
22MG101006	Principles of Management	3	-	-	-	3	-
22PT102006	Human Anatomy	4	1	2	-	6	-
22PT102007	Human Physiology	4	1	2	-	6	-
22PT101004	National Health Care Delivery System	2	-	-	-	2	-
22DF102008	Clinical Microbiology	3	-	2	-	4	-
22DF102009	Pathology	3	-	2	-	4	-
22CC111001	Clinical Posting-I	-	-	-	-	4	-
22CC111002	Clinical Posting-II	-	-	-	-	4	-
22PT102008	Human Anatomy-I	4	1	2	-	6	-
22PT102009	Human Physiology-I	4	1	2	-	6	-
22CC101019	National Health Care Delivery System and Medical Records Management	4	-	-	-	4	-
22DF102025	Research Methodology and Biostatistics	3	-	2	-	4	-

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
22PT102010	Human Anatomy-II	4	1	2	-	6	
22PT102011	Human Physiology-II	4	-	2	-	5	
22CC111003	Clinical Posting-III	-	-	-	-	4	
22CC111004	Clinical Posting-IV	-	-	-	-	4	
22DF101001	Research Methodology and Biostatistics for Health Professionals	4	-	-	-	4	-
22BS101036M	MIND AND BEHAVIOUR	3	-	-	-	3	
Mandatory Courses (Min. 4 Credits to be earned, Earned Credits will not be considered for CGPA)							
22CE107601	Environmental Science	2	-	-	-	2	-
22LG101402	Telugu	2	-	-	-	2	-
22LG101404	Sanskrit	2	-	-	-	2	-

Program Core (80-110 Credits)

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22DF102003	Medical Biochemistry	3	-	2	-	4	-
22RT101001	Fundamentals of Medical Physics and Electronics	3	-	-	-	3	-
22CC101003	Instrumentation in Respiratory Technology	3	-	-	-	3	-
22CC102001	Diagnostic and Treatment of Cardio respiratory Diseases	3	-	2	-	4	-
22CC101007	Basics of Chest Radiological Technique and Interpretation	3	-	-	-	3	-
22CC101006	Basic Pharmacology and Drug Administration	3	-	-	-	3	-
22CC102011	Applied Pathology	5	-	2	-	6	-
22CC102012	Emergency Medicine and Cardiac Life Support- I	3	-	2	-	4	-
22CC102013	Sterilization and Infection Control	3	-	2	-	4	-
22CC102014	Cardiopulmonary Rehabilitation	4	-	2	-	5	-
22CC101016	Polysomnography-I	3	-	-	-	3	-
22CC101015	Medical Psychology	3	-	-	-	3	-
22CC102021	Education IN OPD and IP	3	-	2	-	4	-
22CC111005	Clinical Internship-I	-	-	-	-	20	-
22CC111006	Clinical Internship-II	-	-	-	-	20	Clinical Internship-I
22CC102019	Pulmonary Bronchoprovocation	3	-	2	-	4	-
22CC102065	Cardiopulmonary Assessment and Clinical Intervention	4	-	2	-	5	-
22CC101038	Respiratory Pharmacology and Therapeutics	4	-	-	-	4	-
22CC102072	Advanced Emergency Airway and Respiratory Care Procedures	5	-	2	-	6	-
22CC101041	Essentials of Global Health	3	-	-	-	3	-

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
22CC102069	Dynamic Respiratory Function Assessment Techniques	3	2	2	-	6	

PROGRAM ELECTIVE (10-36 Credits)

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22CC102022	Smoking Cessation Program	3	-	2	-	4	-
22CC102033	Respiratory Care in Sports and Physiology	3	-	2	-	4	-
22CC102018	Pulmonary Interpretation Case Studies	3	-	2	-	4	-
22CC101020	Polysomnography-II	4	-	-	-	4	-
22CC102017	Emergency Medicine and Cardiac Life Support- II	3	-	2	-	4	-
22CC102023	Neonatal and Pediatric Respiratory Care	4	-	2	-	5	-
22CC102032	Respiratory Action Plan for Optimal Care	3	-	2	-	4	-
22CC101040	Sports Nutrition and Respiratory Training	2	-	-	-	2	-

UNIVERSITY ELECTIVE (3-12 Credits)

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22EC101701	AI in Healthcare	3	-	-	-	3	-
22DS101701	Bioinformatics	3	-	-	-	3	-
22SS101701	Constitution of India	3	-	-	-	3	-
22CM101702	Cost Accounting and Financial Management	3	-	-	-	3	-
22MG101701	Entrepreneurship for Micro, Small and Medium Enterprises	3	-	-	-	3	-
22CB101703	Forensic Science	3	-	-	-	3	-
22SS101704	Indian History	3	-	-	-	3	-
22SS101705	Indian Tradition and Culture	3	-	-	-	3	-
22ME101704	Managing Innovation and Entrepreneurship	3	-	-	-	3	-
22LG201701	Personality Development	3	-	-	-	3	-
22CS101702	Web Design Fundamentals	3	-	-	-	3	-
22SS101706	Women Empowerment	3	-	-	-	3	-

Note:

1. If any student has chosen a course or equivalent course from the above list in their regular curriculum then, he/she is not eligible to opt the same course/s under University Elective.
2. The student can choose courses from other disciplines offered across the schools of MBU satisfying the pre-requisite other than the above list.

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22DF102001	MEDICAL TERMINOLOGY AND RECORD KEEPING	4	1	2	-	6
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on word roots, prefixes, suffixes basic medical terms, medical abbreviations to human body systems and record-keeping methods in health care and medical ethics and law.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate basic knowledge on roots, prefixes and suffixes to form medical terms in health care system
- CO2.** Use procedural terms and medical abbreviations to human body for improving communication and reporting between health care providers effectively
- CO3.** Apply advanced tools and techniques to maintain patient health details in medical system.
- CO4.** Design a standard protocol by applying medical law and ethics apply to avoid sentinel events.
- CO5.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	3	1	-	-	-
CO2	3	1	-	-	-	-	-	-	3	-
CO3	3	1	3	-	-	-	-	-	-	1
CO4	2	1								1
CO5	3	-	-	-	-	3	1	-	-	-
Course Correlation Mapping	3	1	3	-	-	3	1	-	3	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION OF MEDICAL TERMINOLOGY (12 Periods)

Derivation of medical terms, define word roots, prefixes, and suffixes, Conventions for combined morphemes and the formation of plurals, Basic medical terms, Form medical terms utilizing roots, suffixes, prefixes, and combining roots.

Module 2: INTRODUCTION OF MEDICAL TERMINOLOGY-1 (12 Periods)

Interpret basic medical abbreviations/symbols, utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system and musculoskeletal system

Module 3: INTRODUCTION OF MEDICAL TERMINOLOGY-2 (12 Periods)

Interpret basic medical abbreviations/symbols, utilize diagnostic, surgical, and procedural terms and abbreviations related to the Respiratory system, cardiovascular system, nervous system, and endocrine system.

Module 4: RECORD KEEPING (12 Periods)

Standard procedures in record keeping, interpret medical orders/reports, Data entry and management on electronic health record system, Advanced tools to maintain records in Health care.

Module 5: MEDICAL ETHICS AND LAW (12 Periods)

Medical ethics – Definition, Basic principles of medical ethics – Confidentiality, Malpractice and negligence – Rational and irrational drug therapy, Autonomy and informed consent – Right of patients, Care of the terminally ill- Euthanasia, Development of a standardized protocol to avoid sentinel events

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Demonstration of role of paramedic in health care system
2. Demonstration of Central Sterile Supply Department (CSSD)
3. Observation and understanding of incinerator complex
4. Demonstration of Immunization section
5. Demonstration of working respective department in health care.

RESOURCES

TEXT BOOKS:

1. Adam Brown, Medical Terminology Easy Guide for Beginners, CreateSpace Independent Publishing Platform, Edition 1, 2016.
2. GD Mogli, Medical records organization and management, Jaypee Brothers Medical Publishers, Edition 2, 2016.

REFERENCE BOOKS:

1. Stedmans, Stedmans pocket Medical Dictionary" Wolters Kluwer India Pvt. Ltd, Edition 1, 2009.
2. Rampi Gupta, CM Francis Medical Ethics, Jaypee Brothers Medical Publishers, Edition 4, 2020.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=_bDatJxhfkQ
2. <https://www.youtube.com/watch?v=9iMhc2OU-go>
3. <https://www.youtube.com/watch?v=sQTrPIwtWaw>

WEB RESOURCES:

1. <https://blog.ipleaders.in/medical-laws-conflict-ethic>
2. <https://www.gponline.com/medico-legal-importance-good-records/article/89>
3. <https://openmd.com/guide/medical-terminology>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22DF102002	INTRODUCTION TO QUALITY AND PATIENT SAFETY	4	1	2	-	6
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course is designed to provide an overview on Quality assurance and management, infection control and prevention, Antibiotic resistance and disaster management.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Apply NABH guidelines to improve the quality of patient care in the health care system.
- CO2.** Identification of suitable evidence-based infections control principles and techniques to control and prevent to disease in the healthcare environment
- CO3.** Identify barriers and opportunities in the health care system based on contextual knowledge on microbial antibiotic resistance.
- CO4.** Demonstrate knowledge on different disaster management techniques to make patient health safety
- CO5.** Work independently or in teams to solve problems with effective communication.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	3	2	-	-	2
CO2	3	-	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	1
CO4	3	-	-	-	-	-	-	-	-	-
CO5	3	-	-	-	-	1	-	-	-	-
Course Correlation Mapping	3	-	-	-	-	2	2	-	-	2

Correlation Levels: **3: High;** **2: Medium;** **1: Low**

COURSE CONTENT

Module 1: QUALITY ASSURANCE AND MANAGEMENT

(15 Periods)

Quality assurance and management - The objective of the course is to help students understand the basic concepts of quality in health care and develop skills to implement sustainable quality assurance programs in the health system: Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norm, Quality Improvement Tools, Introduction to NABH guidelines.

Module 2: INFECTION CONTROL AND PREVENTION

(15 Periods)

The objective of this section will be to provide a broad understanding of the core subject areas of infection prevention and control and to equip AHPs with the fundamental skills required to reduce the incidence of hospital-acquired infections and improve health outcomes. Concepts taught should include a. Evidence-based infection control principles and practices [such as Sterilization, Disinfection, Effective hand hygiene and use of Personal Protective Equipment (PPE)], Prevention & control of common healthcare-associated infections, Components of an effective infection control program, and Guidelines (NABH and JCI) for Hospital Infection Control

Module 3: ANTIBIOTIC RESISTANCE

(15 Periods)

Antibiotic Resistance: History of antibiotics, way of resistance happens and spreads, Types of resistance- intrinsic, acquired, passive, Trends in drug resistance & Actions to fight resistance, Bacterial persistence, Antibiotic sensitivity, Consequences of antibiotic resistance & Antimicrobial Stewardship - Barriers and opportunities, tools and models in hospitals.

Module 4: DISASTER PREPAREDNESS AND MANAGEMENT

(15 Periods)

The principles of on-site disaster management, Fundamentals of emergency management, psychological impact management, Resource management, Preparedness and risk reduction, Key response functions (including public health, logistics, and governance, recovery, rehabilitation and reconstruction), information management, incident command, and institutional mechanisms

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXERCISES:

1. Demonstration of NABH guidelines
2. Demonstration of Vital signs
3. Demonstration of proper use of Personal protective equipment (PPE)
4. Demonstration of evidence-based infection control principles and practices [such as Sterilization, Disinfection, Effective hand hygiene, and use of Personal Protective Equipment (PPE)]
5. Discussion on various types of Antibiotics
6. Demonstration of how Resistance Happens and Spreads

RESOURCES

TEXT BOOKS:

1. Y. Anjaneyulu and R Marayya, Quality Assurance and Quality Management, BSP Books Private Limited, Edition 3, 2018.
2. Deepak Tripathi, Quality management, Jaico Publishing House, Edition 1, 2009.
3. Apurba S Sastry, Deepa shree, Essentials of Hospital infection control, Jaypee Brothers Medical Publisher, Edition 1, 2019.
4. Nidhi Gauba Dhawan and Ambrina Sarar Khan, Disaster management and preparedness, CBS Publisher, Edition 1, 2014.
5. Gireesh Kumar KP and Eng, Handbook of antibiotics, Paras Medical Books, Edition 1, 2014.

REFERENCE BOOKS:

1. Alan R. Hauser, Antibiotics for Clinicians, LWW Exclusive NP, Standard Edition, 2019.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=zSyICkGZ6iM>
2. <https://www.youtube.com/watch?v=LZapz2L6J1Q>
3. <https://www.youtube.com/watch?v=yHs0GyLNSLg>
4. <https://www.youtube.com/watch?v=KwAKjtkpdP4>

WEB RESOURCES:

1. <https://www.sciencedirect.com/science/article/pii/B9780123735935000227>
2. <https://www.who.int/teams/integrated-health-services/infection-prevention-control>
3. <https://www.uicc.org/what-we-do/thematic-areas-work/antimicrobial-resistance-amr-and-its-impact-cancer-care>
4. <https://www.techtarget.com/searchsoftwarequality/definition/quality-assurance>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CS102402	BASIC COMPUTERS AND INFORMATION SCIENCES	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion and hands-on experience on basics of computer science and information science concepts of the I/O devices, CPU (central processing unit) memory, Storage devices and Introduction of windows operating systems and MS office and having the knowledge of computer networks, Internet and its applications.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate knowledge on Basics of computer I/O devices, Processor and memory.
- CO2.** Prepare the Documents using the word processors.
- CO3.** Prepare the work sheet and Slide Presentations using the Excel and presentation tool.
- CO4.** Demonstrate the knowledge on Operating Systems usage and its types.
- CO5.** Interconnect two or more computers for Information sharing and access the Internet.
- CO6.** Work independently or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	-	-	-	-	-	-	-
CO2	3	2	2	-	-	-	-	-	-	-
CO3	3	2	3	-	-	-	-	-	-	-
CO4	2	2	3	-	-	-	-	-	-	-
CO5	3	2	2	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	3	3	-
Course Correlation Mapping	3	2	3	-	-	-	-	3	3	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT:

Module 1 INTRODUCTION TO COMPUTERS (09 Periods)

Introduction, characteristics of computers, block diagram of computers, generations of computers, computer languages, Input-output devices: Input devices (keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices (monitors, pointers, plotters, screen image projector, voice response systems), Processor and memory: Central Processing Unit (CPU), main memory.

Module 2 STORAGE DEVICES AND WORD PROCESSOR (09 Periods)

Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices, Introduction to word processor: Introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.

Module 3 INTRODUCTION TO SPREADSHEET AND PRESENTATIONS (09 Periods)

Introduction to Excel: Introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs, Introduction to PowerPoint: Introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Module 4 COMPUTER NETWORKS AND INTERNET APPLICATIONS (09 Periods)

Computer networks: Introduction, types of networks (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network, Internet and its Applications: Definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet, Application of Computers in clinical settings.

Module 5 INTRODUCTION OF OPERATING SYSTEM (09 Periods)

Introduction to Operating System, Characteristics of Operating System, Types of Operating System and its components, Installation of windows OS, History of OS and features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXERCISES

1. Demonstrate of basic hardware of Computers and laptops.
2. Demonstrate about the I/O Devices and CPU.
3. Create and Design Admission/Enquiry Forms.
4. Create Student Id Card using shapes, text and colors.
5. Create Chart and show the product price comparison between years.
6. Insert the Image into various shapes
7. Calculate student' s marks percentage using spreadsheet.
8. Create slides about yourself using with all the details.
9. What are the steps to connect Internet
10. How to send an Email? Explain the steps in detail.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

TEXTBOOKS:

- 1 Priti Sinha and Pradeep K, Computer Fundamentals, BPB Publications, Edition 6, 2004.
- 2 James Bernstein, Office for the Web Made Easy, Independently published, Edition 1, 2021.

REFERENCE BOOKS:

- 1 Pete Matheson, Microsoft Office 365 for Beginners, Microsoft, Edition 1, 2021.
- 2 Dr Sabah Sayed, Fundamentals of Computer Science, Imperial College Press, Edition 1, 2009.

SOFTWARE/TOOLS:

- 1 Software: MS Office/ Window Operating System

VIDEO LECTURES:

- 1 Computer Fundamentals - Basics for Beginners - Bing video
- 2 <https://youtu.be/-AP1nNK3bRs>

WEB RESOURCES:

- 1 <https://www.udemy.com/computer-basics/online-course>
- 2 <https://www.educba.com/excel/courses/ms-office-course>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22DF105001	BIOMEDICAL WASTE MANAGEMENT	-	1	2	-	2

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course deals with biomedical waste management and environmental safety. Experimental learning on types of biomedical waste in health care system, waste minimization, General waste control and personal care in health care.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Analyze biomedical waste materials by applying decontamination and disposal techniques to prevent harm to health care professionals.

CO2. Work individually or Teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1								1
CO2	3	1	2	-	-	-	-	-	-	1
Course Correlation Mapping	3	1	2	-	-	-	-	-	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

EXPERIENTIAL LEARNING:

COURSE CONTENT AND LIST OF EXERCISES

Biomedical waste management and environment safety- The aim of this section will be to help prevent harm to workers, property, the environment and the general public. Topics to be covered under the subject are as follows:

1. Definition of Biomedical Waste, Types of waste generated from Health Care Facility
2. Demonstration of various procedures for minimization of Biomedical Waste.
3. Demonstration of Biomedical Waste Segregation, collection, transportation, treatment and disposal (including color coding)
4. Study of Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste

5. Study of BMW Management & methods of disinfection
 6. Demonstration of Modern Technology for handling BMW
 7. Use of Personal protective equipment (PPE)
 8. Monitoring & controlling cross-infection (Protective devices)
- (Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)*

RESOURCES

TEXT BOOK:

1. Shishir Baskar, Hospital waste management A guide for self-assessment and review, Jaypee brothers Medical Publication, Edition 1, 2009.
2. R. Radhakrishna, Biomedical waste management, Sumit Enterprises, Edition 3, 2007.

REFERENCE BOOKS:

1. Anant Preet Singh and Sukhjit, Biomedical waste disposal, Haypee Brothers Medical Publishers (P) Ltd, Edition 1, 2012
2. Dr. Shalini Sharma and Prof. SVS Chauhan, An Analysis of Bio-Medical Waste Management, LAP Lambert Academic Publishing, Edition 1, 2010.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=qsclvnPvr18>
2. <https://www.youtube.com/watch?v=gKSPSKiB9PE>
3. <https://www.youtube.com/watch?v=SxkZdmBSkWo>

WEB RESOURCES:

1. <https://byjus.com/current-affairs/biomedical-waste/>
2. <https://www.aiims.edu/en/departments-and-centers/central-facilities/265-biomedical/7346-bio-medical-waste-management.html>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22LG101406	PROFESSIONAL ENGLISH	2	-	-	-	2
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course deals with selected literary works of eminent writers, exercises on speaking, reading comprehension skimming and scanning, vocabulary, grammar, pronunciation, and conversation practice.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- C01.** Demonstrate knowledge of literary works of various pieces of eminent writers.
- C02.** Adapt general and technical vocabulary in communication.
- C03.** Apply grammatically correct English in writing.
- C04.** Analyze texts using reading techniques.
- C05.** Apply different communication styles in various situations.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	-	-	-	-	-	2	-	-	-
C02	2	2	-	-	-	-	2	-	3	-
C03	2	2	-	-	3	-	2	-	3	-
C04	2	3	2	-	2	-	2	-	3	-
C05	2	2	-	-	3	-	2	-	3	-
Course Correlation Mapping	2	2	2	-	3	-	2	-	3	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BE THE BEST OF WHATEVER YOU ARE BY DOUGLAS MALLOTT (06 Periods)

Be the Best of Whatever You Are - A motivational poem, Reading Comprehension, Grammar, Vocabulary, Pronunciation, Language Games, and Conversation Practice, Letter writing.

Module 2: 'ON SAYING PLEASE' SHORT ESSAY BY A. G. GARDINER (06 Periods)

On Saying Please - A Short Essay, Reading Comprehension, Grammar Vocabulary, Pronunciation, Language Games, and Conversation Practice, Email writing.

Module 3: 'IF YOU FORGET ME' POEM BY PABLO NERUDA (06 Periods)

If you Forget Me-A Poem, Reading Comprehension, Grammar, Pronunciation, Language Games and Conversation Practice, essay writing.

Module 4: 'AFTER THE SUNSET' SHORT STORY BY BHOOPAL (06 Periods)

After the Sunset - A Short Story, Reading Comprehension, Grammar, Pronunciation, Language Games, and Conversation Practice, case studies.

Module 5: 'MAN'S PERIL' ESSAY BY BERTRAND RUSSEL (06 Periods)

Man's Peril - An Essay, Reading Comprehension, Vocabulary, Grammar, Pronunciation, Language Games, and Conversation Practice, report writing.

Total Periods: 30

EXPERIENTIAL LEARNING

1. Discuss the role of Health care in nation-building?
2. List out the important vocabulary used most in Health care.
3. Small courtesies play a major role in creating an impression on other people. List out a few examples.
4. Prepare a PowerPoint presentation on the present scenario in higher education and jobs in India.
5. Being a shopkeeper and persuading a customer to buy a product which is introduced newly in the market. Prepare a conversation.
6. The English language has a rich vocabulary. List out the homophones and homonyms and write down the pronunciation and meaning of those words.
7. Describe a situation in your college where teamwork is needed and explain the strategies to manage the team effectively.
8. Write about the importance of IELTS and TOEFL exams.
9. Prepare a report on the medical camp conducted on your campus.
10. Write a letter to the concerned asking permission to attend clinical classes.
11. Prepare a E mail to justify the need of new medical equipment to your hospital.

RESOURCES

TEXT BOOKS:

1. G. Damodar, English Language for Undergraduate Students, Cambridge University, standard edition, 2019.

REFERENCE BOOKS:

1. Meenakshi Raman & Sangeetha Sharma, *Technical Communication*, Oxford University Press, Edition 1, 2012.
2. Ashraf Rizvi, *Effective Technical Communication*, McGraw-Hill Education (India) Pvt. Ltd., Edition 1, 2018

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=WnOOKO0CdaM>
2. <https://www.youtube.com/watch?v=H6Nlz8qmcFc>
3. <https://www.youtube.com/watch?v=-ITliZO85YM>
4. <https://www.youtube.com/watch?v=048YjXwgHWE>
5. <https://www.youtube.com/watch?v=XLLQm7Grmcc>

WEB RESOURCES:

1. https://www.researchgate.net/publication/331773456_RK_Narayan's_A_Snake_in_the_Gra_ss_and_Stephen_Leacock's_With_the_Photographer_-_A_Comparative_Study
2. <https://smartenglishnotes.com/2020/07/17/on-saying-please-summary-analysis-and-questions-and-answers/>
3. http://www.emcp.com/product_catalog/school/litLink/Grade09/U09-04forgetme/
4. <https://englishlanguage-lit.blogspot.com/2021/05/after-sunset-short-story-by-bhoopal.html>
5. <https://www.taylorfrancis.com/chapters/mono/10.4324/9781003090359-31/man-peril-bertrand-russell?context=ubx&refId=1d767e2d-ceb1-4537-9de5-6417eab47d1e>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22MG101006	PRINCIPLES OF MANAGEMENT	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course enables the students to study the evolution of management; functions and principles of management; application of the principles in an organization; the system and process of effective controlling in the organization.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

CO1. Understand managerial functions of business organization.

CO2. Understand the planning process in the organization.

CO3. Describe the principles of Organization.

CO4. Understand the concept and process of staffing.

CO5. Demonstrate the ability to direct, leadership and communicate effectively.

CO6. Work independently or in team to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	1	-	-
CO2	3	1	-	1	-	-	-	1	1	-
CO3	3	1	-	1	-	-	-	1	1	-
CO4	3	1	-	-	-	-	-	1	1	-
CO5	3	1	-	-	-	1	-	-	1	-
CO6	3	-	-	-	-	-	-	1	-	-
Course Correlation Mapping	3	1	-	1	-	1	-	1	1	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO MANAGEMENT

(09 Periods)

Meaning, Definition, Concept, Scope And Principles of Management; Evolution of Management Thought- Management Theories - Classical, Behaviour, System, Contingency and Contemporary Perspectives on Management. Management Art or Science And Management as Profession. Process And Levels of Management. Introduction to Functions [POSDCORB] of Management.

Module 2: PLANNING - IMPORTANCE

(11 Periods)

Planning- Importance, Objectives, Process, Policies, Types of Planning, Decision Making- Process of Decision Making, Types of Decision, Problems involved in Decision Making.

Module 3: ORGANISING

(09 Periods)

Meaning, Importance, Principles of Organizing, Spam of Management, Patterns of Organization- Formal And Informal Organizations, Common Organizational Structures; Departmentalization, Authority- Delegation, Centralization Decentralization, Responsibility- Line and Staff Relationship.

Module 4: STAFFING

(07 Periods)

Sources of Recruitment, Selection Process, Training, Directing, Controlling- Meaning And Importance, Function, Span of Control, Process And Types of Control, Motivation, Coordination- Need and Types And Techniques Of Coordination- Distinction between Coordination And Cooperation- Requisites for Excellent Coordination-Systems Approaches and Coordination.

Module 5: EMERGING ISSUES IN MANAGEMENT

(09 Periods)

Total Quality Management, Technology Management, Talent and Knowledge Management, Leadership, Organizational Change And Development, Corporate Social Responsibility.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXERCISES:

1. Students will be given case studies on management theory and its relevance to contemporary business practices.
2. Case study of Amazon India on planning and staffing personnel for its timely delivery in rural area.
3. Group discussion on technology, organization and management.

The above all will be detailed in CHO

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

TEXT BOOKS:

- 1 Charles W.L. Hill And Steven L. McShane, Principles Of Management, Tata Mc-Craw-Hill Company, Edition 1, 2006.
- 2 Griffin, Ricky W., Management. AITBS Publishers and Distributors, Edition 1, 2010.

REFERENCE BOOKS:

1. Neeru Vasishth, Principles of Management text and cases, Taxmann Publishers, Edition 5, 2019.
2. Robbins, Fundamentals of Management, Pearson Education India, Edition 9, 2016.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=tUrjAn24ZiA>
2. https://www.youtube.com/watch?v=vtVJOg_tW4o

WEB RESOURCES:

1. <https://byjus.com/commerce/henri-fayol-14-principles-of-management/>
2. <https://education.stateuniversity.com/pages/cw1ev9e9ib/An-Introduction-to-the-Principles-of-Management.html>
3. <https://open.lib.umn.edu/principlesmanagement/chapter/1-1-introduction-to-principles-of-management/>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22PT102006	HUMAN ANATOMY	4	1	2	-	6
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on the Macroscopic & Microscopic structure and functions of human body and its Development which is essential for clinical studies.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate the anatomical terms & positions used in clinical practice.
- CO2.** Apply the anatomical knowledge of bones, muscles, and joints of human body in clinical studies.
- CO3.** Demonstrate the organs of circulatory, digestive, and respiratory system in human body.
- CO4.** Analyze the structure and functions of uro-genital system, and endocrine system.
- CO5.** Identify the structure and functions of nervous system, and sense organs.
- CO6.** Work independently or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	-	-	1	1	-	-	1
CO2	3	2	1	-	-	1	1	-	-	1
CO3	3	2	1	-	-	1	1	-	-	1
CO4	3	2	1	-	-	1	1	-	-	1
CO5	3	2	1	-	-	1	1	-	-	1
CO6	3	-	-	-	-	-	-	-	-	1
Course Correlation Mapping	3	2	1	-	-	1	1	-	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

MODULE 1: INTRODUCTION TO HUMAN ANATOMY (12 Periods)

Subdivisions of Anatomy, History of Anatomy, Anatomical terms, Positions, Planes & Axis, Movements, Epithelium - Classification, Tissue - Classification, and Applied anatomy.

MODULE 2: SKELETAL, ARTICULATORY AND MUSCULAR SYSTEM (12 Periods)

Skeletal system: Skeleton, Bone - Classification, Young bone, adult bone, Blood supply, Nerve supply, Ossification, Bones of - Head & Neck, Upper limb, Thorax, Vertebral column, Bony Pelvis, and Lower limb; Cartilage & its Types,

Articulatory system: Joint - Classification, Synovial joint, Joints of - Head & Neck, Upper limb, Thorax, Vertebral column, Pelvis, and Lower limb;

Muscular system: Muscle - Parts, Types, Structure, Architecture, Nomenclature, Nerve supply, Muscle action, Muscles of - Head & Neck, Upper limb, Thorax, Vertebral column, Pelvis, and Lower limb and Applied anatomy.

MODULE 3: CIRCULATORY SYSTEM, DIGESTIVE SYSTEM, AND RESPIRATORY SYSTEM (12 Periods)

Circulatory system: Circulation - Components, Types, Anastomoses, End - Arteries, Heart & Pericardium, Major blood vessels; Lymphatic system - Components, Major Lymphatic vessels; Lymphoid organs - Lymph node, Spleen, Thymus, and Palatine tonsil; Reticulo-Endothelial system, and Applied anatomy.

Digestive system: Oral cavity, Teeth, Tongue, Salivary glands, Pharynx, Oesophagus, Stomach, Small intestine - Duodenum, Jejunum, Ileum, Liver & Gall bladder, Extra-Hepatic Biliary Apparatus Pancreas, Large Intestine - Caecum, Appendix, Colon, Rectum & Anal canal and Applied anatomy.

Respiratory system: External Nose, Nasal cavity, Paranasal air sinuses, Nasopharynx, Oropharynx, Larynx, Trachea, Pleura, Lungs, Diaphragm, and Applied anatomy.

MODULE 4: URO-GENITAL AND ENDOCRINE SYSTEM (12 Periods)

Urinary system: Organs - Kidney, Ureter, Urinary bladder, and Urethra; Skin & Its Appendages - Thick skin, and Thin skin, Hair, and Nail.

Male reproductive system: Organs - Scrotal sac & Testis, Epididymis, Vas deferens, Seminal vesicle, Prostate, and Urethra.

Female reproductive system: Organs - Ovary, Uterus, Fallopian tube, Cervix, Vagina, and Mammary gland.

Exocrine glands: Salivary glands, Lacrimal gland, Pancreas, Liver, Mammary gland, Sweat and Sebaceous gland.

Endocrine glands: Hypothalamus, Pineal gland, Pituitary gland, Thyroid gland, Parathyroid gland, Pancreas, Adrenal gland, and Gonads.

MODULE 5: NERVOUS SYSTEM AND SENSE ORGANS (12 Periods)

Nervous system: Neuron, Neuroglia, Classification, Autonomic Nervous system; Brain - Cerebrum, Cerebellum, Basal Ganglia, Limbic system, Thalamus, Hypothalamus, Ventricles, Cerebro-Spinal fluid, and Spinal cord.

Sense organs: Tongue - Taste pathway, Nose - Olfactory pathway, Eye - Visual pathway, Ear - Auditory pathway.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Demonstration of anatomical terms, positions, planes, axis, movements, and tissues.
2. Demonstration of bones, joints, and muscles in human body.
3. Demonstration of heart, blood vessels, lymphoid organs, digestive system, and respiratory system in human body.
4. Demonstration of organs of urogenital system, and endocrine system in human body.
5. Demonstration of parts of nervous system, and sense organs in human body.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

BOOKS:

1. B.D Chaurasia ' s Human Anatomy-Regional and applied; CBS publishers, Vol 1,2,3,4 Edition 9,2022.
2. Snell [Richard S], Clinical Anatomy for medical students; Edition 6, 2021
3. Inderbir Singh' s book of Anatomy; Vol 1,2,3, Edition 3, 2020
4. Inderbir Singh' s Text book of Human Histology, Jaypee Publishers, Edition 10, 2022
5. Inderbir Singh' s Text book of Human Embryology, Jaypee Publishers, Edition 12, 2022

REFERENCE BOOKS

1. A. k. Datta, Essentials of human anatomy; Current books international publishers; Volume: 1,2,3,4; Edition 10, 2019.
2. Richard Tunstall and Susan Standring, Gray's Anatomy - The anatomical basis of clinical practice, Elsevier publishers, Edition 42, 2020.
3. Rachel koshi, Cunningham's manual of practical Anatomy, Oxford University Press publishers, Volume - 1,2,3; Edition 16, 2017.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=UzPafAvoYH0>.
2. <https://www.youtube.com/watch?v=Nr6a7kqh4ZM>
3. https://www.youtube.com/watch?v=bL_fg1St7Cg
4. <https://www.youtube.com/watch?v=aV1cNPJAByo>
5. https://www.youtube.com/watch?v=_J-NS4Q3bv0
6. <https://www.youtube.com/watch?v=upqjWIElahs>
7. <https://www.youtube.com/watch?v=849IL6HSMd4>
8. <https://www.youtube.com/watch?v=mcmUWYzhdzA>
9. <https://www.youtube.com/watch?v=IvK-UGOI5ZQ>
10. <https://www.youtube.com/watch?v=-sDoYJOQMFw>

WEB RESOURCES:

1. <https://medicostimes.com/mbbs-first-year-books-pdf/>
2. <https://worldofmedicalsaviours.com/anatomy-books-pdf/>
3. <https://enarm.com.mx/catalogo/31.pdf>
4. https://www.freebookcentre.net/medical_books_download/Clinical-Anatomy.html
5. https://www.academia.edu/42079859/ESSENTIAL_CLINICAL_ANATOMY
6. <https://emedicodiary.com/book/view/47/kulkarni-clinical-anatomy-a-problem-solving-approach>
7. <https://textbookequity.org/Textbooks/anatomy+phys+vol2a.pdf>
8. <https://openstax.org/details/books/anatomy-and-physiology>
9. <https://www.pdfdrive.com/clinical-anatomy-books.html>
10. <https://www.goodreads.com/en/book/show/51790563>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22PT102007	HUMAN PHYSIOLOGY	4	1	2	-	6
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on Basic structure and detailed physiology of cell, body fluids, muscles, digestive system, respiratory system and renal system.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Understand the basic concepts of cell physiology, haematology and nerve muscle physiology.
- CO2.** Analyse the various mechanisms of digestive and renal system.
- CO3.** Analyse various mechanisms of hormonal action.
- CO4.** Understand the concepts of cardiovascular and respiratory physiology.
- CO5.** Understand the nervous physiology and its significance.
- CO6.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	2	-	-	-	-	-	-
CO2	3	-	-	1	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-
CO5	3	2	-	2	-	-	-	-	-	-
CO6	3	-	-	-	-	-	3	3	-	3
Course Correlation Mapping	3	2	-	2	-	-	3	3	-	3

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

MODULE 1: GENERAL PHYSIOLOGY, BLOOD AND NERVE MUSCLE PHYSIOLOGY (12 Periods)

Concept of Homeostasis, Cell structure and functions, Transports across membranes, Body fluid volumes, compartments and composition, Blood composition and functions, Plasma proteins - Types and functions, Erythrocytes - functions, Erythropoiesis ,anaemia ' s, Leucocytes - classification and functions, Platelets - morphology and functions, Blood coagulation - Mechanism and name of anticoagulants, Blood groups - Basis of ABO & Rh grouping, Erythroblastosis Fetalis. Muscles - Classification & structure of striated, non-striated & cardiac muscle, Neuromuscular junction & Transmission, Mechanism of skeletal muscle contraction

MODULE 2: DIGESTIVE SYSTEM AND EXCRETORY SYSTEM (12 Periods)

Salivary glands, functions of saliva, Parts of stomach, composition & functions of gastric juice, Pancreatic Juice - composition & functions, Bile - composition & functions of bile & bile salts, Functions of Small intestine & large intestine, Kidney: Basic physiological anatomy (Including JGA), Nephron : structure, types and functions, Formation of urine - GFR, Reabsorption & secretion, Micturition Reflex, Dialysis - Principle, types, Structure & Functions of skin.

MODULE 3: ENDOCRINE SYSTEM AND REPRODUCTIVE SYSTEM (12 Periods)

Hypothalamo-hypophyseal interrelationship, Posterior pituitary hormones and its actions, Anterior pituitary hormones, Growth hormone - Actions , Dwarfism, gigantism, acromegaly, Thyroid hormones - Actions, Cretinism, Myxoedema, Grave ' s disease (clinical features), Parathyroid hormones - Functions, Tetany, Insulin, Glucagon ' s - Actions, Diabetes mellitus, Adrenal medullary hormones & their actions, Adrenal cortex hormones & their actions., Male reproductive organs - Spermatogenesis, Testosterone actions, Female reproductive organs - menstrual cycle (endometrial and ovarian cycles) and its hormonal control, Contraceptive methods in male and female

MODULE 4: RESPIRATORY AND CARDIOVASCULAR SYSTEM (12 Periods)

Basic physiological anatomy, Surfactant, Mechanics of respiration, Oxygen transport, Carbon-dioxide transport, Nervous and chemical regulation, Pulmonary function tests, Basic physiological anatomy, innervations of heart, ECG - normal waves, intervals and their significance, Cardiac cycle - mechanical events, Heart sounds, Blood pressure - Definition, measurement, normal values, factors maintaining BP Regulation.

MODULE 5: NERVOUS SYSTEM AND SPECIAL SENSES (12 Periods)

Structure of neuron, neuroglial cells, synapse and transmission across it, Reflex - Components of reflex arc, examples, Functions of ascending tracts - anterior, lateral spino-thalamic tracts, Dorsal column, Functions of Cortico-spinal (Pyramidal) tract-Descending tract, Functional areas of cerebral cortex, Functions of basal ganglia, thalamus, hypothalamus, limbic system and cerebellum, Receptors for various special senses.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Study of Microscope and its uses
2. Collection of blood sample
3. Determination of RBC count
4. Determination of WBC count
5. Differential leukocyte count
6. Estimation of haemoglobin
7. Determination of blood groups
8. Determination of bleeding time clotting time
9. Determination of ESR
10. Determination of PCV
11. Clinical Examination of cardiovascular system
12. Clinical examination of reflexes
13. Clinical examination respiratory system
14. Determination of Pulse
15. Demonstration of Blood Pressure

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

1. Guyton & Hall, Text book of Medical Physiology, Saunders publisher, Edition 13, 2015.
2. K Sembulingam, Essentials of Medical Physiology, Jaypee Medical Publishers, Edition 9, 2022.
3. G.K. Pal and G.K Pravati, Textbook of Practical Physiology, Orient Longman, Edition 1, 2003

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=xyhbIPSLBsA>
2. <https://www.youtube.com/watch?v=0f9p9JX4qJk>
3. [youtube.com/watch?v=JZhJI6rffZg](https://www.youtube.com/watch?v=JZhJI6rffZg)

WEB RESOURCES:

1. <https://books.google.co.in/books?id=CcJvIiesqp8C&lpg=PP1&pg=PP1#v=twopage&q&f=false>
2. https://books.google.co.in/books?id=KNpN_jvbmAIC&lpg=PP1&pg=PP1#v=onepage&q&f=false

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22PT101004	NATIONAL HEALTH CARE DELIVERY SYSTEM	2	-	-	-	2
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on Health care system, AYUSH, vital events of life and epidemiology in India.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand the basic concepts in health care delivery system.
- CO2** Acquire knowledge on various AYUSH systems.
- CO3** Analyse the Vital events of life and its impact on demography.
- CO4** Understand the principles and methods of epidemiology.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	1	-		-	-	-
CO2	3	1	-	-	2	-	1	-	-	-
CO3	3	2	-	-	1	-	1	-	-	-
CO4	3	-	-	-	1	-		-	-	-
Course Correlation Mapping	3	2	-	-	1	-	1	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

MODULE 1: NATIONAL HEALTHCARE DELIVERY SYSTEM

(07 Periods)

Healthcare delivery system in India at primary, secondary and tertiary care Community participation in healthcare delivery system, Health system in developed countries, Private Sector

MODULE 2: AYUSH SYSTEM OF MEDICINE

(08 Periods)

Introduction to Ayurveda, Naturopathy, Unani, Siddha, Homeopathy, Need COURSE for integration of various system of medicine.

MODULE 3: DEMOGRAPHY AND VITAL STATISTICS

(07 Periods)

Demography & its concept, Vital events of life & its impact on demography, Significance and recording of vital statistics, Census & its impact on health policy.

MODULE 4: NATIONAL HEALTH POLICIES

(08 Periods)

National Health Mission, National Health Policy Issues in Health Care Delivery System in India achievements and constraints in various National Health Programme. National Health Programme- Background objectives, action plan, targets, operations,

Total Periods: 30

EXPERIENTIAL LEARNING

1. Demonstration of various levels of health care system.
2. Presentation of health care programs.
3. Illustration on ayush system of medicine and it's practice.
4. A clinical overview on demography and vital statistics.
5. A clinical based epidemiological study and survey of communicable and non-communicable diseases.

Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

BOOKS:

1. Francis, Hospital Care Management, Jones & Bartlett Learning, Edition 4, 2019.
2. Sharon B .Buchbinder, Introduction to Health Care Management, Jones & Bartlett Learning, Edition 2, 2011.
3. Fandis S, Health Service Management, Analysis& Management, Wasworth publishing, Edition 2, 2019.

VIDEO LECTURES:

1. https://youtu.be/It_cv56DxTk
2. https://youtu.be/VIrdH_3RKKk

WEB RESOURCES:

1. <https://library.medschl.cam.ac.uk/e-books/>

2. <https://www.ncbi.nlm.nih.gov/>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22DF102008	CLINICAL MICROBIOLOGY	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides details on Morphology of Bacteria, Principles & Practices of Sterilization, Basic knowledge on Immunology, Identification of Bacteria, Diseases caused by bacteria, Viruses, Fungi, its Laboratory Diagnosis & Preventive Measures to be taken.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Identify the bacteria by using various cultural methods and apply sterilization techniques in the health care.
- CO2.** Understand Morphology, cultural characteristics, Infections caused, Laboratory Diagnosis, Treatment of various Disease-causing bacteria in Humans.
- CO3.** Learn Morphology, disease caused and lab diagnosis of various fungi effecting Humans.
- CO4.** Understand general properties of viruses, diseases caused, lab diagnosis and prevention of Various viruses effecting Humans.
- CO5.** Understand classification, pathogenesis, lab diagnosis and prevention of various disease causing parasites in humans.
- CO6.** Work individually or in teams to solve problems with effective communication.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	2	2	-	2	1	-	-	1
CO2	3	2	2	-	1	2	-	-	-	-
CO3	3	2	-	-	-	2	-	-	-	1
CO4	3	2	2	-	-	-	-	-	-	1
CO5	3	2	2	-	1	2	-	-	-	1
CO6	3	2	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	2	2	2	1	2	1	-	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module :1 GENERAL MICROBIOLOGY

(10 Periods)

Morphology and classification of microorganisms, Growth, nutrition and multiplication of bacteria, Sterilization and Disinfection - Principles and use of equipment' s of sterilization namely hot air oven, autoclave and serum inspissator, pasteurization, antiseptics and disinfectants. Culture Media, Methods of Identification of Bacteria. Immunology - antigen, Antibodies, Immunity, vaccines, types of vaccine and immunization schedule. Hospital acquired infection - Causative agents, transmission methods, prevention and control of hospital Acquired infections.

Module: 2 SYSTEMIC BACTERIOLOGY

(10 Periods)

Classification of bacteria, morphology, infections caused, lab diagnosis, treatment and prevention of common bacterial infections. Staphylococcus, Streptococcus, Pneumococcus, Neisseria, Corynebacterium diphtheriae, Clostridium, Enterobacteriaceae - Shigella, Salmonella, Klebsiella, E.coli, Proteus, Vibrio cholerae, Pseudomonas ,Spirochetes, Mycobacteria.

Module 3: MYCOLOGY

(08 Periods)

Morphology, disease caused and lab diagnosis of following fungi. Candida, Cryptococcus, Dermatophytes, opportunistic fungi (Aspergillus, Zygomycetes and Penicillium)

Module 4: VIROLOGY

(10 Periods)

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

Module :5 PARASITOLOGY

(07 Periods)

Classification, pathogenesis, lab diagnosis and prevention of Entamoeba, Giardia, Malaria, Hookworm, Roundworm and Filarial worms.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF Practical' s:

1. Compound microscope and its application in microbiology.
2. Demonstration of sterilization equipment ' s: hot air oven, autoclave, bacterial filters. Demonstration of commonly used culture media, nutrient broth, nutrient agar, blood agar, chocolate agar, Macconkey medium, L J media, Robertson cooked meat media, MacConkey agar with LF & NLF, Nutrient agar with staph colonies. Anaerobic culture, Methods and Antibiotic susceptibility test.
3. Demonstration of common serological tests: Widal, VDRL, ASLO, CRP, RF, Rapid tests for HIV, Hbsag and HCV.
4. Gram staining.
5. Acid fast staining.
6. Principles and practice of Biomedical waste management.

RESOURCES

TEXT BOOKS:

1. Anathanarayana & Panikar, Medical Microbiology, University Press, Edition 10, 2018.
2. CP Bhaveja, Textbook of Microbiology, Arya Publications, Edition 5, 2021.
3. Ramnik Sood, Textbook for Laboratory technicians, Jaypee Publishers, Edition 1, 2022.

REFERENCE BOOKS:

1. Bailey & Scott's Diagnostic Microbiology, Elsevier publisher, Edition 15, 2021.
2. Jagdish Chaner, Textbook of Medical Mycology, Jaypee brothers Medical Publishers, Edition 4, 2018

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=_Fk1D7FIIg4
2. <https://www.youtube.com/watch?v=F7TBfCJTZ54>
3. https://www.youtube.com/watch?v=_waCHq1AaNk

WEB RESOURCES:

1. <https://www.cdc.gov/infectioncontrol/index.html>
2. <https://www.who.int/teams/integrated-health-services/infection-prevention-control>
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8325443/>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22DF102009	PATHOLOGY	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on basic pathology of cell injury, inflammation, Immunopathology, Environmental and nutritional disorders, and Neoplasia.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate the concept of cell Injury and events in cell injury
- CO2.** Understand Basic knowledge on Inflammation
- CO3.** Gain knowledge on concept of Immune System & Immunity Disorders.
- CO4.** Learn the different types of Environmental and Nutritional Disorders.
- CO5.** Understand the nature and types of Neoplasia and its evolution.
- CO6.** Work individually or in teams to solve problems with effective communication.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	3	1	-	-	-
CO2	3	1	-	-	-	-	-	-	3	-
CO3	3	1	3	-	-	-	-	-	-	1
CO4	2	1	-	-	-	-	-	-	-	1
CO5	3	-	-	-	-	3	1	-	-	-
CO6	3	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	1	3	-	-	3	1	-	3	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CELL INJURY

(09 Periods)

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.

Module 2: INFLAMMATION

(09 Periods)

General features of inflammation, Acute inflammation, Chemical mediators of inflammation Outcomes of acute inflammation, Morphologic patterns of acute inflammation, Chronic inflammation. Granulomatous Inflammation, Healing By Repair, Scar formation And Fibrosis, Cutaneous Wound Healing, Healing By First Intention, Healing By Second Intention, Edema, Hemostasis and Thrombosis, Infarction, Shock

Module 3: IMMUNE SYSTEM & IMMUNITY DISORDERS

(11 Periods)

Immunopathology - a. Immune system: General concepts. b. Hypersensitivity: type and examples, antibody and cell mediated tissue injury with examples. Secondary immunodeficiency including HIV infection. Auto-immune disorders: Basic concepts and classification, SLE. c. AIDS-Aetiology, Modes of transmission, Diagnostic procedures, handling of infected material and health education.

Module 4: ENVIRONMENTAL AND NUTRITIONAL DISORDERS & INFECTIOUS DISEASE

(09 Periods)

Environmental and nutritional disorders. Occupational Hazards, Radiation injury, Marasmus Kwashiorkar, Immunopathology –Infectious diseases –Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis. b. Bacterial disease: Pyogenic, Diphtheria, Gram negative infection, Bacillary dysentery. c. Viral diseases: Poliomyelitis, Herpes, Rabies, Measles, Ricktsia, Chlamydial infection, HIV infection. d. Fungal disease and opportunistic infections. e. Parasitic diseases: Malaria, Filaria, Amoebiasis, Kala-azar, Cysticercosis, Hydatid cyst.

Module 5: NEOPLASIA

(07 Periods)

Neoplasia: Definition, classification, Biological behaviour : Benign and Malignant, Carcinoma and Sarcoma. d. Malignant Neoplasia: Grades and Stages, Local & Distant spread. e. Carcinogenesis: Environmental carcinogens, chemical, viral, occupational. Benign & Malignant epithelial tumours Eg. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumours Eg: Fibroma, Lipoma, Neurofibroma, Fibrosarcoma, Liposarcoma, Rhabdomyosarcoma, Teratoma

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Collection of blood and anticoagulants used.
2. Discussion different types of microscopic disease conditions in pathology.
3. Staining of slide by Leishman method.
4. Studies of peripheral blood smear.
5. Estimation of hemaglobin by Sahli's method and discussion of other methods used.
6. Erythrocyte sedimentation Rate
7. Identification of various instruments in pathology lab & their uses
8. Bleeding Time, Clotting Time.
9. Demonstration of Pathological specimens

RESOURCES

TEXT BOOKS:

1. Harsh Mohan, Textbook of Pathology with Pathology Quick Review, Jaypee Brothers Medical Publishers, Edition 8, 2019.
2. Ramadas Nayak, Textbook of Pathology for Allied Health Sciences, Jaypee Brothers Medical Publishers, Edition 1, 2018
3. Ramadas Nayak, Sharada Rai, Essentials in Hematology and Clinical Pathology, Jaypee Brothers Medical Publishers, Edition 2, 2018

REFERENCE BOOKS:

1. David J. Magee, James E. Zachazewski, William S. Quillen, Robert C. Manske, Pathology and Intervention in Musculoskeletal Rehabilitation, Saunders Publisher Pvt. Ltd., Edition 2, 2018.
2. Vinay Kumar, Abul K. Abbas, Jon C. Aster, Manoj K. Singh. Robbins and Cotran Pathologic Basis of Disease (Two Vol Set), 10e, Publisher Elsevier Health Science, South Asia Edition, 2020.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=-Ph2uhw9BhE>
2. <https://www.youtube.com/watch?v=JcGKDDvk5AQ>
3. <https://www.youtube.com/watch?v=LaG3nKGotZs>

WEB RESOURCES:

1. https://www.aai.org/AAISite/media/Education/HST/Archive/Riina_Caroline_Presentation.pdf
2. <https://drnaitiktrivedi.com/wp-content/uploads/2020/04/1.-CELL-INJURY-AND-CELLULAR-ADAPTATION.pdf>
3. https://www.pearson.com/content/dam/one-dot-com/one-dot-com/us/en/higher-ed/en/products-services/course-products/fremgen-6e-info/pdf/Sample_ch04_final.pdf

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CC111001	CLINICAL POSTING-I	-	-	-	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides basic knowledge on hospital setup, care of patient, primary illness observation, and handling basic clinical instruments at training hospital.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Develop communication skills to deal with patients and health care professionals.
- CO2.** Apply appropriate medical devices and techniques to diagnose the patient illness.
- CO3.** Develop skills in formulating various medical documentation procedures.
- CO4.** Work individually and in teams following ethical practice.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	2	-	1
CO2	3	1	1	3	-	-	-	-	-	1
CO3	3	-	-	2	-	-	3	1	-	-
CO4	3	-	1	2	-	1	1	1	-	1
Course Correlation Mapping	3	1	1	3	-	1	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

Note:

1. Students will attend to clinical posting weekly two days in 3rd semester.
2. The Evaluation process is day to day, based on logbook and viva.

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CC111002	CLINICAL POSTING-II	-	-	-	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides basic knowledge on hospital setup, care of patient, primary illness observation, and handling basic clinical instruments at training hospital.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Develop case sheet of the concerned patient in the hospital.
- CO2.** Handled appropriate medical devices to generate patients' data.
- CO3.** Perform various instrumental handling techniques to analyse disorders.
- CO4.** Work individually and in teams following ethical practice.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	2	-	1
CO2	3	1	1	3	-	-	-	-	-	1
CO3	3	-	-	2	-	-	3	1	-	-
CO4	3	-	1	2	-	1	1	1	-	1
Course Correlation Mapping	3	1	1	3	-	1	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

Note:

1. Students will attend to clinical posting weekly two days in 4th semester.
2. The Evaluation process is day to day, based on logbook and viva.

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22PT102008	HUMAN ANATOMY - I	4	1	2	-	6

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on the Macroscopic & Microscopic structure and functions of human body and its Development which is essential for clinical studies.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate the anatomical knowledge of terms, positions, movements and tissues of human body.
- CO2.** Apply the anatomical knowledge of bones, muscles, and joints in clinical practice.
- CO3.** Demonstrate the structure and functions of organs in circulatory, digestive, and respiratory system.
- CO4.** Analyse the concepts of normal microscopic anatomy of tissues in human body.
- CO5.** Work independently or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	-	-	1	1	-	-	1
CO2	3	2	1	-	-	1	1	-	-	1
CO3	3	2	1	-	-	1	1	-	-	1
CO4	3	1	1	-	-	1	1	-	-	1
CO5	3	-	-	-	-	-	3	3	-	3
Course Correlation Mapping	3	2	1	-	-	1	2	3	-	2

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO HUMAN ANATOMY (10 Periods)

Subdivisions of Anatomy, History of Anatomy, Anatomical terms, Positions, Planes & Axis, Movements, Epithelium - Classification, Tissue - Classification, and Applied anatomy.

Module 2: SKELETAL, ARTICULATORY, & MUSCULAR SYSTEM (10 Periods)

Skeletal system: Skeleton, Bone - Classification, Young bone, adult bone, Blood supply, Nerve supply, Ossification, Bones of - Head & Neck, Upper limb, Thorax, Vertebral column, Bony Pelvis, and Lower limb; Cartilage & its Types,

Articulatory system: Joint - Classification, Synovial joint, Joints of - Head & Neck, Upper limb, Thorax, Vertebral column, Pelvis, and Lower limb;

Muscular system: Muscle - Parts, Types, Structure, Architecture, Nomenclature, Nerve supply, Muscle action, Muscles of - Head & Neck, Upper limb, Thorax, Vertebral column, Pelvis, and Lower limb and Applied anatomy.

Module 3: CIRCULATORY SYSTEM (10 Periods)

Circulation - Components, Types, Anastomoses, End - Arteries, Heart & Pericardium, Major blood vessels; Lymphatic system - Components, Major Lymphatic vessels; Lymphoid organs - Lymph node, Spleen, Thymus, and Palatine tonsil; Reticulo-Endothelial system, and Applied anatomy.

Module 4: DIGESTIVE SYSTEM (10 Periods)

Organs - Oral cavity, Teeth, Tongue, Salivary glands, Pharynx, Oesophagus, Stomach, Small intestine - Duodenum, Jejunum, Ileum, Liver & Gall bladder, Extra-Hepatic Biliary Apparatus Pancreas, Large Intestine - Caecum, Appendix, Colon, Rectum & Anal canal and Applied anatomy.

Module 5: RESPIRATORY SYSTEM (10 Periods)

Organs - External Nose, Nasal cavity, Paranasal air sinuses, Nasopharynx, Oropharynx, Larynx, Trachea, Pleura, Lungs, Diaphragm, and Applied anatomy.

Module 6: GENERAL HISTOLOGY (10 Periods)

Microscope, Cell, common objects, study of the basic tissues of the body; Epithelium, Connective Tissue, Cartilage; Bone; Muscular tissue; Nervous Tissue; Blood vessels, lymphoid tissue, Glands, Teeth, Skin and its appendages.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Demonstration of anatomical terms, positions, planes, axis, movements, and tissues.
2. Demonstration of bones, joints, and muscles in human body.
3. Demonstration of heart, blood vessels, and lymphoid organs in human body.
4. Demonstration of organs of digestive system in human body.
5. Demonstration of organs of respiratory system in human body.
6. Demonstration of microscope, microscopic structures of cell, objects, and general tissues in human body.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCESBOOKS:

1. B.D Chaurasia's Human Anatomy-Regional and applied; CBS publishers, Vol 1,2,3,4, 9th Edition 2022.
2. Snell Richard S, "Clinical Anatomy for medical students" 6th Edition, Jaypee Brothers Medical Publishers, 2021.
3. Inderbir Singh's book of Anatomy; Vol 1,2,3, 3rd Edition, 2020
4. Inderbir Singh's Text book of Human Histology, Jaypee Publishers, 10th Edition, 2022
5. Inderbir Singh's Text book of Human Embryology, Jaypee Publishers, 12th Edition, 2022
6. A. k. Datta, Essentials of human anatomy; Current books international publishers; Volume: 1,2,3,4; 10th Edition 2019.
7. Richard Tunstall and Susan Standring, Gray's Anatomy - The anatomical basis of clinical practice, Elsevier publishers, 42nd Edition 2020.
8. Rachel koshi, Cunningham's manual of practical Anatomy, Oxford University Press publishers, Volume - 1,2,3; 16th Edition 2017.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=UzPafAvoYH0>.
2. <https://www.youtube.com/watch?v=Nr6a7kqh4ZM>
3. https://www.youtube.com/watch?v=bL_fg1St7Cg
4. <https://www.youtube.com/watch?v=aV1cNPJAByo>
5. https://www.youtube.com/watch?v=_l-NS4Q3bv0
6. <https://www.youtube.com/watch?v=upqjWIElahs>
7. <https://www.youtube.com/watch?v=849IL6HSMd4>
8. <https://www.youtube.com/watch?v=mcmUWYzhdzA>
9. <https://www.youtube.com/watch?v=IvK-UGOI5ZQ>
10. <https://www.youtube.com/watch?v=-sDoYJOQMFw>

WEB RESOURCES:

1. <https://medicostimes.com/mbbs-first-year-books-pdf/>
2. <https://worldofmedicalsaviours.com/anatomy-books-pdf/>
3. <https://enarm.com.mx/catalogo/31.pdf>
4. https://www.freebookcentre.net/medical_books_download/Clinical-Anatomy.html
5. https://www.academia.edu/42079859/ESSENTIAL_CLINICAL_ANATOMY
6. <https://emedicodiary.com/book/view/47/kulkarni-clinical-anatomy-a-problem-solving-approach>
7. <https://textbookequity.org/Textbooks/anatomy+phys+vol2a.pdf>
8. <https://openstax.org/details/books/anatomy-and-physiology>
9. <https://www.pdfdrive.com/clinical-anatomy-books.html>
10. <https://www.goodreads.com/en/book/show/51790563>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22PT102009	HUMAN PHYSIOLOGY - I	4	1	2	-	6
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on Basic structure and detailed physiology of cell, body fluids, muscles, digestive system, respiratory system and renal system.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Understand the basic concepts of cell and body fluids
- CO2.** Analyse the blood and its components.
- CO3.** Analyse the relationship between the mechanisms of nerve and muscle physiology.
- CO4.** Understand the process of digestion and absorption of food.
- CO5.** Understand the mechanisms of respiration on human body.
- CO6** Understand the concepts of blood filtration by kidneys
- CO7** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	-	-	-	-	-	-	-	-
CO2	3	2	-	2	-	-	-	-	-	2
CO3	3	2	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-
CO5	3	-	-	-	-	-	-	-	-	-
CO6	3	-	-	-	-	-	-	-	-	-
CO7	-	-	-	-	-	-	3	3	-	3
Course Correlation Mapping	3	2	-	2	-	-	3	3	-	2

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

MODULE 1: GENERAL PHYSIOLOGY AND BLOOD

(12 Periods)

Cell: Morphology. Organelles: their structure and functions, Transport Mechanisms across the cell membrane, Body fluids: Distribution, composition. Blood: Introduction, Composition and functions. Plasma: Composition, formation, functions and Plasma proteins. RBC: count and its variations. Erythropoiesis- stages, factors regulating. Reticulo-endothelial system, Haemoglobin: structure, function and derivatives Anemia, types of Jaundice. Blood indices, PCV, ESR. WBC: Classification, Morphology, functions, count, its variation of each and Immunity. Platelets: Morphology, functions, count, its variations Haemostatic mechanisms. Blood coagulation-factors: mechanisms, Clinical disorders and Anticoagulants. Blood Groups: Landsteiner' s law. Types, significance, determination, Erythroblastosis Fetalis. Blood Transfusion: Cross matching, Indications and complications. Lymph: Composition, formation, circulation and functions.

MODULE 2: NERVE MUSCLE PHYSIOLOGY

(12 Periods)

Introduction: Resting membrane potential. Action potential - ionic basis and properties. Nerve: Structure and functions of neurons. Classification, Properties and impulse transmission of nerve fibers. Nerve injury - degeneration and regeneration. Muscle: Classification, Skeletal muscle: Structure. Neuromuscular junction: Structure. Neuromuscular transmission, myasthenia gravis. Excitation- Contraction coupling, Rigor mortis.

MODULE 3: DIGESTIVE SYSTEM

(12 Periods)

Introduction: Physiological anatomy and nerve supply of alimentary canal, Enteric nervous system. Salivary Secretion: Saliva: Composition. Functions. Swallowing: Definition. Different stages. Function. Stomach: Functions. Gastric juice: Gland, composition, function, regulation. Gastrin: Production, function and regulation. Peptic ulcer. Pancreatic Secretion: Composition, production, function. Liver: Functions of liver. Bile secretion: Composition, functions and regulation. Gall bladder: Functions. Intestine: Succus entericus: Composition, function and regulation of secretion. Intestinal motility and its function and regulation. Mechanism of Defecation.

MODULE 4: RESPIRATORY SYSTEM

(12 Periods)

Introduction: Physiological anatomy -. Functions of respiratory system. Respiratory muscles. Mechanics of breathing: Intrapleural and Intrapulmonary pressure changes during respiration. Lung compliance: Normal value, Surfactant - Composition, production, functions. RDS Spirometry: Lung volumes and capacities, Timed vital capacity and its clinical significance, Maximum ventilation volume, Respiratory minute volume, Dead Space: Types and their definition, Pulmonary Circulation, Ventilation-perfusion ratio and its importance. Transport of respiratory gases: Oxygen transport - Different forms, oxygen-haemoglobin dissociation curve. Carbon dioxide transport: Different forms, chloride shift. Regulation of Respiration: Neural Regulation. Hering - breuer' s reflex. Voluntary control. Chemical Regulation. Hypoxia: Effects of hypoxia, Type. Disorders of Respiration: Dyspnoea, Orthopnoea, Hyperpnoea and hyperventilation.

MODULE 5: RENAL SYSTEM

(12 Periods)

Introduction: Physiological anatomy. Nephrons - cortical and juxtamedullary. Juxtaglomerular apparatus. Glomerular membrane. Renal blood flow and its regulation. Functions of kidneys. Mechanism of Urine Formation: Glomerular Filtration: Mechanism of glomerular filtration. GFR - normal value and factors affecting. Renal clearance. Inulin clearance. Creatinine clearance. Tubular Reabsorption: Reabsorption of Na⁺, glucose, HCO₃⁻, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: TmG. Renal threshold for glucose. Tubular Secretion: Secretion of H⁺ and K⁺. PAH clearance, Micturition: Mechanism of micturition. Atonic bladder, automatic bladder, Artificial Kidney: Principle of haemodialysis, Structure of skin and

functions.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Study of Microscope and its uses
2. Collection of blood sample
3. Determination of RBC count
4. Determination of WBC count
5. Differential leukocyte count
6. Estimation of haemoglobin
7. Determination of blood groups
8. Determination of bleeding time clotting time
9. Determination of ESR
10. Determination of PCV

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

1. Guyton & Hall, Text book of Medical Physiology, Saunders publisher, 13th Edition ,2015.
2. K Sembulingam, Essentials of Medical Physiology, Jaypee Medical Publishers, 9th Edition ,2022.
3. G.K. Pal and G.K Pravati pal, Textbook of Practical Physiology, Orient Longman, 2003

VIDEOLECTURES:

1. <https://www.youtube.com/watch?v=xyhbIPSLBsA>
2. <https://www.youtube.com/watch?v=0f9p9JX4qJk>
3. [youtube.com/watch?v=JZhJI6rfFzg](https://www.youtube.com/watch?v=JZhJI6rfFzg)

Web Resources:

1. <https://books.google.co.in/books?id=CcJvIiesqp8C&lpg=PP1&pg=PP1#v=twopage&q&f=false>
2. https://books.google.co.in/books?id=KNpN_jvbmAIC&lpg=PP1&pg=PP1#v=onepage&q&f=false
3. <https://www.visiblebody.com/>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CC101019	NATIONAL HEALTH CARE DELIVERY SYSTEM AND MEDICAL RECORDS MANAGEMENT	4	-	-	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on word roots, prefixes, suffixes basic medical terms, medical abbreviations to human body systems and record-keeping methods in health care and medical ethics and law. Health care system, AYUSH, vital events of life and epidemiology in India.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate basic knowledge on roots, prefixes and suffixes to form medical terms in health care system
- CO2.** Apply advanced tools and techniques to maintain patient health details in medical system and Design a standard protocol by applying medical law and ethics.
- CO3.** Understand the basic concepts in health care delivery system and health policies
- CO4.** Acquire knowledge on various AYUSH systems and Analyze the Vital events of life and its impact on demography.
- CO5.** Work individually or in teams to solve problems with effective communication.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	-	-	-	-	-	-	-
CO2	3	2	-	1	-	1	-	-	1	-
CO3	3	2	-	-	-	1	-	-	1	-
CO4	3	2	-	1	-	1	-	-	1	1
CO5	3	2	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	2	-	1	-	1	-	-	1	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module1: INTRODUCTION TO MEDICAL TERMINOLOGY (15 Periods)

Derivation of medical terms, define word roots, prefixes, and suffixes, Conventions for combined morphemes and the formation of plurals, Basic medical terms, Form medical terms utilizing roots, suffixes, prefixes, and combining roots. Interpret basic medical abbreviations/ symbols , utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, Respiratory system, cardiovascular system, nervous system, and endocrine system.

Module2: MEDICAL ETHICS & RECORD KEEPING (15 Periods)

Medical ethics – Definition, Basic principles of medical ethics – Confidentiality, Malpractice and negligence – Rational and irrational drug therapy, Autonomy and informed consent – Right of patients, Care of the terminally ill- Euthanasia, Development of a standardized protocol to avoid sentinel events, Standard procedures in record keeping, interpret medical orders/reports, Data entry and management on electronic health record system, Advanced tools to maintain records in Health care.

Module3: NATIONAL HEALTHCARE DELIVERY SYSTEM & NATIONAL HEALTH POLICIES (15 Periods)

Healthcare delivery system in India at primary, secondary and tertiary care Community participation in healthcare delivery system, Health system in developed countries, Private Sector, National Health Mission, National Health Policy Issues in Health Care Delivery System in India achievements and constraints in various National Health programme. National Health Programme, Background objectives, action plan, targets, operations.

Module4: AYUSH SYSTEM OF MEDICINE, DEMOGRAPHY & VITAL STATISTICS (15 Periods)

Ancient scientists of Bharat, introduction to Ayurveda, Naturopathy, Unani, Siddha, Homeopathy, Need Course for integration of various system of medicine. Demography & its concept, Vital events of life & its impact on demography, Significance and recording of vital statistics, Census & its impact on health policy.

Total Periods:60

EXPERIENTIAL LEARNING

1. Demonstration of various levels of health care system
2. Presentation of health care programs.

3. Illustration on ayush system of medicine and it's practice.
4. A clinical overview on demography and vital statistics.
5. Discussion on medical terminology of different body systems.
6. Write about basic principles of medical ethics.
7. Write about electronic health record system.

RESOURCES

TEXTBOOKS:

1. Adam Brown "Medical Terminology Easy Guide for Beginners" Create Space Independent Publishing Platform, Edition 1, 2016.
2. GD Mogli "Medical records organization and management" Jaypee Brothers Medical Publishers, Edition2, 2016.

REFERENCE BOOKS:

1. Francis, Hospital Care Management, 4th Edition, 2019
2. Sharon B. Buchbinder, Introduction to Health Care Management, 2nd Edition, 2011

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=_bDatJxhfkQ
2. <https://www.youtube.com/watch?v=9iMhc2OU-go>
3. https://youtu.be/It_cV56DxTk
4. https://youtu.be/VIrdH_3RKKk

WEB RESOURCES:

1. <https://library.medschl.cam.ac.uk/e-books/>
2. <https://www.ncbi.nlm.nih.gov/>
3. <https://blog.ipleaders.in/medical-laws-conflict-ethic>
4. <https://www.gponline.com/medico-legal-importance-good-records/article/89>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22DF102025	RESEARCH METHODOLOGY AND BIOSTATISTICS	3	-	2	-	4

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed Knowledge on the basic principles of research and methods applied to draw inferences from the research findings. The students will also be made aware of the need of biostatistics and understanding of data, sampling methods, in addition to being given information about the relation between data and variables.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand concepts of research methodology.
- CO2** Collect data for research in various methods.
- CO3** Analyse research data by using biostatistics
- CO4** Write their research or review papers to publish in journal
- CO5** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	1	-	3	1	-	-	-
CO2	1	1	2	-	2	-	-	-	3	-

C03	1	1	2	-	1	-	-	1	-	1
C04	2	1	2		2					1
C05	1	2	2	-	3	2	1	-	-	-
Course Correlation Mapping	1	1	2	1	2	3	1	1	3	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: FOUNDATIONS OF RESEARCH

(10 Periods)

Definition Research, Introduction to research methods, Objectives of Research, Identifying research problem, Types of Research & Research Approaches, Research Methods vs Methodology Ethical issues in research, Research design.

Module 2: RESEARCH PROBLEM AND DATA COLLECTION

(09 Periods)

Research Problem, Measurement & Scaling Techniques, Types of Data, Research tools and Data Research Problem, Measurement & Scaling Techniques, Types of Data, Research tools and Data collection methods, Sampling methods, randomization, crossover design, placebo, blinding techniques, Developing a research proposal.

Module 3: INTRODUCTION TO BIOSTATISTICS

(09 Periods)

Meaning, Definition, and Characteristics of Statistics, Importance of the Study of Statistics, Understanding of data in biostatistics, Statistics in Health Science, How & where to get relevant data, Relation between data & variables, Type of variables: defining data sets.

Module 4: DATA ANALYSIS AND DISSEMINATION

(09 Periods)

Basic Principles of Data Graphical Representation, Analysis of variance & covariance. Measures of central tendency include mean, median, and mode. Probability and standard distributions include binomial and normal distributions. Sample size calculation, Sampling techniques address sampling need, criteria, procedures, design errors, variation, and tests of significance. Statistical significance involves parametric and non-parametric tests.

Module 5: SCIENTIFIC WRITING

(08 Periods)

Introduction, reviewing literature, formulating research problems and proposals, integrating theory and data and understanding citation and referencing. types of reports, formal report layout, and journal standards (impact factor, citation index). importance of communicating science, challenges in scientific writing, plagiarism and its detection and writing scientific papers.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. To practice problems on various biostatistics tools
2. Demonstrate types of data collection from hospital.
3. To determine research statistics tools.
4. Analyze data by using SPSS.

RESOURCES

TEXT BOOKS:

1. S.P. Gupta, Statistical Methods, Sultan Chand & Sons, Edition 46,2023.
2. C.R. Kothari, Research Methodology, New age International Publisher, Edition 4, 2019.

REFERENCE BOOKS:

1. Himanshu Tyagi, Biostatistics Buster, Jaypee Brothers Medical Publishers, Edition 1,2011.
2. Bratati Banerjee, Mahajans Methods in Bistatistical for medical students and research workers, Jaypee Brothers Medical Publishers, Edition 9, 2018.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=d77eQz0_Sfk
2. https://www.youtube.com/watch?v=yOU_s0xzc-Y
3. https://www.youtube.com/watch?v=txIS0N0I9xU&list=PLEIbY8S8u_DK7i4Fj6Hgq8sn_l42k9H1L
4. https://www.youtube.com/watch?v=1Q6_LRZwZrc

WEB RESOURCES:

1. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8764821/>
2. <https://www.scribbr.com/category/methodology/>
3. <https://www.easybiologyclass.com/biostatistics-introduction-significance-applications-and-limitations-of-statistics/>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22PT102010	HUMAN ANATOMY-II	4	1	2	-	6
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on the Macroscopic & Microscopic structure and functions of human body and its Development which is essential for clinical studies.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate the anatomical knowledge of human excretory organs.
- CO2.** Apply the anatomical knowledge of reproductive organs and its application in clinical practice.
- CO3.** Demonstrate the structure and functions of exocrine and endocrine glands.
- CO4.** Understand the structure and functions of nervous system and its importance in health care practice.
- CO5.** Analyze the concepts of normal microscopic anatomy of various systemic organs in human body.
- CO6.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	1	1	-	1	1	1	-	1
CO2	3	2	1	1	-	1	1	1	-	1
CO3	3	2	1	1	-	1	1	1	-	1
CO4	3	2	1	1	-	1	1	1	-	1
CO5	3	1	1	1	-	1	1	1	-	1
CO6	3	-	-	-	-	-	1	-	-	-
Course Correlation Mapping	3	2	1	1	-	1	1	1	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: EXCRETORY SYSTEM

(11 Periods)

Organs - Kidney, Ureter, Urinary bladder, and Urethra; Skin & Its Appendages - Thick skin, and Thin skin, Hair, and Nail.

Module 2: REPRODUCTIVE SYSTEM

(11 Periods)

Male reproductive system: Organs - Scrotal sac & Testis, Epididymis, Vas deferens, Seminal vesicle, Prostate, and Urethra.

Female reproductive system: Organs - Ovary, Uterus, Fallopian tube, Cervix, Vagina, and Mammary gland.

Module 3: ENDOCRINE SYSTEM

(11 Periods)

Exocrine glands: Salivary glands, Lacrimal gland, Pancreas, Liver, Mammary gland, Sweat and Sebaceous gland.

Endocrine glands: Hypothalamus, Pineal gland, Pituitary gland, Thyroid gland, Parathyroid gland, Pancreas, Adrenal gland, and Gonads.

Module 4: NERVOUS SYSTEM, AND SENSE ORGANS

(12 Periods)

Nervous system: Neuron, Neuroglia, Classification, Autonomic Nervous system; Brain - Cerebrum, Cerebellum, Basal Ganglia, Limbic system, Thalamus, Hypothalamus, Ventricles, Cerebro-Spinal fluid, and Spinal cord.

Sense organs: Tongue - Taste pathway, Nose - Olfactory pathway, Eye - Visual pathway, Ear - Auditory pathway.

Module 5: SYSTEMIC HISTOLOGY

(15 Periods)

Respiratory system: Nasal cavity, Larynx, Trachea, and Lungs.

Digestive system: Oral cavity, Teeth, Tongue, Salivary glands - Parotid, Sub-mandibular, Sub-lingual, Pharynx, Oesophagus, Stomach, Small intestine - Duodenum, Jejunum, Ileum, Large Intestine - Caecum, appendix, Colon, Liver, Gall bladder, and Pancreas.

Nervous system: Cerebrum, Cerebellum, and Spinal cord.

Urinary system: Kidney, Ureter, Urinary bladder, and Urethra.

Male reproductive system: Testis, Vas deferens, Prostate, and Male urethra.

Female reproductive system: Mammary gland, Ovary, Uterus, Cervix, and Vagina.

Endocrine system: Pituitary, Thyroid, and Adrenal gland.

Skin: Thick skin, and Thin skin.

Eye: Cornea, and Retina.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Demonstration of organs in human excretory system.
2. Demonstration of human reproductive organs.
3. Demonstration of exocrine and endocrine glands in human body.
4. Demonstration of organs of nervous system and sense organs in human body.
5. Demonstration of microscopic structures of various systemic organs in human body.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES BOOKS:

1. B.D Chaurasia' s Human Anatomy-Regional and applied; CBS publishers, Vol 1,2,3,4 Edition 9, 2022.
2. Snell [Richard S], Clinical Anatomy for medical students, Edition 6, 2021
3. Inderbir Singh' s book of Anatomy, Vol 1,2,3, Edition 3, 2020
4. Inderbir Singh' s Text book of Human Histology, Jaypee Publishers, Edition 10, 2022
5. Inderbir Singh' s Text book of Human Embryology, Jaypee Publishers, Edition 12, 2022
6. A. k. Datta, Essentials of human anatomy; Current books international publishers; Volume: 1,2,3,4; Edition 10, 2019.
7. Richard Tunstall and Susan Standring, Gray's Anatomy - The anatomical basis of clinical practice, Elsevier publishers, Edition 42, 2020.
8. Rachel koshi, Cunningham's manual of practical Anatomy, Oxford University Press publishers, Volume - 1,2,3; Edition 16, 2017.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=UzPafAvoYH0>.
2. <https://www.youtube.com/watch?v=Nr6a7kqh4ZM>
3. https://www.youtube.com/watch?v=bL_fg1St7Cg
4. <https://www.youtube.com/watch?v=aV1cNPJAByo>
5. https://www.youtube.com/watch?v=_l-NS4Q3bv0
6. <https://www.youtube.com/watch?v=upqjWIElahs>
7. <https://www.youtube.com/watch?v=849IL6HSMd4>
8. <https://www.youtube.com/watch?v=mcmUWYzhdzA>
9. <https://www.youtube.com/watch?v=IvK-UGOI5ZQ>
10. <https://www.youtube.com/watch?v=-sDoYJOQMFw>

WEB RESOURCES

1. <https://medicostimes.com/mbbs-first-year-books-pdf/>

2. <https://worldofmedicalsaviours.com/anatomy-books-pdf/>
3. <https://enarm.com.mx/catalogo/31.pdf>
4. https://www.freebookcentre.net/medical_books_download/Clinical-Anatomy.html
5. https://www.academia.edu/42079859/ESSENTIAL_CLINICAL_ANATOMY
6. <https://emedicodiary.com/book/view/47/kulkarni-clinical-anatomy-a-problem-solving-approach>
7. <https://textbookequity.org/Textbooks/anatomy+phys+vol2a.pdf>
8. <https://openstax.org/details/books/anatomy-and-physiology>
9. <https://www.pdfdrive.com/clinical-anatomy-books.html>
10. <https://www.goodreads.com/en/book/show/51790563>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22PT102011	HUMAN PHYSIOLOGY-II	4	-	2	-	5
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on functional aspects cardiovascular physiology, Endocrine physiology, reproductive physiology, nervous physiology and special senses in human system and its pathophysiology.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand the basic concepts of cardiovascular physiology.
- CO2** Understand the mechanisms and pathophysiology of endocrine glands.
- CO3** Understand the basic concepts of male and female reproductive physiology and various methods of contraception.
- CO4** Analyse the process of sensory and motor impulse transmission from body to brain and vice versa.
- CO5** Understand the mechanisms of Special senses and their role in human body.
- CO6** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	-	-	-
CO2	3	2	-	2	-	-	-	-	-	2
CO3	3	2	-	-	-	-	-	-	-	-
CO4	3	2	-	-	-	-	-	-	-	-
CO5	3	-	-	-	-	-	-	-	-	-
CO6	3	-	-	-	-	-	3	3	-	-
Course Correlation Mapping	3	2	-	2	-	-	3	3	-	2

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CARDIOVASCULAR SYSTEM

(14 Periods)

Introduction: Physiological anatomy and nerve supply of the heart and blood vessels. Organisation of CVS. Cardiac muscles: Structure, Conducting system: Components. Impulse conduction, Cardiac Cycle: Definition. Phases of cardiac cycle. Pressure and volume curves. Heart sounds - causes, character., ECG: Definition. Different types of leads. Waves and their causes. P-R interval., Cardiac Output: Definition. Normal value. Determinants. Stroke volume and its regulation. Heart rate and its regulation. variations, Arterial Blood Pressure: Definition. Normal values and its variations. Regulation of BP., Arterial pulse., Shock - Definition. Classification-causes and features, Special circulations

Module 2: ENDOCRINE SYSTEM

(14 Periods)

Introduction: Major endocrine glands. Hormone: classification, mechanism of action., Functions of hormones, Pituitary Gland: Anterior Pituitary and Posterior Pituitary hormones: Secretory cells, action on target cells, Growth hormone functions Disorders: Gigantism, Acromegaly, Dwarfism, Diabetes insipidus., Pituitary-Hypothalamic Relationship., Thyroid Gland: Thyroid hormone and calcitonin: secretory cells, synthesis, storage, action and regulation of secretion. Disorders: Myxedema, Cretinism, Grave' s disease., Parathyroid hormones: secretory cell, action, regulation of secretion. Disorders: Hyperparathyroidism. Hyperthyroidism. Calcium functions, Adrenal Gland: Adrenal Cortex: Secretory cells, synthesis, action, Cortisol, and Androgens. Disorders: Addison' s disease, Cushing' s syndrome, Conn' s syndrome, Adrenogenital syndrome., Adrenal Medulla: Secretory cells, action, and noradrenaline. Disorders: Pheochromocytoma., Endocrine Pancreas: Secretory cells, action, regulation of secretion of insulin and glucagon. Glucose metabolism and its regulation. Disorder: Diabetes mellitus., Local Hormones. (Briefly)

Module 3: REPRODUCTIVE SYSTEM

(08 Periods)

Introduction: Physiological anatomy reproductive organs. Sex determination. Sex differentiation. Disorder, Male Reproductive System: Functions of testes. Pubertal changes in males. Spermatogenesis. Testosterone: action. Semen., Female Reproductive System: Functions of ovaries and uterus. Pubertal changes in females. Hormones: estrogen and progesterone-action., Menstrual Cycle: Phases., Menarche. Menopause. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions of placenta. Contraception methods male and female

Module 4: NERVOUS SYSTEM

(18 Periods)

Introduction: Organisation of CNS - central and peripheral nervous system. Functions of nervous system. Synapse: Functional anatomy, classification, Synaptic transmission., Sensory Mechanism: Sensory receptors: function, classification and Sensory pathway:, The ascending tracts - lateral spinothalamic tract and the anterior spinothalamic tract - their origin, course, termination and functions., Sensory cortex. Somatic sensations: crude touch, fine touch, tactile localization, tactile discrimination, stereognosis, vibration sense, kinesthetic sensations. Pain sensation:. Cutaneous pain -slow and fast pain, hyperalgesia. Deep pain. Visceral pain - referred pain. Motor Mechanism: Motor Cortex. Motor pathway: The descending tracts - pyramidal tracts, extrapyramidal tracts - origin, course, termination and functions. Upper motor neuron and lower motor neuron. Paralysis, monoplegia, paraplegia, hemiplegia and quadriplegia., Reflex Action: components, Bell-Magendie law, classification and Monosynaptic and, superficial reflexes, deep reflexes, Spinal cord Lesions: Complete transection and Hemi-section of the spinal cord., Cerebellum: Functions., Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome, Basal Ganglia: Structures included and functions. Parkinson' s disease., Higher functions of cerebral cortex - learning, memory and speech., CSF: Formation, composition, circulation and functions. Lumbar puncture and its significance. Blood brain barrier. Hydrocephalus., ANS: Features and actions of parasympathetic and sympathetic nervous system.

Module 5: SPECIAL SENSES

(06 Periods)

Vision: Introduction: Functional anatomy of eye ball. Functions of cornea, iris, pupil, aqueous humor - glaucoma, lens - cataract, vitreous humor, rods and cones. Photopic vision. Scotopic vision., Visual Pathway and the effects of lesions. Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism., Audition: Physiological anatomy of the ear. Functions of external ear, middle ear auditory pathway. Types of Deafness. Tests for hearing., Taste: Taste buds. Primary tastes. Gustatory pathway. Smell: Olfactory pathway.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Examination of Radial pulse
2. Recording of blood pressure
3. Examination of CVS
4. Examination of sensory nervous system
5. Examination of motor nervous system

RESOURCES

TEXT BOOKS:

1. K Sembulingam, Essentials of Medical Physiology, Jaypee Medical Publishers, Edition 9, 2022.
2. D Venkatesh, Basics Of Medical Physiology, Wolters Kluwer, Edition 4, 2023
3. G.K. Pal and G.K Pravati pal, Textbook of Practical Physiology, Orient Longman, Edition 1, 2003

REFERENCE BOOKS:

1. Ganong, Review of medical physiology, The McGraw hill, Edition 23, 2023.
2. Guyton & Hall, Text book of Medical Physiology, Saunders publisher, Edition 13, 2015.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=xyhbIPSLBsA>
2. <https://www.youtube.com/watch?v=0f9p9JX4qJk>
3. [youtube.com/watch?v=JZhJI6rfFzg](https://www.youtube.com/watch?v=JZhJI6rfFzg)

WEB RESOURCES

1. <https://books.google.co.in/books?id=CcJvIiesqp8C&lpg=PP1&pg=PP1#v=twopage&q&f=false>
2. https://books.google.co.in/books?id=KNpN_jvbmAIC&lpg=PP1&pg=PP1#v=onepage&q&f=false
3. <https://www.visiblebody.com/>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CC111003	CLINICAL POSTING-III	-	-	-	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides basic knowledge on hospital setup, care of patient, primary illness observation, and handling basic clinical instruments at training hospital.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Develop communication skills to deal with patients and health care professionals.
- CO2.** Apply appropriate medical devices and techniques to diagnose the patient illness.
- CO3.** Develop skills in formulating various medical documentation procedures.
- CO4.** Work individually and in teams following ethical practice.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	2	-	1
CO2	3	1	1	3	-	-	-	-	-	1
CO3	3	-	-	2	-	-	3	1	-	-
CO4	3	-	1	2	-	1	1	1	-	1
Course Correlation Mapping	3	1	1	3	-	1	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

Note:

1. Students will attend to clinical posting weekly two days in 5th semester.
2. The Evaluation process is day to day, based on logbook and viva.

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CC111004	CLINICAL POSTING-IV	-	-	-	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides basic knowledge on hospital setup, care of patient, primary illness observation, and handling basic clinical instruments at training hospital.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Develop communication skills to deal with patients and health care professionals.
- CO2.** Apply appropriate medical devices and techniques to diagnose the patient illness.
- CO3.** Develop skills in formulating various medical documentation procedures.
- CO4.** Work individually and in teams following ethical practice.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	2	-	1
CO2	3	1	1	3	-	-	-	-	-	1
CO3	3	-	-	2	-	-	3	1	-	-
CO4	3	-	1	2	-	1	1	1	-	1
Course Correlation Mapping	3	1	1	3	-	1	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

Note:

1. Students will attend to clinical posting weekly two days in 6th semester.
2. The Evaluation process is day to day, based on logbook and viva.

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22DF101001	RESEARCH METHODOLOGY AND BIostatISTICS FOR HEALTH PROFESSIONALS	4	-	-	-	4

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed Knowledge on the basic principles of research and methods applied to draw inferences from the research findings. The students will also be made aware of the need of biostatistics and understanding of data, sampling methods, in addition to being given information about the relation between data and variables.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand concepts of research methodology.
- CO2** Collect data for research in various methods.
- CO3** Analyse research data by using biostatistics
- CO4** Write their research or review papers to publish in journal
- CO5** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	1	-	3	1	-	-	-
CO2	1	1	2	-	2	-	-	-	3	-
CO3	1	1	2	-	1	-	-	1	-	1
CO4	2	1	2		2					1

C05	1	2	2	-	3	2	1	-	-	-
Course Correlation Mapping	1	1	2	1	2	3	1	1	3	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: FOUNDATIONS OF RESEARCH

(10 Periods)

Definition Research, Introduction to research methods, Objectives of Research, Identifying research problem, Types of Research & Research Approaches, Research Methods vs Methodology Ethical issues in research, Research design.

Module 2: RESEARCH PROBLEM AND DATA COLLECTION

(09 Periods)

Research Problem, Measurement & Scaling Techniques, Types of Data, Research tools and Data Research Problem, Measurement & Scaling Techniques, Types of Data, Research tools and Data collection methods, Sampling methods, randomization, crossover design, placebo, blinding techniques, Developing a research proposal.

Module 3: INTRODUCTION TO BIOSTATICS

(09 Periods)

Meaning, Definition, and Characteristics of Statistics, Importance of the Study of Statistics, Understanding of data in biostatistics, Statistics in Health Science, How & where to get relevant data, Relation between data & variables, Type of variables: defining data sets.

Module 4: DATA ANALYSIS AND DISSEMINATION

(09 Periods)

Basic Principles of Data Graphical Representation, Analysis of variance & covariance. Measures of central tendency include mean, median, and mode. Probability and standard distributions include binomial and normal distributions. Sample size calculation, Sampling techniques address sampling need, criteria, procedures, design errors, variation, and tests of significance. Statistical significance involves parametric and non-parametric tests.

Module 5: SCIENTIFIC WRITING

(08 Periods)

Introduction, reviewing literature, formulating research problems and proposals, integrating theory and data and understanding citation and referencing. types of reports, formal report layout, and journal standards (impact factor, citation index). importance of communicating science, challenges in scientific writing, plagiarism and its detection and writing scientific papers.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. To practice problems on various biostatistics tools
2. Demonstrate types of data collection from hospital.
3. To determine research statistics tools.
4. Analyze data by using SPSS.

RESOURCES

TEXT BOOKS:

3. S.P. Gupta, Statistical Methods, Sultan Chand & Sons, Edition 46,2023.
4. C.R. Kothari, Research Methodology, New age International Publisher, Edition 4, 2019.

REFERENCE BOOKS:

1. Himanshu Tyagi, Biostatistics Buster, Jaypee Brothers Medical Publishers, Edition 1,2011.
2. Bratati Banerjee, Mahajans Methods in Bistatistical for medical students and research workers, Jaypee Brothers Medical Publishers, Edition 9, 2018.

VIDEO LECTURES:

1. https://www.youtube.com/watch?v=d77eQz0_Sfk
2. https://www.youtube.com/watch?v=yOU_s0xzc-Y
3. https://www.youtube.com/watch?v=txIS0N0I9xU&list=PLEIbY8S8u_DK7i4Fj6Hgg8sn_l42k9H1L
4. https://www.youtube.com/watch?v=1Q6_LRZwZrc

WEB RESOURCES:

4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8764821/>
5. <https://www.scribbr.com/category/methodology/>
6. <https://www.easybiologyclass.com/biostatistics-introduction-significance-applications-and-limitations-of-statistics/>

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22CE107601	ENVIRONMENTAL SCIENCE	2	-	-	-	2
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on natural resources, ecosystems, biodiversity, environment pollution and control, social issues and environment, human population and environment.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

Analyze natural resources to solve complex environmental problems and natural resource management considering society, environment and sustainability.

Analyze ecosystems and biodiversity to solve complex environmental problems by following environmental ethics considering society, environment and sustainability besides communicating effectively in graphical form.

Analyze various types of pollution and their control measures to solve environmental problems through appropriate tools and techniques following latest developments considering society, ethics, environment and sustainability.

Analyze social issues and its impact on environment, environmental acts to solve complex environmental problems considering society, environment and sustainability besides communicating effectively in graphical form.

Analyze human population and its impact on environment to solve complex environmental problems through team work and using appropriate tools and techniques considering ethics, society, environment and sustainability.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	-	2	-	-	1	-	1
CO2	3	2	-	-	2	2	1	1	-	1
CO3	3	2	2	1	2	2	2	-	-	-
CO4	3	2	2	2	2	-	-	2	-	1
CO5	3	2	2	2	2	2	2	-	-	1
Course Correlation Mapping	3	2	2	2	2	2	2	1	-	1

Correlation Levels: 3: High; 2: Medium; 1: LoCOURSE

CONTENT

Module 1: NATURAL RESOURCES (07 Periods)

Multidisciplinary nature of environment; Natural Resources: Renewable and non-renewable resources; Forest, Water, Mineral, Food and Energy resources -Causes, Effects, Remedies, Case studies; Role of an individual in conservation of natural resource and equitable use of resources for sustainable lifestyles.

Module 2: ECOSYSTEMS AND BIODIVERSITY (07 Periods)

Ecosystems: Concept of an ecosystem, Structure and function of an ecosystem - Producers, Consumers, Decomposers; Food chains, Food webs, Ecological pyramids – Types; Characteristic features, Structure and functions of forest ecosystem, Desert ecosystem, Aquatic ecosystem.

Biodiversity: Concept and value of biodiversity, Role of biodiversity in addressing new millennium challenges, Hot spots of biodiversity, Threats to biodiversity, Man-wild life conflicts, Endemic, Endangered and extinct species of India, Conservation of biodiversity – In-situ and ex-situ.

Module 3: ENVIRONMENTAL POLLUTION AND CONTROL (06 Periods)

Causes, Adverse effects and control measures of pollution - Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution, Nuclear pollution, Solid waste management – Urban waste, industrial waste; Latest developments in pollution control, Hazards and disaster management – Floods, Earthquakes, Tsunamis, Case studies.

Module 4: SOCIAL ISSUES AND THE ENVIRONMENT (06 Periods)

Sustainable development, Urban problems related to energy, Environmental ethics –Issues, Solutions; Global warming, Acid rain, Ozone layer depletion, Nuclear accidents and case studies, Wasteland reclamation, Consumerism and waste products, Concept of green technologies, Environment justice: National Green Tribunal and its importance; Environment protection act, Air act, Water act, Wildlife protection act, Forest conservation act, Issues involved in enforcement of environmental legislation, Public environmental awareness.

Module 5: HUMAN POPULATION AND THE ENVIRONMENT (04 Periods)

Population growth, Population characteristics and variation among nations, Population explosion, Family welfare program, Environment and human health, Human rights, Value education, HIV/AIDS, Women and child welfare, Role of information technology in environment and human health; Case studies - Field Work/Assignment/Seminar on Environmental assets – Water bodies/Forest/Grassland/Hill/Mountain.

Total Periods: 30

EXPERIENTIAL LEARNING

Visit a nearby villages and know the status of availability of local resources that can be improved through proper education.

Make an awareness program in the villages for the development of natural resources, ecosystems and biodiversity.

Prepare a document by visiting a local urban waste dumping yard near to the Tirupati city.

Visit a local village and find a barren land and make the land into a useful land by planting plants or providing the soil and fertilizers required to improve the soil.

Visit a local zoological park and identify the species variety and variability.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

TEXT BOOKS:

Anubha Kaushik and Kaushik, C.P., *Perspectives in Environmental Studies*, New Age International (P) Ltd. Publications, Edition 6, 2018.

Erach Barucha, *Environmental Studies*, Orient Blackswan, Edition 3, 2021.

REFERENCE BOOKS:

Cunningham, W. P. and Cunningham, M. A., *Principles of Environmental Science*, Tata McGraw-Hill Publishing Company, New Delhi, Edition 8, 2016.

Benny Joseph, *Environmental Studies*, Tata McGraw-Hill, Edition 2, 2009.

Anji Reddy, M., *Text Book of Environmental Science and Technology*, BS Publications, Revised Edition, 2014.

Rajagopalan, R., *Environmental Studies*, Oxford University Press, Edition 3, 2015.

VIDEO LECTURES:

[http:// nptel.ac.in/courses/109/104/109104047](http://nptel.ac.in/courses/109/104/109104047)

<https://www.youtube.com/watch?v=mIPBPG-5dUw>

WEB RESOURCES:

<https://nptel.ac.in/courses/122102006>

[https://www.flame.edu.in/academics/ug/program-structure/major-minor courses/environmental-studies](https://www.flame.edu.in/academics/ug/program-structure/major-minor%20courses/environmental-studies)

https://www.tutorialspoint.com/environmental_studies/environmental_studies_environment.htm

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22LG101402	తెలుగు	2	-	-	-	2
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: తుమ్మల సీతారామమూర్తి-ఎక్కట్ల, తిక్కన-నాడీజంఘోషాఖ్యానం, పోతన-ఘోషాఖ్యానం, దువ్వూరి రామిరెడ్డి - కృషి వలుడు, మరియు తెలుగు వ్యాకరణం మీద అవగాహన.

COURSE OUTCOMES: కోర్సు విజయవంతంగా పూర్తిచేసిన తర్వాత ,విద్యార్థులు వీటిని చేయగలరు:

- C01.** విద్యార్థులలో మానవీయ విలువలు పెరిగి నైతిక వలువలతో జీవించడం
- C02.** సమాజంలో మనకు చేతనైన సాయం చెయ్యడం ప్రతి మనిషి బాధ్యత అనే సందేశం
- C03.** త్రికరణ శుద్ధితో కృషి చేస్తే ఏదైనా సాధించ వచ్చు అనే సందేశం
- C04.** వ్యవసాయ రంగం గూర్చి విద్యార్థులలో అవగాహన కలగడం
- C05.** తెలుగు వ్యాకరణం

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	-	-	-	-	-	-	-	-	-
C02	3	-	-	-	-	-	-	-	-	-
C03	3	-	-	-	-	-	-	-	-	-
C04	3	-	-	-	-	-	-	-	-	-
C05	3	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	-	-	-	-	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

పాఠ్య ప్రణాళిక

Module 1: ఎక్కట్లు – తుమ్మల సీతారామమూర్తి

(06 Periods)

సత్యవర్తన, సచ్చీలత, సన్మార్గం, సమసమానత్వం గూర్చి వివరించడం.

Module 2: నాడీజంఘాపాఖ్యానం – తిక్కన

(06 Periods)

సహాయం చేసినవారిని మరచి పోరాదు. చేసిన మేలు మరచిన వారి జీవితం ఎంత హీనంగా ఉంటుందో తెలియజేయడం.

Module 3: ధ్రువోపాఖ్యానం – పోతన

(06 Periods)

ఎటువంటి కష్టాలకు సమస్యలకు కుంగి పోకుండా దీక్షతో పట్టుదలతో కృషితో అనుకున్నది సాధించాలని తెలియజేయడం.

Module 4: కృషీ వలుడు – దువ్వూరి రామిరెడ్డి

(06 Periods)

సమాజానికి వెన్నెముక అయిన రైతు యొక్క కష్టాలను త్యాగాలను వివరించడం.

Module 5: సంధులు, సమాసాలు, అలంకారాలు.

(06 Periods)

తెలుగు భాష యొక్క మూలాలను తెలుసుకోవడం.

Total Periods: 30

RESOURCES

TEXT BOOKS:

1. ఎక్కట్లు – కవి తుమ్మల సీతారామమూర్తి చొదరి.
2. నాడీజంఘాపాఖ్యానం – కవి తిక్కన. (మహాభారతం – శాంతి పర్వం – తృతీయా శ్వాసం – 472 నుండి 511 పద్యాల వరకు).
3. ధ్రువోపాఖ్యానం – కవి పోతన (ఆంధ్ర మాహాభాగవతం – చతుర్థ స్కంధం – 216 నుండి 277 పద్యాల వరకు)
4. కృషీ వలుడు – కవి దువ్వూరి రామిరెడ్డి

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=5jX20h6HWzg>
2. <https://www.youtube.com/watch?v=FFtPSPByBmk>
3. https://www.youtube.com/watch?v=nQHF_pgTfL8
4. <https://www.youtube.com/watch?v=IEERKL3Q2Cs>

Web Resources:

1. http://teluguvignanamvinodam1.blogspot.com/2021/06/maha-bharatam-in-telugu-pdf-free-download_25.html
2. <https://www.freegurukul.org/blog/ramayanam-pdf/>

EXPERIENTIAL LEARNING

The experiential learning components will be detailed in CHO.

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22LG101404	SANSKRIT	2	-	-	-	2

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: अस्मिन् पाठ्यक्रमे संस्कृत गद्य, पद्य, व्याकरणेन सह महाभारतम् अपि च रामायणस्य कान्धन खण्डानां मेलनं भवति । अयं पाठ्यक्रमः छात्राणां कृते विभिन्न संस्कृत ग्रन्थानां अपि च साहित्यस्य समालोचनात्मक विश्लेषण करणमपि शिक्षयति । संपूर्ण पाठ्यक्रमे अस्मिन्, छात्राः देवनागरी लिपेः लिखनं अधिगच्छति, संस्कृतस्य शब्दानां उच्चारणं तथा हृदिस्थं करिष्यति, अपि च प्राथमिक व्याकरण पठिष्यति तेन ते संस्कृते सरल वाक्यानां निर्माणं कर्तुं प्रभवन्ति ।

COURSE OUTCOMES: पाठ्यक्रमस्य सफलसमाप्तेः अनन्तरं छात्राः

- CO1** कर्तव्यपरक शैक्षणिक वृत्तिपरक तथा शोधकर्तृणां निर्माणार्थं छात्राणां संज्ञानात्मक, प्रभावशाली तथा व्यवहारिक क्षमतानां आकार प्रदानार्थं सहायतां करोति।
- CO2** सामाजिक परिवर्तने भागग्रहणार्थं सक्षमाः भवितुं छात्रेषु सेवायाः धारणा संचारः करोति।
- CO3** समकालीन समस्या-समाधान स्थितिषु प्राचीन भारतीय ज्ञानस्य अनुप्रयोगस्य ज्ञानप्राप्तिः। सामान्य रूपेण तथा विशेष रूपेण अभ्यसने तथा तस्य मूल्यांकनस्य संदर्भे च नैतिक उपयुक्ततायाः एकः दृढतर भावनायाः विकासनार्थम्।
- CO4** प्राचीन साहित्यतः प्राथमिक जीवनं तथा अवधारणानां ज्ञानप्रदानं यत् कालातीतः जातः तथापि इदानीमपि समाजाय अनुवर्तते।
आवेदनस्य प्रमुख क्षेत्रेषु प्राथमिक कौशलस्य अधिग्रहणे सुगमकरणम् उदा- नेतृत्वे, संचारे, अनुसंधान योग्यतायां, व्यवहार संशोधने इत्यादि।
- CO5** सामाजिक विविधतायाः कृते सम्मान-विकसितं करनं तथा सामाजिक अपि च सांस्कृतिक प्रासंगिकतायाः अध्ययने अभिवृद्धिं करनम्।

CO-PO Mapping Table:

Course Outcomes	Program Outcomes								
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	3	-	-	-	-	-	-	-	-
CO2	3	-	-	-	-	-	-	-	-
CO3	3	-	-	-	-	-	-	-	-
CO4	3	-	-	-	-	-	-	-	-
CO5	3	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	-	-	-	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module-1: प्राचीन पद्यसाहित्यम्

(06 Periods)

1. आर्य पादुका पट्टाभिषेकः - वल्मीकिः – श्रीमद्रामायणम्
2. यक्षप्रश्नाः - वेदव्यासः – महाभारतम्

Module-2: चम्पूकाव्यम् & आधुनिक पद्यकाव्यम्

(06 Periods)

3. गङ्गावतरणम् - भोजराजः - चम्पूरामायणम्
4. मोहापनोदः - श्री पमिडिपाटि पट्टाभिरामारावः – मूलकथा-‘धर्मसौहृदम्’ इति संस्कृत पद्यकाव्यम्

Module-3: गद्यसाहित्यम्

(06 Periods)

5. अत्युत्कटैः पापपुण्यैः इहैव फलमश्नुते - नारायणपण्डितः - हितोपदेशः
6. शूद्रकवीरवरकथा - हितोपदेशः

Module-4: शब्दाः

(6 Periods)

देव, कवि, भानु, पितृ, धातृ, गो, रमा, मति

Module 5: महाकवि, शास्त्रकाराः

(6 Periods)

1. पाणिनिः 2. कौटिल्यः 3. भरतमुनिः 4. भारविः 5. माघः 6. भवभूतिः
7. शङ्कराचार्यः 8. दण्डी

Total Periods: 30

EXPERIENTIAL LEARNING:

The experiential learning components will be detailed in CHO.

RESOURCES

TEXT BOOKS:

1. विश्वभारती
2. संस्कृत भारती
3. अमृतवाणी

REFERENCE BOOKS:

1. रामायणम्
2. महाभारतम्
3. अष्टाध्यायी
4. अमरकोशः

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=bh-14xfMeYk>
2. <https://www.youtube.com/watch?v=6xFkoOpzsvs>

Web Resources:

1. <https://www.forum.universityupdates.in/threads/ou-sanskrit-2nd-semester-study-material.33659/>
2. https://cbpbu.ac.in/study_mat_sanskrit.php

SCHOOL CORE

Course Code	Course Title	L	T	P	S	C
22BS101036	MIND AND BEHAVIOR	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on Introduction to Mind and Body, Molecules of Life, Story of Heredity and Mind, Neural signaling and Mind behavior, and Functions and Behavior of Brain.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand Mind and body, and coordination of Mind and Body
- CO2** Identify Molecules of life such as water, lipids, proteins etc.,
- CO3** Gain knowledge on aspects of Heredity and Mind.
- CO4** Understand Neural signalling, role of neurotransmitters in neurotransmission.
- CO5** Identify the tests for diagnosis of functions of the brain.

CO-PO-PSO Mapping Table:

Course Outcomes	Program Outcomes									Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	-	-	-	-	3	-
CO2	3	2	-	-	-	-	-	-	-	-	3	-
CO3	3	3	-	-	-	-	-	-	-	-	3	-
CO4	3	3	-	-	-	-	-	-	-	-	3	-
CO5	3	3	-	-	-	-	-	-	-	-	3	-
Course Correlation Mapping	3	3	-	-	-	-	-	-	-	-	3	-

Correlation Levels: 3: High; 2: Medium; 1: Low

Module 1: Introduction to Mind and Body**(09 Periods)**

human evolution, mind-body problem, nervous systems, brains, neurons, coordination of mind and body.

Module 2: Molecules of Life**(09 Periods)**

Water, polarity, hydrophilic, hydrophobic, phospholipids, membranes, proteins, chemistry and life

Module 3: Story of Heredity and Mind**(09 Periods)**

DNA back story, Darwin, Bohr, Delbrück, gene, genetic code, ion channels and pumps, membrane potential, neural signaling

Module 4: Neural signaling and Mind behavior**(09 Periods)**

synapses, neurotransmitters, ionotropic and GPCR receptors, autonomic nervous system, seizures, pharmacology, psychoactive drugs, neural wiring and guidance, neuroplasticity.

Module 5: Functions and Behavior of Brain**(09 Periods)**

sensory perception, chemotaxis, olfaction, taste, flavor, vision, retina, photoreceptors, receptive fields, cortical visual areas, hearing, Fourier analysis, hair cell, vestibular, somatosensation, motor circuitry, mirror neurons, lesions, brain imaging, x-ray, CT, MRI, EEG, ECoG, MEG, PET, fMRI

Total Periods: 45**EXPERIENTIAL LEARNING**

1. Submit a document on activities of Brain
2. Discuss about sleep and dreams
3. Assignment on different diagnostic tools used for brain function
4. Seminar on Neural function and Brain
5. Case study of different behaviors
6. Group discussion on Logical thinking

RESOURCES**TEXT BOOKS:**

- 1 S. M. Breedlove, N. V. Watson & M. R. Rosenzweig: Biological Psychology: An Introduction to Behavioral, cognitive and Clinical Neuroscience, 6th Edition, Sinauer Associates Inc., 2010.
- 2 V.S. Ramachandran, The Tell-Tale Brain, 1st Edition, RHI publisher, 2012.

REFERENCE BOOKS:

- 1 R.M. Sapolsky, Behave, The best-selling exploration of why humans behave as they do, 1st edition, Vintage publishers, 2018.
- 2 J. Mitterer, D. Coon, T. Martini, Introduction to psychology: Gateways to Mind and Behavior, 16th Edition, Wadsworth publishing Co Inc, 2021.

VIDEO LECTURES:

- 1 www.biopsychology.com

Web Resources:

- 1 www.sinauer.com/ebooks
- 2 www.ncbi.nlm.nih.gov/sites/entrez

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22DF102003	MEDICAL BIOCHEMISTRY	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on basic concepts of Biochemistry and understand the structural, functional and metabolic properties of biomolecules.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Understand the Basic knowledge of carbohydrates and lipids and its metabolisms
- CO2.** Acquire basic knowledge on proteins and DNA structure
- CO3.** Analyse the functional and structural concepts of Vitamins and Minerals
- CO4.** Analyze different types of enzymes and nutrients
- CO5.** Understand the nature and types of Acid base Balance and Clinical Chemistry
- CO6.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	-	1	-	-	-	-	-	-
CO2	3	2	-	-	-	-	-	-	-	-
CO3	3	2	-	-	-	1	-	-	-	-
CO4	3	2	-	2	-	-	-	-	-	-
CO5	3	2	-	-	-	-	-	-	-	-
CO6	3	-	-	1	-	-	-	-	-	2
Course Correlation Mapping	3	2	-	1	-	1	-	-	-	2

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

MODULE 1 CARBOHYDRATE AND LIPIDS

(12 Periods)

Introduction, Cell structure, Cell membrane structure and function, Carbohydrate Chemistry - Definition, general classification with examples, Structures, composition, sources, properties and functions of Monosaccharides, Disaccharides, Oligosaccharides and Polysaccharides. Metabolism of carbohydrates Lipid Chemistry - Definition, general classification and functions of Lipids, Definition, classification, properties and functions of Fatty acids, Triacylglycerol, Phospholipids, Cholesterol, Essential fatty acids and their importance, Lipoproteins: Definition, classification, properties, Sources and function Ketone bodies. Metabolism of lipids.

MODULE 2: PROTEINS AND NUCLEIC ACID

(10 Periods)

Amino-acid Chemistry - Amino acid chemistry: Definition, Classification, Peptide bonds, Peptides: Definition, biologically important peptides, Protein chemistry: Definition, Classification, Functions of proteins, properties and structure of proteins. Metabolisms Proteins. Nucleotide and Nucleic acid Chemistry - Nucleic acids: Purines and pyrimidine-Structure of DNA - Watson & Crick model of DNA Structure of RNA - Types of RNA

MODULE 3: VITAMINS AND MINERALS

(10 Periods)

Fat soluble vitamins(A,D,E,K) - Water soluble vitamins - B-complex vitamins. Definition, classification - Sources, Coenzyme forms, functions, RDA, digestion, absorption and transport, deficiency and toxicity. Mineral -Definition, Sources, RDA, Digestion, absorption, transport, excretion, functions, disorder of Individual minerals - Calcium, phosphate, iron, Magnesium, fluoride, selenium, molybdenum, copper.

MODULE 4: ENZYMES AND NUTRITION

(08 Periods)

Enzymes - Definition, Active site, Cofactor (Coenzyme, Activator), Proenzyme. Classification with examples, Factors effecting enzyme activity, Enzyme inhibition and significance, Isoenzymes, Diagnostic enzymology (clinical significance of enzymes) Nutrition - Introduction, Importance of nutrition Calorific values, Respiratory quotient Definition, and its significance Energy requirement of a person - Basal metabolic rate: Definition, Normal values, factor affecting BMR Special dynamic action of food. Balanced diet, Nutritional disorders. Marasmus - Kwashiorkor

MODULE 5: ACID BASE BALANCE AND CLINICAL CHEMISTRY

(05 Periods)

Acid-Base balance - Definition of Acids, bases and buffers, pH. Buffer systems of the body, bicarbonate buffer system Role of lungs and kidneys in acid base balance, Acid base imbalance. Clinical Biochemistry - Normal levels of blood and urine constituents, Relevance of blood and urine levels of Glucose, Urea, Uric acid, Creatinine, Calcium, Phosphates, pH and Bicarbonate.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

QUALITATIVE TESTS OF MONOSACCHARIDES (GLUCOSE AND FRUCTOSE)

1. Molisch' s test
2. Fehling' s test
3. Benedict' s test
4. Seliwanoff' s test

QUALITATIVE TESTS OF LIPIDS

5. *Solubility tests*
6. *Emulsification tests*
7. *Saponification tests*

QUALITATIVE TESTS OF PROTEINS

8. Isoelectric precipitation tests
9. Heat coagulation tests

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

TEXT BOOKS:

1. U. Satyanarayana, U. Chakrapani, Biochemistry, Elsevier, Edition 3, 2020.
2. Vasudevan DM, Textbook of Biochemistry for Medical Students, Jaypee Brothers Medical Publishers, Edition 1, 2019
3. Indumati V, Sowbhagya Lakshmi, Integrated Textbook of Biochemistry, Paras Medical Publishers, Edition 1, 2021.
4. Naik Pankaja, Essentials of Biochemistry, Jaypee Brothers Medical Publishers, 3rd Edition, 2017.
5. Agrawal Poonam, Concepts In Biochemistry With Clinical Approach For Undergraduate Medical Students, CBS Publishers & Distributors Pvt Ltd, Edition 1, 2020.

REFERENCE BOOKS:

1. MN Chatterjee and Rana Shinde, Textbook of Medical Biochemistry, JPB, Edition 8, 2012.
2. Denise R Ferrier, Lippincott's Illustrated Reviews Biochemistry, Lippincot Williams and Wilkins, Edition 7, 2016
3. Prasad R Manjeshwar, Textbook of Biochemistry for Physiotherapy Students, Sheetal Distributors, Edition 1, 2020.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=F59RwK9hya8>
2. <https://www.youtube.com/watch?v=OKLxwCdkBn8>
3. https://www.youtube.com/watch?v=jcz99_-JcZ8

WEB RESOURCES:

1. https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_notes/health_science_students/medicalbiochemistry.pdf
2. <https://www.qmul.ac.uk/library/media/library/using-the-library/media-folder-images-library/Principles-Of-Biochemistry-Introductory-Series.pdf>
3. https://rajneeshrajouria.weebly.com/uploads/4/9/0/6/49069889/biochemistry_bicm101.pdf

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22RT101001	FUNDAMENTALS OF MEDICAL PHYSICS AND ELECTRONICS	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on Semiconductors, digital and analog circuit, lesser and optical fibers, electricity and electromagnetism.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Have knowledge about the semiconductor materials.
- CO2.** Use analog and digital components, sensors and output actuators to assemble simple electrical systems.
- CO3.** Provide adequate knowledge about Medical applications of Lasers.
- CO4.** Understand concepts of electric and magnetic fields

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-		2	-	-	-	-	-	-
CO2	3	-	-	2	-	-	-	-	-	-
CO3	3	-	-	2	-	-	-	-	-	-
CO4	3	-	-	2	-	-	-	-	-	-
Course Correlation Mapping	3	-	-	2	-	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

MODULE 1: INTRODUCTION TO SEMICONDUCTORS (10 Periods)

Electronics Introduction to Semiconductors- Extrinsic and Intrinsic Semiconductors- Formation of p-n Junction, p-n Junction diode-Half wave and Full wave rectifiers using diodes, Efficiency: Bipolar Junction Transistor-Forward and reverse bias characteristics.

MODULE 2: INTRODUCTION TO DIGITAL AND ANALOG CIRCUITS (10 Periods)

Digital Fundamentals: Logic gates, Universal gates, Laws of Boolean Algebra, De Morgan's Theorem, Sum of products and product of sums. Operational Amplifiers: Op-Amp Definition, Op-Amp characteristics, differential and Common mode operation, Inverting & Non-Inverting Amplifier and Op-Amp applications.

MODULE 3: INTRODUCTION TO LASERS AND OPTICAL FIBERS (10 Periods)

LASERS: Introduction, Characteristics of Laser, Absorption, Spontaneous and Stimulated emissions, Population and Population inversion, Laser pumping, Lasing action, Types of laser: Nd-YAG Laser and Semiconductor laser (Construction, working and advantages), Lasers in Medical Application (Ophthalmology, Gastroenterology, Dermatology and Urology). OPTICAL FIBERS: Introduction, Basic Principles and structure of optical fibers, acceptance angle and numerical aperture, Types of optical fibers (Qualitative), Applications of optical fibers in Medical industry.

MODULE 4: INTRODUCTION TO ELECTRICITY (10 Periods)

Electricity & Electromagnetism - Electric charge- Conductors and insulators- Coulomb's law- Electric field-Electric lines of force properties of lines of force- Electric field strength-Capacity- Units of capacity- Potential energy of a charged conductor-Principle of a condenser- Capacity of a parallel plate condenser-Electric current and its units- Potential difference-Electromotive Force- Ohm's law.

MODULE 5: INTRODUCTION TO ELECTROMAGNETISM (05 Periods)

Magnetic Field and Magnetic Induction-Magnetic Flux-Direction of Magnetic Field and Current - Ampere's Law-Application of Ampere's Law. Electromagnetic induction, laws of mutual induction and self-induction.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Use simulation tools to design and analyze p-n junction diodes, half wave, and full wave rectifiers.
2. Design and implement simple digital circuits
3. With a case study, elaborate the importance of operational amplifier in the medical equipment.
4. Construct a simple circuit with a battery, wires, and resistors. Measure current, voltage, and resistance using multimeters and observe the relationship between them.

RESOURCES

TEXT BOOKS:

1. S. Salivahanan, N. Sureshkumar, Electronic Devices and Circuits, McGraw Hill, Edition 3, 2012.
2. Jacob Millman and D. Halkias, Integrated Electronics Analog Digital Circuits, McGraw Hill, Edition 1, 1977.
3. EKannatey-Asibu,y, Principles of Laser Materials Processing, Wiley Publication, Edition 3, 2023.

REFERENCE BOOKS:

1. BL Theraja, Principles of Electronic Devices & Circuits: Analog and Digital, Schand Publications, Revised Edition, 2005.
2. John Dirk Walecka, Introduction to Electricity and Magnetism, World Scientific Publishing Co Pte Ltd, Edition 1, 2014.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=JA3sCmrv11M&list=PLgMDNELGJ1CaNcuuQv9xN07ZWkXE-wCGP&index=2>
2. https://www.youtube.com/watch?v=WgWozOgMXKo&list=PLp6ek2hDcoNCj_QQA2CmW1JIHAm5aD7o_&index=2
3. <https://www.youtube.com/watch?v=x1-SibwIPM4&list=PLYQSN7X0ro2314mKyUiOILaOC2hk6Pc3j&index=2>

WEB RESOURCES:

1. <https://ncert.nic.in/ncerts/l/l/leph206.pdf>
2. <https://www.sitams.org/assets/pages/hands/material/AP/unit-II%20Lasers%20and%20Fibre%20Optics.pdf>
3. <https://www.careerlauncher.com/cbse-ncert/images/revision/class-XII/physics.pdf>

PROGRAMME CORE

Course Code	Course Title	L	T	P	S	C
22CC101003	INSTRUMENTATION IN RESPIRATORY TECHNOLOGY	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on demonstrate the competent ability to perform and operate respiratory equipment's.

COURSE OUTCOMES: After successful completion of the course, students will be able to understand:

- CO1.** Ability to perform and operate respiratory equipment' s to deliver medical gas therapy.
- CO2.** Analyse the basic concepts of artificial airway systems in respiratory therapy
- CO3.** Acquire knowledge on Endotracheal Intubation
- CO4.** Understand the principles and functioning of non-invasive instruments
- CO5.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	1	-	-	-	2	-	-	-
CO2	3	-	-	-	-	-	-	-	-	-
CO3	3	-	-	2	-	-	2	-	-	-
CO4	3	-	1	3	-	-	-	-	-	-
CO5	3	-	1	3	-	-	-	-	-	3
Course Correlation Mapping	3	-	1	3	-	-	2	-	-	3

Correlation Levels: **3: High;** **2: Medium;** **1: Low**

COURSE CONTENT

Module 1: MEDICAL GAS SUPPLY & STORAGE (08 Periods)

Medical gas supply & storage: Compressed gas cylinders, Colour coding, Cylinders and cylinder valves, Cylinder storage, Diameter index safety system, medical gas pipeline system, Air compressors, Oxygen concentrators, properties of He and NO, Alarms, Safety devices, portable liquid oxygen systems

Module 2: GAS ADMINISTRATION DEVICES & THERAPY (08 Periods)

Gas administration devices: Reducing valves, flow meters and regulation of gas pressure and flow, central piping system, selection of device to regulate pressure or flow.

Medical gas therapy: Oxygen therapy- goals, clinical practice guidelines, hazards and precautions, O₂ delivery systems, protocol based O₂ therapy approach. Hyperbaric oxygen therapy, Oxygen toxicity. Nitric oxygen therapy, helium oxygen therapy

Module 3: ARTIFICIAL AIRWAY SYSTEMS (10 Periods)

Nebulizers, Metered dose inhalers and DPI' s.

Artificial airways Part- 1:Oro-nasopharyngeal airways, Nasal airways, LMA, Combitubes

Artificial airways Part- 2:Oral, nasal endotracheal tubes, tracheostomy tubes, special purposed tubes, Care of the artificial airway: Long term management, infection control practices, suctioning, cuff management

Module 4: ENDOTRACHEAL INTUBATION (09 Periods)

Endotracheal Intubation: Preparing the patient for endotracheal, intubation, positioning the patient, awake intubation Difficult airway management, Manual Resuscitators & breathing circuit. Infection Control management of endotracheal intubations.

Manual resuscitators and ventilators. Face Masks, AMBU, Bains. Advantages and disadvantages of the manual resuscitators. Selection and Use of manual resuscitators, BLS

Module 5: NON-INVASIVE INSTRUMENTS (10 Periods)

The normal ECG & standardization of conventional lead positions of 12 lead ECG, Equipment' s for NIV, ventilators, interfaces, accessories Modes of non invasive support, Fine tuning of the patient on NIV & synchronization Pediatric NIV- CPAP, Bubble CPAP etc. Non-invasive measurement of blood gases, indirect calorimetry and metabolic measurements, assessment of respiratory mechanics, hemodynamic monitoring.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of BLS
2. Demonstration on O2 delivery devices, oxygen therapy
3. Demonstration - storage of medical gases
4. Demonstration of various humidification systems
5. Demonstration of different aerosol delivery devices
Nebulizers, p-MDIs, DPIs, Mesh nebulizers, Ultrasonic nebulizers
6. Transcutaneous monitoring, pulse oximeter, capnography
7. Demonstration of artificial airways/ airway management technique
8. Maintenance, cleaning, sterilization of respiratory equipment' s

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

TEXT BOOKS:

1. Sandra Goldsworthy, Leslie Graham, Compact Clinical Guide to Mechanical Ventilation: Foundations of Practice for Critical Care Nurses, Springer Publishing Co Inc, Edition, 2021.
2. John F Murray, Jay A Nadel, Text book of Respiratory Medicine, W.B saunders company USA, Edition 2, 2010
3. Shoemaker, Ayres, Greenvik, Holbrook, Text book of critical care, W.B saunders company, Edition 4, 1984

REFERENCE BOOKS:

1. Robert Kacmarek, James Stoller, Al Heuer, Egan's Fundamentals of Respiratory Care, Elsevier Publications, Edition 12, 2021.
2. Scot Irwin, Jan S. Tecklin, Cardiopulmonary Physical Therapy: A Guide to Practice, Mosby, Edition 4,2004

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=-M3OlfmKjO8>
2. <https://www.youtube.com/watch?v=x2FOdgw93sA>
3. <https://www.youtube.com/watch?v=rwBz6bK1B4g>

WEB RESOURCES:

1. <https://www.studocu.com/in/document/apj-abdul-kalam-technological-university/biomedical-instrumentation/ventilators-notes/40917511>
2. <https://www.cambridge.org/core/books/abs/introduction-to-biomedical->

3. <https://www.biomedicalinstrumentationsystems.com/the-functions-of-humidifiers-nebulizers-and-aspirators-as-respiratory-therapeutic-instruments/>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102001	DIAGNOSTIC AND TREATMENT OF CARDIORESPIRATORY DISEASES	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on demonstrate the competent ability to perform and operate Respiratory Diagnostic Testing Equipment, knowledge in interpretation and diagnosis, managing patients with emergencies, Application of respiratory exercises, assisting Bronchoscopy, administering and titrating O2 therapy.

COURSE OUTCOMES: After successful completion of the course, students will be able to understand:

1. Perform and operate body plethysmography, working in bronchoscopy suite room
2. Handle emergency artificial airway systems in respiratory therapy
3. Gain knowledge on Invasive and Non-Invasive monitoring in ICUS and Diagnostic Procedure
4. Learn the principles and functioning of the equipment' s
5. Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	1	-	-	-	2	2	2	-
CO2	3	-	-	-	-	-	-	2	-	-
CO3	3	-	1	2	-	-	2		-	-
CO4	3	-	1	3	-	-	-	-	-	-
CO5	3	-	1	3	-	-	-	2	-	-
Course Correlation Mapping	3	-	1	3	-	-	2	2	2	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BODY PLETHYSMOGRAPHY (10 Periods)

Advanced Spirometry: diagnostic testing, interpretation of spirometry flow volume loop, pre and post bronchodilator, troubleshooting DLCO: breath holding method, interpretation, patient monitoring during procedure, Helium dilution method: procedure, interpretation, method of testing, Slow Voluntary Ventilation (SVV) procedure, interpretation, diagnosis, Maximum Voluntary Ventilation (MVV): procedure, interpretation, diagnosis.

Module 2: RESPIRATORY-CARDIO RELATED DIAGNOSTIC TECHNIQUES (11 Periods)

Tread mill: procedure, method of testing, precaution while testing, Respiratory Cardio Stress Test: procedure, method of testing, precaution, diagnosis and reporting ECG interpretation: identification of ECG waveform, abnormal wave form during pre-test and post-test, interpretation and action , Echocardiography: Introduction and Interpretation ,Exercise stress test: pre-test and post-test monitoring, Reporting and charting, 6-minute walk test: pre-test and post-test monitoring Precautions, diagnostic, procedure, recording, interpretation, Respiratory Drive: Indication and interpretation

Module 3: INVASIVE DIAGNOSTIC TECHNIQUE (12 Periods)

ICD: Assisting the procedure, Indication contraindication, associated chest Xray, procedure techniques, Biopsy Needle Aspiration: procedure, indication contraindication, techniques and assisting bronchoscopy: procedure, technique, types of bronchoscopies, uses, indication, contraindication, therapeutic procedures, Needle Biopsy procedure, indication ,contraindication video assisted bronchoscopy: procedure , indication, contraindication, uses , thoracoscopy: indication ,contraindication ,techniques and uses.

Module 4: NON-INVASIVE DIAGNOSTIC TECHNIQUE (06 Periods)

Peak flow meter: Recording, Charting, patient education, Sputum Induction Method: Procedures, indications, Complications, Interpretation, follow ups in Lab, Reporting, lab testing's related to lung diseases, Incentive spirometry, bed side spirometry, uses indication, interpretation, reporting.

Module 5: RESPIRATORY DIAGNOSTIC AND THERAPEUTIC TECHNIQUE AND PROCEDURE (06 Periods)

Various routes of O2 administration: O2 titration, uses, therapy, Mechanical Ventilator -Part III, interpretation, maintenance, therapy, troubleshooting ICU monitoring: maintenance of emergency cart, checking, working, troubleshooting, ICU techniques, precautions, alarms of ventilator, assisting procedures in ICU, Bronchoscopy in ICU. procedures, recording, charting.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of body plethysmography
2. Demonstration on O₂ titration
3. Demonstration - bronchoscopy, procedure, biopsies, report handling, patient management.
4. Demonstration of monitoring ECG, HR, PR, RR in OP and IP, MICU, SICU
5. Demonstration, monitoring, working protocol in bronchoscopy suit room
6. Transcutaneous monitoring, of invasive methods
7. Demonstration of artificial airways/ airway management technique
8. Patient education, recording of peak flow meter, interpretation

RESOURCES

TEXT BOOKS:

1. John F Murray, Jay A Nadel, Text book of Respiratory Medicine, W.B saunders company USA, Edition 2, 2010
- 2.. Shoemaker, Ayres, Greenvik, Holbrook, Text book of critical care, W.B saunders company, Edition 4, 1984.

REFERENCE BOOKS:

1. Gary White, Basic Clinical Lab Competencies for Respiratory Care: An Integrated Approach, Delmar Cengage Learning, Edition 1, 2012.
2. Scot Irwin, Jan S. Tecklin, Cardiopulmonary Physical Therapy: A Guide to Practice, Mosby, Edition 4, 2004.

VIDEO LECTURES:

1. <https://m.youtube.com/watch?v=4bVVh-FiICs>
2. <https://m.youtube.com/watch?v=aKmvSLG1c8Q>
3. <https://www.thoracic.org/professionals/clinical-resources/video-lecture-series/bronchoscopy/>

WEB RESOURCES

1. <https://www.thoracic.org/professionals/clinical-resources/video-lecture-series/bronchoscopy/intro-to-bronchoscopy-lower-airway-anatomy.php>
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5755606/>
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5019018/>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101007	BASICS OF CHEST RADIOLOGICAL TECHNIQUE AND INTERPRETATION	3	-	-	-	3

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides a detailed discussion on imaging and interpretation of chest Xray and having a distinctive knowledge and applying during the procedure in op and icus

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Understanding the anatomy of Thorax.
- CO2.** Understand and interpret the normal chest radiography.
- CO3.** Understanding thoracic abnormalities and pathologies related to imaging.
- CO4.** Evaluation of surgical lines, catheters and central lines in chest imaging.
- CO5.** Understand detailed study of HRCT - Chest.
- CO6.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	-	-	-	-	1	-	-	1
CO2	3	1	-	-	-	-	-	-	-	1
CO3	3	1	-	-	-	1	-	-	-	1
CO4	3	1	-	-	-	1	-	-	-	1
CO5	3	1	-	-	-	1	1	-	-	1
CO6	1	1	1	-	-	1	1	-	-	-
Course Correlation Mapping	3	1	1	-	-	1	1	-	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: HUMAN CHEST ANATOMY

(08 Periods)

Introduction of thorax – surface landmarks, soft tissue land marks, skeleton of thorax. Clinical anatomy – inlet and outlet of thorax. Bones and joints of thorax – Ribs, Sternum, Vertebrae column. Respiratory movements. Thoracic cavity & pleurae. Lungs, Mediastinum, Pericardium & heart. Superior vana cava, Aorta & pulmonary trunk. Trachea, Oesophagus & thoracic duct. Blood vessels and lymphatics.

Module 2: CHEST RADIOGRAPH PRACTICALITIES

(10 Periods)

State basic chest radiograph principles, describe chest radiography acquisition, List common chest radiograph views, discuss chest radiograph quality, State key anatomy which can be assessed and explain the silhouette sign.

Module 3: THORACIC RADIOGRAPHY - NON-PULMONARY AND PULMONARY PATHOLOGIES

(10 Periods)

State what regions other than the lungs require review, describe specific findings of common pathologies, explain common causes of the pathologies review, Interpret basic medical abbreviations/symbols, utilize diagnostic, surgical, and procedural terms and abbreviation related to the Respiratory system, cardiovascular system.

Module 4: SURGICAL LINES, CATHETERS AND TUBES

(10 Periods)

Nasogastric tube (NGT), Nasopharyngeal airway tube (NPAT), Endotracheal tube (ETT), Central venous line/catheter (CVL/CVC), Intercostal tube/catheter (ICC), Permanent pacemaker (PPM), Temperature probe, Pericardial drain, Intra-aortic balloon pump (IABP)

Module 5: HIGH RESOLUTION COMPUTERIZED TOMOGRAPHY OF CHEST

(07 Periods)

Diagnostic imaging, indication and contraindication, State basic chest radiograph principles, Describe HRCT acquisition, List common HRCT views, Discuss HRCT quality, State key anatomy which can be assessed.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Demonstration of reading a chest Xray
2. Demonstration of finding the position of lines and tubes on a Xray
3. Observation and understanding of Xray before and after procedure
4. Demonstration of knowing the importance of Xray for functioning in cardio rehabilitation lab
5. Demonstration of reading Xray for performing respiratory physio therapy
6. Identifying common pathologies.
7. Demonstration and interpretation of HRCT Chest

RESOURCES

TEXT BOOKS:

1. J.Corne, M.Carroll, I.BrownD.Delany, Chest X-Ray made easy, Churchill Living stone publications, Edition 1, 2022.
2. B.D.Chaurasia's, Human Anatomy, CBS Publications & Distributors Pvt Ltd, Volume 1, Edition 6, 2020.

REFERENCE BOOKS:

1. Jamie Weir et all (Mosby-Elsevier), Weir& Abrahams' Imaging Atlas of Human Anatomy, Elsivers, Edition 6, 1998.
2. Richard S. Snell, An Atlas of Normal Radiographic Anatomy, Lippincott Williams & Wilkins, Edition 1, 2015.

VIDEO LECTURES:

1. <https://m.youtube.com/watch?v=3Ok6wIiu0zk>
2. <https://m.youtube.com/watch?v=2scYh2J4GRY>
3. <https://www.youtube.com/watch?v=CPwRi6DO5VY>
4. <https://www.youtube.com/watch?v=tJPfcmA-WWs>
5. <https://www.youtube.com/watch?v=WKBVBLbap1Y>

WEB RESOURCES:

1. <https://smarteradiology.com/services/online-x-ray-reporting-and-interpretation>
2. <https://www.sciencedirect.com/book/9780702030468/the-chest-x-ray-a-survival-guide>
3. <https://www.sciencedirect.com/book/9780702030468/the-chest-x-ray-a-survival-guide>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101006	BASIC PHARMACOLOGY AND DRUG ADMINISTRATION	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: The Course will cover General Pharmacology with Special Emphasis on common drugs used, Route of Administration, Type of formulations, Dose and frequency of administration, Side effects and Toxicity, Management of Toxic effects, Drug interactions, Knowledge of chemical and trade names, Importance of Manufacturing and expiry dates and instruction about handling each drug.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Acquire knowledge on principles of basic pharmacology.
- CO2.** Understand the General considerations of Cholinergic Drugs
- CO3.** Gain knowledge on anesthetic and Analgesics drugs.
- CO4.** Identify the mechanism of various drugs related to Cardiovascular & Respiratory system.
- CO5.** Learn about various drugs related to microbial infections and other diseases
- CO6.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	3	1	-	-	-
CO2	3	1	-	-	-	-	-	-	-	-
CO3	3	1	3	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-
CO5	3	-	-	-	-	3	1	-	-	-
CO6	3	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	1	3	-	-	3	1	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1:

General pharmacological principles - Definition - Routes of drug administration Pharmacokinetics, Pharmacodynamics - Adverse drug effects, Drugs acting on Autonomic Nervous System, Peripheral Nervous System and Drugs acting on Central Nervous system.

Module 2: CHOLINERGIC DRUGS

(05 Periods)

General considerations-Cholinergic system & drugs-Anticholinergic drugs-Adrenergic drugs-antiadrenergic drugs.

Module 3: ANAESTHETICS & ANALGESICS

(10 Periods)

Skeletal muscle relaxants-Local anaesthetics, General anaesthetics-Ethyl & Methyl Alcohol-Sedatives - Hypnotics- Antiepileptics - Drugs used in mental illness - Opioid analgesics and Non opioid Analgesics - Nonsteroidal Anti-inflammatory drugs.

Module 4: CARDIOVASCULAR & RESPIRATORY DRUGS

(10 Periods)

Cardiovascular drugs - Cardiac glycosides, Antiarrhythmic drugs, Antianginal drugs, Antihypertensives and Diuretics, Erythropoietin, Drugs affecting-coagulation, Fibrinolytic and Antiplatelet drugs, Treatment of cough and Antiasthma tic drugs. Drugs on Respiratory system.

Module 5: ANTIMICROBIAL AND OTHER DRUGS

(10 Periods)

General consideration-Antibiotics-Antibacterial agents- -Antifungal- -Antiviral- Antiseptic-Disinfectant-.Corticosteroids, Antithyroid drugs and Drugs for Diabetes Mellitus, Treatment of Vomiting, Constipation, Diarrhea and Treatment of peptic ulcer, Vitamins, Vaccines.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Understanding of inculcate knowledge on various drugs.
2. Understanding the terminologies and basic principles of pharmacokinetic.
3. Observation and understanding the pharmacological action and mechanism of action of common drugs used for different disease conditions.
4. understanding therapeutic uses and adverse effects of common drugs.
5. Demonstrate the intended to discuss the various modalities of drug delivery and instruments.

RESOURCES

TEXT BOOKS:

1. Tara V Shanbag, Pharmacology: Prep Manual for Undergraduates, Elsevier Publications, Edition 2, 2012.
2. Padmaja Uday kumar, Pharmacology for Dental and Allied Health Sciences, Jaypee Brothers Medical Publishers, Edition 4, 2016.

REFERENCE BOOKS:

1. KD Tripathi, Essentials of Medical Pharmacology, Jaypee Brothers Medical Publishers, Edition 8, 2018.
2. R S Sataskar, Pharmacology and Pharmacotherapeutics, Popular Prakashan Ltd, Edition 21, 2015.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=LLv29S7Hm3U>
2. <https://www.youtube.com/watch?v=r-gJaMoMon0>
3. <https://www.youtube.com/watch?v=oKtIzV2T69Y>

WEB RESOURCES:

1. <https://www.slideshare.net/specialclass/antibiotics-2173921>
2. http://www.harpercollege.edu/ls-hs/nur/120/sdolezal/lesson8_files/lesson8.ppt
3. <https://repo.knmu.edu.ua/bitstream/123456789/10408/1/Anti-inflammatory>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102011	APPLIED PATHOLOGY	5	-	2	-	6
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on basic concepts of applied Pathology and understand of disease biology of various systems.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Demonstrate basic knowledge disease conditions of cardiac diseases
- CO2** To Develop Basic knowledge about Pulmonary Pathophysiology
- CO3** Demonstrate basic knowledge disease conditions of blood and its blood cells.
- CO4** Ability to learn the different types of pathology Related to the nephron and kidney.
- CO5** Work individually or in teams to solve problems with effective communication.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	1	1	-	-	-
CO2	3	1	-	-	-	-	-	-	3	-
CO3	3	1	3	-	-	-	-	-	-	1
CO4	3	1	-	-	-	-	-	-	-	1
CO5	3	-	-	-	-	1	1	-	-	-
Course Correlation Mapping	3	1	3	-	-	1	1	-	3	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CARDIOPATHOLOGY

(18 Periods)

Cardiomyopathy-Definition, Types, causes and clinical significance· Pericardial effusion- causes, effects and diagnosis· Congenital heart diseases · Valvular Heart diseases-causes, Pathology & complication. Complications of artificial valves. Atherosclerosis- Definition, risk factors, Pathogenesis, clinical significance and management. · Hypertension-Definition, types and Pathogenesis and clinical manifestations. · Aneurysms-Definition, classification, Pathology and complications. Pathophysiology of Heart failure.

Module 2: PULMONARY PATHOPHYSIOLOGY

(14 Periods)

Disease conditions of lungs. Pneumonia, Bronchitis, Bronchiectasis, definition types and clinical manifestations. COPD, Asthma, - Definition and types. causes, Pathology & complications· basic Concept of obstructive versus restrictive pulmonary disease. · Pneumoconiosis-Definition, types, Pathology and clinical manifestations · Pulmonary congestion and edema. · Pleural effusion-causes, effects and diagnosis.

Module 3: HEMATOPATHOLOGY

(14 Periods)

Anemia: Classification, clinical features & lab diagnosis. - Hemostatic disorders, Vascular and Platelet disorders and its laboratory diagnosis. - Coagulopathies - Inherited and Acquired with lab diagnosis. - Leukocytic disorders: Leukocytosis, Leukopenias. - Leukemia: Classification, clinical manifestation, pathology and Diagnosis. Hematogenous pathological disorders.

Module 4: RENAL PATHOLOGY

(14 Periods)

Disorders related to the kidney diseases. Briefly the causes, mechanism, effects and diagnosis of ARF & CRF. Disease conditions of Glomerulus and nephron Pyelonephritis. Congenital anomalies• End stage renal disease - Definition, causes, effects and role of dialysis and renal transplantation in its management. • Brief concept about obstructive uropathy. Congenital diseases of renal system.

Module 5: MUSCULOSKELETAL AND NEUROPATHOLOGY

(15 Periods)

Disease conditions of musculoskeletal system like Osteomyelitis: acute, chronic, Rickets/ Osteomalacia, osteoporosis, Paget's disease. - Tumors classification. - Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout, Tuberculous. Diseases of central nervous system- Cerebral Oedema & Its Management, Ocular Trauma, Meningitis, Encephalitis, Inflammations and Infections: TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess.

Total Periods: 75

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1:Description & diagnosis of the following gross specimens

- a. Atherosclerosis.
- b. Aortic aneurysm.
- c. Myocardial infraction.
- d. Emphysema
- e. Chronic glomerulonephritis.
- f. Chronic pyelonephritis

2:Interpretation & Diagnosis of the following charts

- a. Hematology
Chart-AML, CML, Hemophilia, neutrophilia, eosinophilia.
- b. Urine Chart -
ARF, CRF, Acute glomerulonephritis.

3:Estimation of Hemoglobin

4:Estimation Bleeding & Clotting time.

RESOURCES

TEXT BOOKS:

1. Harsh Mohan "Textbook of Pathology with Pathology Quick Review" Jaypee Brothers Medical Publishers, 8th Edition, 2019.
2. Ramadas Nayak "Textbook of Pathology for Allied Health Sciences" Jaypee Brothers Medical Publishers, 1st Edition, 2018
3. Ramadas Nayak, Sharada Rai "Essentials in Hematology and Clinical Pathology" Jaypee Brothers Medical Publishers, Second Edition, 2018

REFERENCE BOOKS:

1. David J. Magee, James E. Zachazewski, William S. Quillen, Robert C. Manske, "Pathology and Intervention in Musculoskeletal Rehabilitation" Saunders Publisher Pvt. Ltd. 2nd Edition, 2018.
2. Vinay Kumar, Abul K. Abbas, Jon C. Aster, Manoj K. Singh. Robbins and Cotran Pathologic Basis of Disease (Two Vol Set), 10e, Publisher Elsevier Health Science, South Asia Edition, 2020.
3. Dr.V.K.Srivastava, "Text book of Applied Clinical Pathology & Laboratory Diagnosis, Medico Refresher Publications, 1st edition, 2019.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=JcGKDDvk5AQ>
2. <https://www.youtube.com/watch?v=-Ph2uhw9BhE>
3. <https://www.youtube.com/watch?v=LaG3nKGotZs>

Web Resources:

1. https://www.aai.org/AAISite/media/Education/HST/Archive/Riina_Caroline_Presentation.pdf
2. https://www.pearson.com/content/dam/one-dot-com/one-dot-com/us/en/higher-ed/en/products-services/course-products/fremgen-6e-info/pdf/Sample_ch04_final.pdf
3. <https://drnaitiktrivedi.com/wp-content/uploads/2020/04/1.-CELL-INJURY-AND-CELLULAR-ADAPTATION.pdf>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102012	EMERGENCY MEDICINE AND CARDIAC LIFE SUPPORT- I	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course is designed to train the skills of CPR for victims of all ages, use of an automated external defibrillator and relief of choking.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Promptly recognize several life- threatening emergencies, give high - quality cardiopulmonary resuscitation and delivery appropriate ventilations and early use of an AED
- CO2** Identify the arrhythmias and apply high performance team management
- CO3** demonstrate the use a defibrillator in event of a cardiac emergency
- CO4** Understand types of tachyarrhythmia and understand the principles of treatment and know how to perform.
- CO5** Apply invasive and noninvasive cardiac pacing safely and effectively.
- CO6** Work individually or in teams to solve problems with effective communication.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	2	-	-	1	2	1	1
CO2	3	1	-	3	-	-	2	2	1	1
CO3	3	-	-	3	-	-	-	2	-	1
CO4	3	-	-	2	-	-	-	1	-	1
CO5	3	-	-	2	-	-	-	-	-	1
CO6	3	1	-	-	-	1	2	1	1	1
Course Correlation Mapping	3	1	-	2	-	1	2	2	1	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BASIC LIFE SUPPORT

(16 Periods)

Introduction of BLS, Airway, Barrier devices for giving breaths., alternative airway, Adult Basic life support., Pregnant Basic life support., post cardiac arrest., opioid algorithm choking., opioid algorithm., emergency drugs, Other life threatening emergencies, Heart attack, stroke, Drowning, Anaphylaxis, Gastro intestinal bleeding, Comparison of In hospital and out hospital .

Module 2: ADVANCED CARDIAC LIFE SUPPORT

(10 Periods)

Introduction, Respiratory arrest Vs Cardiac arrest, Bradycardia, Rhythm, Managing bradycardia., Tachycardia, Stable and Unstable, Managing Tachycardia., Shockable rhythm, Ventricular fibrillation, Pulseless ventricular Tachycardia., Management, Non Shockable rhythm, Pulseless electrical activity, Asystole, Management., Selected special situations, Post cardiac arrest care.

Module 3: DEFIBRILLATOR

(08 Periods)

Basics about defibrillation, types of defibrillator, manual external and internal defibrillator, semi automated external defibrillator, automated external defibrillator, implantable cardioverter defibrillator, wearable cardiac defibrillator, indications of defibrillation, procedural steps for defibrillation, energy levels (joules) , paddle versus adhesive patches

Module 4: CARIOVERSION AND PACING AND VENTILATION

(11 Periods)

Introduction, Basics of Cardioversion, Indications Of Cardioversion, refractory period , Abnormal rhythm, Types of cardioversion, chemical cardioversion, electrical cardioversion, procedure, Procedure, Difference between Defibrillation and cardioversion. Introduction of Transcutaneous pacing, indication, contraindication, procedure., Transvenousvenous pacing, indication, contraindication, procedure, ambulatory ventilator and drugs used.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Demonstration of BASIC LIFE SUPPORT
2. Demonstration of ADVANCED CARDIAC LIFE SUPPORT
3. Demonstration of defibrillator
4. Demonstration of cardioversion
5. Understanding the pacing procedure

RESOURCES BOOKS

1. Monstenbjork M.D., Basic life support provider manual, Medical creation, Edition 1, 2020.
2. Monstenbjork M.D, Advance cardiovascular life support provider manual, medical creation, Edition 5, 2021.

VIDEO LECTURES:

1. <https://youtu.be/fb29LCjX4-E?si=gCgciS4RhXBb4rD2>
2. <https://youtu.be/qMR0WFByy4c?si=WuHf3gefmxXF3c6rU>
3. <https://youtu.be/S7dm1-1WBww?si=xteqpxWLeXK4eRGo>
4. <https://youtu.be/fooQi2PRSZk?si=1o1dTfCpQPv1o8nX>

Web Resources:

1. <https://emedicine.medscape.com/article/1344081-overview>
2. <https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines/algorithms>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102013	STERILIZATION AND INFECTION CONTROL	3	-	2	-	4

Pre-Requisite

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course provides details on Health care associated infections and Antimicrobial resistance, communicable diseases to Healthcare workers in hospital set up and its preventive measure, importance of sterilization & disinfection in OT's, Wards, ICU's, CSSD.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Have knowledge on various types of Health care associated infections and Antimicrobial resistance, Surveillance of emerging resistance and changing flora.
- CO2** Gain Knowledge on communicable diseases encountered by Healthcare workers in hospital set up and its preventive measure: Occupationally acquired infections in healthcare professionals by various routes, Preventive measures to combat the spread of these infections by monitoring and control.
- CO3** Learn Importance of sterilization Disinfection of instruments used in patient care rooms, OT' s, wards, equipment' s.
- CO4** Gain knowledge on Universal health precautions, Blood spill management, needle stick injury, Biomedical waste management Treatment of Biohazard samples
- CO5** Work individually or in teams to solve problems with effective communication.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	2	1	-	2	3
CO2	3	3	2	-	1	2	-	-	3	-
CO3	3	3	3	-	2	3	-	-	3	1
CO4	2	2	3	-	-	-	-	-	2	1
CO5	1	1	-	-	-	-	-	-	2	-
Course Correlation Mapping	3	3	2	3	1	2	1	-	2	2

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module :1 HEALTH CARE ASSOCIATED INFECTIONS (10 Periods)

Health care associated infections and Antimicrobial resistance: Infections that patients acquire during the course of receiving treatment for other conditions within a healthcare setting like Methicillin Resistant Staphylococcus aureus infections, Infections caused by *Clostridium difficile*, Vancomycin resistant enterococci etc. Catheter related blood stream infections, Ventilator associated pneumonia, Catheter Related urinary tract infections, Surveillance of emerging resistance and changing flora.

Module: 2 COMMUNICABLE DISEASE TO HEALTHCARE (10 Periods)

Disease communicable to Healthcare workers in hospital set up and its preventive measure: Occupationally acquired infections in healthcare professionals by respiratory route (tuberculosis, varicella-zoster, respiratory syncytial virus etc), blood borne transmission (HIV, Hepatitis B, Hepatitis C, Cytomegalovirus, Ebola virus etc), oro faecal route (Salmonella, Hepatitis A etc), direct contact (Herpes Simplex Virus etc). Preventive measures to combat the spread of these infections by monitoring and control.

Module 3: STERILIZATIONS IN OT (10 Periods)

Importance of sterilization: Disinfection of instruments used in patient care: Classification, different methods, advantages and disadvantages of the various methods. Disinfection of the patient care unit Infection control measures for ICU's Rooms: Gaseous sterilization, One Atmosphere Uniform Glow Discharge Plasma (OAUGDP). Equipments: classification of the instruments and appropriate methods of sterilization. Central supply sterile department: the four areas and the floor plan for instrument cleaning, high-level disinfecting and sterilizing areas.

Module 4: UNIVERSAL PRECAUTIONS IN OT (15 Periods)

Standard and universal precautions, Blood spill management, needle stick injury, Biomedical waste management Treatment of Biohazard samples, Blood collection procedure.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF Practical:

1. Demonstration of sterilization instruments Autoclave, Hot-air oven
2. Gaseous sterilization of OT' s, Patient wards, ICU' s
3. Collection of specimen from outpatient units, inpatient units, minor operation theater and major operation theater for sterility testing.
4. Interpretation of results of sterility testing.

RESOURCES

TEXT BOOKS:

1. Dwarkadas K Baheti, Vandana V Laheri, Text book of Understanding Anesthetic Equipment & Procedures: A Practical Approach, Jaypee Brothers Medical Publishers, Edition 1, 2015.
2. Anathanarayana & Panikar, Text book of Medical Microbiology, Jaypee Brothers Medical Publishers, University Press, Edition 10, 2022.
3. C.P. Baveja, Textbook of Microbiology, Arya Publications, Edition 5, 2019.

REFERENCE BOOKS:

1. Connie R. Mahon MS, Donald C. Lehman, Text book of Diagnostic Microbiology, Saunders, Edition 6, 2018.
2. Dwarkadas K Baheti, Vandana V Laheri, Text book of Understanding Anesthetic Equipment & Procedures: A Practical Approach, Jaypee Brothers Medical Publishers, Edition 1, 2015.
3. Parmeshwar Kumar, Shakti Gupta, Arti Kapil, Text book of Disinfection and Sterilization Practices in Indian Operation Theatres, Lambert Academic publishing, Edition 1, 2018.

VIDEO LECTURES:

1. https://youtu.be/p_52PvJVxG8
2. <https://youtu.be/mXEyw8635uc>
3. <https://youtu.be/32KyVb-Ggn8>

Web Resources:

1. <https://www.cdc.gov/infectioncontrol/index.html>
2. <https://www.who.int/teams/integrated-health-services/infection-prevention-control>
3. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8325443/>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102014	CARDIO PULMONARY REHABILITATION	4	-	2	-	5

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION:

COURSE OUTCOMES: After successful completion of the course, students will be able to understand:

- CO1.** Ability to understand and perform cardio-respiratory Rehabilitation
- CO2.** Ability to use the adjunct devices to perform the respiratory chest physiotherapy
- CO3.** To gain knowledge on types of surgery related chest physiotherapy
- CO4.** To learn the principles and functioning of the equipment used in cardio- pulmonary rehabilitation.
- CO5.** Work individually and in team to perform Respiratory rehabilitation and chest physiotherapy

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	-	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	-	3	-	-
CO5	3	3	2	3	-	-	-	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CARDIO- RESPIRATORY PHYSIOTHERAPY TECHNIQUES (12 Periods)

Principles and techniques of respiratory physiotherapy in diseases of cardiovascular and pulmonary origin: Breathing exercises, Inspiratory muscle training, Airway clearance devices: Flutter, Thera PEP, acapella, High frequency chest wall oscillation (HFCWO), Intrapulmonary percussive ventilation (IPV), Insufflation/exsufflation- assisted cough, IPPB, Airway clearance techniques: Postural Drainage & Manual Techniques, ACBT, Hyperinflation, Suctioning, Selection of airway clearance technique, Positioning and Mobilization.

Module 2: CARDIOVASCULAR PHYSIOTHERAPY (12 Periods)

Assessment of cardiovascular system, Investigative procedures, Cardiac rehabilitation and secondary prevention, Etiopathogenesis, clinical and physiotherapy management of the following conditions: congenital heart diseases, Fallot's tetralogy, ischemic heart diseases, Cardiac failure, Rheumatic fever, Hypertension, Endocarditis, Cardiac muscle disorder, Cardiac Peripheral neoplasm, vascular diseases.

Module 3: PULMONARY PHYSIOTHERAPY (12 Periods)

Assessment of pulmonary system, Investigative procedures, clinical and physiotherapy management of the following conditions: obstructive pulmonary diseases, Infections, Neoplasm, Interstitial pulmonary diseases, Diseases of nasopharynx, larynx and trachea, Diseases of pleura, diaphragm and chest wall, Chest deformity Mechanical ventilation: implications for physiotherapy, Respiratory failure, Physiotherapeutic technique used in ICU, Cardiopulmonary exercise testing and prescription, intensive care unit assessment : Respiratory Physiotherapy in intensive care unit, Assessment of critically ill patient in the ICU, Monitoring and interpreting medical investigations

Module 4: PHYSIOTHERAPY IN CARDIOVASCULAR SURGERIES (12 Periods)

Cardiac Surgeries: pre- and post- operative assessment, management and complications of Cardiac surgery: Indication, contraindications, incision, pre- and post- operative management complications of the following: Valvotomy and valve replacement, Open heart surgery, cardiac bypass surgery, Heart transplantation, Pacemaker implantation, Coronary angioplasty.

Module 5: PHYSIOTHERAPY IN PULMONARY SURGERIES (12 periods)

Thoracic surgery: pre-and post-operative assessment, management and complications of thoracic surgery : Indication, contraindications, incision, pre- and post- operative management complications of the following: Rib fracture, Flail chest, Stove in chest, Surgery of the pleura, Pneumothorax, Haemothorax, Lung contusion and laceration, Injuries to vessels and bronchus., Lung transplantation: Intercostals catheters, Lobectomy, Pneumonectomy, segmentectomy, Thoracoplasty, Lung Volume Reduction surgery.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of chest physiotherapy
2. Demonstration on Cardio- Pulmonary Rehabilitation.
3. Demonstration - Breathing Exercises, use of breathing exercise equipment
4. Knowledge of cardio- respiratory disease conditions
5. Knowledge of cardio-pulmonary surgeries and application of cardio- respiratory therapy
6. Understanding and Application of Mobilization therapy and postural drainage therapy
7. Demonstration of chest physiotherapy in intensive care unit.
8. Patient Education, home therapy, Breathing techniques.

RESOURCES

TEXT BOOKS:

1. Robert Kacmarek, James Stoller, and Albert Heuer. Sandra Goldsworthy, Leslie Graham., Egan's Fundamentals of Respiratory Care, Elsevier Publications, Edition 12, 2021.
2. S Sunder, Textbook of Rehabilitation, Jaypee Brothers Medical publishers, Edition 4, 2019.
3. Joan E. Cash, Sach's Textbook of Chest, Heart and Vascular Disorders for Physiotherapists, Mosby Publishers, Edition 4, 1987.

REFERENCE BOOKS:

1. PP Mohanty and Monalisa Patnaik, Principles of Exercise Therapy, Paras Medical Publisher, Edition 1, 2022.
2. Eleanor F Branch and Susan S Ros, Advances in Cardiac and Pulmonary Rehabilitation, Routledge publications, Edition 1, 1990.
3. Scot Irwin, Jan S. Tecklin, Cardiopulmonary Physical Therapy: A Guide to Practice, Mosby, Edition 4, 2004

VIDEO LECTURES:

1. <https://youtu.be/FF3m2H0G0Ug?si=8Vf-Vx3OabfnqIjN>
2. <https://youtu.be/Zl0IwF-pVmE?si=fwu4uy7gtsAAQY0i>
3. <https://youtu.be/00HRugsoH6g?si=Jmsy4nYZKAJINcl4>

WEB RESOURCES

1. www.physio-pedia.com
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5019018/>
3. www.aarc.org

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101016	POLYSOMNOGRAPHY-I	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on demonstrate the competent ability to perform and operate Respiratory Diagnostic Testing Equipment, knowledge in interpretation and diagnosis, managing patients with emergencies, Application of respiratory exercises, assisting Bronchoscopy, administering and titrating O2 therapy.

COURSE OUTCOMES: After successful completion of the course, students will be able to understand:

- C01** Perform and operate body plethresmography, working in bronchoscopy suite room
- C02** Handle emergency artificial airway systems in respiratory therapy
- C03** Gain knowledge on Invasive and Non-Invasive monitoring in ICUS and Diagnostic Procedure
- C04** To learn the principles and functioning of the equipment' s
- C05** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	-	1	3	-	-	-	2	-	-
C02	3	-	1	3	-	-	-	2	-	-
C03	3	-	1	3	-	-	-	2	-	-
C04	3	-	1	3	-	-	-	2	-	-
C05	3	-	1	3	-	-	-	2	-	-
Course Correlation Mapping	3	-	1	3	-	-	-	2	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: NEUROBIOLOGY OF SLEEP AND WAKEFULNESS (15 Periods)

Introduction, the ascending arousal system induces wakefulness, The VLPO and the sleep stage, The brainstem control of state stability, promoting sleep State stability, Homeostatic regulation of sleep, circadian sleep regulation, The Neuropathology of Sleep - wake disorder- Insomnia, Narcolepsy, Disorders Associated with Fragmented Sleep, Circadian Rhythm Sleep Disorders, Disordered Sleep Associated with Primary Neurological Disorders: Alzheimer' s and Parkinson' s Diseases.

Module 2: MODELLING OF SLEEP-WAKE DYNAMICS (10 Periods)

Introduction to sleep, The need for sleep, Human Circadian Rhythm, Human Sleep, Sleep Architecture, Sleep and Aging, Changes to Normal Sleep Architecture, Drug Effects on Sleep, 9Pregnancy and Sleep. neurobiology disorder and sleep

Module 3: DISORDERED SLEEP AND BREATHING (10 Periods)

Obstructive Sleep Apnea in Adults: - introduction, condition, treatment, Obstructive Sleep Apnea in Children: -introduction, condition, Treatment, Central Sleep Apnea, Sleep-Related Hypoventilation Disorders, Sleep-Related Hypoxemia Disorder, Snoring, Cataphrenia. Apnea Hypopnea Dyspnea

Module 4: SLEEP AND ANESTHESIA (10 Periods)

Definition of general Anaesthesia, Sleep & Anaesthesia onset, Autonomic nervous system response, Sleep & Anaesthesia emergence, Maintenance of period sleep Arousal pathways, Sleep pathways, anaesthetics collide in sleep pathways, Circadian Rhythm and Anaesthesia, Circadian Control of Immune Function, Sleep Disruption and Cognitive Dysfunction in Sedated ICU Patients.

Total Hours 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Knowledge of neurobiology of sleep, sleep disorder, breathing
2. Understanding the circadian sleep cycles, sleep wake dynamics
3. Knowledge of Sleep and anesthesia
4. Understanding the sleep rhythm

5. Applying and demonstrating the sleep study machines
6. Demonstration - polysomnography
7. Demonstrating sleep studies
8. Patient education, charting recording, interpretation

RESOURCES

TEXT BOOKS:

1. Robert Kacmarek, James Stoller, and Albert Heuer. Sandra Goldsworthy, Leslie Graham, Egan's Fundamentals of Respiratory Care, Elsevier Publications, Edition 12, 2021.
2. S Sunder, Textbook of Rehabilitation, Jaypee Brothers Medical publishers, Edition 4, 2019.

REFERENCE BOOKS:

1. PP Mohanty and Monalisa Patnaik, Principles of Exercise Therapy, Paras Medical Publisher, Edition 1, 2022.
2. Eleanor F Branch and Susan S Ros, Advances in Cardiac and Pulmonary Rehabilitation Routledge publications, Edition 1, 1990.

VIDEO LECTURES:

1. <https://youtu.be/ohTE--PgBkY?si=Wc8OES8OFbGTkDdG>
2. <https://youtu.be/PkFcyQ43U20?si=ucNsCkgoIp-TmZMI>
3. <https://youtu.be/iWo90uxkNM0?si=ODzhN4UrDoawa6k5>

WEB RESOURCES

1. <https://aasm.org/>
2. <https://jcsa.aasm.org/>
3. www.ncbi.nlm.nih.gov/books/

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101015	MEDICAL PSYCHOLOGY	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on various behavioral patterns of individuals, theories of development, normal and abnormal aspects of motor, social, emotional, and language development, and communication and interaction skills appropriate to various age groups.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand the fundamental concepts of psychology and its branches.
- CO2** Acquire knowledge of basic concepts of growth and development of personality.
- CO3** Apply the concepts of Attention, Perception, and Sensation to assess the psychology of humans.
- CO4** Understand the fundamental concepts of conflicts, frustration, and its type.
- CO5** Analyse the theoretical concepts of Intelligence and Emotions.
- CO6** Acquire knowledge of basic theories of learning and types of personality.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	-	-	1	-	-	-	-
CO2	3	3	-	-	-	-	-	-	-	-
CO3	2	3	1	-	-	1	-	-	-	-
CO4	3	2	2	-	-	-	-	-	-	-
CO5	3	2	2	-	-	-	-	-	-	-
CO6	2	2	-	-	-	2	-	-	-	-

Course Correlation Mapping	3	2	2	-	-	1	-	-	-	-
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Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO PSYCHOLOGY (07 Periods)

Schools: Structuralism, functionalism, behaviourism, Psychoanalysis.

Methods: Introspection, observation, inventory, and experimental method.

Branches: pure psychology and applied psychology; Psychology and physiotherapy

Module 2: GROWTH AND DEVELOPMENT (08 Periods)

Life span: Different stages of development (Infancy, childhood, adolescence, adulthood, middle age, old age).

Heredity and environment: Role of heredity and environment in physical and psychological development, "Nature v/s Nurture controversy

Module 3: ATTENTION, PERCEPTION AND SENSATION (08 Periods)

Sensation: Vision, Hearing, Olfactory, Gustatory and Cutaneous sensation, movement, equilibrium, and visceral sense.

Attention: Types of attention, Determinants of attention (subjective determinants and objective determinants).

Perception: Gestalt principles of organization of perception (principle of figure-ground and principles of grouping), factors influencing perception (experience and context).

Illusion and hallucination: Different types.

Module 4: MOTIVATION, FRUSTRATION AND CONFLICT (08 Periods)

Motivation: Motivation cycle (need, drive, incentive, reward), Classification of motives, Abraham Maslow's theory of need hierarchy

Frustration: sources of frustration

Conflict: types of conflict, Management of frustration, and conflict

Module 5: INTELLIGENCE AND EMOTIONS (08 Periods)

Three levels of analysis of emotion (physiological level, subjective state, and overt behavior).

Theories of emotion

Stress and management of stress.

Intelligence: Theories of intelligence, Distribution of intelligence, Assessment of Intelligence

Reasoning: Deductive and inductive reasoning.

Problem-solving: Rules in problem-solving (algorithm and heuristic)

Creative thinking: Steps in creative thinking, traits of creative people.

Module 6: INTELLIGENCE AND EMOTIONS (06 Periods)

Factors affecting learning.

Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.

The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.

Personality

Approaches to Personality: type & trait, behaviouristic, psychoanalytic, and humanistic approach.

Personality Assessment: observation, situational test, questionnaire, rating scale, interview, and projective techniques.

Defence Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization, undoing, introjection, acting out

EXPERIENTIAL LEARNING

1. Demonstration of various behavioral patterns and disorders.
2. Illustration on psychosocial disorders.
3. Demonstration of different personalities and disorders.
4. Analysis of intelligence quotient.
5. A clinical study on counselling the patient.
6. Demonstrating the concepts of problem-solving in psychosocial problems.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in CHO.)

RESOURCES

BOOKS:

1. Robert A Baron, Text Book Psychology, Jaypee Publishers, Edition 1, 2020.
2. T. Ramalingam, Psychology for Physiotherapist, Jaypee Publishers, Edition 2, 2019.
3. Niraj Ahuja-Text Book of Psychiatry-Jaypee Publishers, Edition 4, 2019

VIDEO LECTURES:

1. www.britannica.com
2. www.alliant.edu

WEB RESOURCES:

1. www.psychology.com
2. <http://www.guides.lib.uw.edu>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102021	EDUCATION IN OPD AND IP	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course is designed to educate the patient, with the use of respiratory devices and breathing technique to manage patient with lifestyle changes, coping up with the disease, pulmonary rehabilitation, to identify and treat the respiratory conditions.

COURSE OUTCOMES: After successful completion of the course, students will be able to

- CO1** Follow Medication plans
- CO2** Do Follow ups
- CO3** Apply Treatment guidelines
- CO4** Counsel Patient nutrition and education
- CO5** Counsel Psychology support to the patient and family members

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	-	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	-	3	-	-
CO5	3	3	2	3	-	-	-	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: PATIENT EDUCATION (12 Periods)

General Patient Education, appropriate education and communication techniques, Current medications, Current health care concerns, Life style/behaviour Discuss current lifestyle decisions including employment and work hours, typical sleep habits, dietary decisions, family dynamics, and exercise participation, Give examples of lifestyle and behaviour changes, health Weight control/nutrition

Module 2: IN - PATIENT EDUCATION (11 Periods)

Discuss health consequences, assess patient ' s willingness to discuss and/or adapt to suggestions for lifestyle/behavior changes, Interrelationship of co-morbid conditions, Personal and Public safety, Sleep hygiene, psychological support

Module 3: OUT - PATIENT EDUCATION (12 Periods)

Collect and review available objective diagnostic data, patient assessment, Use of written, audiovisual, and computer-based materials to enhance and reinforce education and communication, Review patient ' s understanding and clarify misconceptions of current, Disorder, diagnosis, severity, testing, treatment, and contraindications and health benefits of treatment, improving sleep health, Identify, recognize and reward patient ' s willingness to succeed, progress toward health.

Module 4: SOAP DOCUMENTATION (10 Periods)

Subjective: Onset of the chief complaint, Chronology, Quality of the chief complaint, Modifying factors, Associated signs and symptoms, Objective: demographic data's, findings, lab results, Assessment, and Plan

Total period:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Counsel Life style modifications
2. Demonstrate Treatment outcome
3. Educate Medication and its uses
4. Perform Exercise and rehabilitation planning
5. Counsel Nutrition
6. Maintain Follow up visits and treatment follow up
7. Sleep hygiene and its importance
8. Regular visits to hospital to keep their health in tract

RESOURCES BOOKS

1. James Stoller, Egan's Fundamentals of Respiratory Care, Elsevier Health Sciences, Edition 12, 2019.
2. Barbara Klug Redman, The Practice of Patient Education A Case Study Approach, Independent Publication, Edition 10, 2006.

VIDEO LECTURES:

1. https://youtu.be/62NoW9m1_5c?si=LjqrPTm-WU8dNP_r
2. https://youtu.be/62NoW9m1_5c?si=dEscPksrYwaUXm9M
3. <https://youtu.be/WvLmYgmawoo?si=UJKAQjZwieWLC4ke>

WEB RESOURCES

1. <http://www.ihl.org>
2. <https://www.ncbi.nlm.nih.gov>
3. <https://go.aastweb.org>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC111005	CLINICAL INTERNSHIP-I	-	-	-	-	20
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides basic knowledge on hospital setup, care of patient, primary illness observation, and handling basic clinical instruments at training hospital.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Develop communication skills to deal with patients and health care professionals.
- CO2.** Apply appropriate medical devices and techniques to diagnose the patient illness.
- CO3.** Develop skills in formulating various medical documentation procedures.
- CO4.** Work individually and in teams following ethical practice.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	2	-	1
CO2	3	1	1	3	-	-	-	-	-	1
CO3	3	-	-	2	-	-	3	1	-	-
CO4	3	-	1	2	-	1	1	1	-	1
Course Correlation Mapping	3	1	1	3	-	1	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

The internship program will be divided into two semesters, each spanning six months. Throughout each semester, students will engage in six hours of daily practice, accumulating a total of 720 hours of practical training. A key requirement of the program is for students to diligently maintain a work logbook, which will be endorsed by their supervisor or trainer. At the

conclusion of the internship, candidates must submit their completed work logbook along with a certificate issued by the training institute.

The evaluation of candidates' training will be overseen by both internal and external examiners appointed by the University/Board. This evaluation will take the form of practical and viva examinations. The extended internship period affords students the opportunity to continuously develop confidence and enhance their clinical service delivery skills. They will demonstrate proficiency in both beginning and intermediate procedures, while also observing advanced and specialized techniques.

By the end of the clinical training, students will have practiced all the skills acquired through classroom and clinical instruction. They are expected to commit to a minimum of six hours of daily work, with the possibility of additional hours depending on the requirements of the healthcare setting.

Posting areas for Respiratory Therapy:

Students are posted in different area, within pulmonary department and in other clinical areas as needed. Pulmonary function lab , demonstrating various technique and performing spirometry , DLCO.Helium dilution testing, ans interpreting the reports and helping pulmonologist in aiding the patient , ICU's were Respiratory care is mandatory and treating patients with Mechanical ventilation, invasive and non-invasive, Emergency intubation, Extubation, Chest physio therapy ,ICU Bronchoscopy,ABG, O2 therapy for patients,and as when needed .Sleep lab for performing sleep studies , Polysomnography , CPAP and BIPAP titration. Interpreting the reports and taking care of sleep studies thorough out the study. In OPD for asthma education, COPD education, Smoking cessation therapy for patients in assisting the patients and educating the patients.

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC111006	CLINICAL INTERNSHIP-II	-	-	-	-	20
Pre-Requisite	22CC111005 Clinical Internship-I					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides basic knowledge on hospital setup, care of patient, primary illness observation, and handling basic clinical instruments at training hospital.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Develop communication skills to deal with patients and health care professionals.
- CO2.** Apply appropriate medical devices and techniques to diagnose the patient illness.
- CO3.** Develop skills in formulating various medical documentation procedures.
- CO4.** Work individually and in teams following ethical practice.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	2	-	1
CO2	3	1	1	3	-	-	-	-	-	1
CO3	3	-	-	2	-	-	3	1	-	-
CO4	3	-	1	2	-	1	1	1	-	1
Course Correlation Mapping	3	1	1	3	-	1	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

The internship program will be divided into two semesters, each spanning six months. Throughout each semester, students will engage in six hours of daily practice, accumulating a total of 720 hours of practical training. A key requirement of the program is for students to diligently maintain a work logbook, which will be endorsed by their supervisor or trainer. At the conclusion of the internship, candidates must submit their completed work logbook along with a certificate issued by the training institute.

The evaluation of candidates' training will be overseen by both internal and external examiners appointed by the University/Board. This evaluation will take the form of practical and viva examinations. The extended internship period affords students the opportunity to continuously develop confidence and enhance their clinical service delivery skills. They will demonstrate proficiency in both beginning and intermediate procedures, while also observing advanced and specialized techniques.

By the end of the clinical training, students will have practiced all the skills acquired through classroom and clinical instruction. They are expected to commit to a minimum of six hours of daily work, with the possibility of additional hours depending on the requirements of the healthcare setting.

Posting areas for Respiratory Therapy:

Students are posted in different area, within pulmonary department and in other clinical areas as needed. Pulmonary function lab , demonstrating various technique and performing spirometry , DLCO.Helium dilution testing, ans interpreting the reports and helping pulmonologist in aiding the patient , ICU's were Respiratory care is mandatory and treating patients with Mechanical ventilation, invasive and non-invasive, Emergency intubation, Extubation, Chest physio therapy ,ICU Bronchoscopy,ABG, O2 therapy for patients,and as when needed .Sleep lab for performing sleep studies , Polysomnography , CPAP and BIPAP titration. Interpreting the reports and taking care of sleep studies thorough out the study. In OPD for asthma education, COPD education, Smoking cessation therapy for patients in assisting the patients and educating the patients.

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102019	PULMONARY BRONCHOPROVOCATION	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course is designed to educate the patient , with the use of respiratory devices and breathing technique, use of methacholine, demonstrating spirometry for asthma patients and educate on nebulizer medication asthaline, ipratropium bromide .Explaining the procedure of the bronchoprovocation testing.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Perform the provocation test and its importance
- CO2** Perform the study for the patient
- CO3** Gain knowledge on patient education and treatment plan
- CO4** Perform the functioning of the Bronchoprovocation testing
- CO5** Perform resuscitation in case of emergency

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	-	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	-	3	-	-
CO5	3	3	2	3	-	-	-	3	-	-

Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-
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Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: METHACHOLINE (12 Periods)

Introduction, study of Bronchoprovocation Drug, pharmacology, pharmacokinetics, pharmacodynamics, Methacholine, uses, indications, contraindications, complications, airway management, reversal drugs, Bronchodilators, uses, indications, contraindications, pulmonary lab.

Module 2: EQUIPMENT'S USED IN BRONCHOPROVOCATION (12 Periods)

Spirometry, FEV1, lung parameters, normal spirometry, values and parameters uses, indication, contraindication, operation while doing test, nebulizer drugs: normal saline, asthaline, ipratropium bromide, uses, indication, contraindications, nebulizer machine, preparations for the test, nebulizer masks, recording and charting.

Module 3: BRONCHOPROVOCATION PREPARATION (11 Periods)

FEV1 measurement, dosing of methacholine, dilution, method of dilution, normal saline nebulization, emergency cart, uses indications while testing, resuscitation equipment and its importance, indication, contraindications, complications during testing, recording charting the values.

Module 4: BRONCHOPROVOCATION PRECAUTIONS (10 Periods)

Importance of methacholine, challenge testing, bronchial hyper responsiveness precautions, emergency management, recordings - vitals: monitoring, recording, uses of portable spirometry, charting, diagnosis and reporting.

Total periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Study of demographic data

2. Interpretation lab results
3. Demonstration tests, charting and reports
4. Knowledge of cases and its outcome for effective treatment
5. Approach towards the emergency cases
6. Understanding the importance and effect of treatment plan in methacholine challenge test.
7. Understanding the indication contraindication and complication.
8. Patient Education, use of nebulization and reversal drug.

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102065	CARDIOPULMONARY ASSESSMENT AND CLINICAL INTERVENTION	4	-	2	-	5

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION:

COURSE OUTCOMES: After successful completion of the course, students will be able to understand:

- CO1** Ability to understand and perform cardio-pulmonary assessment.
- CO2** Ability to manage critical cardio vascular procedures.
- CO3** To gain knowledge on types of surgery related to cardio - respiratory management.
- CO4** To learn the principles and functioning of the equipment used in cardio- pulmonary assessment and management.

C05 Work individually and in team to manage cardio - Respiratory emergencies.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	3	2	3	-	-	2	3	-	-
C02	3	3	-	3	-	-	-	3	-	-
C03	3	3	2	3	-	-	2	3	-	-
C04	3	3	2	3	-	-	-	3	-	-
C05	3	3	2	3	-	-	-	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: COMPREHENSIVE CARDIO - PULMONARY TECHNIQUE (15 Periods)

Patient history and assessment, vital science and assessment, cardiovascular physical examination, respiratory physical examination, functional assessment of cardiovascular, functional assessment for respiratory- Activity tolerance, Quality of life assessment, clinical skill practices.

Module 2: DIAGNOSTIC TESTING INTERPRETATIONS OF CARDIO AND PULMONARY (15 Periods)

Electrocardiogram, monitoring, recording, interpretation of ECG, Laboratory Studies, imaging studies, hemodynamic monitoring- cardio pulmonary arterial line placement exercise testing- cardio pulmonary exercise testing, case based- learning, cardio and pulmonary assessment and safety consideration.

Module 3: CARDIOPULMONARY CLINICAL SYNDROMES (15 Periods)

Common pulmonary disease and its interpretation, clinical cases, cardiovascular disorders, Respiratory pulmonary disease and interpretation, integrated cardio pulmonary conditions, its interpretation, emergency recognition, clinical reasoning.

Module 4: CLINICAL INTERVENTION AND MANAGEMENT (15 Periods)

Respiratory intervention- pulmonary Bronchoscopy, thoracocentesis, use of Equipment's, indications, contraindications and complications, cardio intervention, comprehensive care planning, monitoring and evaluation, monitoring techniques in clinical intervention, mechanical circulatory support, emergency procedures, case stimulation and care reasoning.

Module 5: PHYSIOTHERAPY IN CARDIO - PULMONARY SURGERIES (15 periods)

Thoracic surgery: pre-and post-operative assessment, management and complications of thoracic surgery: Rib fracture, Flail chest, Stove in chest, Surgery of the pleura, Pneumothorax, Hemothorax, Lung contusion and laceration.

Cardiac Surgeries: Valvotomy and valve replacement, Open heart surgery, cardiac bypass surgery, Heart transplantation, Pacemaker implantation, Coronary angioplasty.

Total Periods: 75

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of cardio - respiratory assessment
2. Demonstration on Cardio- Pulmonary management.
3. Demonstration - Breathing Exercises, use of breathing exercise equipment
4. Knowledge of cardio- respiratory disease conditions
5. Knowledge of cardio-pulmonary surgeries and application of cardio- respiratory therapy
6. Understanding and Application of Mobilization therapy and postural drainage therapy
7. Demonstration of chest physiotherapy in intensive care unit.
8. Patient Education, home therapy, Breathing techniques.

RESOURCES

TEXT BOOKS:

1. Robert Kacmarek, James Stoller, Egan's Fundamentals of Respiratory Care, 12th Edition (2020).

2. S Sunder, Textbook of Rehabilitation Paperback – 1 January 2019.
3. Joan e. cash, Patricia A. Downie, Cash's textbook of chest, heart and vascular disorders for physiotherapists, Edition of 1983.

REFERENCE BOOKS:

1. PP Mohanty and Monalisa Patnaik, Principles of Exercise Therapy, 1st edition (2022)
2. Eleanor F Branch and Susan S Rosist, Advances in Cardiac and Pulmonary Rehabilitation, edition 1990.
3. Scot Irwin, Jan S. Tecklin "Cardiopulmonary Physical Therapy: A Guide to Practice" 4th edition, Mosby, 2004.

VIDEO LECTURES:

1. <https://youtu.be/FF3m2H0G0Ug?si=8Vf-Vx3OabfnqIJn>
2. <https://youtu.be/Zl0IwF-pVmE?si=fwu4uy7gtsAAQY0i>
3. <https://youtu.be/00HRugsoH6g?si=Jmsy4nYZKAJINcl4>

WEB RESOURCES:

1. www.physio-pedia.com
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5019018/>
3. www.aarc.org

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101038	RESPIRATORY PHARMACOLOGY AND THERAPUETICS	4	-	-	-	4

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: The Course will cover Respiratory Pharmacology and Therapeutics, with Special Emphasis on common drugs used, Route of Administration, Type of formulations, Dose and frequency of administration, Side effects and Toxicity, Management of Toxic effects, Drug interactions, Knowledge of chemical and trade names, Importance of Manufacturing and expiry dates and instruction about handling each drug.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1. Acquire knowledge on principles of basic Respiratory Pharmacology.
- CO2. Understand the General considerations of Cholinergic Drugs and anti-cholinergic drugs.
- CO3. Gain knowledge on anaesthetic and Analgesics drugs.
- CO4. Identify the mechanism of various drugs related to Cardiovascular& Respiratory system.
- CO5. Learn about various drugs related to microbial infections and other diseases
- CO6. Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	3	1	-	-	-
CO2	3	1	-	-	-	-	-	-	-	-
CO3	3	1	3	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-
CO5	3	-	-	-	-	3	1	-	-	-
CO6	3	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	1	3	-	-	3	1	-	-	-

PROGRAM CORE

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION

(10 Periods)

General pharmacological principles - Definition - Routes of drug administration Pharmacokinetics, Pharmacodynamics - Adverse drug effects, Drugs acting on Autonomic Nervous System, Peripheral Nervous System and Drugs acting on Central Nervous system.

Module 2: ANTITUSSIVE AGENTS

(10 Periods)

General considerations-Centrally acting antitussive, Opioid antitussive, non-opioid antitussive, Peripheral acting antitussive, Expectorants, Mucolytic agents- mode of action, pharmacokinetics, pharmacodynamics.

Module 3: CLASSIFICATION OF RESPIRATORY DRUGS

(15 Periods)

Bronchodilators - short acting beta 2 agonist and long-acting beta 2 agonist, Anticholinergic, short acting Muscarinic antagonist, long-acting Muscarinic Antagonist, Methylxanthines- Mode of Action, Indications, contraindications, complications and uses.

Module 4: CARDIOVASCULAR & RESPIRATORY DRUGS

(15 Periods)

Cardiovascular drugs - Cardiac glycosides, Antiarrhythmic drugs, Antianginal drugs, Antihypertensives and Diuretics, Erythropoietin, Drugs affecting-coagulation, Fibrinolytic and Antiplatelet drugs, Treatment Anti - Inflammatory Drug - Inhaled Corticosteroids, Systemic Corticosteroids.

Module 5: ANTIMICROBIAL AND OTHER DRUGS

(10 Periods)

General consideration-Antibiotics-Antibacterial agents- -Antifungal- -Antiviral- Antiseptic-Disinfectant-. Corticosteroids, Antithyroid drugs and Drugs for Diabetes Mellitus, Treatment of Vomiting, Constipation, Diarrhoea and Treatment of peptic ulcer, Vitamins, Vaccines.

Total Periods: 60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Understanding of inculcate knowledge on various drugs.
2. Understanding the terminologies and basic principles of pharmacokinetic.
3. Observation and understanding the pharmacological action and mechanism of action of common drugs used for respiratory disease conditions.
4. Understanding therapeutic uses and adverse effects of Respiratory drugs.
5. Demonstrate the intended to discuss the various modalities of drug delivery and instruments.

RESOURCES

TEXT BOOKS:

1. Laurence L. Brunton, Bjorn C. Knollmann, Goodman and Gilman's The Pharmacological Basis of Therapeutics - "**The Blue Bible**", 14th edition, 2023
2. Padmaja Uday kumar, Pharmacology for Dental and Allied Health Sciences, Jaypee Brothers Medical Publishers, Edition 4, 2016.

REFERENCE BOOKS:

1. KD Tripathi, Essentials of Medical Pharmacology, Jaypee Brothers Medical Publishers, Edition 8, 2018.
2. Clive P. Page, Simon Pitchford, Dale's Pharmacology Condense, Edition 3, 2018.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=LLv29S7Hm3U>
2. <https://www.youtube.com/watch?v=r-gJaMoMon0>
3. <https://www.youtube.com/watch?v=oKtIzV2T69Y>

WEB RESOURCES:

1. <https://www.slideshare.net/specialclass/antibiotics-2173921>
2. http://www.harpercollege.edu/ls-hs/nur/120/sdolezal/lesson8_files/lesson8.ppt
3. <https://repo.knmu.edu.ua/bitstream/123456789/10408/1/Anti-inflammatory>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102072	ADVANCED EMERGENCY AIRWAY AND RESPIRATORY CARE PROCEDURES	5	-	2	-	6

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is designed to develop the knowledge and practical skills required for **advanced emergency airway and respiratory care**. It emphasizes the **latest techniques and technological advancements**, including the use of **automated and modern respiratory support equipment**, to manage critically ill patients effectively in emergency situations.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate advanced respiratory techniques.
- CO2.** Identify and apply the various methods to treat the arrhythmias as a team.
- CO3.** Demonstrate the use of defibrillator in an event of cardiac and respiratory emergency
- CO4.** Understand types of tachyarrhythmia and principles of treatment and know how to perform.
- CO5.** Apply invasive and non-invasive cardiac pacing safely and effectively.
- CO6.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	2	-	-	2	2	-	1
CO2	3	1	-	3	-	-	2	2	-	1
CO3	3	-	-	3	-	-	-	2	-	1
CO4	3	-	-	2	-	-	-	1	-	1
CO5	3	-	-	2	-	-	-	-	-	1
CO6	3	-	-	-	-	-	3	-	-	-
Course Correlation Mapping	3	1		2	-	-	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: AIRWAY ASSESSMENT AND BASIC MANAGEMENT (15 Periods)

Airway patency: recognition and assessment techniques, airway obstruction: partial vs complete, adult vs pediatric, Airway assessment tools (Mallampati score, LEMON method, etc.), Basic airway maneuvers: head-tilt–chin-lift, jaw thrust, Suctioning and secretion management, Oropharyngeal and nasopharyngeal airway insertion, Infection control and safety during airway management, Airway management in trauma and cervical spine injury

Module 2: ADVANCED AIRWAY MANAGEMENT (15 Periods)

Rapid Sequence Intubation (RSI): preoxygenation, medications, and complications, Difficult airway algorithm and management strategies, Supraglottic airway devices: LMA, i-gel, Combi tube, Cricothyrotomy and emergency tracheostomy, Troubleshooting airway complications (dislodgement, blockage, cuff leak), Airway management documentation and post-procedure monitoring.

Module 3: DEFIBRILLATOR, CARDIOVERSION, and PACING (15 Periods)

Manual external and internal defibrillator, Semiautomated external defibrillator, Automated external defibrillator, Implantable cardioverter, Wearable cardiac defibrillator. cardioversion: Types of cardioversion, chemical cardioversion, electrical cardioversion, procedure. Pacing: trans cutaneous pacing, transvenous pacing.

Module 4: RESPIRATORY AND CARDIAC EMERGENCIES (15 Periods)

Management of major respiratory emergencies: Severe asthma and COPD exacerbations, Pulmonary edema and aspiration, Pneumothorax, hemothorax, and tension pneumothorax, Pulmonary embolism, Drowning and smoke inhalation injuries, Cardiorespiratory arrest – adult, Code Blue and trauma care, ACLS integration in respiratory crisis situations

Module 5: POST-EMERGENCY AND SPECIAL RESPIRATORY CARE PROCEDURES (15 Periods)

Post-resuscitation and post-intubation airway care, Airway management, Airway and ventilatory management in pregnancy and obesity, Transport of critically ill patients – oxygen and ventilation considerations, Ethical and legal aspects of emergency respiratory care, Quality assurance and documentation in airway management

Total Hours 75

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Demonstration of intubation and extubation
2. Demonstration of emergency and special care in respiratory care procedures.
3. Demonstration of defibrillator
4. Demonstration of cardio version
5. Understanding the pacing procedure

RESOURCES BOOKS

1. American Heart Association, Advance cardiac life support, Provider manual, Standard Edition, 2020.
2. Monstenbjork M.D., basic life support provider manual, medical creation, Edition 1, 2020.
3. MonstenbjorkM.D, Advance cardiovascular life support provider manual,medical creation, Edition 1, 2021.

VIDEO LECTURES:

1. <http://www.heartsselfstudy.com>
2. <http://www.usctruma.com>
3. <https://youtu.be/K2PqO4x4htQ?si=XLypkk8aac1pkKGx>
4. <https://youtu.be/x2FOd93sA?si=S4BW7-9uGYag8Ggy>

WEB RESOURCES

1. <https://emedicine.medscape.com/article/1344081-overview>
2. <https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines/algorithms>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101041	Essentials of Global Health	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION:

This course introduces students to the fundamental concepts, principles, and challenges of global health with a focus on health equity, disease prevention, and health systems across different regions of the world. It examines the global burden of disease, social and environmental determinants of health, and the impact of globalization on population health.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Explain concept, scope, and importance of global health and its relationship with public health and healthcare systems worldwide.
- CO2.** Address the global burden of disease, including communicable diseases, non-communicable diseases, maternal and child health issues, and emerging health threats.
- CO3.** Analyze social, economic, environmental, and cultural determinants of health and their impact on health inequalities across countries.
- CO4.** Evaluate global health challenges such as pandemics, climate change, malnutrition, antimicrobial resistance, and healthcare access disparities.
- CO5.** Apply global health principles to propose strategies for disease prevention, health promotion, and sustainable healthcare development at national and international levels.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	2	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	2	3	-	-
CO5	3	3	2	3	-	-	2	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: Introduction (15 Periods)

This module introduces you to the course, some of the basic concepts of global health, and a number of key perspectives for considering global health issues. This module will also introduce you to the key actors in global health and the different ways in which they are organized and function.

Module 2: The burden of disease (15 Periods)

Module 2 focuses on the “burden of disease” . It first examines the state of the world’ s health. It then introduces you to key demographic factors and how they relate to global health. It concludes with several sessions that examine what people get sick, disabled and die from and to what risk factors and determinants these conditions can be attributed.

Module 3: Health System (15 Periods)

Module 3 focuses on health systems. It first examines the notion of “value for money” in considering investments in health. It then reviews how health systems in different parts of the world are organized; some of the issues they face in effectively and efficiently providing appropriate services of acceptable quality; and what we are learning can be done to address those issues in cost-effective ways.

Module 4: Cross cutting theme in Global Health (15 Periods)

Module 4 focuses on some of the most important cross-cutting themes in global health. These include the relationship between the environment and health, complex humanitarian emergencies and natural disasters and health, and nutrition and health. They also include an assessment of the health of women, children, and adolescents. A single session is devoted exclusively to childhood immunization.

Module 5: Critical Causes of Illness and Death (10 Periods)

focuses on critical causes of illness, disability, and death. It first examines communicable diseases, such as emerging infectious diseases, HIV, TB, malaria, and the neglected tropical diseases. It then reviews key issues in noncommunicable diseases, such as heart disease, stroke, cancer, and diabetes. It concludes with a look at injuries. Each session examines the nature of the condition; its burden of disease; the determinants and risk factors for the condition; who is most affected by it; and what we have learned can be done to address the condition in cost-effective ways.

Total periods :70

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Analyze global morbidity and mortality trends using WHO data.
2. Compare healthcare systems of developed, developing, and underdeveloped countries.
3. Study changes in disease patterns across different regions of the world.
4. Study prevalence, transmission, and prevention of diseases like TB, HIV/AIDS, Malaria, and COVID-19.
5. Analyze risk factors and global strategies for prevention of diabetes, cardiovascular diseases, and cancer.
6. Nutrition and Global Malnutrition Assessment
7. Pandemic Preparedness and Response
8. Health Inequity and Vulnerable Populations

RESOURCES

TEXT BOOKS:

1. Skolnik, Richard L. *Global Health 101* — 2019, Jones & Bartlett Publishers — Edition: (often 4th)
2. Detels, Roger (Ed.), Martin Gulliford, Quarraisha Abdool Karim, et al. *Oxford Textbook of Global Public Health* — 2022, Oxford University Press — 7th Edition
3. Birn, Anne - Emanuelle, Yenni Pillay & Timothy Holtz *Textbook of Global Health* — 2017, Oxford University Press — 4th Edition

REFERENCE BOOKS:

1. Hunter, David J. & Harvey V. Fineberg *Readings in Global Health: Essential Reviews from the New England Journal of Medicine* — 1st Edition, Oxford University Press (Year not always listed commercially)
2. Sethia, Babulal & Parveen Kumar *Essentials of Global Health* – 2019, Elsevier – 1st Edition
3. Tracy Kidder *Mountains Beyond Mountains: The Quest of Dr. Paul Farmer, A Man Who Would Cure the World* — 2003, Random House — 1st Edition (biographical global health narrative)

VIDEO LECTURES:

1. <https://youtu.be/ScRgptv7DO8?si=-FLNCjxABFn8uejL>
2. <https://youtu.be/a545vEBZpT8?si=fx-dGT6N7FDQNsX>
3. <https://youtu.be/Er-qyN8WJsg?si=q5-SE7PbLv6eiKtb>

Web Resources

1. worldhealthexpo.com
2. <https://www.who.int/observatories/global-observatory-on-health-research-and-development>
3. <https://www.who.int>

PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102069	DYNAMIC RESPIRATORY FUNCTION ASSESSMENT TECHNIQUES	3	2	2	-	6

Pre-Requisite -
Anti-Requisite -
Co-Requisite -

COURSE DESCRIPTION: Emphasis is placed on clinical application, patient preparation, equipment handling, quality control, and interpretation of results in various respiratory conditions including asthma, chronic obstructive pulmonary disease (COPD), restrictive lung disorders, and neuromuscular diseases

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate advanced respiratory techniques .
- CO2.** Identify and apply the various methods to access the lung function.
- CO3.** Demonstrate the lung function assesment testing
- CO4.** Understand types of lung function testing, interpretation and diagnosis.
- CO5.** Apply invasive and non-invasive respiratory care diagnostics testing.
- CO6.** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	2	-	-	2	2	-	1
CO2	3	1	-	3	-	-	2	2	-	1
CO3	3	-	-	3	-	-	-	2	-	1
CO4	3	-	-	2	-	-	-	1	-	1
CO5	3	-	-	2	-	-	-	-	-	1
CO6	3	-	-	-	-	-	3	-	-	-
Course Correlation Mapping	3	1		2	-	-	2	2	-	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: Principles of Pulmonary Function Testing (15 Periods)

Classification of pulmonary function tests, Indications and contraindications, Patient preparation and positioning, Pulmonary function testing equipment and calibration, technique, indications, and limitations of spirometry, Infection control and patient safety and protocol of infection control in pulmonary function lab, Quality control, acceptability, and reproducibility criteria

Module 2: Dynamic Pulmonary Function Tests (15 Periods)

Spirometry: principles, procedure, and parameters, Forced Vital Capacity (FVC) and Forced Expiratory Volume in 1 second (FEV₁), FEV₁/FVC ratio and clinical interpretation, Slow Vital Capacity (SVC/SVV): principle, procedure, and significance, Maximum Voluntary Ventilation (MVV): technique, indications, and limitations, Peak Expiratory Flow Rate (PEFR), Flow-volume loop, Bronchodilator reversibility testing

Module 3: Lung Volumes and Gas Transfer Assessment (15 Periods)

Static and dynamic lung volume measurements, Helium Dilution Method, Measurement of Functional Residual Capacity (FRC), Advantages and limitation, Diffusing Capacity of the Lung for Carbon Monoxide (DLCO), Physiological basis of diffusion, Single-breath DLCO technique, Factors influencing DLCO, Clinical relevance

Module 4: Clinical Application and Pre-Surgical Pulmonary Assessment (15 Periods)

Integrated interpretation of pulmonary function tests, Obstructive, restrictive, and mixed ventilatory defects, **Pre-Surgical Pulmonary Assessment**, Importance and objective, Risk factors for postoperative pulmonary complications, Role of spirometry, SVC, MVV, DLCO, and ABG, Exercise tolerance tests (6MWT, stair-climbing), Preoperative respiratory optimization strategies, Pediatric and geriatric considerations, Limitations of pulmonary function testing, Documentation, reporting, and ethical considerations.

Module 5: Interpretation, Clinical Applications, and Special Considerations (15 Periods)

Integrated interpretation of pulmonary function tests, Obstructive, restrictive, and mixed ventilatory defects, Clinical significance of MVV, SVC, and sputum induction finding, DLCO interpretation in emphysema, interstitial lung disease, anemia, and pulmonary vascular disorders, Exercise-induced respiratory function testing, Pediatric and geriatric considerations, Limitations and sources of error in respiratory function assessment, Documentation, reporting, and ethical consideration.

Total Periods: 75

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Demonstration of pulmonary function test, interpretation and diagnosis
2. Demonstration of emergency and special care in respiratory care procedures.
3. Demonstration of diffusion carbon monoxide
4. Demonstration of helium dilution method
5. Understanding the 6 min walking test , interpretation and diagnosis

RESOURCES BOOKS

1. American Heart Association, Advance cardiac life support, Provider manual, Standard Edition, 2020.
2. Monstenbjork M.D., basic life support provider manual, medical creation, Edition 1, 2020.
3. MonstenbjorkM.D, Advance cardiovascular life support provider manual,medical creation, Edition 1, 2021.

VIDEO LECTURES:

1. <https://youtu.be/BBpS1Wrj3Bg?si=opaTLzaH3A89Af9x>
2. https://youtu.be/DRPzcIFEcHo?si=_W1sB065sAHUoGvU
3. <https://youtu.be/oOkNS-vvnhQ?si=VTWvx1rco8cdKiJo>
4. <https://youtu.be/q9eMTNs4EUA?si=3xludOBTRlcPd6Vi>

WEB RESOURCES

1. <https://emedicine.medscape.com/article/1344081-overview>
2. <https://cpr.heart.org/en/resuscitation-science/cpr-and-ecc-guidelines/algorithms>

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC102022	SMOKING CESSATION PROGRAM	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion and demonstrate the ability to perform and educate, knowledge in interpretation and diagnosis, managing patients , Application of respiratory exercises, assisting nicotine therapy, home therapy, and education on coping up with smoking cessation program.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** perform smoking cessation program
- CO2** use their knowledge of smoking cessation skills on smoking cessation program.
- CO3** Gain knowledge on smoking cessation education to patients
- CO4** learn the principles and functioning of the smoking cessation action plan
- CO5** Perform individually and instruct smoking education, smoking cessation charting and follow ups

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	-	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	-	3	-	-
CO5	3	3	2	3	-	-	-	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: NICOTINE (11 Periods)

Nicotine – A Stimulant, Effects of Nicotine on Central Nervous System, Hematological, Cardiovascular, Metabolic, Endocrine, Acetaldehyde & Carbon Monoxide, Other Psychological Effect, Stages of Development of addiction, and Withdrawal, nicotine medications, nicotine gums , nicotine patches, -uses, indication , contraction.

Module 2: ADDICTION TREATMENT ASSESSMENT (11 Periods)

The Addiction Triangle to assess Treatment Needs, Strategies for tobacco control and specific strategies for tobacco cessation, Protection of vulnerable groups- A human rights approach to tobacco control, Community interventions,

Module 3: 5A' S MODEL - PHARMACOTHERAPY FOR TOBACCO CESSATION (11 Periods)

Stages of Readiness to Change, ASK- ADVISE - ASSESS - ASSIST - ARRANGE, Fagerstrom Addiction Scale for Smokers, Modified Fagerstrom Questionnaire for Smokeless Tobacco Users, Preventing Relapse, basics of tobacco smoke.

Module 4: 5R'S MODEL- BEHAVIORAL STRATEGIES (12 Periods)

RELEVANCE, RISKS, REWARDS, ROADBLOCKS, REPETITION, Withdrawal, Relapse Prevention, Common Smoking Signals, Situations involving negative emotional state (Anger, depression, frustration, boredom) Rewarding aspect, Thought Management, Common Resumption Thoughts and Strategies

Total period 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of smoking cessation
2. Demonstration of smoking cessation
3. Demonstration - Breathing Exercises, use of breathing exercise equipment
4. Knowledge of tobacco and its complications
5. Application of nicotine therapy
6. Understanding and Use of nicotine therapy drugs and its uses
7. Assisting patients with 5 A' s
8. Patient Education, home therapy, coping with withdrawal symptom

RESOURCES

TEXT BOOKS:

1. James Stoller, Egan's Fundamentals of Respiratory Care, Publisher Elsevier Health Sciences, Edition 12, 2019.
2. Suzanne Harris, Paul Brunetta, How to Stop Smoking and Live Free of Nicotine Addiction, Borealis Press publisher, Edition 1, 2020.
3. Jane Elliott, Easy Way to Stop Smoking and Live A Better Life, Publisher independently published, Edition 3, 2023.

REFERENCE BOOKS:

1. Mason P, Helping Smokers Change: A Resource Pack For Training Health Professionals, Churchill Livingstone Publisher, Edition 2, 2021.

VIDEO LECTURES:

1. <https://youtu.be/Oce0qXiUYBM?si=QQnxeVIGxJ6ctRZk>
2. https://youtu.be/7AWdjLg7nSw?si=K_wjXWYhOdJBCnyr
3. https://youtu.be/g43M--o4mXQ?si=acvYcWfDAo_R47r8

WEB RESOURCES

1. www.ash.org.uk
2. www.tobaccodocuments.org
3. www.cdc.gov/tobacco

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC102033	RESPIRTORY CARE IN SPORTS AND PHYSIOLOGY	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course is designed to educate the patient, with the use of respiratory devices and breathing technique, use of COPD Action plan diary, demonstrating the use of intensive spirogram for COPD patients and educate on breathing techniques and demonstrate the use of inhaler techniques.

COURSE OUTCOMES: After successful completion of the course, students will be able to”

- CO1** perform COPD action plan
- CO2** To use the adjunct devices to perform the respiratory COPD action plan
- CO3** Gain knowledge on COPD education to patients
- CO4** Learn the principles and functioning of the equipment used in action plan
- CO5** Work individually and in team to perform charting of COPD action plan

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	-	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	-	3	-	-
CO5	3	3	2	3	-	-	-	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: COPD MANAGEMENT AND PATIENT EDUCATION (11 Periods)

General Patient Education, Current medications, Current health care concerns, Life style/behaviour,health Weight control/nutrition.Risk reduction, symptom control, Management of COPD patient education, patient goals, achievement of therapy goals, aim to reduce exacerbation. COPD treatment in adolescents and adults, Use of medication, Inhaler technique.

Module 2: APPROACH TO COPD TREATMENT (11 Periods)

COPD,Discuss current lifestyle decisions including employment and work hours, typical sleep habits, dietary decisions, family dynamics, and exercise participation chronic bronchitis, emphysema, Exercise -induced COPD exacerbation Causes, airway, use of drug, triggers, use of nebulizer, Breathing exercise therapy, control of exacerbation, indication, contraindication, adverse effects.

Module 3: BREATHING EXERCISES FOR COPD (11 Periods)

Breathing techniques, precautions, use of emergency medication, how to overcome triggers and COPD exacerbation, use of medication during exacerbation, patient education,breathing exercises- chest exercise - inspiration and expiration - using exercise hand equipment,chest expansion exercise

Module 4: REHABILITATION AND COPD (12 Periods)

Use of device, mobilization , Tread mill, aerobics, Maintenance of COPD Diary, Recording, charting, follow ups, checking the inhalers intake,Bronchodilator, record keeping, Indication, Contraindication, adverse effects on the use of medication.

Total period:45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of COPD Plan
2. Demonstration of COPD Action plan
3. Demonstration - Breathing Exercises, use of breathing exercise equipment
4. Knowledge of COPD disease conditions
5. Application of breathing exercise
6. Understanding and Use of Nebulization and Inhaler therapy
7. Demonstration of COPD Action plan and use of nebulizer Equipment
8. Patient Education, home therapy, Breathing techniques.

RESOURCES

TEXT BOOKS:

1. James Stoller, Egan's Fundamentals of Respiratory Care, Publisher Elsevier Health Sciences, Edition 12, 2019.
2. by Dr. David Bellamy and Rachel Booker, Independently published, Edition 4, 2001,

REFERENCE BOOKS:

1. Beeh KM, Glaab T, Stowasser S, et al., Characterisation of exacerbation risk and exacerbator phenotypes in the POET-COPD trial, Respir Res, Edition 1, 2013.
2. Mannino DM, Gagnon RC, Petty TL, Obstructive lung disease and low lung function in adults, Lydick, Edition 1, 2013.

VIDEO LECTURES:

1. https://youtu.be/nhP--wqxjmo?si=o5AUaDF-nW_6g_YH
2. <https://youtu.be/ZJPJjZRHmy8?si=PZ3HFezVadvKdwoY>
3. <https://youtu.be/AdeiN29az-Q?si=i43x38R6PG0-p70N>

WEB RESOURCES

1. www.copdfoundation.org
2. www.aarc.org
3. www.ats.org

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC102018	PULMONARY INTERPRETATION CASE STUDIES	3	-	2	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: These courses provides a detailed discussion and demonstrate the competent ability to perform research, and descriptive case studies, knowledge in interpretation and diagnosis, managing Participant observation, Physical artifacts, case study data collection, and review of cases, approach to analytical data of cases.

COURSE OUTCOMES: After successful completion of the course, students will be able to

- CO1** Gain Ability to understand the case study
- CO2** Gain Ability to solve the case study
- CO3** Do observational case studies on participants
- CO4** Collect data, review cases, and approach the participants and gain knowledge in
- CO5** understand and Solve case study and interpretation in labs

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	-	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	-	3	-	-
CO5	3	3	2	3	-	-	-	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CASE STUDY (11 Periods)

Introduction, Collective case studies, Descriptive case studies, Explanatory case studies, Exploratory case studies, Instrumental case studies, Intrinsic case studies, clinical presentations.

Module 2: CASE STUDY DATA AND TREATMENT PLAN (11 Periods)

Archival records, Direct observation, Documents, Interviews, Participant observation, Physical artifacts, case study data collection, review of cases, approach to analytical data of cases, Cognitive behavioral approach, Cognitive behavioral therapy, Humanistic approach, client-centred therapy Psychoanalytic approach, Pharmacological approach: mono-therapy, medications, use and management

Module 3: PSYCHOLOGICAL CASE STUDY (11 Periods)

Background information, interpretation, presentation of case study, Description of the presenting problem, diagnosis, diagnostic and statical manual, psychoanalytical approach, psychoanalytical therapy

Module 4: PFT INTERPRETATION AND CASE STUDY (12 Periods)

PFT parameter, FVC, FEV1, FEV1/FVC, RV, MEF, Findings for obstructive and restrictive diseases, pulmonary relates case studies, patient assesment, auscultation findings, other supporting reports- CXR, ABG, patient education and recording.

Total periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Study of demographic data
2. Interpretating lab results
3. Demonstration - Breathing Exercises, use of breathing exercise equipment
4. Knowledge of cases and its outcome for effective treatment
5. Approach towards the psychological treatment
6. Understanding the importance and effect of treatment plan and cases
7. Understanding behavioral approach towards the patient
8. Patient Education, home therapy, Breathing techniques.

RESOURCES

TEXT BOOKS:

1. Robert Kacmarek, James Stoller, Egan's Fundamentals of Respiratory Care, Publisher Elsevier Health Sciences, Edition 12, 2019
2. Robert K. Yin, Case Study Research and Applications, Jaypee Medical Publications, Edition 3, 2017.
3. Robert K. Yin, Case Study Research: Design and Methods, independently published, Edition 1, 2022.

REFERENCE BOOKS:

1. Barker M., Assessing the quality in qualitative research, Jaypee brothers Medical Publishers, Edition 1, 2021.
2. Baxter P., Jack S, Qualitative case study methodology: Study design and implementation for novice researchers, The Qualitative Report, Elsevier publications, Edition 1, 2022.

VIDEO LECTURES:

1. <https://youtu.be/NtJso8hRKvw?si=ErQ2-HdVjkUdgCKY>
2. <https://youtu.be/UWu78KZvj70?si=I58xAs0O7vJnhbgg>
3. <https://youtu.be/Ds6F-D7knK8?si=xLkdMqghcZhVesaD>

WEB RESOURCES

1. www.aarc.org
2. www.thecasecenter.org
3. www.library.bu.edu

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC101020	POLYSOMNOGRAPHY-II	4	-	-	-	4
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on demonstrate the competent ability to perform and operate Respiratory Diagnostic Testing Equipment, knowledge in interpretation and diagnosis, managing patients with emergencies, Application of CPAP and BiPAP therapy with administering and Titrating O2 therapy.

COURSE OUTCOMES: After successful completion of the course, students will be able to

- CO1** To Perform and operate body plethsmography, working in Bronchoscopy suite room
- CO2** Handle emergency artificial airway systems in respiratory therapy
- CO3** Perform Invasive and Non-Invasive monitoring in ICUS and Diagnostic Procedure
- CO4** Learn the principles and functioning of the equipment' s
- CO5** Work individually or in teams to solve problems with effective communication

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	1	3	-	-	-	2	-	-
CO2	3	-	1	3	-	-	-	2	-	-
CO3	3	-	1	3	-	-	-	2	-	-
CO4	3	-	1	3	-	-	-	2	-	-
CO5	3	-	1	3	-	-	-	2	-	-
Course Correlation Mapping	3	-	1	3	-	-	-	2	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CPAP (15 Periods)

CPAP mode, its type, outcome, pressure management, and its uses, management of CPAP device, type of device and management CPAP mask, types, sizes, pressure tubes, online monitoring and Titrating, polysomnography waveform.

Module 2: Bi-PAP (15 Periods)

BiPAP mode, its type, outcome, pressure management, and its uses, management of BIPAP device, BIPAP mask, types, sizes, pressure tubes, Bi pap mask, types and its uses, online monitoring and Titrating

Module 3: SHIFTING OF PRESSURE (15 Periods)

Pressure Titrating, pressure shifting, polysomnography wave form, shifting from CPAP to BIPAB, online titration, management of sleep patient, use of mask during sleep study.

Module 4: RECORDING AND REPORTING (15 Periods)

Analyzing, recording, flow chart, patient record, online studying the polysomnography, reporting, result of the patient and diagnosing, follow up, patient education on use of CPAP, pressure setting in the device.

Total Periods:60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Knowledge of Neurobiology of sleep, sleep disorder, breathing
2. Understanding the circadian sleep cycles, sleep wake dynamics
3. Knowledge of the instrument
4. Understanding the sleep rhythm and titration
5. Applying and demonstrating the sleep study machines
6. Demonstration to patient explaining – CPAP AND BIPAP operations.
7. Demonstrating the use of CPAP
8. Patient education, charting recording, interpretation

RESOURCES

TEXT BOOKS:

1. James Stoller "Egan's Fundamentals of Respiratory Care" 12th Edition, year:2020
Publisher Elsevier Health Sciences, 2019
2. Sterman MB, Clemente CD. "Sleep patterns induced by basal forebrain stimulation in the behaving". publisher : independently published

REFERENCE BOOKS:

1. American Academy of Sleep Medicine. (2014) "The International Classification of Sleep Disorders"- Third Edition by Darien, IL
2. Peppard, P. E., Young, T., Barnet, J. H., (2013). "Increased prevalence of sleep-disordered breathing in adults" American journal of epidemiology
3. Gray TC, Rees GJ." The role of apnoea in anaesthesia for major surger". (1952).PubMed
Google Scholar

VIDEO LECTURES:

1. https://youtu.be/kCUAPvCXUCc?si=0quUkT-n_sbuDB6z
2. <https://youtu.be/EU6IIvNE4NE?si=QXHy5YvI0LjwwKeF>
3. <https://youtu.be/iWo90uxkNM0?si=ODzhN4UrDoawa6k5>

WEB RESOURCES

1. <https://aasm.org/>
2. <https://jcsn.aasm.org/>
3. www.ncbi.nlm.nih.gov/books/

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC102017	EMERGENCY MEDICINE AND CARDIAC LIFE SUPPORT- II	3	-	2	-	4

Pre-Requisite -s

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: This course is designed to train the skills of CPR for victims of all ages, use of an automated external defibrillator and relief of choking.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Promptly recognize several life- threatening emergencies, give high - quality cardiopulmonary resuscitation and delivery appropriate ventilations and early use of an AED
- CO2** Identify the arrhythmias and apply high performance team management
- CO3** demonstrate the use a defibrillator in event of a cardiac emergency
- CO4** Understand types of tachyarrhythmia and understand the principles of treatment and know how to perform.
- CO5** Apply invasive and non invasive cardiac pacing safely and effectively.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	2	-	-	1	2	1	3
CO2	3	1	-	3	-	-	2	2	1	3
CO3	3	-	-	3	-	-	-	2	-	1
CO4	2	-	-	2	-	-	-	1	-	1
CO5	2	-	-	2	-	-	-	-	-	1
Course Correlation Mapping	2	1		2	-	-	1	1	1	1

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: PEDIATRIC BASIC AND ADVANCED LIFE SUPPORT (13 Periods)

Anthropometry, neonatal resuscitation, algorithm of treating asphyxia patients, routine care of baby, diarrhea, pathophysiology, treatment, foreign body obstruction, sudden infant death syndrome, prevention, diaphragmatic hernia, types, treatment.

Module 2: ADVANCED TRAUMA LIFE SUPPORT (10 Periods)

Advance trauma life support algorithm, management, types of fracture, epidural hematoma, subdural hematoma, Subarachnoid Haemorrhage, cardiac tamponade, head injury.

Module 3: PREGNANCY LIFE SUPPORT (11 Periods)

Hemorrhage in early pregnancy, abortion, threatened, inevitable, complete, incomplete, missed, septic, recurrent, medical termination of pregnancy, ectopic pregnancy, sites of ectopic pregnancy, management of ectopic pregnancy, hypertensive disorders in pregnancy , pre eclampsia , eclampsia, cord prolapsed, breech presentation.

Module 4: SUPPORTING EQUIPMENT'S (11 Periods)

Introduction, Airway equipment and management, laryngeal mask airway, combitube, OPA, NPA, endotracheal intubation, spine board, scoop board, Kendrick extrication device.

Total Periods: 45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Understanding of pediatric emergency.
2. Demonstration of advanced trauma life support
3. Demonstration of pregnancy medical condition.
4. Demonstration of emergency equipment.

RESOURCES BOOKS

1. A.Snthosh kumar, handbook of pediatrics, CBS publishers, Edition 1, 2017
2. Louis Solomon, David J.Warwick, Apleys system of orthopedics and fracture, Arnold publications, Edition 1, 2020

VIDEO LECTURES:

1. https://youtu.be/nTa1Oxv-LVw?si=j_deWPX7eUmpOTGq
2. <https://youtu.be/qMR0WFByy4c?si=WuHf3gefmx3c6rU>
3. https://youtu.be/_CAv_eM2nSA?si=gDymQhTc1ptpbISO
4. <https://youtu.be/fooQi2PRSZk?si=1o1dTfCpQPv1o8nX>

Web Resources:

1. www.samlib.com/textbooksorthopedicsSanders: Core Knowledge in Orthopaedics: Trauma, 1st ed.; 2008.
2. www.emedicine.com - Medscape reference

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC102023	NEONATAL AND PEDIATRIC RESPIRATORY CARE	4	-	2	-	5
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION:

COURSE OUTCOMES: After successful completion of the course, students will be able to understand:

- CO1** Understand the anatomical and physiological differences between neonatal, pediatric, and adult respiratory systems.
- CO2** Gain proficiency in using respiratory equipment and monitoring devices specific to neonatal and pediatric care.
- CO3** Learn evidence-based protocols for neonatal and pediatric airway management, including intubation, surfactant therapy, and CPAP.
- CO4** Develop skills in assessing respiratory function and vital signs in neonatal and pediatric patients.
- CO5** Apply appropriate interventions such as oxygen therapy, mechanical ventilation, and non-invasive respiratory support.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	2	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	2	3	-	-
CO5	3	3	2	3	-	-	2	3	-	-

Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-
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Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: Introduction to Neonatal and Pediatric Respiratory Care (15 Periods)

Overview of neonatal and pediatric respiratory care, anatomy and physiology of the respiratory system in neonates and children, Differences from adult respiratory anatomy, Lung development and surfactant production, Basic respiratory physiology in neonates and children.

Module 2: Respiratory Assessment in Neonates and Children (15 Periods)

Clinical examination: observation, palpation, and auscultation, assessment of vital signs: respiratory rate, heart rate, oxygen saturation, and blood pressure, laboratory and diagnostic tests, arterial blood gases (ABG), chest X-ray interpretation, Pulse oximetry and capnography, scoring systems for respiratory distress (e.g., Silverman-Anderson index)

Module 3: Common Neonatal Respiratory Conditions (15 Periods)

Respiratory Distress Syndrome (RDS): Pathophysiology, risk factors, and diagnosis, surfactant therapy and mechanical ventilation, transient tachypnea of the Newborn (TTN): Causes, clinical features, and management, Meconium Aspiration Syndrome (MAS), Mechanisms and treatment options, Persistent Pulmonary Hypertension of the Newborn (PPHN): diagnosis and management strategies. Bronchopulmonary Dysplasia (BPD): Risk factors, pathophysiology, and long-term management.

Module 4: Neonatal and Pediatric Respiratory Interventions (15 Periods)

Oxygen Therapy: Indications, methods of administration, and monitoring, Use of nasal cannula, oxygen hoods, and incubators. Non-invasive Ventilation and invasive ventilation. Ventilator settings and adjustments for neonates and children. Ventilator weaning and extubation strategies. Surfactant Therapy: Indications, types, and administration of surfactant. Airway Management: Endotracheal intubation, neonatal and pediatric sizing, Laparoscopy and tracheostomy care, Suctioning techniques and complications.

Total periods :60

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of in-invasive and non-invasive mechanical ventilator
2. Demonstration of oxygen therapy
3. Demonstration - use of breathing exercise equipment
4. Knowledge of neonatal and pediatric condition
5. Application of respiratory therapy
6. Understanding and Use of techniques specialized in neonatal and pediatric care
7. Demonstration of
8. Patient Education, home therapy, Breathing techniques.

RESOURCES

TEXT BOOKS:

1. "Neonatal and Pediatric Respiratory Care" by David J. W. Miles
2. "Pediatric Respiratory Care" by Robert M. Kacmarek, James K. Stoller, and Alan L. Lumb
3. PALS (Pediatric Advanced Life Support) and NALS (Neonatal Advanced Life Support) Guidelines
Current Clinical Guidelines and Protocols – American Academy of Pediatrics (AAP),
Neonatal Resuscitation Program (NRP)

REFERENCE BOOKS:

1. "Textbook of Pediatric Critical Care" by Bradley P. Fuhrman and Jeffrey S. Zimmerman
2. Manual of Neonatal Respiratory Care" by Vicki E. G. McKinney
3. Current Clinical Guidelines and Protocols – American Academy of Pediatrics (AAP),

Neonatal Resuscitation Program (NRP)

VIDEO LECTURES:

1. <https://youtu.be/adkp2f5kfneonatal>
2. <https://youtu.be/neonatal>
3. https://youtu.be/Wuj14MRA7JY?si=hsH_Ps1iOcBiT_IY

Web Resources

4. www.aarc.org
5. www.art.org
3. www.aap.org

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC102032	RESPIRATORY ACTION PLAN FOR OPTIMAL CARE	3	-	2	-	4

Pre-Requisite -

Anti-Requisite -

Co-Requisite -

COURSE DESCRIPTION: The course helps in applying the management and control of action plan for respiratory disease conditions

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Ability to explain the role of allergens, genetic factors, and environmental triggers in asthma exacerbations.
- CO2** Understanding the role of long-acting bronchodilators (LABAs, LAMAs), inhaled corticosteroids (ICS), and combination therapy in managing COPD.
- CO3** Knowledge of long-term control medications (e.g., inhaled corticosteroids, leukotriene modifiers) and quick-relief medications (e.g., short-acting beta agonists).
- CO4** Understanding the impact of long-term smoking or occupational exposure in COPD progression.
- CO5** Familiarity with Clinical Guidelines: Understanding and applying guidelines such as the Global Initiative for Asthma (GINA) and the Global Initiative for Chronic Obstructive Lung Disease (GOLD) to ensure evidence-based care.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-

CO2	3	3	-	3	-	-	-	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	-	3	-	-
CO5	3	3	2	3	-	-	-	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: Asthma Management and Breathing Exercise for Asthma (11 Periods)

Risk reduction, symptom control, Management of asthma patient education, patient goals, achievement of therapy goals, aim to reduce exacerbation. Asthma treatment in adolescents and adults, Use of medication, Inhaler technique. Breathing techniques, precautions, use of emergency medication, how to overcome triggers and asthma exacerbation, use of medication during exacerbation, patient education. pregnancy and asthma breathing exercises.

Module 2: Approach to Asthma Treatment and Asthma Action Plan (12 Periods)

Asthma exacerbation, dyspnea associated with asthma, Exercise -induced asthma exacerbation Causes, airway, use of drug, triggers of asthma, use of nebulizers, Breathing exercise therapy, control of exacerbation, indication, contraindication, adverse effects. Use of device, Maintenance of asthma Diary, Recording, charting, follow ups, checking the inhalers intake, record keeping, Indication, Contraindication, adverse effects on the use of medication, PEFM, recording and charting.

Module 3: COPD Management and Breathing Exercises for COPD (12 Periods)

Managing COPD at Home-breathing techniques, precautions, use of emergency medication, how to overcome COPD exacerbation, use of medication during exacerbation, patient education. COPD breathing exercises, COPD vaccinations, Psycho-social Support, Advanced management: lung reduction surgery, lung transplant.

Module 4: Approach to COPD Treatment and COPD Action Plan (10 Periods)

Use of breathing assisted devices, Maintenance of COPD Diary, Recording, charting, follow ups,

checking the inhalers intake, record keeping, Indication, Contraindication, adverse effects on the use of medication, use of CPAP,BIPAP- home O2 concentrater and management.

Total periods :45

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical demonstration of asthma Plan and COPD plan
2. Demonstration of asthma Action plan and COPD action plan
3. Demonstration - Breathing Exercises, use of breathing exercise equipment
4. Knowledge of asthma disease conditions and COPD disease condition
5. Application of breathing exercise
6. Understanding and Use of Nebulization and Inhaler therapy
7. Demonstration of COPD action plan and uses of non invasive devices
8. Patient Education, home therapy, Breathing techniques.

RESOURCES

TEXT BOOKS:

1. **"Asthma: Basic Mechanisms and Clinical Management"** Authors: Peter J. Barnes, J. Mark FitzGerald, and Michael B. O'Byrne Edition Year: 5th Edition (2021) Publisher: Elsevier
2. "Global Initiative for Chronic Obstructive Lung Disease (GOLD) Report" Edition Year: 2023
Publisher: GOLD (Global Initiative for Chronic Obstructive Lung Disease)
3. Asthma: Comorbidities, Coexisting Conditions, and Differential Diagnosis April 2014 by Richard F. Lockett MD, Dennis K. Ledford MD, WAO .

REFERENCE BOOKS:

1. "Asthma and COPD: Basic Principles and Practice" Authors: Jean Bousquet, Stephen E.

Peters, and Richard D. L. Jones Edition Year: 4th Edition (2021) Publisher: Elsevier

2. Aggarwal B, Mulgirigama A, Berend N. Exercise-induced bronchoconstriction: prevalence, pathophysiology, patient impact, diagnosis and management. NPJ Prim Care Respir Med. 2018 Aug
3. Martin AJ, Landau LI, Phelan PD. Lung function in young adults who had asthma in childhood. Am Rev Respir Dis. 1980 Oct.

VIDEO LECTURES:

1. <https://youtu.be/r2bkBvYFHcg?si=umUuGEeHPTECxEZP>
2. <https://youtu.be/Vxccerv5qQY?si=8X5LgEruThHoXT8Z>
3. https://youtu.be/x_x0G4_mgdw?si=H8TLOuF53RIRuAqv

Web Resources

1. www.aarc.org
2. www.art.org
3. www.earc.org

PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC101040	SPORTS NUTRITION AND RESPIRATORY TRAINING	2	-	-	-	2
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION:

This course provides an in-depth understanding of the role of nutrition in respiratory health and disease management. It explores how nutritional status influences lung function, respiratory muscle strength, immune response, and recovery in patients with acute and chronic respiratory conditions.

COURSE OUTCOMES: After successful completion of the course, students will be able to understand:

- CO1.** This module helps students understand the nutritional essentials
- CO2.** Helps to explore the roles of macro nutrients, vitamins, minerals, and hydration
- CO3.** Learn evidence-based protocols for nutritional assessment
- CO4.** Understand metabolic adaptations to training.
- CO5.** Ensure the players remain healthy, well-fueled, and game-ready at all times.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	3	-	-	2	3	-	-
CO2	3	3	-	3	-	-	2	3	-	-
CO3	3	3	2	3	-	-	2	3	-	-
CO4	3	3	2	3	-	-	2	3	-	-
CO5	3	3	2	3	-	-	2	3	-	-
Course Correlation Mapping	3	3	2	3	-	-	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: **(15 Periods)**

Power & Performance: Foundations of Nutrition and Training

Delve into the nutritional essentials that drive elite performance on the field. This module covers the roles of macronutrients, vitamins, minerals, and hydration, offering practical guidance to optimize players' diets and ensure they're always game ready.

Module 2: **(13 Periods)**
Fueling Champions: Applied Sport Nutrition for Football

Explore the journey of food from plate to pitch, and discover how the body converts nutrients into powerful movement. Learn about digestion, muscle energy systems, and how to balance energy intake and expenditure for sustained athletic output.

Module 3: **(15 Periods)**
Building Champions: Applied Sport Training for Football

Gain a deeper understanding of the physical and metabolic demands faced by footballers during matches. This module breaks down match performance, energy systems, fatigue management, and the art of planning elite training for maximum impact.

Total periods :43

EXPERIENTIAL LEARNING

LIST OF EXPERIMENTS:

1. Clinical assessment and nutrition
2. Demonstration of exercise therapy
3. Assessment of Basal Metabolic Rate (BMR)
Calculation of Daily Energy Requirements for Athletes
4. Calculation of Daily Energy Requirements for Athletes
5. Pre-event and Post-event Meal Planning for Athlete
6. comparisons of Diet Plans for Endurance vs Strength Athletes
7. Patient Education
- 8.

RESOURCES

TEXT BOOKS:

1. *Sport Nutrition* — 4th Edition (2024) Gleeson, Michael & Jeukendrup, Asker E. Human Kinetics Publishers — 2024
2. *Sports Nutrition: Energy Metabolism and Exercise* — 2nd Edition (2008)
3. *Physiology of Sport and Exercise* — (Current ~8th Edition, 2021/2024) **Kenney, W. Larry; Wilmore, Jack H.; Costill, David L.** Human Kinetics Publishers – 2021/2024

REFERENCE BOOKS:

1. **McArdle, W. D., Katch, F. I., & Katch, V. L.**
Exercise Physiology: Nutrition, Energy, and Human Performance – **9th Edition (2022/2023)**
Lippincott Williams & Wilkins (LWW). A comprehensive reference on exercise physiology with strong coverage of energy systems and metabolism.
2. **Hoffman, J., Forsyth, A., Mantzioris, E., & Belski, R. (Eds.)**
Nutrition for Sport, Exercise and Performance – **2nd Edition (2018)**
Routledge. Evidence-based sport nutrition science with practical and performance insights
3. **Bean, A.**
The Complete Guide to Sports Nutrition – **8th/9th Edition (latest)**
Bloomsbury Sport. Practical and scientific reference on nutrition strategies for athletes

VIDEO LECTURES:

1. <https://youtu.be/fr3NxCR9z2U?si=X1hOX8smX1NKQVRa>
2. <https://rumble.com/v6so177-top-10-benefits-of-exercise.html>
3. <https://rumble.com/v3zd5zy-optimizing-athletic-performance-through-protein-and-fat-rich-diet.html>

Web Resources

1. www.aarc
2. www.arc
3. www.iarc

Course Code	Course Title	L	T	P	S	C
22EC101701	AI IN HEALTHCARE	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on Concepts of Artificial Intelligence (AI) in Healthcare; The Present State and Future of AI in Healthcare Specialties; The Role of Major Corporations in AI in Healthcare; Applications of AI in Healthcare.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand the fundamental concepts of AI in Healthcare sector.
- CO2** Analyse the present state and future of AI in Healthcare specialties for different scenarios.
- CO3** Apply design concepts and metrics for AI in Healthcare.
- CO4** Demonstrate basic concepts and terminologies of future applications of Healthcare in AI.
- CO5** Develop AI applications through AI techniques for healthcare

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	2	-	-	-	-	-	-
CO2	2	3	-	2	-	2	2	-	-	-
CO3	2	-	2	2	-	-	-	-	-	-
CO4	2	-	-	-	2	2	-	-	-	-
CO5	-	-	3	-	-	-	-	-	-	-
Course Correlation Mapping	2	-	3	2	2	2	2	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN HEALTHCARE (08 Periods)

Introduction to AI in Healthcare, Benefits & Risks, AI in the health sector, AI versus human intelligence, The future of AI in health sector, AI & Neural networks.

Module 2: THE PRESENT STATE & FUTURE OF AI IN HEALTHCARE SPECIALTIES (10 Periods)

Artificial Intelligence in: preventive healthcare, Radiology, Pathology, Surgery, Anesthesiology, Psychiatry, Cardiology, Pharmacy, Dermatology, Dentistry, Orthopedics, Ophthalmology.

Module 3: THE ROLE OF MAJOR CORPORATIONS IN AI IN HEALTHCARE (08 Periods)

IBM Watson, The role of Google & Deep mind in AI in Healthcare, Baidu, Facebook & AI in Healthcare, Microsoft & AI in Healthcare.

Module 4: FUTURE OF HEALTHCARE IN AI (10 Periods)

Evidence-based medicine, personalized medicine, Connected medicine, Virtual Assistants, Remote Monitoring, Medication Adherence, Accessible Diagnostic Tests, Smart Implantables, Digital Health and Therapeutics, Incentivized Wellness, Block chain, Robots, Robot-Assisted Surgery, Exoskeletons, Inpatient Care, Companions, Drones, Smart Places, Smart Homes, Smart Hospitals.

Module 5: APPLICATIONS OF AI IN HEALTHCARE (09 Periods)

Case Study 1: AI for Imaging of Diabetic Foot Concerns and Prioritization of Referral for Improvements in Morbidity and Mortality.

Case Study 2: Outcomes of a Digitally Delivered, Low-Carbohydrate, Type 2 Diabetes Self-Management.

Case Study 3: Delivering A Scalable and Engaging Digital Therapy.

Case Study 4: Improving Learning Outcomes for Junior Doctors through the Novel Use of Augmented and Virtual Reality for Epilepsy.

Case Study 5: Big Data, Big Impact, Big Ethics: Diagnosing Disease Risk from Patient Data.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Analyze how the artificial intelligence is used to predict the disease result and Prognosis Assessment of a patient.
2. How does drug discovery happen and how does AI is helping in drug discovery and Labs.
3. Justify that artificial intelligence provide engineering solutions for early detection and Diagnosis of diseases.
4. Demonstrate the prediction of bladder volume of a patient.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. Dr. Parag Mahajan, *Artificial Intelligence in Healthcare*, Med Manthra Publications, First Edition 2019.
2. Arjun Panesar, *Machine Learning and AI for Healthcare Big Data for Improved Health*, Apress Publications, 2019.

REFERENCE BOOKS:

1. Michael Matheny, Sonoo Thadaney Israni, Mahnoor Ahmed, and Danielle Whicher, *Artificial Intelligence in Health Care: The Hope, the Hype, the Promise, the Peril*, National Academy of Medicine Publication, First Edition 2019.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=-aHBwTQQyNU>
2. <https://intellipaat.com/blog/artificial-intelligence-in-healthcare/>

WEB RESOURCES

1. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6616181/>
2. <https://www.ibm.com/topics/artificial-intelligence-healthcare>
3. <https://builtin.com/artificial-intelligence/artificial-intelligence-healthcare>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22DS101701	BIOINFORMATICS	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course focus on Biological Data Acquisition, Databases, Data Processing, Methods of Analysis, Applications of Bio-informatics.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Understand basic biological data acquisition in bioinformatics.
- CO2** Identify the proper databases for the information search by choosing the biological databases and also submission and retrieval of data from databases.
- CO3** Analyze the results of bioinformatics data using text and sequence-based searching techniques.
- CO4** Analyze the secondary and tertiary structures of proteins by applying different alignment programs
- CO5** Design biological databases by using contextual knowledge on bioinformatics.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	-	-	-	-	-
CO2	2	3	-	-	-	-	-	-	-	-
CO3	2	3	-	-	-	-	-	-	-	-
CO4	2	3	-	-	-	-	-	-	-	-
CO5	3	2	3	3	3	-	-	-	-	-
Course Correlation Mapping	3	3	3	3	3	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BIOLOGICAL DATA ACQUISITION

(09 Periods)

Biological information, Retrieval methods for DNA sequence, protein sequence and protein structure information

Module 2: DATABASES

(09 Periods)

Format and Annotation: Conventions for database indexing and specification of search terms, Common sequence file formats. Annotated sequence databases - primary and secondary sequence databases, protein sequence and structure databases.

Module 3: DATA PROCESSING

(09 Periods)

Data - Access, Retrieval and Submission: Standard search engines; Data retrieval tools - Entrez, DBGET and SRS; Submission of (new and revised) data; Sequence Similarity Searches: Local and global. Distance metrics. Similarity and homology. Scoring matrices, PAM and BLOSUM

Module 4: METHODS OF ANALYSIS

(09 Periods)

Dynamic programming algorithms, Needleman-Wunsch and Smith-waterman. Heuristic Methods of sequence alignment, FASTA and BLAST; Multiple Sequence Alignment and software tools for pair wise and multiple sequence alignment, CLUSTAL program, Prediction of Tertiary structure of proteins.

Module 5: APPLICATIONS

(09 Periods)

Genome Annotation and Gene Prediction; ORF finding; Phylogenetic Analysis, Genomics, Proteomics, Genome analysis - Genome annotation, DNA Microarray, computer aided drug design (CADD).

Total Periods: 45

EXPERIENTIAL LEARNING

1. Calculate the dynamic programming matrix and one or more optimal alignment(s) for the sequences GAATTC and GATTA, scoring +2 for a match, -1 for a mismatch and with a linear gap penalty of $d = 2$.
2. Determine whether the RNA string GGACCACCAGG should be folded into two substructures.
3. Discuss how to carry out the multiple sequence alignment of the following three sequences: TTTTAAA, AAAACCCC, CCCCTTTT.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Lesk, A. K., *Introduction to Bioinformatics*, Oxford University Press, 4th Edition, 2013
2. Dan Gusfield, *Algorithms on Strings, Trees and Sequences: Computer Science and Computational Biology*, Cambridge University Press, 1997.

REFERENCE BOOKS:

1. Baldi, P. and Brunak, S., *Bioinformatics: The Machine Learning Approach*, MIT Press, 2nd Edition, 2001.
2. Mount, D.W., *Bioinformatics Sequence and Genome Analysis*, Cold Spring Harbor Laboratory Press, 2nd Edition, 2004.
3. Tindall, J., *Beginning Perl for Bioinformatics: An introduction to Perl for Biologists*, O' Reilly Media, 1st Edition, 2001.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=liNblw4x50E>
2. <https://www.youtube.com/watch?v=eZfyWdHnzR0>

WEB RESOURCES

1. <https://www.britannica.com/science/bioinformatics>
2. <https://www.ebi.ac.uk/training/online/courses/bioinformatics-terrified/what-bioinformatics/>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101701	CONSTITUTION OF INDIA	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides and in-depth knowledge about Constitution of India’ s Preamble and its Philosophy; Union Legislature; Federalism in India; Judiciary and Public Services; Nation Building. The students can gain first-hand information and knowledge about these dynamics and accordingly act based on these sources in their professional and routine activities.

COURSE OUTCOMES: After successful completion of this course, the students will be able to:

CO1: Demonstrate knowledge in the Parliamentary proceedings, Election Commission, Public Services and Foreign Policy of India.

CO2: Apply the reasoning informed by the various aspects of the Constitution and its provisions to assess societal issues and the consequent responsibilities relevant to the professional engineering practice.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	-	-	-	-	3	2	-	-	-
CO2	2	-	-	-	-	3	-	3	-	-
Course Correlation Mapping	2	-	-	-	-	3	2	3	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: PREAMBLE AND ITS PHILOSOPHY (09 Periods)

Introduction to Indian Constitution; Evolution of Indian Constitution; preamble and its philosophy

Module 2: UNION LEGISLATURE (09 Periods)

The Parliament, Parliamentary Structure, Process of Legislation; President of India - Powers and Functions; Prime Minister and Council of Ministers; Constitution Amendment Procedure.

Module 3: FEDERALISM IN INDIA (09 Periods)

Centre-State Administrative Relationship; Governors - Powers and Functions; State Legislature - Composition and powers; Chief Ministers - Powers and Functions; The Election Commission - Powers and Functions.

Module 4: JUDICIARY AND PUBLIC SERVICES (09 Periods)

The Union Judiciary - Supreme Court and High Court; Fundamental Rights and Duties All India Services - Central Civil Services - State Services - Local Services.

Module 5: INTERNATIONAL PARTICIPATION (09 Periods)

Foreign Policy of India; International Institutions Influence: UNO, WTO, WHO, SAARC, International Summits: BRICS, NSS, UNEP - India's Role in International Negotiations; Environmentalism in India.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Review newspapers and submit a report on critical analysis of Indian Civil Servants exercise of powers, in the wake of constitutionally assigned authority.
2. Visit your village Panchayat office or Municipality office and generate a report on your observations about maintained Constitutional symbolism.
3. Watch few videos on recent Indian Independence Day and Republic Day celebrations as marked in New Delhi and present a detailed report, by considering the following aspects:
 - a) Comparatively analyze the speeches of the President of India and Prime Minister of India as delivered on these two occasions.
 - b) Compare these two events relevance in terms of Indian Armed Forces presence.
 - c) Observe, compare and analyse 'flag code' relevance as marked in these two events.
4. Watch a few videos on recent 'proceedings' of any state Legislative Assembly session and submit a detailed report.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Brijji Kishore Sharma, *Introduction to the Constitution of India*, Prentice Hall of India, 2005

REFERENCE BOOKS:

1. Mahendra Pal Singh, V. N. Shukla's, *Constitution of India*, Eastern Book Company, 2011.
2. Pandey J. N., *Constitutional Law of India*, Central Law Agency, 1998

VIDEO LECTURES:

1. Doctrine of Basic Structure: <https://www.youtube.com/watch?v=cvUf9ZeEe8Y>
2. Significance of the Constitution: https://www.youtube.com/watch?v=vr1Dc_-ZKbQ

WEB RESOURCES

1. The Constitution of India: <https://www.youtube.com/watch?v=of2SoO8i8mM>
2. Protection of Constitutional Democracy:
<https://www.youtube.com/watch?v=smJ99cdPrns>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CM101702	COST ACCOUNTING AND FINANCIAL MANAGEMENT	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: Cost accounting; cost sheet & preparation of cost sheet; standard costing & variance analysis; financial management & ratio analysis; introduction to investment.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Demonstrate the concepts of Cost Accounting and Management Accounting and the elements of costing.
- CO2** Determine the Cost of Production for pricing decisions.
- CO3** Apply the Standard Costing and Variance techniques for the control of the cost of production
- CO4** Analyze the Profitability and financial condition of an organization using Ratios.
- CO5** Apply Capital Budgeting techniques for making investment decisions in an organization.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	2	-	-	1	-	-
CO2	3	-	-	-	2	-	-	1	-	-
CO3	3	-	-	-	2	-	-	1	-	-
CO4	3	-	-	-	2	-	-	1	-	-
CO5	3	-	-	-	2	-	-	1	-	-
Course Correlation Mapping	3	-	-	-	2	-	-	1	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: COST ACCOUNTING

(09 Periods)

Meaning of Cost and Cost Accounting, Objectives, Scope, Advantages, and Disadvantages - Cost Accounting Vs Management Accounting - Elements of Costing - Installation of costing system - Material Control, Labor Control, Overhead Control.

Module 2: COST SHEET & PREPARATION OF COST SHEET

(09 Periods)

Analysis of Cost - Preparation of cost sheet, estimate, tender, and quotation (Simple problems) - Importance of Costing while pricing the products

Module 3 STANDARD COSTING & VARIANCE ANALYSIS

(09 Periods)

Introduction to Standard Costing & Variances - Variance Analysis: Material variances, Labor variances (Simple Problems).

Module 4 FINANCIAL MANAGEMENT & RATIO ANALYSIS

(09 Periods)

Meaning, Objectives - Nature and Scope, Importance of FM - Ratio Analysis: Types of Ratios: Solvency Ratios, Liquidity Ratios, Turnover Ratios, and Profitability Ratios - Financial Statement Analysis through Ratios (Simple Problems).

Module 5 INTRODUCTION TO INVESTMENT

(09 Periods)

Investment - Meaning and Definition- concept of risk and returns - Capital budgeting techniques - Security Analysis and Portfolio Management (Basic concepts).

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare a report on the role of cost accountants in the growth of a company.
2. To visit the manufacturing unit to observe how they used various techniques for analyzing the financial health of a company.
3. Prepare a report on factors influencing the form of business organization.
4. Prepare the cost sheet with practical examples of any two manufacturing companies.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. S.P. Jain and K.L. Narang: *Cost Accounting*, Kalyani Publishers, Ludhiana, 10th edition, 2016.
2. I.M. Pandey, *Financial Management*, Vikas Publishing House Pvt. Ltd., 14th edition, 2016.

REFERENCE BOOKS:

1. The Institute of Company Secretaries of India, *Cost and Management Study Material*, New Delhi.
2. CA Saravana Prasath, *Cost Accounting and Financial management*, Wolters Kluwer India

Pvt. Ltd., New Delhi, 2018.

VIDEO LECTURES:

- 1 <https://www.youtube.com/watch?v=ESqO8sFgQa0&list=PLlhSIFfDZcUVE2kzOhEubO9rkvUOAgZbz>
- 2 <https://www.youtube.com/watch?v=tzasFmP1CpA><https://www.youtube.com/watch?v=tzasFmP1CpA>

WEB RESOURCES

- 1 https://www.tutorialspoint.com/accounting_basics/management_versus_cost_accounting.htm
- 2 <https://www.netsuite.com/portal/resource/articles/financial-management/financial-management.shtml>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22MG101701	ENTREPRENEURSHIP FOR MICRO, SMALL AND MEDIUM ENTERPRISES	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: To understand the setting up and management of MSMEs and initiatives of Government and other institutions support for growth and development of MSMEs

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Understand the basic of SME and challenges of MSMEs
- CO2.** Explain the opportunities to Set-Up SSI/SME Units and role of rural & women entrepreneurship.
- CO3.** Illustrate roles of various institutions supporting MSMEs.
- CO4.** Understand Management of MSME, NPA & sickness units
- CO5.** Evaluate role of Government in Promoting Entrepreneurship

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	1	2	1	-	-	-	-	-	-
CO2	1	1	2	-	-		2		1	
CO3	2	2	1	-	-	-	-	1	-	-
CO4	3	1	2	-	-	-	-	-	-	-
CO5	2	2	1	-	-	1	-	-	-	-
Course Correlation Mapping	2	2	2	2	1	1	2	1	1	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION2

(07 Periods)

Concept & Definition, Role of Business in the modern Indian Economy SMEs in India, Employment and export opportunities in MSMEs. Issues and challenges of MSMEs

Module 2: MSME SETTING

(09 Periods)

Identifying the Business opportunity, Business opportunities in various sectors, formalities for setting up an enterprise - Location of Enterprise - steps in setting up an enterprise - Environmental aspects in setting up, Incentives and subsidies.

Module 3: MSMES SUPPORTING INSTITUTIONS

(09 Periods)

Forms of Financial support, Long term and Short term financial support, Sources of Financial support, Development Financial Institutions, Investment Institutions, Central level institutions, State level institutions, Other agencies, Commercial Bank - Appraisal of Bank for loans

Module 4: MANAGEMENT OF MSME

(10 Periods)

Management of Product Line; Communication with clients - Credit Monitoring System - Management of NPAs - Restructuring, Revival and Rehabilitation of MSME, Problems of entrepreneurs - sickness in SMI - Reasons and remedies -- Evaluating entrepreneurial performance

Module 5: ENTREPRENEURSHIP PROMOTION

(10 Periods)

MSME policy in India, Agencies for Policy Formulation and Implementation: District Industries Centers (DIC), Small Industries Service Institute (SISI), Entrepreneurship Development Institute of India (EDII), National Institute of Entrepreneurship & Small Business Development (NIESBUD), National Entrepreneurship Development Board (NEDB)

Total Periods: 45

EXPERIENTIAL LEARNING

1. Present a case study on MSMEs Business Strategies.
2. Collect the data about nearby MSMEs and Present their structures in a PPT
3. Discuss in the group MSMEs opportunities in terms of Orientation and Development.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Vasant Desai, *Small Scale Industries and Entrepreneurship*, Himalaya Publishing House, 2003..
2. Poornima M Charanthimath, *Entrepreneurship Development Small Business Enterprises*, Pearson, 2006.

REFERENCE BOOKS:

1. Suman Kalyan Chaudhury, *Micro Small and Medium Enterprises in India Hardcover*, Raj Publications, 2013.
2. Aneet Monika Agarwal, *Small and medium enterprises in transitional economies, challenges and opportunities*, DEEP and DEEP Publications
3. Paul Burns & Jim Dew Hunt, *Small Business Entrepreneurship*, Palgrave Macmillan

publishers, 2010.

VIDEO LECTURES:

1. <https://sdgs.un.org/topics/capacity-development/msmes>
2. <https://blog.tatanexarc.com/msme/msme-schemes-in-india-for-new-entrepreneurs-and-start-ups/>

WEB RESOURCES

1. ncert.nic.in/textbook/pdf/kebs109.pdf
2. <https://www.jetir.org/papers/JETIR1805251.pdf>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CB101703	FORENSIC SCIENCE	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course provides a detailed discussion on Concepts of Forensic Science, Tools and Techniques in Forensic Science, Forensic Photography, Crime Scene Management, Crime Scene Management Laws and Forensic Science.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- C01** Understand the basic concepts of Forensic science.
- C02** Apply various tools and techniques in forensic science for crime investigation.
- C03** Understand Forensic Photography fundamentals.
- C04** Perform Crime scene investigation, scene reconstruction and prepare reports.
- C05** Understand Legal aspects of Forensic Science.

CO-PO Mapping Table:

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	3	-	-	-	-	-	-	-	-	-
C02	3	3	2	2	2	-	-	-	-	-
C03	3	3	-	-	-	-	-	-	-	-
C04	3	3	2	2	2	-	-	-	-	-
C05	3	3	2	2	2	-	-	-	-	-
Course Correlation Mapping	3	3	2	2	2	-	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION

(09 Periods)

Introduction, Need, Scope, Concepts and Significance of Forensic Science, History and Development of Forensic Science, Laws and Basic principles of Forensic Science, Branches of forensic science, Organizational set-up of a Forensic Science Laboratory. Investigative strategies. Expert testimony and eye-witness report.

Module 2: TOOLS AND TECHNIQUES IN FORENSIC SCIENCE

(09 Periods)

Basic principles of microscopy, spectroscopy, chromatography, Electrophoresis, Enzyme_Linked Immunosorbent Assay (ELISA), Radio Immuno Assay (RIA). Measuring and optical instruments. Research methodologies; Formation of research design on a specific problem. Central tendency and Dispersion. Test of significance. Analysis of variance, Correlation and Regression.

Module 3: FORENSIC PHOTOGRAPHY

(8 Periods)

Basic principles of Photography, Techniques of black & white and color photography, cameras, lenses, shutters, depth of field, film; exposing, development and printing techniques; Different kinds of developers and fixers; UV, IR, fluorescence illumination guided photography; Modern development in photography- digital photography, working and basic principles of digital photography; Surveillance photography. Videography and Crime Scene & laboratory photography.

Module 4: CRIME SCENE MANAGEMENT

(11 Periods)

Crime scene investigations, protecting and isolating the crime scene; Documentation, sketching, field notes and photography. Searching, handling and collection, preservation and transportation of physical evidences, Chain of custody and Reconstruction of scene of crime. Report writing.

Module 5: LAW AND FORENSIC SCIENCE

(8 Periods)

Legal aspects of Forensic Science: Forensic Science in the Criminal Justice System, The Criminal Investigation Process, Production of Evidence: The Subpoena, The Rules of Evidence, Authentication of Evidence: The Chain of Custody, The Admissibility of Evidence, Laboratory Reports, Examples of Analysis and Reports, Expert Testimony, Getting into Court, Testifying, Being a Witness and an Expert, Considerations for Testimony.

Total Periods: 45

EXPERIENCIAL LEARNING

1. Study of Computer Forensics and different tools used for forensic investigation
2. Identify and list the steps for hiding and extract any text file behind an image file/ Audio file using Command Prompt

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXT BOOKS:

1. Houck M.M and Siegel J.A, *Fundamentals of Forensic Science*, Elsevier, 2nd edition, 2010.

2. Sharma B.R, *Forensic Science in Criminal Investigation and Trials*, Universal Publishing Co., New Delhi, 2003.

REFERENCE BOOKS:

1. Nanda B.B and Tewari, R.K, *Forensic Science in India- A vision for the Twenty First Century*, Select Publisher, New Delhi, 2001.
2. James, S.H and Nordby, J.J, *Forensic Science- An Introduction to Scientific and Investigative Techniques*, CRC Press, USA, 2003.
3. Saferstein, Criminalistics, *An Introduction of Forensic Science*, Prentice Hall Inc, USA,2007.
4. Barry, A.J. Fisher, *Techniques of Crime Scene Investigation*, CRC Press, NewYork, 7th edition, 2003.

VIDEO LECTURES:

1. <https://nptel.ac.in/courses/106106178>
2. <https://www.youtube.com/watch?v=X5fo1H7bc0g>

WEB RESOURCES

1. <https://www.nist.gov/forensic-science>
2. <https://www.coursera.org/learn/forensic-science>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101704	INDIAN HISTORY	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: Introduction; Ancient India; Classical and Medieval era; Modern India; India after independence.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Demonstrate contextual knowledge in the evolution of ancient and medieval Indian History and acquire an awareness of societal and cultural transformation.
- CO2** Analyze the situations before and after Independence and assess the societal reforms implemented in India after Independence.
- CO3** Practice culture transformations and appreciate its influence to adapt themselves in global scenarios.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	-	-	-	-	1	-	-	-	-
CO2	1	2	-	-	-	1	-	-	-	-
CO3	1	1	-	-	-	2	-	-	-	-
Course Correlation Mapping	2	1	-	-	-	2	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION TO INDIAN HISTORY (08 Periods)

Elements of Indian History; History Sources: Archaeology, Numismatics, Epigraphy & Archival research; Methods used in History; History & historiography; Sociological concepts-structure, system, organization, social institutions, Culture and social stratification (caste, class, gender, power), State & Civil Society.

Module 2: ANCIENT INDIA (09 Periods)

Mohenjo-Daro civilization; Harappa civilization; Mauryan Empire.

Module 3: CLASSICAL & MEDIEVAL ERA (12 Periods)

Classic Era (200 BC - 1200 AD); Hindu - Islamic Era (1200 - 1800 AD).

Module 4: MODERN INDIA (06 Periods)

Age of Colonialism (17th - 19th centuries); First war of Indian Independence; Freedom Struggle (1857-1947)

Module 5: INDIA AFTER INDEPENDENCE (1947 -) (10 Periods)

The Evolution of the Constitution and Main Provisions; Consolidation of India as a Nation; Politics in the States; Indian economy; Modernization and globalization, Secularism and communalism, Nature of development, Processes of social exclusion and Inclusion, Changing Nature of Work and Organization.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare a write-up on how to safeguard ancient monuments.
2. Analyze the most famous historically important place you visited.
3. Prepare a presentation on the ancient Seven Wonders of the World with their significance and how they are destroyed.
4. Prepare a presentation on “Wars of the past not only destroyed people and their livelihood but also the people’s tradition and culture.”
5. Prepare a poster on “Continents that No Longer Exist” with causes

(Note: It’s an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. K. Krishna Reddy, *Indian History*, Tata McGraw-Hill, 21st reprint, 2017.

REFERENCE BOOKS:

1. Guha, Ramachandra, *India after Gandhi*, Pan Macmillan, 2007.
2. Romila Thapar, *Early India*, Penguin India, New Delhi 2002.

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101705	INDIAN TRADITION AND CULTURE	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: Basic traits of Indian Culture; Humanistic Reforms under Jainism and Buddhism; Culture in the medieval period; Socio Religious reforms in Indian Culture; Reform movements for harmonious relations.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Demonstrate knowledge of Vedic and Upanishadic culture and society to consider human aspirations, values and theories.
- CO2** Understand the contributions of Buddhism and Jainism to Indian culture.
- CO3** Examine the cultural conditions and achievements of India under Mouryas and Guptas.
- CO4** Analyze social religious reforms and reform movements.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	-	-	-	-	1	-	-	-	-
CO2	3	-	-	-	-	1	-	-	-	-
CO3	2	-	-	-	-	3	-	-	-	-
CO4	2	-	-	-	-	3	-	-	-	-
Course Correlation Mapping	3	-	-	-	-	2	-	-	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: BASIC TRAITS OF INDIAN CULTURE (08 Periods)

Meaning and definition and various interpretations of culture - Culture and its features - The Vedic and Upanishad culture and society - Human aspirations and values in these societies - Chaturvidha purushardhas, Chaturashrma and Chaturvarna theory.

Module 2: HUMANISTIC REFORMS UNDER JAINISM AND BUDDHISM (09 Periods)

Salient features of Jainism - contributions of Jainism to Indian culture - Contributions of Achaarya and Mahaapragya - Buddhism as a humanistic culture - The four noble truths of Buddhism - Contributions of Buddhism to Indian culture.

Module 3: CULTURE IN THE MEDIEVAL PERIOD (09 Periods)

Unifications of India under Mouryas and Guptas and their cultural achievements - Cultural conditions under satavahanas - Contributions to Pallavas and cholas to art and cultural achievements of Vijayanagara rulers

Module 4: SOCIO RELIGIOUS REFORMS IN INDIAN CULTURE (09 Periods)

Western impact on India - Introduction of Western education - social and cultural awakening and social reform movements of Rajaramohan Roy - Dayanandha Saraswathi - Anne Besant (theosophical society).

Module 5: REFORM MOVEMENTS FOR HARMONIOUS RELATIONS (09 Periods)

Vivekananda, Eswarchandravidyasagar and Veeresalingam - emancipation of women and struggle against caste - Rise of Indian nationalism - Mahatma Gandhi - Non-violence and satyagraha and eradication of untouchability.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Identify different cultural festivals of Indian States and prepare a write-up on their uniqueness.
2. India has a rich history with numerous architectural wonders. Prepare a report on any three famous architectural wonders in India.
3. Explore the diverse flavors of Indian cuisine and prepare a poster on the different dishes and their distinctiveness.
4. India is a country of Unity in Diversity. Make a PowerPoint presentation on different traditional dresses of various cultural people.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. Valluru Prabhakaraiah, *Indian Heritage and Culture*, Neelkamal Publications Pvt. Ltd. Delhi, 1/e, reprint 2015.

REFERENCE BOOKS:

1. L. P. Sharma, *History of Ancient India*, Konark Publishers, Pvt. Ltd. New Delhi, 2010.
2. L. P. Sharma, *History of Medieval India*, Konark Publishers, Pvt. Ltd. New Delhi, 2010.
3. The Cultural Heritage of India Vol-I, II, III, IV, V, The Ramakrishna Mission Institute of Culture, Calcutta

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22ME101704	MANAGING INNOVATION AND ENTREPRENEURSHIP	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION:

Evolution of entrepreneurship from economic theory Managerial and entrepreneurial competencies; Concepts of Shifting Composition of the Economy Purposeful Innovation & Sources of Innovative Opportunity; The Innovation Process; Innovative Strategies; Entrepreneurial Motivation; Entrepreneurs versus inventors; Ethics and International Entrepreneurship; Strategic Issues in International Entrepreneurship; Problem solving Innovation and Diversification

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate the principles of innovation process for establishing Industrial ventures.
- CO2.** Identify and analyze the gaps in an organization for innovation in the context of developed economies
- CO3.** Develop a comprehensive and well-planned business structure for a new venture.
- CO4.** Demonstrate knowledge on intellectual property rights, patents, trademarks, copyrights, trade secrets and commercialization of intellectual property.
- CO5.** Apply ethics in constructive innovation framework and problem solving.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	1	-	1	1	1	1	-	-
CO2	3	2	1	-	1	-	-	-	-	-
CO3	3	3	1	1	1	-	-	-	-	-
CO4	3	2	1	1	1	1	-	-	-	-
CO5	3	3	3	1	1	1	-	-	-	-
Course Correlation Mapping	3	2	1	1	1	1	1	1	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CREATIVITY AND INNOVATION (09 Periods)

Introduction, Levels of innovation, Purposeful innovation and the sources of innovative opportunity, The innovation process, Innovative strategies, Strategies that aim at introducing and innovation, Dynamics of ideation and creativity - Inbound, Outbound; Context and process of new product development, Theories of outsourcing.

Module 2: PARADIGMS OF INNOVATION (09 Periods)

Systems approach to innovation, Innovation in the context of developed economies and Emerging economies, Examining reverse innovation and its application, Performance gap, Infrastructure gap, Sustainability gap, Regulatory gap, Preference gap, organizational factors effecting innovation at firm level.

Module 3: SOURCES OF FINANCE AND VENTURE CAPITAL (09 Periods)

Importance of finance, Comparison of venture capital with conventional development capital, Strategies of venture funding, Investment phases, Investment process, Advantages and disadvantages of venture capital, Venture capital developments in India.

Module 4: INTELLECTUAL PROPERTY INNOVATION AND ENTREPRENEURSHIP (09 Periods)

Introduction to Entrepreneurship, Evolution of entrepreneurship from economic theory, Managerial and entrepreneurial competencies, Entrepreneurial growth and development, Concepts, Ethics and Nature of International Entrepreneurship, Intellectual property - forms of IP, Patents, Trademarks, Design registration, Copy rights, Geographical indications, Patent process in India.

Module 5: OPEN INNOVATION FRAME WORK & PROBLEM SOLVING (09 Periods)

Concept of open innovation approach, Difference between open innovations and Closed innovation approaches, Limitations and Opportunities of open innovation frame work, Global context of strategic alliance, Role of strategic alliance, Problem Identification and Problem Solving, Innovation and Diversification

Total Periods:45

EXPERIENTIAL LEARNING

1. Identify the Innovative Marketing Strategies for Startups
2. Identify the Coca-cola Company Intellectual Property Rights

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

CASE STUDIES/ARTICALS:

Contemporary relevant case studies/ Articles will be provided by the course instructor at the beginning.

1. Tesla Inc.: Disrupting the Automobile Industry
This case study examines how Tesla Inc. disrupted the traditional automobile industry through its innovative electric vehicles and sustainable energy solutions. It discusses the sources of innovative opportunity that Tesla leverages, the ideation and creativity dynamics involved in new product development, and the strategies that the company uses to introduce and market its innovations.
2. Google Inc.: Innovation in Developed Economies
This case study explores how Google Inc. became a global leader in the technology industry through its innovative search engine, advertising, and cloud computing solutions. It highlights the performance gap that Google addressed, the regulatory and sustainability gaps that it leveraged, and the impact of its innovation strategies on the company's growth and profitability.
3. Flipkart: From Startup to Unicorn
This case study examines how Flipkart, an Indian e-commerce company, secured venture capital funding to become one of the largest online marketplaces in India. It discusses the importance of finance in entrepreneurship, the advantages and disadvantages of venture capital, and the strategies that Flipkart used to attract venture funding.
4. Patanjali Ayurved: Building a Brand through Intellectual Property
This case study explores how Patanjali Ayurved, an Indian consumer goods company, built a strong brand through its intellectual property strategies. It discusses the forms of IP that Patanjali leverages, the patent process in India, and the impact of IP on the company's growth and profitability.
5. Procter & Gamble: Innovation through Open Innovation
This case study analyzes how Procter & Gamble, a global consumer goods company, leveraged open innovation to achieve unprecedented success in product development and marketing. It discusses the difference between open and closed innovation approaches, the limitations and opportunities of open innovation, and the role of strategic alliances in global innovation.

RESOURCES

TEXT BOOKS:

1. Vinnie Jauhari, Sudhanshu Bhushan, *Innovation Management*, Oxford University Press, 1st Edition, 2014.
2. Drucker, P.F., *Innovation and Entrepreneurship*, Taylor & Francis, 2nd Edition, 2007.

REFERENCE BOOKS:

1. Robert D Hisrich, Claudine Kearney, *Managing Innovation and Entrepreneurship*, Sage Publications, 1st Edition, 2014.
2. V.K. Narayanan, *Managing Technology and Innovation for Competitive Advantage*, Pearson India, 1st Edition, 2002.

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=wWsl48VLfVY>
2. <https://www.youtube.com/watch?v=dDpQ9ALKX0U>
3. https://www.youtube.com/watch?v=Eu_hkxkJGTg

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22LG201701	PERSONALITY DEVELOPMENT	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course gives awareness to students about the various dynamics of personality development.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Demonstrate knowledge in Self-Management and Planning Career
- CO2.** Analyze the functional knowledge in attitudes and thinking strategies
- CO3.** Learn and apply soft skills for professional success.
- CO4.** Function effectively as an individual and as a member in diverse teams
- CO5.** Communicate effectively in public speaking in formal and informal situations.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	1	-	-	-	-	-	-	-	-
CO2	2	3	-	-	-	-	-	-	-	-
CO3	2	2	-	-	3	-	-	-	-	2
CO4	1	1	-	-	-	-	-	-	3	3
CO5	-	-	-	-	-	-	-	-	-	3
Course Correlation Mapping	2	2	3	-	3	-	-	-	3	3

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: SELF-ESTEEM & SELF-IMPROVEMENT (09 Periods)

Know Yourself - Accept Yourself; Self-Improvement: Plan to Improve - Actively Working to Improve Yourself- Exercises- case studies

Module 2: DEVELOPING POSITIVE ATTITUDES (09 Periods)

How Attitudes Develop – Attitudes are Catching – Improve Your Attitudes – Exercises- case studies

Module 3 SELF-MOTIVATION & SELF-MANAGEMENT (09 eriods)

Show Initiative - Be Responsible Self-Management; Efficient Work Habits - Stress Management - Employers Want People Who can Think - Thinking Strategies- Exercises- case studies

Module 4 GETTING ALONG WITH THE SUPERVISOR (09 Periods)

Know your Supervisor - Communicating with your Supervisor - Special Communication with your Supervisor - What Should you Expect of Your Supervisor? - What your Supervisor expects of you - Moving Ahead Getting Along with your Supervisor- Exercises- case studies

Module 5 WORKPLACE SUCCESS (09 Periods)

First Day on the Job - Keeping Your Job - Planning Your Career - Moving Ahead- Exercises- case studies

Total Periods: 45

EXPERIENTIAL LEARNING

1. List out the self-improvements in you on the charts and explain in detail.
2. Discuss different famous personalities and their attitudes.
3. Describe different personalities with respect to self-motivation and self-management.
4. Imagine you are a supervisor and illustrate different special communications.
5. Assume and Interpret different experiences on the first day of your job.

(Note: It's an indicative one. Course instructor may change the activities and the same shall be reflected in course handout)

RESOURCES

TEXTBOOK:

1. Harold R. Wallace and L. Ann Masters, *Personal Development for Life and Work*, Cengage Learning, Delhi, 10th edition Indian Reprint, 2011. (6th Indian Reprint 2015)
2. Barun K. Mitra, *Personality Development and Soft Skills*, Oxford University Press, 2011.

REFERENCE BOOKS:

1. K. Alex, *Soft Skills*, S. Chand & Company Ltd, New Delhi, 2nd Revised Edition, 2011.
2. Stephen P. Robbins and Timothy A. Judge, *Organizational Behaviour*, Prentice Hall, Delhi, 16th edition, 2014

VIDEO LECTURES:

1. <https://www.youtube.com/watch?v=6Y5VWBLi1es>
2. <https://www.youtube.com/watch?v=H9qA3inVMrA>

WEB RESOURCES

1. <https://www.universalclass.com/.../the-process-of-perso...>
2. <https://www.ncbi.nlm.nih.gov/pubmed/25545842>
3. <https://www.youtube.com/watch?v=Tuw8hxrFBH8>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CS101702	WEB DESIGN FUNDAMENTALS	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: This course is designed to introduce the student to the technologies and facilities of web design: CSS, javascript, and jquery. Students will understand the web design process and use these software technologies together to produce web design projects.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1.** Understand the fundamentals of HTML 5 and the principles of web design.
- CO2.** Construct basic websites using HTML and Cascading Style Sheets.
- CO3.** Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
- CO4.** Learn how to use HTML5 and other Web technologies to develop interactive and responsive web pages.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	-	-	-	-	-	-	-
CO2	3	3	-	-	-	-	2	-	-	-
CO3	3	3	3	-	-	-	-	-	-	-
CO4	2	3	3	-	-	-	-	2	-	-
Course Correlation Mapping	3	3	3	-	-	-	2	2	-	-

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: INTRODUCTION

(09 Periods)

Elements - Data types - Working with Text - Arranging Text - Displaying Lists - VAR Element - BDO Element - SPAN Element - DIV Element.

Module 2: LINKS AND URLS

(09 Periods)

Hyperlinks - URLs - Linking to a Mail System - Creating Tables - Inserting Images in a Web Page - Colors - Form Elements - Multiple-Choice Elements - Multimedia

Module 3: DYNAMIC HTML

(09 Periods)

Features of JavaScript - Programming Fundamentals - JavaScript Functions, Events, Image Maps, and Animations - JS Objects - Document Object - Validation, Errors, Debugging, Exception Handling, and Security

Module 4: CASCADING STYLE SHEET

(09 Periods)

CSS Syntax - CSS Selectors - Backgrounds and Color Gradients - Fonts and Text Styles - Creating Boxes and Columns - Displaying, Positioning, and Floating an Element - Table Layouts - : Effects, Frames, and Controls in CSS

Module 5: ADVANCED FEATURES OF HTML5

(09 Periods)

Creating Editable Content - Checking Spelling Mistakes - Custom Data Attributes - Client-Side Storage - Drag and Drop Feature - Web Communication - **jQuery** - Fundamentals of jQuery - Callback Functions - jQuery Selectors - jQuery Methods to Access HTML Attributes.

Total Periods: 45

EXPERIENTIAL LEARNING

1. Design a blog layout that includes header, navigation menu, content area, sidebar. Apply appropriate styling to each section.
2. Develop a java script based quiz that presents MCQs to the user and provides immediate feedback on their answers. Keep track of the score and display the final results at the end.
3. Build a web page that displays and image gallery. Each image should be a clickable link that opens the image in a larger view when clicked.

(Note: It's an indicative one. The course instructor may change the activities and the same shall be reflected in course handout.)

RESOURCES

TEXTBOOKS

1. DT Editorial Services, *HTML 5 Black Book*, Dreamtech Press, 2nd Edition, 2016.

REFERENCE BOOKS

1. Jennifer Niederst Robbins, *HTML5 Pocket Reference*, O'Reilly, 5th Edition, 2018.
2. Ben Frain, *Responsive Web Design with HTML5 and CSS3*, Packt, 2nd Edition, 2020.

VIDEO RESOURCES

1. https://www.youtube.com/watch?v=h_RftxdJTzs
2. <https://www.youtube.com/watch?v=dlkWNdnO8ek>

WEB RESOURCES

1. <https://www.w3schools.com/html/>
2. <https://www.w3schools.com/css/>
3. <https://www.geeksforgeeks.org/web-technology/>
4. <https://www.smashingmagazine.com/2021/03/complete-guide-accessible-front-end-components/>
5. <https://css-tricks.com/>
6. <https://davidwalsh.name/css-optional>

UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
22SS101706	WOMEN EMPOWERMENT	3	-	-	-	3
Pre-Requisite	-					
Anti-Requisite	-					
Co-Requisite	-					

COURSE DESCRIPTION: Concept & Framework, Status of Women, Women’s Right to Work, International Women’s Decade, and Women Entrepreneurship.

COURSE OUTCOMES: After successful completion of the course, students will be able to:

- CO1** Demonstrate the knowledge of the characteristics and achievements of empowered women and women's empowerment techniques by analyzing women’s legal and political status.
- CO2** Apply the knowledge of women’s rights by analyzing various societal issues and obstacles in different fields, including science and technology.
- CO3** Demonstrate the knowledge of the significance of women’s participation in policy debates, National conferences, and common forums for equality and development by identifying and analyzing issues.
- CO4** Analyze the concept of women’s entrepreneurship, government schemes, and entrepreneurial challenges and opportunities.

CO-PO Mapping Table

Course Outcomes	Program Outcomes									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	1	-	-	1	3	-	1	-	-
CO2	3	1	-	-	-	2	-	-	-	-
CO3	3	1	-	-	-	2	-	-	-	3
CO4	3	1	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	1	-	-	1	3	-	1	-	3

Correlation Levels: 3: High; 2: Medium; 1: Low

COURSE CONTENT

Module 1: CONCEPT & FRAMEWORK (09 Periods)

Introduction - Empowered Women ' s Characteristics - Achievements of Women ' s Empowerment **Concept of Empowerment:** Meaning & Concept - Generalizations about Empowerment - Empowerment Propositions - Choices women can make for empowerment - Women ' s participation in decision making, development process & in Governance. **Framework for Empowerment** - Five levels of equality - Tenets of Empowerment- Elements - Phases and aspects - Techniques - Categories and Models - Approaches.

Module 2: STATUS OF WOMEN (09 Periods)

Legal Status: Present Scenario - Call for Social Change - Significant Trends - Legal & Schemes - Personal Law - Joint Family - Criminal Law - Shift towards Dowry - Deterrent Punishment - Criminal Law (II Amendment) - Discrimination in Employment.

Political Status: Present Scenario - Political Participation & its Nature Socio - economic Characteristics - Political Mobilization: Mass Media - Campaign Exposure - Group Orientation - Awareness of issues and participation - Progress & Future Thrust.

Module 3: WOMEN' S RIGHT TO WORK (09 Periods)

Introduction - Present Scenario - Changes in Policy & Programme - National Plan of Action- Women ' s Cells and Bureau - Increase in the work participation rate - Discrimination in the labour market - Women in unorganized sector - Issues and Obstacles- Women in Education - Women in Science & Technology - Case Study: Linking Education to Women ' s Access to resources.

Module 4: WOMEN' S PARTICIPATORY DEVELOPMENT (09 Periods)

Dynamics of social change - conscious participation - Information Explosion - Organized Articulation - National Conference - Common Forums - Participatory Development - New Issues Identified - Role of other Institutions.

Module 5: WOMEN ENTREPRENEURSHIP (09 Periods)

Introduction - Definition - Concept - Traits of women Entrepreneurs - Role of Women Entrepreneurs in India - Reasons for Women Entrepreneurship - Government schemes & Financial Institutions to develop Women Entrepreneurs - Key policy recommendations - Project Planning - Suggestions and measures to strengthen women entrepreneurship - Growth & Future challenges - Training and Opportunities - Case Study: Training Women as Hand-pump Mechanics- Case Study: Literacy for Empowering Craftswomen

Total Periods: 45

EXPERIENTIAL LEARNING

1. Prepare poster presentation on “impact of women's self-help groups on their empowerment and socio-economic development.”
2. Prepare a comparative analysis chart on the status of women in various countries.
3. Prepare a presentation on women and cultural responsibilities in different societies.
4. Prepare a presentation on the women of the past, present and future in terms of responsibilities and duties.
5. Prepare a presentation on the great women entrepreneurs of India.

(Note: It's an indicative one. Course Instructor may change activities and shall be reflected in course Handout)

RESOURCES

TEXT BOOKS:

1. SahaySushama, *Women and Empowerment*, Discovery Publishing House, New Delhi, 2013.
2. NayakSarojini, Jeevan Nair, *Women ' s Empowerment in India*, Pointer Publishers, Jaipur, 2017.

REFERENCE BOOKS:

1. Baluchamy. S, *Women ' s Empowerment of Women*, Pointer Publishers, Jaipur, 2010.
2. Khobragade Grishma, *Women ' s Empowerment: Challenges and Strategies Empowering Indian Women*, Booksclinic Publishing, Chhattisgarh, 2020.

WEB RESOURCES

1. <https://www.economicdiscussion.net/entrepreneurship/women-entrepreneurs-in-india>
2. <https://www.businessmanagementideas.com/entrepreneurship-2/women-entrepreneurs>

