

# **MOHAN BABU UNIVERSITY**

Sree Sainath Nagar, Tirupati – 517 102



## **SCHOOL OF PARAMEDICAL, ALLIED AND HEALTH CARE SCIENCES**

### **B.Sc. Emergency Medicine and Critical Care Technology**

#### **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. Emergency Medicine and Critical Care Technology

### Program Outcomes

On successful completion of the Programs, the graduates of B.Sc. Emergency Medicine and Critical Care Technology 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. Emergency Medicine and Critical Care Technology

### Basket Wise - Credit Distribution

S. No.	Basket	Credits (Min. - Max.)
1	SCHOOL CORE	60-75
2	PROGRAM CORE	65-85
3	PROGRAM ELECTIVE	15-25
4	UNIVERSITY ELECTIVE	9-12
<b>TOTAL CREDITS</b>		<b>Min. 195</b>

## School Core (60-75Credits)

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	-
22PT102008	Human Anatomy - I	4	1	2	-	6	-
22PT102009	Human Physiology - I	4	1	2	-	6	-
22PT101004	National Health Care Delivery System	2	-	-	-	2	-
22DF102008	Clinical Microbiology	3	-	2	-	4	-
22DF102009	Pathology	3	-	2	-	4	-
22PT102010	Human Anatomy-II	4	1	2	-	6	-
22PT102011	Human Physiology-II	4	-	2	-	5	-
22CC111001	Clinical Posting-I	-	-	-	-	4	-
22CC111002	Clinical Posting-II	-	-	-	-	4	-
22CC101019	National Health Care Delivery System and Medical Records Management	4	-	-	-	4	-

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22CC111003	Clinical Posting-III	-	-	-	-	4	-
22CC111004	Clinical Posting-IV	-	-	-	-	4	-
22DF102025	Research Methodology and Biostatistics	3	-	2	-	4	-
<b>Mandatory Courses (Min. 8 Credits to be earned, Earned Credits will not be considered for CGPA )</b>							
22CE107601	Environmental Science	2	-	-	-	2	-
22LG101402	Telugu	2	-	-	-	2	-
22LG101404	Sanskrit	2	-	-	-	2	-

## Program Core (65-85 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	-
22CC101002	Instrumentation in Emergency Services	3	1	-	-	4	-
22CC101010	Pre-Hospital Emergency Care	3	-	-	-	3	-
22CC102004	Emergency Cardiac Techniques	3	-	2	-	4	-
22CC101006	Basic Pharmacology and Drug Administration	3	-	-	-	3	-
22CC102007	Emergency Orthopaedics -I	3	-	2	-	4	-
22CC102008	Emergency Surgery-I	3	-	2	-	4	-
22CC102009	Emergency Obstetrics and Gynecology	3	-	2	-	4	-
22CC102010	Clinical Procedure in Emergency Care	3	-	2	-	4	-
22CC101014	Toxicology and Environmental Emergency	3	1	-	-	4	-
22CC102027	Emergency Medicine -I	3	-	2	-	4	-
22CC102024	Pediatric Emergency	4	-	2	-	5	-
22CC111005	Clinical Internship-I	-	-	-	-	20	-
22CC111006	Clinical Internship-II	-	-	-	-	20	Clinical Internship-I

## Program Elective (15-25 Credits)

Course Code	Title of the Course	Lecture	Tutorial	Practical	Project based Learning	Credits	Pre-requisite
		L	T	P	S	C	
22CC102028	Patient care in Emergency	3	-	2	-	4	-
22CC102031	Critical Concepts and Decision Making in Emergency Medicine	3	-	2	-	4	-
22CC102030	Disaster Management and Industrial Emergencies	3	-	2	-	4	-
22CC102029	Emergency Medicine-II	4	-	2	-	5	-
22CC102025	Emergency Surgery-II	4	-	2	-	5	-
22CC102026	Emergency Orthopaedics-II	3	-	2	-	4	-
22CC101039	HOSPITAL AND EMERGENCY ROOM MANAGEMENT	4	-	-	-	4	-

## University Elective (9-12 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
<b>22DF102001</b>	<b>MEDICAL TERMINOLOGY AND RECORD KEEPING</b>	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
<b>CO1</b>	3	-	-	-	-	3	1	-	-	-
<b>CO2</b>	3	1	-	-	-	-	-	-	3	-
<b>CO3</b>	3	1	3	-	-	-	-	-	-	1
<b>CO4</b>	2	1	-	-	-	-	-	-	-	1
<b>CO5</b>	3	-	-	-	-	3	1	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>	<b>1</b>

**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, utilized 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, utilized 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](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	<b>INTRODUCTION TO QUALITY AND PATIENT SAFETY</b>	4	1	2	-	6
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	-	-	-	-	3	2	-	-	2
<b>CO2</b>	3	-	-	-	-	-	-	-	-	-
<b>CO3</b>	3	-	-	-	-	-	-	-	-	1
<b>CO4</b>	3	-	-	-	-	-	-	-	-	-
<b>CO5</b>	3	-	-	-	-	1	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	-	-	-	-	<b>2</b>	<b>2</b>	-	-	<b>2</b>

**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 & Action 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, Deepashree, 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	<b>BASIC COMPUTERS AND INFORMATION SCIENCES</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	2	-	-	-	-	-	-	-	-
<b>CO2</b>	3	2	2	-	-	-	-	-	-	-
<b>CO3</b>	3	2	3	-	-	-	-	-	-	-
<b>CO4</b>	2	2	3	-	-	-	-	-	-	-
<b>CO5</b>	3	2	2	-	-	-	-	-	-	-
<b>CO6</b>	-	-	-	-	-	-	-	3	3	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>3</b>	-	-	-	-	<b>3</b>	<b>3</b>	-

**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 students 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.

## **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, Edition1, 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
<b>22DF105001</b>	<b>BIOMEDICAL WASTE MANAGEMENT</b>	-	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
<b>CO1</b>	3	1								1
<b>CO2</b>	3	1	2	-	-	-	-	-	-	1
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>

**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)

## **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

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

**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:

- CO1.** Demonstrate knowledge of literary works of various pieces of eminent writers.
- CO2.** Adapt general and technical vocabulary in communication.
- CO3.** Apply grammatically correct English in writing.
- CO4.** Analyze text using grading techniques.
- CO5.** Apply different communication styles in various situations.

### CO-POMapping Table:

<b>Course Outcomes</b>	<b>Program Outcomes</b>									
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>
<b>CO1</b>	3	-	-	-	-	-	2	-	-	-
<b>CO2</b>	2	2	-	-	-	-	2	-	3	-
<b>CO3</b>	2	2	-	-	3	-	2	-	3	-
<b>CO4</b>	2	3	2	-	2	-	2	-	3	-
<b>CO5</b>	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– 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 RUSSELL (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\\_Grass\\_and\\_Stephen\\_Leacock's\\_With\\_the\\_Photographer\\_-\\_A\\_Comparative\\_Study](https://www.researchgate.net/publication/331773456_RK_Narayan's_A_Snake_in_the_Grass_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/](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
<b>22MG101006</b>	<b>PRINCIPLES OF MANAGEMENT</b>	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
<b>CO1</b>	3	-	-	-	-	-	-	1	-	-
<b>CO2</b>	3	1	-	1	-	-	-	1	1	-
<b>CO3</b>	3	1	-	1	-	-	-	1	1	-
<b>CO4</b>	3	1	-	-	-	-	-	1	1	-
<b>CO5</b>	3	1	-	-	-	1	-	-	1	-
<b>CO6</b>	3	-	-	-	-	-	-	1	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>-</b>

**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, Span 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

## **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](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

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22PT102008</b>	<b>HUMAN ANATOMY - I</b>	4	1	2	-	6
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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 incirculatory, digestive, and respiratory system.
- CO4.** Analyze 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
<b>CO1</b>	3	1	1	-	-	1	1	-	-	1
<b>CO2</b>	3	2	1	-	-	1	1	-	-	1
<b>CO3</b>	3	2	1	-	-	1	1	-	-	1
<b>CO4</b>	3	1	1	-	-	1	1	-	-	1
<b>CO5</b>	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**

**(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**

### **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 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 and 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 and 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](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](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](https://www.freebookcentre.net/medical_books_download/Clinical-Anatomy.html)
5. [https://www.academia.edu/42079859/ESSENTIAL\\_CLINICAL\\_ANATOMY](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
<b>22PT102009</b>	<b>HUMAN PHYSIOLOGY - I</b>	4	1	2	-	6
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	2	-	-	-	-	-	-	-	-	-
<b>CO2</b>	3	2	-	2	-	-	-	-	-	2
<b>CO3</b>	3	2	-	-	-	-	-	-	-	-
<b>CO4</b>	3	2	-	-	-	-	-	-	-	-
<b>CO5</b>	3	-	-	-	-	-	-	-	-	-
<b>CO6</b>	3	-	-	-	-	-	-	-	-	-
<b>CO7</b>	-	-	-	-	-	-	3	3	-	2
Course Correlation Mapping	3	2	-	2	-	-	3	3	-	2

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

### COURSECONTENT

**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 fibres. 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. RDSSpirometry: 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. Juxtamedullary 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<sup>+</sup>, glucose, HCO<sub>3</sub><sup>-</sup>, urea and water. Filtered load. Renal tubular transport maximum. Glucose clearance: T<sub>m</sub>G. Renal threshold for glucose. Tubular Secretion: Secretion of H<sup>+</sup> and K<sup>+</sup>. PAH clearance, Micturition: Mechanism of

micturition. Atonic bladder, automatic bladder, Artificial Kidney: Principle of haemodialysis, Structure of skin and functions.

**Total Periods:60**

## **EXPERIENTIALLEARNING**

### **LISTOFEXPERIMENTS:**

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.)*

## **RESOURCE BOOKS**

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

### **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)

### **WEBRESOURCES:**

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](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
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**

## **COURSECONTENT**

### **MODULE1: 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

### **MODULE2: AYUSH SYSTEM OF MEDICINE (08Periods)**

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

### **MODULE3: DEMOGRAPHY AND VITAL STATISTICS (07Periods)**

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

### **MODULE4: NATIONAL HEALTH POLICIES (08Periods)**

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,

**TotalPeriods: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 & Bartleft Learning, Edition 4, 2019.
2. Sharon B .Buchbinder, Introduction to Health Care Management, Jones & Bartleft 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](https://youtu.be/It_cv56Dxtk)
2. [https://youtu.be/VIrdH\\_3RKKk](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

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

**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:

- C01** Identify the bacteria by using various cultural methods and apply sterilization techniques in the health care.
- C02** Understand Morphology, cultural characteristics, Infections caused, Laboratory Diagnosis, Treatment of various Disease-causing bacteria in Humans.
- C03** Learn Morphology, disease caused and lab diagnosis of various fungi effecting Humans.
- C04** Understand general properties of viruses, diseases caused, lab diagnosis and prevention of Various viruses effecting Humans.
- C05** Understand classification, pathogenesis, lab diagnosis and prevention of various disease causing parasites in humans.
- C06** 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
<b>C01</b>	3	-	2	2	-	2	1	-	-	1
<b>C02</b>	3	2	2	-	1	2	-	-	-	-
<b>C03</b>	3	2	-	-	-	2	-	-	-	1
<b>C04</b>	3	2	2	-	-	-	-	-	-	1
<b>C05</b>	3	2	2	-	1	2	-	-	-	1
<b>C06</b>	3	2	-	-	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>

**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. RamnikSood, 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](https://www.youtube.com/watch?v=_Fk1D7FIIg4)
2. <https://www.youtube.com/watch?v=F7TBfCJTZ54>
3. [https://www.youtube.com/watch?v=\\_waCHq1AaNk](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

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

**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
<b>CO1</b>	3	-	-	-	-	3	1	-	-	-
<b>CO2</b>	3	1	-	-	-	-	-	-	3	-
<b>CO3</b>	3	1	3	-	-	-	-	-	-	1
<b>CO4</b>	2	1	-	-	-	-	-	-	-	1
<b>CO5</b>	3	-	-	-	-	3	1	-	-	-
<b>CO6</b>	3	-	-	-	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>	<b>1</b>

**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 NUTRITIONALDISORDERS & INFECTIOUS DISEASE**

**(09 Periods)**

Environmental and nutritional disorders. Occupational Hazards, Radiationinjury, 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 tumoursEg. Squamous papilloma, Squamous cell carcinoma, Malignant melanoma. Benign & Malignant mesenchymal tumoursEg: 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 hemoglobin 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](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](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
<b>22PT102010</b>	<b>HUMAN ANATOMY-II</b>	4	1	2	-	6
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	2	1	1	-	1	1	1	-	1
<b>CO2</b>	3	2	1	1	-	1	1	1	-	1
<b>CO3</b>	3	2	1	1	-	1	1	1	-	1
<b>CO4</b>	3	2	1	1	-	1	1	1	-	1
<b>CO5</b>	3	1	1	1	-	1	1	1	-	1
<b>CO6</b>	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:**

- Demonstration of organs in human excretory system.
- Demonstration of human reproductive organs.
- Demonstration of exocrine and endocrine glands in human body.
- Demonstration of organs of nervous system and sense organs in human body.
- 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.)*

### **RESOURCESBOOKS:**

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

### **VIDEO LECTURES:**

- <https://www.youtube.com/watch?v=UzPafAvoYH0>.
- <https://www.youtube.com/watch?v=Nr6a7kqh4ZM>
- [https://www.youtube.com/watch?v=bL\\_fg1St7Cg](https://www.youtube.com/watch?v=bL_fg1St7Cg)
- <https://www.youtube.com/watch?v=aV1cNPJAByo>
- [https://www.youtube.com/watch?v=\\_l-NS4Q3bv0](https://www.youtube.com/watch?v=_l-NS4Q3bv0)
- <https://www.youtube.com/watch?v=upqjWIElahs>
- <https://www.youtube.com/watch?v=849IL6HSMd4>
- <https://www.youtube.com/watch?v=mcmUWYzhdzA>
- <https://www.youtube.com/watch?v=IvK-UGOI5ZQ>
- <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](https://www.freebookcentre.net/medical_books_download/Clinical-Anatomy.html)
5. [https://www.academia.edu/42079859/ESSENTIAL\\_CLINICAL\\_ANATOMY](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
<b>22PT102011</b>	<b>HUMAN PHYSIOLOGY-II</b>	4	-	2	-	5

**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
<b>CO1</b>	3	-	-	-	-	-	-	-	-	-
<b>CO2</b>	3	2	-	2	-	-	-	-	-	2
<b>CO3</b>	3	2	-	-	-	-	-	-	-	-
<b>CO4</b>	3	2	-	-	-	-	-	-	-	-
<b>CO5</b>	3	-	-	-	-	-	-	-	-	-
<b>CO6</b>	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**

**(14Periods)**

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**

**(18Periods)**

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](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

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

**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
<b>CO1</b>	3	-	-	-	-	-	-	2	-	1
<b>CO2</b>	3	1	1	3	-	-	-	-	-	1
<b>CO3</b>	3	-	-	2	-	-	3	1	-	-
<b>CO4</b>	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 3<sup>rd</sup> semester.
2. The Evaluation process is day to day, based on logbook and viva.

## SCHOOL CORE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CC111002</b>	<b>CLINICAL POSTING-II</b>	-	-	-	-	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
<b>CO1</b>	3	-	-	-	-	-	-	2	-	1
<b>CO2</b>	3	1	1	3	-	-	-	-	-	1
<b>CO3</b>	3	-	-	2	-	-	3	1	-	-
<b>CO4</b>	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 4<sup>th</sup> 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
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
<b>CO1</b>	3	2	-	-	-	-	-	-	-	-
<b>CO2</b>	3	2	-	1	-	1	-	-	1	-
<b>CO3</b>	3	2	-	-	-	1	-	-	1	-
<b>CO4</b>	3	2	-	1	-	1	-	-	1	1
<b>CO5</b>	3	2	-	-	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>1</b>

**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, Edition 2, 2016.

### **REFERENCE BOOKS:**

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

### **VIDEOLECTURES:**

1. [https://www.youtube.com/watch?v=\\_bDatJxhfkQ](https://www.youtube.com/watch?v=_bDatJxhfkQ)
2. <https://www.youtube.com/watch?v=9iMhc2OU-go>
3. [https://youtu.be/It\\_cV56Dxtk](https://youtu.be/It_cV56Dxtk)
4. [https://youtu.be/VIrdH\\_3RKKk](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

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

**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
<b>CO1</b>	3	-	-	-	-	-	-	2	-	1
<b>CO2</b>	3	1	1	3	-	-	-	-	-	1
<b>CO3</b>	3	-	-	2	-	-	3	1	-	-
<b>CO4</b>	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 5<sup>th</sup> 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
<b>Pre-Requisite</b>						
<b>Anti-Requisite</b> -						
<b>Co-Requisite</b> -						

**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
<b>CO1</b>	3	-	-	-	-	-	-	2	-	1
<b>CO2</b>	3	1	1	3	-	-	-	-	-	1
<b>CO3</b>	3	-	-	2	-	-	3	1	-	-
<b>CO4</b>	3	-	1	2	-	1	1	1	-	1
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>1</b>

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

#### Note:

1. Students will attend to clinical posting weekly two days in 6<sup>th</sup> 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
<b>22DF102025</b>	<b>RESEARCH METHODOLOGY AND BIOSTATISTICS</b>	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
<b>CO1</b>	3	2	-	1	-	3	1	-	-	-
<b>CO2</b>	1	1	2	-	2	-	-	-	3	-
<b>CO3</b>	1	1	2	-	1	-	-	1	-	1
<b>CO4</b>	2	1	2		2					1
<b>CO5</b>	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](https://www.youtube.com/watch?v=d77eQz0_Sfk)
2. [https://www.youtube.com/watch?v=yOU\\_s0xzc-Y](https://www.youtube.com/watch?v=yOU_s0xzc-Y)
3. [https://www.youtube.com/watch?v=txIS0N0I9xU&list=PLEIbY8S8u\\_DK7i4Fj6Hgg8sn\\_l42k9H1L](https://www.youtube.com/watch?v=txIS0N0I9xU&list=PLEIbY8S8u_DK7i4Fj6Hgg8sn_l42k9H1L)
4. [https://www.youtube.com/watch?v=1Q6\\_LRZwZrc](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
<b>22CE107601</b>	<b>ENVIRONMENTAL SCIENCE</b>	2	-	-	-	2
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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:

- CO1.** Analyze natural resources to solve complex environmental problems and natural resource management considering society, environment and sustainability.
- CO2.** Analyze ecosystems and biodiversity to solve complex environmental problems by following environmental ethics considering society, environment and sustainability besides communicating effectively in graphical form.
- CO3.** 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.
- CO4.** 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.
- CO5.** 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
<b>CO1</b>	3	2	-	-	2	-	-	1	-	1
<b>CO2</b>	3	2	-	-	2	2	1	1	-	1
<b>CO3</b>	3	2	2	1	2	2	2	-	-	-
<b>CO4</b>	3	2	2	2	2	-	-	2	-	1
<b>CO5</b>	3	2	2	2	2	2	2	-	-	1
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>		<b>1</b>

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

## **COURSE 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**

1. Visit a nearby villages and know the status of availability of local resources that can be improved through proper education.
  2. Make an awareness program in the villages for the development of natural resources, ecosystems and biodiversity.
  3. Prepare a document by visiting a local urban waste dumping yard near to the Tirupati city.
  4. 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.
  5. 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:

1. Anubha Kaushik and Kaushik, C.P., *Perspectives in Environmental Studies*, New Age International (P) Ltd. Publications, Edition 6, 2018.
2. Erach Barucha, *Environmental Studies*, Orient Blackswan, Edition 3, 2021.

### REFERENCE BOOKS:

1. Cunningham, W. P. and Cunningham, M. A., *Principles of Environmental Science*, Tata McGraw-Hill Publishing Company, New Delhi, Edition 8, 2016.
2. Benny Joseph, *Environmental Studies*, Tata McGraw-Hill, Edition 2, 2009.
3. Anji Reddy, M., *Text Book of Environmental Science and Technology*, BS Publications, Revised Edition, 2014.
4. Rajagopalan, R., *Environmental Studies*, Oxford University Press, Edition 3, 2015.

### VIDEO LECTURES:

1. <http://nptel.ac.in/courses/109/104/109104047>
2. <https://www.youtube.com/watch?v=mIPBPG-5dUw>

### WEB RESOURCES

1. <https://nptel.ac.in/courses/122102006>
2. <https://www.flame.edu.in/academics/ug/program-structure/major-minor/courses/environmental-studies>
3. [https://www.tutorialspoint.com/environmental\\_studies/environmental\\_studies\\_environment.htm](https://www.tutorialspoint.com/environmental_studies/environmental_studies_environment.htm)

## SCHOOL CORE

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

**COURSE DESCRIPTION:** తుమ్మల సీతారామమూర్తి-ఎక్కట్లు, తిక్కన-నాడీజంఘాపాఖ్యానం, పోతన-ఢ్రువోపాఖ్యానం, దువ్వూరి రామిరెడ్డి - కృషీ 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)**

సత్ప్రవర్తన, 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 చౌదరి.
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](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](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 OUTCOMES:** पाठ्यक्रमस्य सफलसमाप्तेः अनन्तरं छात्राः

**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 हृदिस्यं करिष्यति, अपि च प्राथमिक व्याकरण पठिष्यति तेन ते संस्कृते सरल वाक्यानां निर्माणं कर्तुं प्रभवन्ति ।

- CO1** कतव्यपरक शक्षाणक वृत्तपरक तथा शाधकतृणा इनमाणाय छात्राणा सज्ञानात्मक, प्रभावशाला तथा व्यवहारक क्षमतानां आकार प्रदानार्थ सहायतां करोति।
- CO2** सामाजिक परिवर्तने भागग्रहणार्थ 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 अभिवृद्धि 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

<b>Module-1:</b> प्राचीन पद्यसाहित्यम्	<b>(06 Periods)</b>
1. आर्य पादुका पट्टाभिषेकः - वल्मीकिः - श्रीमद्रामायणम्	
2. यक्षप्रश्नाः - वेदव्यासः - महाभारतम्	
<b>Module-2:</b> चम्पूकाव्यम् & आधुनिक पद्यकाव्यम्	<b>(06 Periods)</b>
3. गङ्गावतरणम् - भोजराजः - चम्पूरामायणम्	
4. मोहापनोदः - श्री पमिडिपाटि पट्टाभिरामारावः - मूलकथा-‘धर्मसौहृदम्’ इति संस्कृत पद्यकाव्यम्	
<b>Module-3:</b> गद्यसाहित्यम्	<b>(06 Periods)</b>
5. अत्युत्कटैः पापपुण्यैः इहैव फलमश्नुते - नारायणपण्डितः - हितोपदेशः	
6. शूद्रकवीरवरकथा - हितोपदेशः	
<b>Module-4:</b> शब्दाः	<b>(6 Periods)</b>
देव, कवि, भानु, पितृ, धातृ, गो, रमा, मति	
<b>Module 5:</b> महाकवि, शास्त्रकाराः	<b>(6 Periods)</b>
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](https://cbpbu.ac.in/study_mat_sanskrit.php)

## PROGRAM CORE

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

**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
<b>CO1</b>	3	2	-	1	-	-	-	-	-	-
<b>CO2</b>	3	2	-	-	-	-	-	-	-	-
<b>CO3</b>	3	2	-	-	-	1	-	-	-	-
<b>CO4</b>	3	2	-	2	-	-	-	-	-	-
<b>CO5</b>	3	2	-	-	-	-	-	-	-	-
<b>CO6</b>	3	-	-	1	-	-	-	-	-	2
Course Correlation Mapping	3	2	-	1	-	1	-	-	-	2

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

## **COURSECONTENT**

### **MODULE1: 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.

**TotalPeriods: 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, 3<sup>rd</sup> 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, Lippincott 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](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](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://rajneeshraja.weebly.com/uploads/4/9/0/6/49069889/biochemistry\\_bicm101.pdf](https://rajneeshraja.weebly.com/uploads/4/9/0/6/49069889/biochemistry_bicm101.pdf)

## PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
<b>22RT101001</b>	<b>FUNDAMENTALS OF MEDICAL PHYSICS AND ELECTRONICS</b>	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.** Acquire knowledge about the semiconductor materials.
- CO2.** Apply knowledge of analog and digital components, sensors and output actuators to assemble simple electrical systems.
- CO3.** Acquire 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
<b>CO1</b>	3	-	-	2	-	-	-	-	-	-
<b>CO2</b>	3	-	-	2	-	-	-	-	-	-
<b>CO3</b>	3	-	-	2	-	-	-	-	-	-
<b>CO4</b>	3	-	-	2	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	-	-	<b>2</b>	-	-	-	-	-	-

**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.

### **MODULE2 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](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/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>

## PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101002	INSTRUMENTATION IN EMERGENCY SERVICES	3	1	-	-	4

**Pre-Requisite** -

**Anti-Requisite** -

**Co-Requisite** -

**COURSE DESCRIPTION:** This course provides a detailed discussion on understanding objectives, theories and process of emergency care technology and helping the students to acquire knowledge; understanding and skills in techniques in Emergency Room.

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

- CO1** Acquire basic knowledge on emergency theatre equipment's
- CO2** Understand applications of machine breathing system in critical care
- CO3** Apply Non-Invasive Assessment and Support Of Oxygenation And Ventilation in emergency care
- CO4** Understanding the procedures and uses of central sterile supply department
- 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
<b>CO1</b>	3	2	-	3	-	2	-	-	-	-
<b>CO2</b>	3	2	-	3	-	2	-	-	-	-
<b>CO3</b>	3	1	-	2	-	1	-	-	-	-
<b>CO4</b>	3	-	-	3	-	1	-	-	-	-
<b>CO5</b>	3	-	-	3	-	1	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>3</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

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

## **COURSE CONTENT**

### **MODULE 1: MEDICAL EQUIPMENT'S IN OT (08 Periods)**

Medical Gas Supply-Compressed gas cylinders, Color coding, Cylinder valves, pin index, Gas piping system, Alarms & safety devices, Recommendations for piping system, Scavenging of waste anesthetic gases.

### **MODULE 2: FACE MASKS & AIRWAY LARYNGOSCOPES (08 Periods)**

Endotracheal tubes – Types, sizes, (RAE Tube, Flexo metallic). Complications – Use care and maintenance of an aesthesiaequipment Laryngoscopes in Anesthesia and its different methods and types.

### **MODULE 3: MACHINE BREATHING SYSTEM (10 Periods)**

**Anesthesia Machine:** Hanger and yoke system, Cylinder pressure gauge, Pressure regulator, Flow meter assembly, Vaporizers-types, hazards, maintenance, filling & draining, etc. **Breathing System:** General considerations: humidity & heat. Common components – connectors, adaptors, reservoir bags, Capnography. Pulse oximetry, Methods of humidification, Classification of breathing system, Maplesonsystem – a b c d e f, Jackson Reesystem, Bain circuit, Nonrebreathing valves – ambu valves. The circle system, Components, Soda lime and indicators.

### **MODULE 4: MONITORING AND FAMILIARIZATION OF OT INSTRUMENTS (09 Periods)**

Familiarization of OT and OT techniques. MONITORING: Electrocardiography(ECG), Pulse oximetry(SpO<sub>2</sub>), Temperature- central and peripheral, End tidal carbon dioxide( EtCO<sub>2</sub>), Anaesthesia gas monitoring, Non-invasive blood pressure (NIPB) and Invasive blood pressure(IBP), Central venous pressure(CVP), PA Pressure, LA Pressure & cardiac output, Anaesthesia depth monitor, Neuromuscular transmission monitor

### **MODULE 5: CSSD INSTRUMENTATION (10 Periods)**

CSSD, Instrumentations and working principle, Cleaning and decontamination devices, Maintenance and repair of equipment's, Hot air Oven for drying & heat sterilization, Work flow in CSSD, store, supply and inventory Management

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS**

1. Cylinders
2. Suction apparatus
3. Endotracheal tubes
4. Laryngoscopes,
5. LMA
6. Oropharyngeal airway, Nasopharyngeal airway
7. Anesthesia machine- description, parts, safety features

*(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. MURTHY S., Emergency Medicine Equipments Procedures And Drugs, CBS PUBLISHERS & DISTRIBUTORS PVT. LTD, Edition 1, 2022.
2. Bhawana Sharma, Devendra Richhariya, Textbook of Emergency Medicine: Including Intensive Care & Trauma, Jaypee Brothers Medical Publishers, Edition 2, 2022.
3. KPP Abhilash,CMC Vellore Handbook of Emergency Medicine, Jaypee Brothers Medical Publishers, Edition 3, 2021

#### **REFERENCE BOOKS:**

1. Neelam Rai, Arpit Ravindra Lal., Textbook for Operation Theatre Technicians: As Per Paramedical Council Syllabus., Jaypee Brothers Medical Publishers, Edition 1, 2017
2. Apurba S Sastry, DeepashreeR.,Essentials of Hospital Infection Control, Jaypee Brothers Medical Publishers, Edition 1, 2021.
3. Lippincott Williams & Wilkins, Manual Of Practical Examination In Critical Care And Emergency Medicine, Jaypee Brothers Medical Publishers, Edition 2, 2019.

#### **VIDEO LECTURES:**

1. <https://www.youtube.com/channel/UCH6o9VC8aF103h4IOo5F3BA>
2. [https://www.youtube.com/channel/UCJeFOVY\\_Lmx4lCdWbJME\\_vQ](https://www.youtube.com/channel/UCJeFOVY_Lmx4lCdWbJME_vQ)
3. <https://www.youtube.com/watch?v=IwOwzssJUUA>

#### **WEB RESOURCES**

1. <https://www.slideshare.net/verdahsabah/medical-instruments-45875175>
2. <https://www.fresno.ucsf.edu/em/parkmedic/downloads/lemadocs/TacMed.pdf>
3. [https://nhm.gov.in/images/pdf/programmes/ERS/Specification\\_of\\_Equipments\\_for\\_ERS\\_Ambulance.pdf](https://nhm.gov.in/images/pdf/programmes/ERS/Specification_of_Equipments_for_ERS_Ambulance.pdf)

## PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101010	PRE-HOSPITAL EMERGENCY CARE	3	-	-	-	3

**Pre-Requisite** -

**Anti-Requisite** -

**Co-Requisite** -

**COURSE DESCRIPTION:** This course is aimed at producing an efficient medical service with the necessary knowledge, skills and attitude to manage effectively a wide range of clinical problems in pre-emergency.

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

- CO1.** Learn the purpose of emergency medical services (EMS) system
- CO2.** Demonstrate about the extrication devices and handling of various emergencies.
- CO3.** Understand the relationship between culture and communication for effective treatment
- CO4.** Apply the various documentation methods in prehospital and in-hospital settings.
- CO5.** Understand the essential care and adverse outcome in geriatric emergency
- 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
<b>CO1</b>	3	-	1	-	-	-	1	-	-	-
<b>CO2</b>	3	-	-	3	1	-	1	-	-	-
<b>CO3</b>	3	-	-	-	-	-	-	3	-	-
<b>CO4</b>	3	-	-	-	-	-	-	-	-	-
<b>CO5</b>	3	-	-	-	-	-	-	-	-	-
<b>CO6</b>	3	-	-	2	-	-				
<b>Course Correlation Mapping</b>	<b>3</b>	<b>-</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>3</b>	<b>-</b>	<b>-</b>

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

## **COURSE CONTENT**

### **Module 1: EMS SYSTEM**

**(07 Periods)**

Ems system: introduction, history of EMS-traditional EMS employment, additional types of transport, level of education, working with other professionals, professionalism, roles and responsibility, types of research., Work force safety and wellness, introduction, components of wellbeing, physical wellbeing, mental wellbeing, emotional wellbeing, spiritual wellbeing, disease transmission, protection, coping with death and dealing., Public health, introduction – public health threats – community organism – steps developed in prevention program - injuries and illness surveillance – prevention – types of prevention.

### **Module 2: EXTRICATION AND RESCUE SITUATION**

**(09 Periods)**

Vehicle extrication-Introduction, rescue training, guidelines of rescue operation, steps in special rescue - anatomy and structure components, alternative vehicle, vehicle stabilization, gaining access to the patient, Disentangling the Patient., Additional rescue situation, Confined space, trenches, water, rope rescue, structure fire, industrial rescue, Patient care, Pain management, medical supplies, extrication device.

### **Module 3: COMMUNICATION**

**(11 Periods)**

Communication, communication theory, barriers of communication, phases of emergency medical dispatch, Technological Advances in the Collection and Exchange of Information, Cross-cultural communication, cultural competence, cultural awareness, language interpretation, Communication system, simple system, complex system, basic radio communication theory, FCC regulation, content of transmission, clarity of transmission, Communication system components, backup communication system, biotelemetry, communication used phase of response, relaying information to medical control, Therapeutic communication, conduct the interview, Strategies to Elicit Useful, Responses to Questions, Common Interviewing Errors, Nonverbal Skills, Special Interview Situations.

### **Module 4: DOCUMENTATION**

**(06 Periods)**

Documentation, introduction gen, legal implication of PCR, Purpose of documentation, continuity of care, minimum requirements and billing, Types of PCR, documentation of EMS call, transfer of care, care prior to arrival, Situation for additional document, refusal of care, work place injury, special circumstance, Completing the PCR, the PCR narrative, elements for written PCR, consequence of poor documentation, narrative, errors and falsification, documenting the incident time, consequences of Inappropriate, Documentation.

### **Module 5: GERIATRIC EMERGENCY**

**(12 Periods)**

Geriatric Emergencies, Introduction, Changes in the respiratory system, asthma, pneumonia, COPD, pulmonary embolism., Changes in cardiovascular system, acute coronary syndrome, heart failure, arrhythmia, hypertension, stroke, aneurysm., Changes in neurological system, delirium, dementia, seizure, parkinsonism disease., Changes in gastro intestinal system, Bowel obstruction, peptic ulcer, GI bleeding., Changes in renal system, Renal failure, urinary tract infection, incontinence., Changes in endocrine, Diabetes mellitus., Immunological changes., Musculo skeletal, Osteoporosis, Arthritis., Patient with special changes, Introduction, abuse and neglect, recognize of abuse and neglect, physical findings, Management of abuse and neglect, Care for cognitive and sensory communication impairment, Developmental delay, Down syndrome, Earing impairment, speech impairment, visual impairment, mental or emotional impairment.

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Understanding the roles and responsibility in emergency department.
2. Demonstration the extrication devices.
3. Understanding the types of communication in emergency department
4. Understanding the use of documentation.
5. Clinical visit the geriatric emergency.

### **RESOURCES**

#### **TEXT BOOKS:**

1. Kundan mittal, Pre hospital life support manual, Jaypee brothers' medical publishers, Edition 1,2010.
2. Mick j sanders, Mosby paramedic book, Jaypee brothers' medical publishers, Edition 4, 2012.
3. Nancy caroline, Emergency care in streets, Jones and Bartlett, Edition 8, 2007.

#### **REFERENCE BOOKS:**

1. Keith J. karren, Pre hospital emergency care book, Edition 11, 2017.
2. Mark c.enhenry, EMT pre hospital care, jones and Bartlett, Edition 4, 2011.

#### **VIDEO LECTURES:**

1. [https://youtu.be/X7VdjgOoq2k?si=wZ5oal\\_sLHIj6EU7](https://youtu.be/X7VdjgOoq2k?si=wZ5oal_sLHIj6EU7)
2. <https://youtube.com/watch?v=-q7INUrzzHs&feature=shared>

#### **WEB RESOURCES**

1. <https://www.ncbi.nlm.nih.gov/books/NBK448107/>
2. <https://memorial.health/Resources/7972833d-4daa-484a-b6c3-0e6ea4e22acc/4%20EMS%20Communication%20and%20Documentaion.pdf>

## PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
<b>22CC102004</b>	<b>EMERGENCY CARDIC TECHNIQUES</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to train the skills of CPR for victims of all ages by using various automated external defibrillator and relief of choking.

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

- CO1.** Demonstrate the basic life support techniques in the various age groups.
- 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 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
<b>CO1</b>	3	-	-	2	-	-	2	2	-	1
<b>CO2</b>	3	1	-	3	-	-	2	2	-	1
<b>CO3</b>	3	-	-	3	-	-	-	2	-	1
<b>CO4</b>	3	-	-	2	-	-	-	1	-	1
<b>CO5</b>	3	-	-	2	-	-	-	-	-	1
<b>CO6</b>	3	-	-	-	-	-	3	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>		<b>2</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>1</b>

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

## **COURSE CONTENT**

### **Module 1: BASIC LIFE SUPPORT**

**(16 Periods)**

Introduction, CPR coach, Team dynamic, Airway, Barrier devices for giving breaths., Adult Basic life support., Pediatric Basic life support., Pregnant Basic life support., choking., opioid algorithm., Other life threatening emergencies, Heart attack, stroke, Drowning, Anaphylaxis, Chain of survival, 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, Pulse less electrical activity, Asystole, Management., Selected special situations, Post cardiac arrest care.

### **Module 3: DEFIBRILLATOR**

**(08 Periods)**

Introduction, Techniques, Manual external and internal defibrillator, Semi automated external defibrillator, Automated external defibrillator, Implantable cardioverter defibrillator, Wearable cardiac defibrillator.

### **Module 4: CARDIOVERSION**

**(06 Periods)**

Introduction, refractory period, Abnormal rhythm, Types of cardioversion, chemical cardioversion, electrical cardioversion, procedure.

### **Module 5: PACING**

**(05 Periods)**

Introduction, Transcutaneous pacing, indication, contraindication, procedure., Transvenous venous pacing, indication, contraindication, procedure.

**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 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. <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

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

**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
<b>CO1</b>	3	-	-	-	-	3	1	-	-	-
<b>CO2</b>	3	1	-	-	-	-	-	-	-	-
<b>CO3</b>	3	1	3	-	-	-	-	-	-	-
<b>CO4</b>	2	1	-	-	-	-	-	-	-	-
<b>CO5</b>	3	-	-	-	-	3	1	-	-	-
<b>CO6</b>	3	-	-	-	-	-	-	-	-	-
Course Correlation Mapping	3	1	3	-	-	3	1	-	-	-

**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: 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 Antiasthmatic 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, Diarrhoea 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 Udaykumar, 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](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
<b>22CC102007</b>	<b>EMERGENCY ORTHOPAEDICS-I</b>	3	-	2	-	4
<b>Pre-Requisite</b>						
<b>Anti-Requisite</b> -						
<b>Co-Requisite</b> -						

**COURSE DESCRIPTION:** This course is designed to train the skills of immobilize the fracture in all types of fracture and gain knowledge about ITLS (INTERNATIONAL TRAUMA LIFE SUPPORT) algorithm in with polytrauma.

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

- CO1** Demonstrate the general trauma assessment and management.
- CO2** Asses the head and chest injuries intrauma.
- CO3** Understand the treatment and able to recognize the abdominal and pelvic trauma
- CO4** Demonstration the splinting in upper and lower extremities
- 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
<b>CO1</b>	3	3	2	2	-	2	3	3	-	3
<b>CO2</b>	3	3	2	1	-	-	1	-	-	3
<b>CO3</b>	3	3	2	-	-	-	-	-	-	3
<b>CO4</b>	3	3	-	-	-	-	2	-	-	3
<b>CO5</b>	3	-	-	-	-	-	3	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>3</b>

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

## **COURSE CONTENT**

### **Module 1: GENERAL ORTHOPAEDICS**

**(09 Periods)**

Introduction: Mechanism of injury- Types of fracture, fracture healing, complication of fracture, Principles of management, splinting techniques, control the bleeding, soft tissue injury, wounds, vascular injury, Trauma in pediatric, Pathophysiology, Clinical features, Management, trauma in pregnancy, Pathophysiology, Clinical features, Management, trauma assessment and management, sprain and strain, management.

### **Module 2: HEAD AND CHEST INJURIES**

**(11 Periods)**

Head injury, Clinical features, Management, Maxillofacial injury, spinal cord injury, epidural hematoma, subdural hematoma, Subarachnoid Hemorrhage. Chest injuries, Pathophysiology Clinical features, Management, hemothorax, pneumothorax, cardiac tamponade, flail chest, diaphragmatic tear, aortic rupture, clavicle fracture, scapula fracture, acromioclavicular joint fracture, sternoclavicular joint dislocation

### **Module 3: ABDOMINAL AND PELVIC INJURIES**

**(07 Periods)**

Abdominal trauma, Pathophysiology Clinical features, Management, mechanism of injury, treatment, pelvic trauma mechanism of injury, treatment, pelvic dislocation, pre hospital and in hospital management, shock, types and treatment, fracture of acetabulum, evisceration and pre hospital management.

### **Module 4: UPPER EXTREMITY INJURY**

**(10 Periods)**

Neck of humerus fracture, shaft of humerus fracture, fracture of radius and ulnar, olecranon fracture, elbow dislocation, Monteggia fracture, Galeazzi fracture, Colles fracture, Smiths fracture, nerve injury, pathophysiology, clinical features, management

### **Module 5: LOWER EXTREMITY INJURY**

**(08 Periods)**

Neck of femur fracture, shaft of femur fracture, fracture of femoral condyles, dislocation of knee, fracture of patella, ankle fracture, injury to semilunar cartilage, fracture of tibia and fibula, foot injury, nerve injury, pathophysiology, clinical features, management, overuse injuries and types, management.

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstration the trauma assessment and management
2. Understand the head and chest injury related to trauma.
3. Demonstration of pelvic binder in trauma patient.
4. Demonstration the splinting of upper extremity
5. Demonstration the splinting of lower extremity

## RESOURCES

### TEXT BOOKS:

1. John ebenezar, Textbook of Orthopedics, Jaypee brothers Medical publishers, Edition 5,2016.
2. Louis Solomon, Apleys system of orthopedics and fracture, taylor & francis publications, Edition 8, 2001.
3. Natarajan's, Textbook of Orthopaedics and Traumatology, wolters kluwer publications, Edition 8, 2018.

### REFERENCE BOOKS:

1. Ian Greaves, Keith Parter, Trauma care manual, taylor & francis publications, Edition 2, 2000.
2. Maheshwari & mhaskar, Essential Orthopedics, jaypee Brothers Medical publishers, Edition 5, 2015.

### VIDEO LECTURES:

1. [https://youtu.be/nTa1Oxv-LVw?si=j\\_deWPX7eUmpOTGq](https://youtu.be/nTa1Oxv-LVw?si=j_deWPX7eUmpOTGq)
2. <https://youtu.be/Ty4eibxAG3U?si=nZp6TEWVdnt-0ET8>
3. <https://youtu.be/i7GidKRUzrY?si=JVnOXU1qVTuOAMFH>

### WEB RESOURCES

1. <https://my.clevelandclinic.org/health/treatments/25252-splint>
2. <https://accessemergencymedicine.mhmedical.com/content.aspx?bookid=2969&sectionid=250456703>
3. <https://accessmedicine.mhmedical.com/content.aspx?bookid=1944&sectionid=143516997#:~:text=The%20main%20types%20of%20shock,supporting%20vital%20functions%20until%20recovery>

## PROGRAM CORE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CC102008</b>	<b>EMERGENCY SURGERY-I</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to gain knowledge and recognition of major abdominal illness and trauma, ask for relevant investigations, so as to avoid any delay in resuscitation.

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

- CO1** Perform the various types of suture in-hospital and pre-hospital area.
- CO2** Understand the liver and pancreatic injuries in medicine and trauma patients.
- CO3** Understand of hollow organ injury related to medicine and trauma patient.
- CO4** Acquire knowledge on injury of urinary system.
- CO5** Differentiate types of rectal disorder in emergency care.
- 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
<b>CO1</b>	3	3	2	3	-	-	3	2	-	3
<b>CO2</b>	3	3	-	2	-	-	-	-	-	2
<b>CO3</b>	3	3	-	2	-	-	-	-	-	2
<b>CO4</b>	3	3	-	-	-	-	-	-	-	2
<b>CO5</b>	3	3	-	2	-	-	-	-	-	2
<b>CO6</b>	3	-	-	-	-	-	3	3	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>2</b>

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

## **COURSE CONTENT**

### **Module 1: GENERAL SURGERY**

**(10 Periods)**

Wounds: Classification of wounds, wound healing, treatment of wound, compartment syndrome, ulcer, fistula, massive blood transfusion, burns, Special Burn considerations, amputation, button battery ingestion, childhood coin ingestion Radiographic consideration, esophageal obstruction and foreign bodies, principles of suture and its techniques,

### **Module 2: LIVER AND PANCREATIC INJURY**

**(08 Periods)**

Portal hypertension, hepatic failure, hepatic encephalopathy, acute and chronic pancreatitis, Pathophysiology, Causes, Signs and symptoms, Investigations, Treatment, complications of acute pancreatitis, pancreatic fistulae, pancreatic necrosis, pancreatic trauma, cholecystitis, appendicitis, Clinical features, Physical Examination, Investigations, Treatment, renal colic, torsion of testis.

### **Module 3: STOMACH, INTESTINE**

**(10 Periods)**

Gallstones, Acute Cholecystitis, Pathophysiology, Causes, Signs and symptoms, Investigations, Treatment, Obstructive Jaundice, Dysphagia, Gastro-Esophageal Reflux Disease (GORD/GERD), Gastritis, Acute Peptic Ulcer Clinical features, difference between duodenal and gastric ulcer, Investigations and Treatment, Hematemesis, Small Bowel Enema, Intestinal Obstruction, Acute Appendicitis, gastro intestinal bleeding, intestinal obstruction,

### **Module 4: UROLOGY**

**(10 Periods)**

Hematuria, cystic diseases of the kidney, Cystitis, Prostatitis, Bladder Outlet Obstruction, Carcinoma in Prostate, Urethral Injury, Stricture Urethra, Retention of Urine, Phimosis, Fournier's Gangrene, Torsion of the Testis, investigation and management, Undescended Testis, injuries to kidney

### **Module 5: RECTUM AND ANAL CANAL**

**(07 Periods)**

Rectal prolapse, anorectal malformations (arm), piles/hemorrhoids, anal fissure, anorectal abscess, anal incontinence, proctitis, anorectal strictures.

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstrate the Heimlich maneuver in pre hospital.
2. Understand the liver, spleen, pancreas illness with the laboratory values.
3. Understand the intestinal and stomach illness by scans.
4. Understand the excretory organ disease.
5. Understand about the anal rectal disorder.

## RESOURCES

### TEXT BOOKS:

1. Sriram bhat M, SRB manual of surgery, JaypeePublishers, Edition 6, 2019.
2. S Das, A manual on clinical surgery, JaypeePublishers, Edition 7, 2022.
3. K.RajgopalShenoy, Manipal manual of surgery, CBS Publishers, Edition 4, 2020.

### REFERENCE BOOKS:

1. Norman s, Williams, Bailey and Love's short practice of surgery, taylor & francis publishers, Edition 27, 2000.
2. Kailash R gindodia, Handbook of surgery, CBS Publishers, Edition 1, 2022.

### VIDEO LECTURES:

1. [https://youtu.be/\\_CAv\\_eM2nSA?si=gDymQhTc1ptpbISO](https://youtu.be/_CAv_eM2nSA?si=gDymQhTc1ptpbISO)
2. <https://youtu.be/Vx-nxTtthUg?si=622eW3Mou19LNZX7>
3. [https://youtu.be/CcJBtM1qSMI?si=RmSM4fL2zuWyIRW\\_](https://youtu.be/CcJBtM1qSMI?si=RmSM4fL2zuWyIRW_)

### WEB RESOURCES

1. <https://www.medicalnewstoday.com/articles/239454>
2. <https://www.mayoclinic.org/diseases-conditions/pancreatitis/symptoms-causes/syc-20360227>
3. <https://my.clevelandclinic.org/health/diseases/21220-hepatic-encephalopathy>

## PROGRAM CORE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CC102009</b>	<b>EMERGENCY OBSTETRICS AND GYNAECOLOGY</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to train the skills to learn patient assessments of acute gynecological issues and patient management of gynecologic surgery patients.

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

- CO1** Understand anatomy and physiology of female reproductive system and physiological changes during pregnancy.
- CO2** Manage the pregnancy hemorrhagic condition
- CO3** Identify and manage the stages of labor
- CO4** Understand various surgical techniques for labor
- CO5** Manage the pregnancy trauma cases
- 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
<b>CO1</b>	3	1	-	3	-	-	-	-	-	-
<b>CO2</b>	2	1	-	3	-	-	-	-	-	-
<b>CO3</b>	3	1	-	3	-	-	-	-	-	-
<b>CO4</b>	2	1	-	3	-	-	-	-	-	-
<b>CO5</b>	3	1	-	3	-	-	-	-	-	-
<b>CO6</b>	2	1	-	3	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

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

## **COURSE CONTENT**

### **Module 1: FEMALE REPRODUCTIVE SYSTEM**

**(09 Periods)**

Anatomy of female reproductive system , External genitalia, Labia majora, Labia minora, Perineum, Internal genitalia, Uterus, Vagina, Fallopian tube, Ovary, Muscles and Fascia in relation to pelvic organ, Female urethra, Urinary bladder, Pelvic ureter, Breast, Menstrual cycle , Physiological changes during pregnancy , Diagnosis of pregnancy , Antenatal Assessment , Antenatal Assessment of fetal well being

### **Module 2: COMMON PROBLEMS IN PREGNANCY**

**(09 Periods)**

Vomiting in Pregnancy , Hyperemesis Gravidarum , Clinical Courses , Management , Haemorrhage 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, Hydatidiform mole, Complication of molar pregnancy, Hypertensive Disorders in Pregnancy , Pre Eclampsia , Eclampsia , Essential Hypertension in Pregnancy , Antepartum Haemorrhage , Placenta Praevia , Abruptio Placenta

### **Module 3: STAGES OF LABOR**

**(09 Periods)**

Malposition, Malpresentation, Cord Prolapse, Occipito posterior position , Breech presentation , Face presentation , Brow presentation , Cord prolapsed, Transverse lie, Mechanism of labor, cause, Management of labor, Prolonged labor and obstructed labor, Causes , Diagnosis , Treatment , Complication of Third Stage of Labor, Post Partum Hemorrhage , Retained Placenta , Inversion of Uterus.

### **Module 4: SURGERY ILLNESS**

**(09 Periods)**

Medical and Surgical Illness in Pregnancy, Anaemia in pregnancy , Concepts of physiological anemi, Iron deficiency anemia, Complications of anemia in pregnancy, Gestational diabetes mellitus, Glycosuria in pregnancy , Normal Labor, Causes of Onset , Physiology , Mechanism , Management , Preterm Labor, Etiology , Clinical Courses , Management

### **Module 5: TRAUMA IN PREGNANCY**

**(09 Periods)**

Trauma in Pregnancy, Mechanism , Assessment and Management , Injuries to Birth Canal, Medical , Surgical , Combined, Pharmacotherapeutics in Obstetric, Oxytocin , Analgesia and Anaesthesia , Emergency Department Cesarean Section, Preterm labour and birth, PROM - Prelabour Ruptute Of Membrane.

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstrate the diagnosis of pregnancy
2. Perform the techniques to manage hemorrhage in pregnancy
3. Identify the stages of labor
4. Demonstrate the types of drugs using for pregnancy
5. Demonstrate the anatomy and physiology of female reproductive system

## **RESOURCES**

### **TEXT BOOKS:**

1. Hiralal Konar, DC Duttas Textbook of Obstetrics including Perinatology and Contraception, Jaypee Brothers Medical publications, Edition 6, 2023.
2. Sarla Gopalan, Mudaliar and Menon Clinical Obstetrics, Orient Longman Publications, Edition 10, 2005.

### **REFERENCE BOOKS:**

1. Sabarathnum Arulkumaran, Essentials of Obstetrics, Anshan Publications, Edition 1, 2004.
2. V.G. Padubidri, S.N Daffary, Shaw's textbook of gynecology, Jaypee Brothers Medical publishers, Edition 18, 2002.

### **VIDEO LECTURES:**

1. <https://youtu.be/TutIT7XIhmk?si=4po46YrNNXGIDVh->
2. <https://youtu.be/5-VaG-Qbbfo?si=iwnW3fAy8sE6DUC->
3. <https://youtu.be/8xz1Jbs972U?si=QPzXLnYzcuwU8fzp>
4. [https://youtu.be/qbDEhFXN\\_Bs?si=s60yKf5EWZtGBj4B](https://youtu.be/qbDEhFXN_Bs?si=s60yKf5EWZtGBj4B)

### **WEB RESOURCES**

1. [www. emedicine](http://www.emedicine.com) - Medscape reference
2. [WWW. WebMD](http://www.webmd.com) reference

## PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC102010	CLINICAL PROCEDURE IN EMERGENCY CARE	3	-	2	-	4

**Pre-Requisite** -

**Anti-Requisite** -

**Co-Requisite** -

**COURSE DESCRIPTION:** This course is designed to train the skills of doing both invasive and noninvasive procedures

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

- CO1** Apply various method to measure vital signs
- CO2** Apply various invasive procedures
- CO3** Understand and apply the techniques to insert the cannulation
- CO4** Handle the latest equipment, devices drug therapies and techniques used in emergency room
- CO5** Demonstrate when to perform every type of emergency procedure and implement the best possible approach for every patient.
- 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
<b>CO1</b>	3	-	-	2	-	-	1	2	-	3
<b>CO2</b>	3	-	-	3	-	-	2	2	-	3
<b>CO3</b>	3	-	-	3	-	-	2	2	-	1
<b>CO4</b>	2	-	-	3	-	-	2	1	-	1
<b>CO5</b>	2	-	-	2	-	-	1	-	-	1
<b>CO6</b>	3	-	-	3	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>1</b>

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

## **COURSE CONTENT**

### **Module 1: VITAL SIGN MEASUREMENT AND NON-INVASIVE PROCEDURE (12 Periods)**

Pulse assessment, pulse site, Respiratory assessment, Temperature assessment, Blood pressure assessment, Pulse oximetry, Carbon dioxide Monitoring -Capnometry, Oxygen therapy, Delivery systems for Inhaled Medication (a) Nebulizers, (b) Metered Dose Inhaler

### **Module 2: RESPIRATORY AND CARDIOVASCULAR PROCEDURES (14 Periods)**

Endotracheal intubation and extubation, Drugs through ET tube, Tracheostomy insertion and management, Suctioning an artificial airway, Nasotracheal suctioning, Insertion of nasopharyngeal and oropharyngeal airway, Mechanical ventilation, Intercostal drainage, Thoracentesis, Cardiac Monitoring, Central venous pressure monitoring, Insertion of Arterial line, Central venous cannulation, Pericardiocentesis

### **Module 3: CANNULATION (07 Periods)**

Cannulating Umbilical Vein, Indication, Contraindication, Procedure, Drugs through umbilical vein, Complication, Intraosseous Infusion, Indication, Contraindication, Procedure, Drugs through umbilical vein, Complication Insertion of intravenous catheter, Administration of parenteral nutrition, Blood administration

### **Module 4: DECONTAMINATION AND GENITOURINARY PROCEDURES (06 Periods)**

Ipecac induced emesis, Activated charcoal, Whole bowl irrigation, Urethral catheterization, Peritoneal dialysis, Placement and Management of external Arteriovenous shunt., Continuous Arteriovenous hemofiltration

### **Module 5: GASTROINTESTINAL AND NEUROLOGIC PROCEDURES (06 Periods)**

Insertion of nasogastric tube, Insertion of enteral feeding tube and initiation of feedings, Gastric lavage, Upper gastrointestinal endoscopy, Insertion of rectal tube, Paracentesis, Peritoneal lavage

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Observation of Pulse rate by using advance device.
2. Perform Oxygen therapy to required patients
3. Demonstrate the cannulation procedure.
4. Perform the Nasogastric tube insertion.
5. Demonstrate the insertion of feeding tube

## **RESOURCES**

### **TEXT BOOKS:**

1. James Robert, Robert & Hedges Clinical Procedure in Emergency Medicine and acute care, Elsevier Publications, Edition 7, 2018.
2. Andrew N. Pollack, Nancy Caroline's Emergency care in streets, Bartlett publishers, Edition 7, 2007.

### **REFERENCE BOOKS:**

1. James R. Robert, Jerris R Hedges, Clinical Procedure in Emergency Medicine, Elsevier publications, Edition 5, 2011
2. Eric Reichman, Emergency medicine Procedures, McGraw-Hill Education Publishers, Edition 2, 2013

### **VIDEO LECTURES:**

1. <https://youtu.be/fLfHsuWYbdc?si=55x52FWnlkpl5SSj>
2. [https://youtu.be/EHJQZq\\_u0iw?si=LYt4oL5QkjYHTSxl](https://youtu.be/EHJQZq_u0iw?si=LYt4oL5QkjYHTSxl)
3. [https://youtu.be/7SPCcm5EpR8?si=\\_FPnip9DMphK0C7l](https://youtu.be/7SPCcm5EpR8?si=_FPnip9DMphK0C7l)
4. <https://youtu.be/X6W4SIdT978?si=oQORKuF6jgwxmWj0>

### **WEB RESOURCES**

1. [www.Medicalcity-iq.net/](http://www.Medicalcity-iq.net/).
2. [www. Web MD.reference](http://www.WebMD.reference)

## PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
22CC101014	<b>TOXICOLOGY AND ENVIRONMENTAL EMERGENCY</b>	3	1	-	-	4

**Pre-Requisite** -

**Anti-Requisite** -

**Co-Requisite** -

**COURSE DESCRIPTION:** This course is designed to train the skills of doing both invasive and noninvasive procedures

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

- CO1** Treat poisonous patients with decontamination techniques.
- CO2** Identify types of bite and clinical management.
- CO3** Apply various methods to reduce heat from the heat illness patient.
- CO4** Identify cold injury and its clinical management.
- CO5** Apply various methods to treat electrical illness patients.
- 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
<b>CO1</b>	3	2	3	3	-	-	-	-	-	-
<b>CO2</b>	3	2	-	1	-	-	-	-	-	-
<b>CO3</b>	3	2	-	1	-	-	-	-	-	-
<b>CO4</b>	3	2	-	1	-	-	-	-	-	-
<b>CO5</b>	3	2	-	1	-	-	-	-	-	-
<b>CO6</b>	3	2	-	1	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	-	-	-	-	-	-

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

## **COURSE CONTENT**

### **Module 1: MANAGEMENT OF POISON AND OVERDOSE (13 Periods)**

Opiates toxicity, Organophosphates, Carbon monoxide, Cyanide, Caustics, Copper sulphate, Digoxin toxicity, Hydrocarbons, Tricyclic toxicity, Metals, Acetaminophen overdose, Poisonous alcohols, Poisonous plants.

### **Module 2: VENOMOUS BITES AND STINGS: (14 Periods)**

Snake bite, Scorpion stings, Spider bite, Bee and wasp stings, Fish stings, Dog bite, Cat bite, Leech bite, Human bite

### **Module 3: HEAT ILLNESS (06 Periods)**

Homeostasis and body temperature, Thermoregulatory mechanisms, Physiologic responses to heat and cold, Heat illness, Heat cramps, Heat syncope, Heat exhaustion, Heat stroke

### **Module 4: COLD INJURY (06 Periods)**

Hypothermia: Risk factors, Treatment, Resuscitative efforts., Drowning or submersion: Pathophysiology, and Management., Diving injuries: Physiology, Injuries during descent, Injuries during ascent, and Management., Local cold injury: Risk factors for frost bite, Superficial and deep frost bite and Trench foot.

### **Module 5: ALTITUDE AND ELECTRICAL ILLNESS (06 Periods)**

Altitude illness, Physiology, Management, Electrical injury, Types of electrical injury, Effects of different intensities, Lightning injuries, Radiating injuries

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstrate gastric lavage procedure.
2. Identify poisonous plants
3. Differentiate and identify types of bites from given problem.

## **RESOURCES**

### **TEXT BOOKS:**

1. Gold Franks, Toxicological Emergencies, McGraw Hill, Edition 8,2006.
2. Adams-Mosby, Rosens Emergency medicine, Elsevier, Edition 7, 2006.

### **REFERENCE BOOKS:**

1. Donald G Barceloux Medical toxicology of natural substances, Wiley Publications, Edition 1, 2012.
2. Plantz and Wipfler, Emergency medicine, Lippincott Williams and Wilkins, Edition 2,2007.

### **VIDEO LECTURES:**

1. [https://youtu.be/0s9fRDAS0hU?si=ACr1Umx\\_xb5znqp5](https://youtu.be/0s9fRDAS0hU?si=ACr1Umx_xb5znqp5)
2. <https://youtu.be/K3b47wuThXY?si=5ujdhXP6Us8qvZBV>
3. <https://youtu.be/sO-V5Uj-dYg?si=KMUIb0XpwQsYpTSD>
4. <https://youtu.be/tPEj-0sKZyo?si=qOO3ukRMnNBx7fsd>

### **WEB RESOURCES**

1. www. medicine - Medscape reference
2. WWW. WebMD refer

## PROGRAM CORE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CC102027</b>	<b>EMERGENCY MEDICINE -I</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to train the skills of identify the entire medical emergency and they know the emergency drugs and administration.

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

- CO1** Demonstration the emergency drugs.
- CO2** Asses the respiratory problems.
- CO3** Understand the treatment and able to recognize the abdominal disease.
- CO4** Understand the cardiovascular condition and they know about anticoagulants.
- CO5** Understand the seizures disorder
- 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
<b>CO1</b>	3	3	2	2	-	2	3	3	-	3
<b>CO2</b>	3	3	2	1	-	-	1	-	-	3
<b>CO3</b>	3	3	2	-	-	-	-	-	-	3
<b>CO4</b>	3	3	-	-	-	-	2	-	-	3
<b>CO5</b>	3	1	-	-	-	-	-	-	-	-
<b>CO6</b>	3	1	-	2	-	-	-	-	-	-
Course Correlation Mapping	3	3	2	2	-	2	3	3	-	3

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

## **COURSE CONTENT**

### **Module 1: EMERGENCY DRUGS (09 Periods)**

Adrenaline (Epinephrine), Atropine, Antiarrhythmic drugs, Beta blockers, Calcium channel blockers, Diazepam, Dextrose, Dopamine, Dobutamine, Furosemide, Glucagon, Lidocaine, Mannitol, Midazolam, Norepinephrine, Salbutamol, Drugs in obstetrics mechanism, indication, contraindication, dosage.

### **Module 2: RESPIRATORY EMERGENCY (11 Periods)**

Fluids and electrolytes, fluids used in hospital for emergency patients, Chronic obstructive pulmonary disease (COPD), degree, investigation, treatment, Asthma, classification, treatment, Pneumonia, stages, management, Pulmonary edema, pathophysiology, treatment.

### **Module 3: GASTROINTESTINAL EMERGENCIES (07 Periods)**

Abdominal pain, fluid management, Hepatitis, stages, treatment, Abdominal aortic aneurysm, types, investigation, treatment, Bowel obstruction, pathophysiology, treatment, Hernias, types, identification, treatment.

### **Module 4: CARDIOVASCULAR EMERGENCIES (10 Periods)**

Angina pectoris, types, treatment, Myocardial infarction (MI), types, identification, ECG changes, treatment, Thrombolytic Therapy, classification, Congestive Cardiac Failure (CCF), types, treatment, Hypertensive Emergencies and urgency, Cardiac Arrhythmias, 12 lead ECG, Heart Block, types, drug of choice

### **Module 5: CENTRAL NERVOUS SYSTEM EMERGENCIES (08 Periods)**

Meningitis, pathophysiology, treatment, Stroke, identification, scales, algorithm for stroke treatment, Seizure and Status epilepticus, pathophysiology, treatment, Syncope, causes, abnormal bleeding happen in brain, types, treatment.

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstration the emergency drug administration.
2. Understand the ECG placement and identification.
3. Understand the abdominal condition.
4. Assess the CVS and CNS condition in emergency situation.
5. Understand the fluid administration in dehydration and burns patients.

## **RESOURCES**

### **TEXT BOOKS:**

1. Judith E. Tintinalli Emergency medicine, McGraw Hill, Edition 5, 2022.
2. Nancy Caroline's, Emergency care in streets, Bartlett publishers, Edition 6, 2006.

### **REFERENCE BOOKS:**

1. Adams, Emergency medicine, Elsevier, Edition 1, 2011.
2. Mick J. Sanders, Mosby's paramedic textbook, Bartlett publishers, Edition 3, 2012.

### **VIDEO LECTURES:**

1. <https://my.clevelandclinic.org/health/articles/22611-epinephrine-adrenaline>
2. <https://www.healthline.com/health/hepatitis>
3. <https://my.clevelandclinic.org/health/treatments/23238-thrombolytics>

### **WEB RESOURCES**

1. [www.emedicine.com](http://www.emedicine.com) - Medscape reference
2. [WWW.WebMD.com](http://www.webmd.com) reference
3. [www.aha.org](http://www.aha.org)

## PROGRAM CORE

Course Code	Course Title	L	T	P	S	C
<b>22CC102024</b>	<b>PEDIATRIC EMERGENCY</b>	4	-	2	-	5
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to gain knowledge and recognition the basic outline on how to diagnosis the pediatric problems and they able treat in outside hospital and in hospital.

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

- CO1** Perform the various types of CPR.
- CO2** Understand the dehydration treatment in paediatrics cases.
- CO3** Demonstrate the special considerations and skills for handling pediatric patients.
- CO4** Acquire knowledge on respiratory problems.
- CO5** Differentiate types of neurovascular disorder.
- 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
<b>CO1</b>	3	3	2	3	-	-	3	2	-	3
<b>CO2</b>	3	3	-	2	-	-	-	-	-	2
<b>CO3</b>	3	3	-	2	-	-	-	-	-	2
<b>CO4</b>	3	3	-	-	-	-	-	-	-	2
<b>CO5</b>	3	3	-	2	-	-	-	-	-	2
<b>CO6</b>	3	-	-	-	-	-	3	3	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>2</b>

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

## **COURSE CONTENT**

### **Module 1: COMPARATIVE ANATOMY (12 Periods)**

Comparative anatomy between adult & pediatric airway, developmental milestones, changes occur in month wise, anthropometry, neonatal resuscitation, algorithm of treating asphyxia patients, types of CPR methods for neonatal arrest assessment of newborn and pediatric

### **Module 2: SPECIAL CONDITION (12 Periods)**

Meconium aspiration syndrome, pathophysiology, management, diaphragmatic hernia, types, treatment, apnea, burns, degree, pathophysiology, fluid resuscitation, sids (sudden infant death syndrome), prevention, dehydration, treatment, diarrhea, pathophysiology, treatment.

### **Module 3: MANAGEMENT OF INJURED CHILD (12 Periods)**

primary survey, resuscitation, secondary survey, emergency treatment , abdominal pain, treatment

### **Module 4: RESPIRATORY EMERGENCIES (12 Periods)**

foreign body obstruction, neonatal asphyxia, bronchiolitis, treatment, pneumonia, types, treatment asthma, classification, investigation, treatment, croup, clinical feature, x ray identification, treatment, epiglottis's, difference between epiglottitis and croup.

### **Module 5: NEUROVASCULAR EMERGENCIES (12 Periods)**

neonatal seizure, pathophysiology, treatment, febrile convulsion, pathophysiology, drug of choice for convulsion, meningitis, treatment, different between GCS in pediatric and adult.

**Total Periods: 60**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstrate the neonatal CPR.
2. Understand the emergency condition in emergency department.
3. Demonstrate the primary and secondary survey
4. Recognize the breathing difficulties in pediatrics.
5. Understand about the seizures disorder.

## RESOURCES

### TEXT BOOKS:

1. A.Parthasarathy, IAP book of pediatrics, Nair-Jaypee, Edition 3, 2019
2. Meharban Singh, care of new born, CBS publishers, Edition 6, 2020
3. Ghai, VinodK.Paul, Essential Pediatrics, CBS publisher, Edition9, 2019

### REFERENCE BOOKS:

1. A . santhosh kumar, handbook of pediatrics, CBS publishers, Edition 1, 2017
2. Ludwig Bachur, Goelik ruddy show Textbook of pediatrics Emergency medicine Fleischer, Jaypee brothers Medical publishers, Edition 1, 2022.

### VIDEO LECTURES:

1. [https://youtu.be/\\_CAv\\_eM2nSA?si=gDymQhTc1ptpbiSO](https://youtu.be/_CAv_eM2nSA?si=gDymQhTc1ptpbiSO)
2. <https://youtu.be/Vx-nxTtthUg?si=622eW3Mou19LNZX7>
3. [https://youtu.be/CcJBtM1qSMI?si=RmSM4fL2zuWyIRW\\_](https://youtu.be/CcJBtM1qSMI?si=RmSM4fL2zuWyIRW_)

### WEB RESOURCES

1. [www. emedicine - Medscape reference](http://www.emedicine.com)
2. [WWW. WebMD reference](http://WWW.WebMD.com)
3. [www.aha.org](http://www.aha.org)

## PROGRAM CORE

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

**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
<b>CO1</b>	3	-	-	-	-	-	-	2	-	1
<b>CO2</b>	3	1	1	3	-	-	-	-	-	1
<b>CO3</b>	3	-	-	2	-	-	3	1	-	-
<b>CO4</b>	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.

1. Demonstrate professional interpersonal, oral, and written communications skills sufficient to serve the needs of patients and the public including an awareness of how diversity may affect the communication process.
2. Perform pre-analytical, analytical, and post-analytical processes:
  - Demonstrate ability to understand investigation/test requisition.
  - Collecting the relevant clinical samples alongwith complete and accurate documentation with proper safety measures in relation to sample accountability.
  - To transport the samples with precautionary measures to the relevant lab section.
  - Demonstrate the ability to prepare clinical sample for processing.
  - Ability to record the test results/data.
  - To demonstrate the ability to interpret the test reports and its documentation in lab records.
  - Demonstrate ability to release the report to the right person in minimum turn-around-time (TAT).
3. Perform problem solving and troubleshooting techniques for laboratory methodologies Correlate laboratory test results with patient diagnosis and treatment.
4. To follow basic quality assessment protocol of clinical laboratory.
5. Demonstrate routine laboratory techniques sufficient to orient new employees within the clinical laboratory.
6. Apply basic scientific principles in learning new techniques/procedures; demonstrate application of principles and methodologies.
7. Utilize computer technology applications to interact with computerized instruments and laboratory information systems.

## PROGRAM CORE

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

**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
<b>CO1</b>	3	-	-	-	-	-	-	2	-	1
<b>CO2</b>	3	1	1	3	-	-	-	-	-	1
<b>CO3</b>	3	-	-	2	-	-	3	1	-	-
<b>CO4</b>	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.

1. Demonstrate professional interpersonal, oral, and written communications skills sufficient to serve the needs of patients and the public including an awareness of how diversity may affect the communication process.
2. Perform pre-analytical, analytical, and post-analytical processes:
  - Demonstrate ability to understand investigation/test requisition.
  - Collecting the relevant clinical samples alongwith complete and accurate documentation with proper safety measures in relation to sample accountability.
  - To transport the samples with precautionary measures to the relevant lab section.
  - Demonstrate the ability to prepare clinical sample for processing.
  - To demonstrate the ability to interpret the test reports and its documentation in lab records.
  - Demonstrate ability to release the report to the right person in minimum turn-around-time (TAT).
3. Perform problem solving and troubleshooting techniques for laboratory methodologies Correlate laboratory test results with patient diagnosis and treatment.
4. To follow basic quality assessment protocol of clinical laboratory.
5. Demonstrate routine laboratory techniques sufficient to orient new employees within the clinical laboratory.
6. Apply basic scientific principles in learning new techniques/procedures; demonstrate application of principles and methodologies.
7. Utilize computer technology applications to interact with computerized instruments and laboratory information systems.

## PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
<b>22CC102028</b>	<b>PATIENT CARE IN EMERGENCY</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to train the skills of demonstrate how to manage respiratory and cardiac emergencies, provide advance first aid and transport the injured to a medical facility.

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

- CO1** Demonstrate the stroke scale in outside hospital.
- CO2** Asses the injuries related to skeletal system.
- CO3** Understand the gynaecological condition
- CO4** Understand the children condition in emergency condition.
- 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
<b>CO1</b>	3	3	2	2	-	2	3	3	-	3
<b>CO2</b>	3	3	2	1	-	-	1	-	-	3
<b>CO3</b>	3	3	2	-	-	-	-	-	-	3
<b>CO4</b>	3	3	-	-	-	-	2	-	-	3
<b>CO5</b>	3	-	-	-	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>3</b>

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

## **COURSE CONTENT**

### **Module 1: CENTRAL NERVOUS SYSTEM (13 Periods)**

Structure of neuron, degeneration and regeneration of nerve fibers, unconscious patient, causes, syncope, treatment, meningitis, causes, treatment, Cerebro vascular accident, types, pathophysiology, 8'Ds of stroke scale, treatment.

### **Module 2: SKELETAL SYSTEM (11 Periods)**

Fracture-long bones, types, investigation, treatment, pelvic injuries, testes for pelvic fracture identification, Sprain Strain, treatment, immobilisation and support, types, principals.

### **Module 3: MATERNITY (10 Periods)**

Anatomy and physiology of female reproductive system, menstrual cycle, normal labour, stages, mechanism, prolonged labour treatment, obstructed labour, management.

### **Module 4: INFANTS AND CHILDREN (11 Periods)**

Preterm baby, child abuse, sudden infant death syndrome, geriatric patients, normal changes in old age, medical conditions common in old age, the common special needs associated with old age.

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstration the management of neurological condition.
2. Understand the bony fracture and treatment.
3. Demonstration of labour.
4. Demonstration the infants emergency
5. Demonstration of splinting depend on fracture.

## **RESOURCES**

### **TEXT BOOKS:**

1. Barbara Aehlert "Paramedic practice today above and beyond" 1<sup>st</sup> Edition and 1<sup>st</sup> Volume, Jems Pub Co, 2009.
2. Mick J.Sanders "Mosbys paramedic textbook" ,4<sup>th</sup> Edition, Jones and Bartlett Learning, 2012.

### **REFERENCE BOOKS:**

1. Kyle J Hanson "K.D.TripathiEssentials of Medical Pharmacology" 6<sup>th</sup> Edition, Jaypee Brothers and Medical Publishers.
2. Marx ,Hockberger Walls "Rosens emergency medicine" 7<sup>th</sup> Edition, Elsevier, 2014.

**VIDEO LECTURES:**

1. <https://my.clevelandclinic.org/health/diseases/5601-stroke>
2. <https://continentalhospitals.com/diseases/obstructed-labor/>
3. <https://www.healthline.com/health/sprain-vs-strain>

**WEB RESOURCES**

1. [www.trauma.org](http://www.trauma.org)
2. [www.emedicine.com](http://www.emedicine.com) - Medscape reference
3. [WWW.WebMD.com](http://www.webmd.com) reference

## PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
<b>22CC102031</b>	<b>CRITICAL CONCEPTS AND DECISION MAKING IN EMERGENCY MEDICINE</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to train the skills of immobilize the fracture in all types of fracture and gain knowledge about ITLS (INTERNATIONAL TRAUMA LIFE SUPPORT) algorithm in with polytrauma.

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

- CO1** Demonstrate the general trauma assessment and management.
- CO2** Asses the head and chest injuries in trauma.
- CO3** Understand the treatment and able to recognize the abdominal and pelvic trauma
- CO4** Demonstration the splinting in upper and lower extremities
- 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
<b>CO1</b>	3	3	2	2	-	2	3	3	-	3
<b>CO2</b>	3	3	2	1	-	-	1	-	-	3
<b>CO3</b>	3	3	2	-	-	-	-	-	-	3
<b>CO4</b>	3	3	-	-	-	-	2	-	-	3
<b>CO5</b>	3	3	-	-	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>3</b>

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

## **COURSE CONTENT**

### **Module 1: DERMATOLOGY**

**(11 Periods)**

Fatigue, edema, types, treatment, diaphoresis, chronic pain, red eye, rhinitis, tinnitus, murmur, types, treatment.

### **Module 2: CARDIOVASCULAR CONDITION**

**(13 Periods)**

Hypertension, types, medication treatment, prevention, hypotension, causes, treatment, palpitations, congestive cardiac failure, causes, types, treatment, corpulmonale, treatment, dyspnoea.

### **Module 3: ELECTROLYTE IMBALANCE**

**(10 Periods)**

Hypoglycemia, pathophysiology, treatment, hyperglycemia, causes, treatment, hypothermia, causes, first bite, treatment, hyperthermia, causes, treatment, anorexia, dysphagia, heart burn, treatment.

### **Module 4: GASTRO INTESTINAL DISORDER**

**(11Periods)**

Non cardiac chest pain, causes, common investigation, treatment, dyspepsia, ascites, treatment, rectal bleeding, location, causes, treatment, constipation, cause, management, obstipation, flatulence, irritable bowel syndrome, treatment

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Understand the skin emergencies
2. Understand the cardiovascular emergencies.
3. Understand the electrolyte problems.
4. Understand the abdominal conditions.
5. Demonstration the procedure for ascititis.

## **RESOURCES**

### **TEXT BOOKS:**

1. Barbara-Mosby, Paramedic practice today above and beyond- Elsevier, 2010
2. Mosbys Mick J.Sanders, Mosbys paramedic textbook,4<sup>th</sup> edition, Mosby Elsevier, 2010

### **REFERENCE BOOKS:**

1. K.D.Tripathi, essentials of Medical Pharmacology, 6<sup>th</sup>edition, jaypee, 2018
2. Marx hockberger walls, Rosens emergency medicine, 7<sup>th</sup> edition, jaypee, 1835

**VIDEO LECTURES:**

1. <https://medlineplus.gov/ency/article/000813.htm>
2. <https://www.mayoclinic.org/diseases-conditions/dysphagia/symptoms-causes/syc-20372028#:~:text=Dysphagia%20is%20a%20medical%20term,isn't%20cause%20for%20concern.>
3. <https://my.clevelandclinic.org/health/diseases/14792-ascites>

**WEB RESOURCES**

1. [www.trauma.org](http://www.trauma.org)
2. [www.emedicine.com](http://www.emedicine.com) - Medscape reference
3. [WWW.WebMD.com](http://www.webmd.com) reference

## PROGRAM ELECTIVE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CC102030</b>	<b>DISASTER MANAGEMENT AND INDUSTRIAL EMERGENCIES</b>	3	-	2	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course is designed to train the skills of immobilize the patient in disaster environment and treat the patient by triage algorithm.

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

- CO1** Demonstrate the basic of triage.
- CO2** Asses the disaster created by human.
- CO3** Understand the electricity related injuries.
- CO4** Understand the types of hazards related to disaster.
- CO5** Understand the natural incident.
- 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
<b>CO1</b>	3	2	2	2	-	2	3	3	-	3
<b>CO2</b>	3	2	2	1	-	-	1	-	-	3
<b>CO3</b>	3	2	2	-	-	-	-	-	-	3
<b>CO4</b>	3	2	1	-	-	-	2	-	-	3
<b>CO5</b>	3	2	-	-	-	-	-	-	-	-
<b>CO6</b>	3	2	-	-	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>3</b>

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

## **COURSE CONTENT**

### **Module 1: BASIC OF DISASTER**

**(09 Periods)**

Triage, types, SALT triage, START triage, jump start triage, principles of Hospital disaster planning, emergency medical services in disaster.

### **Module 2: MANMADE DISASTERS**

**(11 Periods)**

Hazardous material emergencies, types, hazards cards, radiation injuries, ionizing and non ionizing radiation, air crash disaster, types, treatment, maritime disasters, derailing, treatment, prevention, terrorist bombing, chemical disasters, types, mass shooting.

### **Module 3: INDUSTRIAL HAZARDS**

**(07 Periods)**

Electrocution, types, types, treatment, Amputation, types, treatment, Crush injury and compartment syndrome, Fall from height, associated injuries, related to treatment, Assaults

### **Module 4: OCCUPATIONAL HAZARDS AND INJURIES**

**(10 Periods)**

Chemical hazards, types, treatment, biological hazards, types, treatment, physical hazards, mechanical hazards, psychological hazards.

### **Module 5: NATURAL DISASTERS**

**(08 Periods)**

Earthquakes, formation, triage treatment, tornadoes, mechanism, hurricanes, Winter storm, types, formation, disaster cycle, floods, treatment, firestorm and wildfires ,Tsunamis, formation, Volcanic eruptions, formation, Heat related disaster.

**Total Periods: 45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Understand the basic of disaster
2. Demonstrate the types of triage
3. Understand the electricity related injury.
4. Understand the natural disaster.
5. Understand manmade disaster.

## RESOURCES

### TEXT BOOKS:

1. David E .Hogan "Disaster medicine" 2<sup>nd</sup> Edition, Lippincott Williams and Wilkins, 2007.
2. Marx ,Hockberger Walls "Rosens emergency medicine" 7<sup>th</sup> Edition, Elsevier,2017.

### REFERENCE BOOKS:

1. P.K. Dave "Emergency Medical Services and disaster management" 1<sup>st</sup> Edition, Alpha Sciences International Ltd, 2002

### VIDEO LECTURES:

1. <https://education.nationalgeographic.org/resource/hurricane/>
2. <https://medlineplus.gov/ency/patientinstructions/000457.htm#:~:text=Hazardous%20materials%20are%20substances%20that,with%20hazardous%20materials%20and%20waste.>
3. <https://emedicine.medscape.com/article/822587-overview>

### WEB RESOURCES

1. United Nations International Strategy for Disaster Reduction (UNISDR).Global Platform for Disaster Risk Reduction, Second Session, Geneva, Switzerland, 16- 19 June 2009  
[http://www.unisdr.org/files/11963\\_GP09Proceedings.pdf](http://www.unisdr.org/files/11963_GP09Proceedings.pdf)
2. World Bank (2005).  
Hazards of Nature, Risks to Development. <http://www.worldbank.org/ieg/naturaldisasters/>
3. Pan American Health Organization (1999).  
Humanitarian Assistance in Disaster Situations: A Guide for Effective Aid.  
<http://www.paho.org/english/ped/pedhuman.pdf>

## PROGRAM ELECTIVE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CC102029</b>	<b>EMERGENCY MEDICINE-II</b>	4	-	2	-	5

**Pre-Requisite**

**Anti-Requisite** -

**Co-Requisite** -

**COURSE DESCRIPTION:** This course is designed to train the skills of identifying the hematological and other condition presented in emergency condition.

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

- CO1** Understand the genitor urinary problem.
- CO2** Asses the common blood disorder.
- CO3** Understand the treatment and able to recognize the endocrine condition presented to ER
- CO4** Understand the skin diseases.
- CO5** Understand to different types of communicable disease in ER.
- 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
<b>CO1</b>	3	3	2	2	-	2	3	3	-	3
<b>CO2</b>	3	3	2	1	-	-	1	-	-	3
<b>CO3</b>	3	3	2	-	-	-	-	-	-	3
<b>CO4</b>	3	3	2	-	-	-	2	-	-	3
<b>CO5</b>	3	-	2	-	-	-	-	-	-	-
<b>CO6</b>	3	-	2	2	-	-	-	-	-	-
Course Correlation Mapping	3	3	2	2	-	2	3	3	-	3

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

## **COURSE CONTENT**

### **Module 1: GENITO URINARY EMERGENCIES**

**(12 Periods)**

Renal failure, investigation, treatment, urolithiasis, treatment, urinary tract infection, identification, treatment, Haematuria, color identification, treatment.

### **Module 2: HEMATOLOGICAL DISORDERS:**

**(12 Periods)**

Anemia – Aplastic, Hemolytic, Hypochronic / Microcytic, Megaloblastic, Normochromic normocytic Hemoglobinopathies, Polycythemia, White blood disorders, types, treatment, Platelet abnormalities, types, investigation, treatment.

### **Module 3: ENDOCRINE AND METABOLIC EMERGENCIES**

**(12 Periods)**

Diabetic Ketoacidosis, pathophysiology, investigation, treatment, Diabetes insipidus, Hyperosmolar coma, pathophysiology, treatment, Thyroid crisis, treatment, Vomiting, types, pathology, treatment, Diarrhea, types, investigation, treatment.

### **Module 4: DERMATOLOGICAL EMERGENCIES**

**(12 Periods)**

Virus infections: varicella, herpes zoster, acute leprosy reactions, investigation, treatment, autoimmune disorders: pemphigus vulgaris, systemic lupus erythematosus, treatment, toxic disorders: acute erythroderma, dermatitis venenata, severe pruritus, scabies, allergic reactions.

### **Module 5: COMMUNICABLE DISEASE**

**(12 Periods)**

Causative organism, Mode of transmission, Signs and symptoms, Prophylaxis, Investigation and common treatment of following diseases: Malaria, Tuberculosis, Dengue. Acquired Immunodeficiency syndrome (AIDS), Typhoid, Plague, Polio, Tetanus, Chicken pox, Cholera, Measles.

**Total Periods: 60**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstration the trauma assessment and management
2. Understand the head and chest injury related to trauma.
3. Demonstration of pelvic binder in trauma patient.
4. Demonstration the splinting of upper extremity
5. Demonstration the splinting of lower extremity

## **RESOURCES**

### **TEXT BOOKS:**

1. Judith E. Tintinalli, Emergency medicine, McGraw Hill, Edition 5, 2022.
2. Nancy Caroline's, Emergency care in streets, Bartlett publishers, Edition 6, 2006.

### **REFERENCE BOOKS:**

1. Adams, Emergency medicine, Elsevier, Edition 1, 2011
2. Mick J. Sanders, Mosby's paramedic textbook, Bartlett publishers, Edition 3, 2012

### **VIDEO LECTURES:**

1. <https://my.clevelandclinic.org/health/articles/22611-epinephrine-adrenaline>
2. <https://www.healthline.com/health/hepatitis>
3. <https://my.clevelandclinic.org/health/treatments/23238-thrombolytics>

### **WEB RESOURCES**

1. [www.emedicine.com](http://www.emedicine.com) - Medscape reference
2. [WWW.WebMD.com](http://www.webmd.com) reference
3. [www.aha.org](http://www.aha.org)

## PROGRAM ELECTIVE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
22CC102025	EMERGENCY SURGERY-II	4	-	2	-	5

**Pre-Requisite**

**Anti-Requisite** -

**Co-Requisite** -

**COURSE DESCRIPTION:** This course is designed to gain knowledge and recognition the basic outline on how to diagnose and administer care or to recognize, prevent and treat various emergencies that commonly occur in adult patients.

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

- CO1** Understand the solid injuries happen during trauma
- CO2** Understand the treatment related to hollow organ injury
- CO3** Understand the inflammatory condition happen in medical related patients
- CO4** Acquire knowledge on anesthetic drugs used in emergency room.
- 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
<b>CO1</b>	3	3	2	3	-	-	3	2	-	3
<b>CO2</b>	3	3	-	2	-	-	-	-	-	2
<b>CO3</b>	3	3	-	2	-	-	-	-	-	2
<b>CO4</b>	3	3	-	-	-	-	-	-	-	2
<b>CO5</b>	3	-	-	-	-	-	3	3	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>2</b>	<b>-</b>	<b>2</b>

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

## **COURSE CONTENT**

### **Module 1: SOLID ORGAN INJURY**

**(15 Periods)**

Hepatic encephalopathy, investigation, treatment, treatment, pancreatitis, type, diagnosis management, pancreatic trauma, gastro esophageal reflux disease(GERD), renal colic, types, investigation treatment.

### **Module 2: HOLLOW ORGAN INJURY**

**(15 Periods)**

Gastritis, treatment, peptic ulcer, types, difference between gastric and duodenal ulcer, treatment in ER, hematemesis, gastro intestinal bleeding, types, grading, treatment, intestinal obstruction, pathophysiology, investigation, treatment.

### **Module 3: INFLAMMATORY CONDITION**

**(15 Periods)**

Peritonitis, diagnosis treatment, omphalitis, hernia, types, treatment, Fournier gangrene, prostate cancer, diagnosis, treatment.

### **Module 4: ANESTHESIA**

**(15 Periods)**

General anesthesia, anesthetic agent, regional anesthesia, regional anesthesia, dosages.

**Total Periods: 60**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Determine the solid organ injuries
2. Demonstrate the emergency condition in emergency department.
3. Demonstrate the infection related problems
4. Analyze the techniques of anesthesia

## RESOURCES

### TEXT BOOKS:

1. Sriram bhat M, SRB manual of surgery, Jaypee brother medical publishersPublishers, Edition 6, 2019
2. S Das, A manual on clinical surgery, Jaypee brother medical publishersPublishers, Edition 7, 2022
3. K.RajgopalShenoy, Manipal manual of surgery, CBS Publishers, Edition 4, 2020

### REFERENCE BOOKS:

1. Norman s, Williams, Bailey and Love's short practice of surgerytaylor & francis publishers, Edition 27, 2000
2. Kailash R gindodia, Handbook of surgery, CBS Publishers, Edition 1, 2022

### VIDEO LECTURES:

1. [https://youtu.be/\\_CAv\\_eM2nSA?si=gDymQhTc1ptpbiSO](https://youtu.be/_CAv_eM2nSA?si=gDymQhTc1ptpbiSO)
2. <https://youtu.be/Vx-nxTtthUg?si=622eW3Mou19LNZX7>
3. [https://youtu.be/CcJBtM1qSMI?si=RmSM4fL2zuWyIRW\\_](https://youtu.be/CcJBtM1qSMI?si=RmSM4fL2zuWyIRW_)

### WEB RESOURCES

1. <https://www.medicalnewstoday.com/articles/239454>
2. <https://www.mayoclinic.org/diseases-conditions/pancreatitis/symptoms-causes/syc-20360227>
3. <https://my.clevelandclinic.org/health/diseases/21220-hepatic-encephalopathy>

## PROGRAM ELECTIVE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CC102026</b>	<b>EMERGENCY ORTHOPAEDICS-II</b>	3	-	2	-	4

**Pre-Requisite**

**Anti-Requisite** -

**Co-Requisite** -

**COURSE DESCRIPTION:** This course is designed to train the skills of immobilize the fracture in all types of fracture and gain knowledge about trauma assessment related to both pediatric and pregnancy patients.

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

- CO1** Asses the hand injury for trauma patients
- CO2** Demonstration the splinting in foot injury patients.
- CO3** Understand the treatment and able to recognize the muscles and ligament injury
- CO4** Work individually or in teams to treat the trauma patients.

### CO-PO Mapping Table:

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

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

## **COURSE CONTENT**

### **Module 1: HAND INJURY**

**(11 Periods)**

Anatomy of hand bones, function, fracture of metacarpal bone, treatment, fracture of phalanges, treatment, dislocation of metacarpo phalangeal joint, bennetts fracture, mallet finger, barton fracture, flexor tendon injuries, extensor tendon injuries,

### **Module 2: FOOT INJURY**

**(12 Periods)**

Anatomy of foot bone, function, fracture of talus, fracture of calcaneum, fracture of metatarsals, fracture of phalanges, degree, management,

### **Module 3: INJURIES TO MUSCLES AND LIGAMENT**

**(11 Periods)**

Anatomy of ligament and muscles, function, types of ligament and muscles, fracture of femoral condyles, fracture of tibial condyles, injuries to ligaments, injuries to muscle, management,

### **Module 4: TRAUMA ASSESSMENT**

**(11 Periods)**

Assessment of trauma patients, Bleeding control, vascular injury, management, spinal cord injury, anatomy, causes, treatment, scapula fracture, sternoclavicular fracture, trauma assessment of pediatric and pregnancy

**Total Periods:45**

## **EXPERIENTIAL LEARNING**

### **LIST OF EXPERIMENTS:**

1. Demonstration the splinting techniques in hand injury patients.
2. Demonstration of splinting techniques in foot injury patients.
3. Understand the muscles and ligament problems and treatment
4. Demonstration assessment in all trauma patient.

## **RESOURCES**

### **TEXT BOOKS:**

1. Louis Solomon, David J. Warwick Apleys, System of orthopedics and fracture, Arnold publications, Edition 7, 2006.
2. Ian Greaves, Keith Parter-Hodder, Trauma care manual, Arnold publications, Edition 6, 2002.
3. Mayilvahanan Natarajan, Textbook of Orthopaedics and Traumatology All India publishers, Edition 6, 2022.

### **REFERENCE BOOKS:**

1. Mark D. Miller, Jenifer A. Hart, Essential Orthopedics, Elsevier Publications, Edition 2, 2009.
2. Bruce D. Browner, Skeletal Trauma basic science management and Reconstruction, volume, Elsevier Publications, Edition 5, 2019.

### **VIDEO LECTURES:**

1. [https://youtu.be/nTa1Oxv-LVw?si=j\\_deWPX7eUmpOTGq](https://youtu.be/nTa1Oxv-LVw?si=j_deWPX7eUmpOTGq)
2. <https://youtu.be/Ty4eibxAG3U?si=nZp6TEWVdnt-0ET8>

### **WEB RESOURCES**

1. [ebooks.cambridge.org](http://ebooks.cambridge.org)
2. [www.samlib.com/textbooksorthopedicsSanders](http://www.samlib.com/textbooksorthopedicsSanders): Core Knowledge in Orthopaedics: Trauma, 1st ed.; 2008.

## PROGRAM ELECTIVE

Course Code	Course Title	L	T	P	S	C
22CC101039	HOSPITAL AND EMERGENCY ROOM MANAGEMENT	4	-	-	-	4
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**COURSE DESCRIPTION:** This course trains students in managing hospital and emergency room operations through strategic planning and crisis handling. It covers healthcare infrastructure, clinical and support services, and quality management. Legal, ethical, and modern healthcare trends like telemedicine are emphasized. The goal is to improve patient care and operational efficiency.

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

- CO1** Demonstrate the ability to develop and implement strategic plans for efficient hospital and emergency room management.
- CO2** Apply crisis management principles to handle emergencies and high-pressure situations effectively in healthcare settings.
- CO3** Manage healthcare infrastructure and coordinate clinical and support services to optimize patient care.
- CO4** Implement quality assurance and performance evaluation techniques to improve healthcare delivery.
- CO5** Understand and apply legal, ethical, and modern healthcare practices, including telemedicine and health insurance, in hospital management.
- 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
<b>CO1</b>	3	1	1	-	-	-	2	1	-	-
<b>CO2</b>	3	1	1	-	-	-	1	-	1	-
<b>CO3</b>	2	1	2	-	-	-	2	-	-	1
<b>CO4</b>	3	1	-	3	-	-	-	-	-	1
<b>CO5</b>	2	1	-	-	-	3	1	-	-	-
<b>CO6</b>	3	1	-	3	-	-	2	3	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>-</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>

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

## **COURSE CONTENT**

### **Module 1: INTRODUCTION TO MANAGEMENT & ORGANIZATION (12 Periods)**

The evolution of Management, Definition and importance of Management: Planning, Organizing, staffing, Motivating, Leading and Controlling. Management of health care units (in brief). Individual behavior in organization; organizational functioning (Group/Individual); Perception; Motivation MBO; Organisational Development.

### **Module 2: PLANNING AND MANAGEMENT OF HOSPITALS & CLINICAL SERVICES (12 Periods)**

**Planning and Management of Hospitals and Clinical Services;** Building and physical layout, space required for separate functions, planning of infrastructure facilities, clinical services, equipment and human resources, types of hospitals. Organization and administration of various clinical services, outpatient services.

### **Module 3: ORGANIZING SUPPORT CLINICAL SERVICES & HOSPITAL MANAGEMENT (12 Periods)**

**Organizing of Support Clinical Services and Hospital Management;** Imaging, CSSD, Laboratory, Blood Bank, Diet, Medical Records, Mortuary. Housekeeping, maintenance (water, electricity, civil, air conditioning, life), pest control, transport, security. Forecasting, purchasing and procurement (sourcing, methods and procedures), storing and issuing, concept of inventory control, maintenance of equipment and contracts (with special reference to major biomedical equipment). Trends in financing of health and hospital services, classification of hospitals depending on source of financing, roles of financial institutions.

### **Module 4: PERSONNEL AND QUALITY MANAGEMENT IN HOSPITALS & MARKETING (12 Periods)**

**Personnel and Quality Management in Hospital and Marketing;** Concepts, manpower planning, training and developments, team building, conflict management, performance appraisal, office rules and regulations, outline of strategic planning and marketing. Concepts of quality, professional audit system, QA program, medical audit, quality circle, TQM, patient satisfaction, ISO 9000. A brief outline, computerization in hospital departments. Concept, techniques, indicators, evaluation of efficiency and effectiveness evaluation of hospital and medical care services.

### **Module 5: ETHICAL, LEGAL, AND CURRENT ISSUES IN HOSPITAL MANAGEMENT (12 Periods)**

**Ethical, Current Issues and Legal Aspects of Hospital Management Services;** Laws related to hospital, medico-legal cases, law of torts, autopsy, dying declaration, Consumer Protection Act (CPA), waste management, telemedicine, organ transplantation, rehabilitation service, health insurance. Operations research and quantitative methods in hospital administration and nursing services in a hospital.

**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. Observation of performance appraisal and hospital quality control systems
5. Observation of medico-legal procedures and telemedicine services in the legal cell and telemedicine unit

### **RESOURCES**

#### **TEXT BOOKS:**

- 1 . Scott E. Mace and Marc A. Schenker: *Emergency Department Management: A Practical Approach*, 2012.
- 2 . Richard L. Miller and Michael C. Roberts: *Hospital and Healthcare Facility Design*, 2002.

#### **REFERENCE BOOKS:**

3. **BM Sakharkar**; *Principles of Hospital Administration and Planning*, 2nd edition, Jaypee Brothers Medical Publishers Pvt. Limited, **2008**.
4. **R. Kumar and S.L. Goel**; *Hospital Administration and Management: Theory and Practice*, Deep and Deep Publications, **2007**.

#### **VIDEO LECTURES:**

1. <https://www.youtube.com/watch?v=vTdH2m0NIaI>
2. <https://www.youtube.com/watch?v=4rGgvvhCbmQ>
3. <https://www.youtube.com/playlist?list=PLhiM2SOVTcD-8AhKWZVGIXBv2dXJIdmGf>

#### **Web Resources:**

4. <https://www.coursera.org/browse/health/healthcare-management>
5. <https://alison.com/tag/healthcare-management>
6. <https://www.edx.org/learn/healthcare-administration>

## UNIVERSITY ELECTIVE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22EC101701</b>	<b>AI IN HEALTHCARE</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	2	2	2	-	-	-	-	-	-
<b>CO2</b>	2	3	-	2	-	2	2	-	-	-
<b>CO3</b>	2	-	2	2	-	-	-	-	-	-
<b>CO4</b>	2	-	-	-	2	2	-	-	-	-
<b>CO5</b>	-	-	3	-	-	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>2</b>	<b>-</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>-</b>

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

## **COURSE CONTENT**

### **Module 1: INTRODUCTION TO ARTIFICIAL INTELLIGENCE IN (08 Periods) HEALTHCARE**

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 (10 Periods) SPECIALTIES**

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*, MedManthra 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://intellipaath.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

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22DS101701</b>	<b>BIOINFORMATICS</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	-	-	-	-	-	-	-	-	-
<b>CO2</b>	2	3	-	-	-	-	-	-	-	-
<b>CO3</b>	2	3	-	-	-	-	-	-	-	-
<b>CO4</b>	2	3	-	-	-	-	-	-	-	-
<b>CO5</b>	3	2	3	3	3	-	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	-	-	-	-	-

**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: TTTTAAAA, 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, 4<sup>th</sup> 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, 2<sup>nd</sup> Edition, 2001.
2. Mount, D.W., *Bioinformatics Sequence and Genome Analysis*, Cold Spring Harbor Laboratory Press, 2<sup>nd</sup> Edition, 2004.
3. Tindall, J., *Beginning Perl for Bioinformatics: An introduction to Perl for Biologists*, O'Reilly Media, 1<sup>st</sup> 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

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22SS101701</b>	<b>CONSTITUTION OF INDIA</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	1	-	-	-	-	3	2	-	-	-
<b>CO2</b>	2	-	-	-	-	3	-	3	-	-
<b>Course Correlation Mapping</b>	<b>2</b>	-	-	-	-	<b>3</b>	<b>2</b>	<b>3</b>	-	-

**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 awake 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](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
<b>22CM101702</b>	<b>COST ACCOUNTING AND FINANCIAL MANAGEMENT</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	-	-	-	2	-	-	1	-	-
<b>CO2</b>	3	-	-	-	2	-	-	1	-	-
<b>CO3</b>	3	-	-	-	2	-	-	1	-	-
<b>CO4</b>	3	-	-	-	2	-	-	1	-	-
<b>CO5</b>	3	-	-	-	2	-	-	1	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	-	-	-	<b>2</b>	-	-	<b>1</b>	-	-

**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, 10<sup>th</sup> edition, 2016.
2. I.M. Pandey, *Financial Management*, Vikas Publishing House Pvt. Ltd., 14<sup>th</sup> 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=PLLhSIFdZcUVE2kzOhEubO9rkvUOAgZbz>
- 2 <https://www.youtube.com/watch?v=tzasFmP1CpAhttps://www.youtube.com/watch?v=tzasFmP1CpA>

### WEB RESOURCES

- 1 [https://www.tutorialspoint.com/accounting\\_basics/management\\_versus\\_cost\\_accounting.htm](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
<b>22MG101701</b>	<b>ENTREPRENEURSHIP FOR MICRO, SMALL AND MEDIUM ENTERPRISES</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	2	1	2	1	-	-	-	-	-	-
<b>CO2</b>	1	1	2	-	-	-	2	-	1	-
<b>CO3</b>	2	2	1	-	-	-	-	1	-	-
<b>CO4</b>	3	1	2	-	-	-	-	-	-	-
<b>CO5</b>	2	2	1	-	-	1	-	-	-	-
<b>Course Correlation Mapping</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>-</b>

**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: MSME 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](http://ncert.nic.in/textbook/pdf/kebs109.pdf)
2. <https://www.jetir.org/papers/JETIR1805251.pdf>

## UNIVERSITY ELECTIVE

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22CB101703</b>	<b>FORENSIC SCIENCE</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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:

- CO1** Understand the basic concepts of Forensic science.
- CO2** Apply various tools and techniques in forensic science for crime investigation.
- CO3** Understand Forensic Photography fundamentals.
- CO4** Perform Crime scene investigation, scene reconstruction and prepare reports.
- CO5** Understand Legal aspects of Forensic Science.

### CO-PO Mapping Table:

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

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

## **COURSE CONTENT**

### **Module INTRODUCTION (09 Periods)**

**1:**  
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 TOOLS AND TECHNIQUES IN FORENSIC SCIENCE (09 Periods)**

**2:**  
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 FORENSIC PHOTOGRAPHY (08 Periods)**

**3:**  
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 CRIME SCENE MANAGEMENT (11 Periods)**

**4:**  
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 LAW AND FORENSIC SCIENCE (08 Periods)**

**5:**  
**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, 2<sup>nd</sup> 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

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22SS101704</b>	<b>INDIAN HISTORY</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	2	-	-	-	-	1	-	-	-	-
<b>CO2</b>	1	2	-	-	-	1	-	-	-	-
<b>CO3</b>	1	1	-	-	-	2	-	-	-	-
<b>Course Correlation Mapping</b>	<b>2</b>	<b>1</b>	-	-	-	<b>2</b>	-	-	-	-

**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, 21<sup>st</sup> 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
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	-	-	-	-	1	-	-	-	-
<b>CO2</b>	3	-	-	-	-	1	-	-	-	-
<b>CO3</b>	2	-	-	-	-	3	-	-	-	-
<b>CO4</b>	2	-	-	-	-	3	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	-	-	-	-	<b>2</b>	-	-	-	-

**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

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22ME101704</b>	<b>MANAGING INNOVATION AND ENTERPRENEURSHIP</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	1	1	-	1	1	1	1	-	-
<b>CO2</b>	3	2	1	-	1	-	-	-	-	-
<b>CO3</b>	3	3	1	1	1	-	-	-	-	-
<b>CO4</b>	3	2	1	1	1	1	-	-	-	-
<b>CO5</b>	3	3	3	1	1	1	-	-	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	-	-

**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/ARTICLES:**

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, 1<sup>st</sup> Edition, 2014.
2. Drucker, P.F., *Innovation and Entrepreneurship*, Taylor & Francis, 2<sup>nd</sup> Edition, 2007.

### REFERENCE BOOKS:

1. Robert D Hisrich, Claudine Kearney, *Managing Innovation and Entrepreneurship*, Sage Publications, 1<sup>st</sup> Edition, 2014.
2. V.K. Narayanan, *Managing Technology and Innovation for Competitive Advantage*, Pearson India, 1<sup>st</sup> 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](https://www.youtube.com/watch?v=Eu_hkxkJGTg)

## UNIVERSITY ELECTIVE

Course Code	Course Title	L	T	P	S	C
<b>22LG201701</b>	<b>PERSONALITY DEVELOPMENT</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	2	1	-	-	-	-	-	-	-	-
<b>CO2</b>	2	3	-	-	-	-	-	-	-	-
<b>CO3</b>	2	2	-	-	3	-	-	-	-	2
<b>CO4</b>	1	1	-	-	-	-	-	-	3	3
<b>CO5</b>	-	-	-	-	-	-	-	-	-	3
<b>Course Correlation Mapping</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>-</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>3</b>

**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, 10<sup>th</sup> edition Indian Reprint, 2011. (6<sup>th</sup> 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, 2<sup>nd</sup> Revised Edition, 2011.
2. Stephen P. Robbins and Timothy A. Judge, *Organizational Behaviour*, Prentice Hall, Delhi, 16<sup>th</sup> 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
<b>22CS101702</b>	<b>WEB DESIGN FUNDAMENTALS</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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
<b>CO1</b>	3	3	3	-	-	-	-	-	-	-
<b>CO2</b>	3	3	-	-	-	-	2	-	-	-
<b>CO3</b>	3	3	3	-	-	-	-	-	-	-
<b>CO4</b>	2	3	3	-	-	-	-	2	-	-
<b>Course Correlation Mapping</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>-</b>

**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, 2<sup>nd</sup> 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](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

<b>Course Code</b>	<b>Course Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>S</b>	<b>C</b>
<b>22SS101706</b>	<b>WOMEN EMPOWERMENT</b>	3	-	-	-	3
<b>Pre-Requisite</b>	-					
<b>Anti-Requisite</b>	-					
<b>Co-Requisite</b>	-					

**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

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

**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>