

**MRSPTU B. SC. (CARDIAC CARE TECHNOLOGY) SYLLABUS  
BATCH 2021 ONWARDS (4 YEARS COURSE)**

**Total Credits:25**

Semester 1 <sup>ST</sup>		Contact Hours			Max Marks		Total Marks	Credits
Subject Code	Subject Name	L	T	P	Int.	Ext		
BCCTS1-101	Human Anatomy Part I	3	0	0	40	60	100	3
BCCTS1-102	Human Physiology Part I	3	0	0	40	60	100	3
BCCTS1-103	General Biochemistry & Nutrition	3	1	0	40	60	100	4
BCCTS1-104	Introduction to National HealthCare System (Multidisciplinary/ Interdisciplinary)	3	0	0	40	60	100	3
BCCTS1-105	Human Anatomy Part I- Practical	0	0	4	60	40	100	2
BCCTS1-106	Human Physiology Part I- Practical	0	0	4	60	40	100	2
BCCTS1-107	General Biochemistry - Practical	0	0	4	60	40	100	2
BCCTS1-108	English & Communication	3	0	0	40	60	100	3
BCCTS1-109	Drug abuse: problem, management and prevention	3	0	0	40	60	100	3
<b>Total</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>420</b>	<b>480</b>	<b>900</b>	<b>25</b>

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**Total Credit: 26**

Semester 2 <sup>nd</sup>		Contact Hours			Max Marks		Total Marks	Credits
Subject Code	Subject Name	L	T	P	Int.	Ext		
BCCTS1-201	Human Anatomy Part II	2	0	0	40	60	100	2
BCCTS1-202	Human Physiology Part II	2	0	0	40	60	100	2
BCCTS1-203	General Microbiology	3	0	0	40	60	100	3
BCCTS1-204	Basic Pathology & Hematology	3	1	0	40	60	100	4
BCCTS1-205	Introduction to Quality and Patient safety (Multidisciplinary/ Interdisciplinary)	3	0	0	40	60	100	3
BCCTS1-206	Human Anatomy Part II- Practical	0	0	4	60	40	100	2
BCCTS1-207	Human Physiology Part II- Practical	0	0	2	60	40	100	1
BCCTS1-208	General Microbiology- Practical	0	0	4	60	40	100	2
BCCTS1-209	Basic Pathology & Hematology- Practical	0	0	4	60	40	100	2
BCCTS1-210	Environmental Science	3	0	0	40	60	100	3
BCCTS1-211	Computer Fundamentals - Theory	2	0	0	40	60	100	2
<b>Total</b>		-	-	-	<b>520</b>	<b>580</b>	<b>1100</b>	<b>26</b>

**Students shall undergo 4 weeks CCT Directed Clinical training after 2<sup>nd</sup> semester during summer vacation in hospitals, Lab, etc. as per the requirements of the program.**

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**HUMAN ANATOMY- PART I**

**Subject Code: BCCTS1-101**

**L T P C  
3 0 0 3**

**Duration: 45 (Hrs.)**

**Teaching Objective:**

- To introduce the students to the concepts related to General anatomy, Muscular, Respiratory, Circulatory, Digestive and Excretory system

**Learning Outcomes:**

- Comprehend the normal disposition, interrelationships, gross, functional and applied anatomy of various structures in the human body.
- Demonstrate and understand the basic anatomy of Respiratory and Circulatory system
- Demonstrate and understand the basic anatomy of Digestive and Excretory system

**Unit-1**

**(13 hrs.)**

- **Introduction to Anatomy , Terminology, Cell and Cell division, Tissues of body, Skin**
- **Skeletal System:**Classification of bones, Parts of developing long bone and its blood supply, Joints I- Classification of joints, Joints II- Synovial Joint, Appendicular skeleton I- Bones of upper Limb, Appendicular skeleton II- Bones of lower limb,Axial skeleton-I, Axial skeleton-II.

**Unit 2**

**(11 hrs.)**

- **Muscular System:**Muscle I-Types, Muscle II- Muscle groups and movements, Muscles of Upper limb, Muscles of lower limb, Muscles of Neck, Muscles of back, Muscles of abdomen.
- **Joints:**Shoulder, Hip, Knee, Movements and muscle groups producing movements at other joints.

**Unit 3**

**(11 hrs.)**

- **Respiratory System:**Introduction to Respiratory system, Larynx, Thoracic cage and diaphragm, Lung & Pleura, Trachea & Bronchopulmonary segments, Mediastinum.
- **Circulatory System:**Types of blood vessels, Heart& Pericardium, Coronary Circulation, Overview of Media stenum, Blood vessels of Thorax.

**Unit 4**

**(10 hrs.)**

- **Digestive System:**GIT I- Pharynx, Oesophagus, GIT II-Stomach, GIT III- Small and Large Intestine, GIT IV-Liver & Gall Bladder, GIT V- Spleen, GIT VI-Pancreas , Salivary glands.
- **Excretory System:**Kidney, Ureter, Bladder, Urethra, Pelvis dynamic

**HUMAN ANATOMY PART I- PRACTICAL**

**Subject Code: BCCTS1-105**

**L T P C  
0 0 4 2**

**Duration: 4 Hrs./ Week**

**EXPERIMENTS**

- **Introduction to Anatomy, Terminology, Cell and Cell division, Tissues of body, Skin**
- **Skeletal System:**Classification of bones, Parts of developing long bone and its blood supply, Joints- Classification of joints, Joints II- Synovial Joint, Appendicular skeleton I- Bones of upper Limb, Appendicular skeleton II- Bones of lower limb, Axial skeleton-I , Axial skeleton-II.
- **Muscular System:**Muscle I-Types, Muscle II- Muscle groups and movements, Muscles of Upper limb, Muscles of lower limb, Muscles of Neck, Muscles of back, Muscles of abdomen.
- **Joints:**Shoulder, Hip, Knee, Movements and muscle groups producing movements at other joints.
- **Respiratory System:**Introduction to Respiratory system, Larynx, Thoracic cage and diaphragm, Lung & Pleura , Trachea & Bronchopulmonary segments , Mediastinum
- **Circulatory System:**Types of blood vessels, Heart& Pericardium, Coronary Circulation, Overview of media stenum , Blood vessels of Thorax
- **Digestive System:**GIT I- Pharynx, Oesophagus, GIT II-Stomach, GIT III- Small and Large Intestine, GIT IV-Liver & Gall Bladder, GIT V- Spleen, GIT VI-Pancreas , Salivary glands
- **Excretory System:**Kidney, Ureter, Bladder, Urethra, Pelvis dynamic

**TextBooks:**

- Manipal Manual of Anatomy for Allied Health Sciences courses: Madhyastha S.
- G.J. Tortora& N.P Anagnostakos: Principles of Anatomy and Physiology
- B.D. Chaurasia: Handbook of General Anatomy

**Reference books:**

- B.D. Chaurasia: Volume I-Upper limb & Thorax, Volume II- Lower limb, Abdomen & Pelvis Volume III- Head, Neck, Face Volume IV- Brain-Neuroanatomy
- Vishram Singh: Textbook of Anatomy Upper limb & Thorax Textbook of Anatomy Abdomen & Lower limb Textbook of Head neck and Brain
- Peter L. Williams And Roger Warwick:- Gray's Anatomy - Descriptive and Applied, 36<sup>th</sup> Ed; Churchill Livingstone.
- T.S. Ranganathan: Text book of Human Anatomy
- Inderbirsingh, G P Pal: Human Embryology

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- Textbook of Histology, A practical guide:- J.P Gunasegaran

**HUMAN PHYSIOLOGY PART I**

**Subject Code: BCCTS1-102**

**L T P C  
3 0 0 3**

**Duration: 45 (Hrs.)**

**Teaching objective:**

- To teach basic physiological concepts related to General physiology, Hematology, Nerve-Muscle physiology, Cardiovascular, Digestive & Respiratory physiology

**Learning outcomes:**

- To understand the basic physiological concepts of General physiology
- To understand the basic physiological concepts of Hematology
- To understand the basic physiological concepts of Nerve-Muscle physiology
- To understand the basic physiological concepts of Respiratory physiology
- To understand the basic physiological concepts of Cardiovascular physiology

**Unit 1 (13 hrs.)**

- **General Physiology:** Introduction to physiology, Homeostasis, Transport Across cell membrane.
- **Blood:** Composition, properties and functions of Blood, Haemopoiesis, Haemogram (RBC, WBC, Platelet count, Hb Concentrations), Blood Groups – ABO and RH grouping, Coagulations & Anticoagulants, Anemias: Causes, effects & treatment, Body Fluid: Compartments, Composition, Immunity – Lymphoid tissue.

**Unit 2 (10 hrs.)**

- **Cardio vascular system:** Introduction, general organization, functions & importance of CVS, Structure of heart, properties of cardiac muscle, Junctional tissues of heart & their functions, Origin & spread of Cardiac Impulse, cardiac pacemaker, Cardiac cycle & ECG, Heart Rate & its regulation, Cardiac output, Blood Pressure definition & normal values, Physiological needs & variation, regulation of BP.

**Unit 3 (7 hrs.)**

- **Digestive system:** General Introduction, organization, innervations & blood supply of Digestive System, Composition and functions of all Digestive juices, Movements of Digestive System (Intestine), Digestion & Absorption of Carbohydrate, Proteins & Fats

**Unit 4 (15 hrs.)**

- **Respiratory System:** Physiologic anatomy, functions of respiratory system, non-respiratory functions of lung, Mechanism of respiration, Lung Volumes & capacities, Transport of Respiratory Gases O<sub>2</sub>, Transport of Respiratory Gases CO<sub>2</sub>, Regulation of Respiration.
- **Muscle nerve physiology:** Structure of neuron & types, Structure of skeletal Muscle,

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Sarcomere, Neuromuscular junction & Transmission. Excitation & contraction coupling (Mechanism of muscle contraction).

**HUMAN PHYSIOLOGY PART I – PRACTICAL**

**Subject Code: BCCTS1-106**

**L T P C  
0 0 4 2**

**Duration: 4 Hrs./ Week**

**EXPERIMENTS**

- Study of Microscope and its use, Collection of Blood and study of Haemocytometer
- Haemoglobinometry
- White Blood Cell count
- Red Blood Cell count
- Determination of Blood Groups
- Leishman's staining and Differential WBC Count
- Determination of Bleeding Time, Determination of Clotting Time
- Pulse & Blood Pressure Recording, Auscultation for Heart Sounds
- Artificial Respiration – Demonstration, Spirometry- Demonstration

**Textbooks**

- Basics of medical Physiology – D Venkatesh and H.H Sudhakar, 3<sup>rd</sup> edition.
- Principles of Physiology – Devasis Pramanik, 5<sup>th</sup> edition.
- Human Physiology for BDS – Dr A.K. Jain, 5<sup>th</sup> edition.
- Textbook of human Physiology for dental students – Indukhurna 2<sup>nd</sup> edition.
- Essentials of medical Physiology for dental students – Sembulingum.

**Reference books**

- Textbook of Medical Physiology, Guyton, 2<sup>nd</sup> South Asia Edition.
- Textbook of Physiology Volume I & II (for MBBS) – Dr. A. K. Jain.
- Comprehensive textbook of Medical Physiology Volume I & II – Dr. G. K. Pal.

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**GENERAL BIOCHEMISTRY & NUTRITION**

**Subject Code: BCCTS1-103**

**L T P C**

**Duration: 60(Hrs.)**

**3 1 0 4**

**Teaching Objective:**

- At the end of the course, the student demonstrates his knowledge and understanding on:
- Structure, function and interrelationship of biomolecules and consequences of deviation from normal.
- Integration of the various aspects of metabolism, and their regulatory pathways.
- Principles of various conventional and specialized laboratory investigations and instrumentation, analysis and interpretation of a given data.
- To diagnose various nutritional deficiencies
- Identify condition and plan for diet

Provide health education base on the client deficiencies

**Learning Outcomes:**

- Define “biochemistry.”
- Identify the five classes of polymeric biomolecules and their monomeric building blocks.
- Explain the specificity of enzymes (biochemical catalysts), and the chemistry involved in enzyme action.
- Explain how the metabolism of glucose leads ultimately to the generation of large quantities of ATP.
- Describe how fats and amino acids are metabolized, and explain how they can be used for fuel.
- Describe the structure of DNA, and explain how it carries genetic information in its base sequence.
- Describe DNA replication, RNA and protein synthesis.
- Explain how protein synthesis can be controlled at the level of transcription and translation.

Summarize what is currently known about the biochemical basis of Cancer.

**Unit 1**

**(15hrs)**

- Introduction and scope of biochemistry.
- **Chemistry of carbohydrates, proteins, lipids and nucleic acid–Chemistry of Carbohydrates:** Definition, Functions, Properties, Outline of classification with eg (Definition of Monosaccharides, Disaccharides, Polysaccharides and their examples).
- **Chemistry of Proteins:** Amino acids (total number of amino acids, essential and non-essential Amino acids). Definition, Classification of Proteins Structural organization of protein, Denaturation of Proteins.
- **Chemistry of Lipids:** Definition, functions, Classification (Simple Lipids, Compound

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Lipids, Derived Lipids). Essential Fatty Acids.

- **Chemistry of Nucleic acid:** Nucleosides and Nucleotides, Watson and Crick model of DNA, RNA- its type along with functions.

**Unit 2** **(10 hrs)**

- **Elementary knowledge of enzymes:**
- Classification, mechanism of enzyme action, Factors Affecting Activity of enzymes, enzyme specificity, Enzyme inhibition, Isoenzymes and their diagnostic importance.
- **Biological oxidation:**
- Brief concept of biological oxidation: Definition of Oxidative phosphorylation Electron transport chain. Inhibitors and Uncouples briefly

**Unit 3** **(15 hrs)**

- **Metabolism of Carbohydrate:**
- Glycolysis, TCA cycle, Definition and significance of glycogenesis and glycogenolysis. Definition and significance of HMP shunt, definition and significance of gluconeogenesis. Regulation of blood Glucose level, Diabetes Mellitus, Glycosuria. Glucose Tolerance Test.
- **Metabolism of Proteins:**
- Transamination, Trans methylation reactions. Urea cycle, Functions of glycine, tyrosine, phenylalanine, tryptophan and Sulphur containing amino acids.
- **Metabolism of Lipid:**
- Outline of beta oxidation with energetic, Ketone bodies (Enumerate) and its importance. Functions of cholesterol and its biomedical significance. Lipid profile and its diagnostic importance. Fatty liver, lipotropic factor, atherosclerosis.
- **Metabolism of Nucleic acid:**
- Purine catabolism (Formation of uric acid), Gout.

**Unit 4** **(20 hrs)**

- **Vitamins and Minerals:**
- RDA, Sources, functions and deficiency manifestations of Fat soluble vitamins. RDA, Sources, functions and deficiency manifestations of Water soluble vitamins. RDA, Sources, functions and deficiency manifestations of Calcium, Phosphorous, Iron, Iodine.
- **Principle and applications of:**
- Colorimeters, pH Meter
- **Pre examination Skills:**
- Collection and preservation of samples (Anticoagulants), transportation & Separation of biological specimens, Sample rejection criteria, Disposal of Biological Waste materials.
- **Nutrition:**



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- History of Nutrition, Nutrition as a science, Food groups, RDA, Balanced diet, diet planning, Assessment of nutritional status.
- **Energy:** Units of energy, Measurements of energy and value of food, Energy expenditure, Total energy/calorie requirement for different age groups and diseases, Satiety value, Energy imbalance- obesity, starvation, Limitations of the daily food guide, Role of essential nutrients in the balanced diet.

**Textbooks**

- Textbook of Medical Laboratory Technology, Volume 1, 3<sup>rd</sup> Edition by Praful Ghodkar
- Textbook of Medical Laboratory Technology, Volume 2, 3<sup>rd</sup> Edition by Praful Ghodkar
- Medical Laboratory Technology (Volume 1): Procedure Manual for Routine Diagnostic, Kanai Mukharjee
- Medical Laboratory Technology (Volume 2): Procedure Manual for Routine Diagnostic, Kanai Mukharjee
- Medical Laboratory Technology (Volume 3): Procedure Manual for Routine Diagnostic, Kanai Mukharjee
- Essentials of Biochemistry, Second Edition, Dr. (Prof) Satyanarayan

**Reference books**

- An Introduction to Chemistry, 8<sup>th</sup> Edition by Mark Bishop
- Clinical Chemistry made easy, 1<sup>st</sup> Edition by Hughes
- Tietz Fundamentals of Clinical Chemistry, 7<sup>th</sup> Edition by Carl Burtis

**GENERAL BIOCHEMISTRY - PRACTICAL**

**Subject Code BCCTS1-107**

**L T P C**  
**0 0 4 2**

**Duration: 4 Hrs./ Week**

**EXPERIMENTS**

- Introduction to Personnel protective equipment used in laboratory and their importance (LCD)
- Handling of colorimeters – operation and maintenance (LCD)
- Serum electrolytes measurement (only demo)
- Demonstration of semi-automated / fully automated blood analyzer
- Demonstration of tests for carbohydrates (Monosaccharides, disaccharides and polysaccharides)
- Precipitation Reactions of protein (only demonstration)
- Test on bile salts (only demonstration)
- Tests on Normal constituents of Urine (only demo)

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- Tests on Abnormal constituents of Urine (only demo)

**Textbooks:**

- Textbook of Medical Laboratory Technology, Volume 1, 3<sup>rd</sup> Edition by Praful Ghodkar
- Textbook of Medical Laboratory Technology, Volume 2, 3<sup>rd</sup> Edition by Praful Ghodkar
- Medical Laboratory Technology (Volume 1): Procedure Manual for Routine Diagnostic, Kanai Mukharjee
- Medical Laboratory Technology (Volume 2): Procedure Manual for Routine Diagnostic, Kanai Mukharjee
- Medical Laboratory Technology (Volume 3): Procedure Manual for Routine Diagnostic, Kanai Mukharjee
- Essentials of Biochemistry, Second Edition, Dr. (Prof) Satyanarayana
- Essentials of Biochemistry, 2<sup>nd</sup> Edition, Dr. Pankaja Naik
- Principles and Techniques of Biochemistry and Molecular Biology, 5<sup>th</sup> Edition, Wilson & Walker

**Reference books:**

- An Introduction to Chemistry, 8<sup>th</sup> Edition by Mark Bishop
- Clinical Chemistry made easy, 1<sup>st</sup> Edition by Hughes
- Tietz Fundamentals of Clinical Chemistry, 7<sup>th</sup> Edition by Carl Burtis

**INTRODUCTION TO NATIONAL HEALTH CARE SYSTEM (MULTIDISCIPLINARY/  
INTERDISCIPLINARY)**

**Subject Code: BCCTS1-104**

**L T P C  
3 0 0 3**

**Duration: 45 (Hrs.)**

**Teaching Objective:**

- To teach the measures of the health services and high-quality health care
- To understand whether the health care delivery system is providing high-quality health care and whether quality is changing over time.
- To provide to the National Health Programme- Background objectives, action plan, targets, operations, in various National Health Programme.
- To introduce the AYUSH System of medicines.

**Learning Outcomes:**

- The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.

**Unit 1**

**(18 hrs)**

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- **Introduction to healthcare delivery system:**Healthcare delivery system in India at primary, secondary and tertiary care; Community participation in healthcare delivery system; Health system in Developed countries; Private /Govt. Sector; National Health Mission; National Health Policy; Issues in Health Care Delivery System in India.
- **National Health Programme:**Background objectives, action plan, targets, operations, achievements and constraints in various National Health Programme.

**Unit 2** **(12 hrs)**

- **Introduction to AYUSH system of medicine:**Introduction to Ayurveda; Yoga and Naturopathy; Unani; Siddha; Homeopathy; Need for integration of various system of Medicine

**Unit 3** **(7 hrs)**

- **Health scenario of India:**Past, present and future
- **Demography & Vital Statistics:**Demography – its concept; Census & its impact on health policy

**Unit 4** **(8 hrs)**

- **Epidemiology:**Principles of Epidemiology; Natural History of disease; Methods of Epidemiological studies; Epidemiology of communicable & non-communicable diseases, disease, transmission, host defense immunizing agents, cold chain, Immunization, disease, monitoring and surveillance

**Books:**

- National Health Programs Of India National Policies and Legislations Related to Health: 1 J. Kishore (Author)
- A Dictionary of Public Health Paperback by J Kishor
- Health System in India: Crisis & Alternatives , National Coordination Committee, Jan SwasthyaAbhiyan
- In search In Search of the Perfect Health System
- Central Bureau of Health Intelligence (1998). Health Information of India, Ministry of Health and Family Welfare, New Delhi.
- Goyal R. C. (1993). Handbook of Hospital Personal Management, Prentice Hall of India, New Delhi, 17–41. Ministry of Health and Family Welfare (1984). National Health Policy, Annual Report (1983–4), Government of India, New Delhi
- Historical Development of Health Care in India, Dr. Syed Amin Tabish,
- cultural Competence in Health Care by Wen-Shing Tseng (Author),Jon Streltzer(Author)
- Do We Care: India's Health System by K. Sujatha Rao (Author)

ABILITY ENHANCEMENT ELECTIVE COURSE

**ENGLISH AND COMMUNICATION SKILLS**

Subject Code: BCCTS1-108

L T P C  
3 0 0 3

Duration: 45 (Hrs.)

**Teaching Objective:**

- This course deals with essential functional English aspects of the of communication skills essential for the health care professionals.
- To train the students in oral presentations, expository writing, logical organization and Structural support.

**Learning Outcomes:**

- Able to express better.
- Grow personally and professionally and Develop confidence in every field

**Unit 1**

(15 hrs)

- **Basics of Grammar:** Vocabulary, Synonyms, Antonyms, Prefix and Suffix, Homonyms, Analogies and Portmanteau words
- **Basics of Grammar** –Active, Passive, Direct and Indirect speech, Prepositions, Conjunctions and Euphemisms
- **Writing Skills:** Letter Writing, Email, Essay, Articles, Memos, one word substitutes, note making and Comprehension

**Unit 2**

(08 hrs)

- Writing and Reading, Summary writing, Creative writing, newspaper reading
- Practical Exercise, Formal speech, Phonetics, semantics and pronunciation

**Unit 3**

(10 hrs)

- **Introduction to communication skills:** Communication process, Elements of communication, Barriers of communication and how to overcome them, Nuances for communicating with patients and their attenders in hospitals.
- **Speaking:** Importance of speaking efficiently, Voice culture, Preparation of speech. Secrets of good Delivery, Audience psychology, handling, Presentation skills, Individual feedback for each student, Conference/Interview technique.

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**Unit 4**

**(12 hrs)**

- **Listening:** Importance of listening, Self-assessment, Action plan execution, Barriers in listening, Good and persuasive listening.
- **Reading:** What is efficient and fast reading, Awareness of existing reading habits, tested techniques for improving speed, Improving concentration and comprehension through systematic study.
- **Non Verbal Communication:** Basics of non-verbal communication, Rapport building skills using neuro- linguistic programming (NLP), Communication in Optometry practice.

**Text books:**

- Graham Lock, Functional English Grammar: Introduction to second Language Teachers. Cambridge University Press, New York, 1996.
- Gwen Van Servellen. Communication for Health care professionals: Concepts, practice and evidence, Jones & Bartlett Publications, USA, 2009

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**DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION**

**Subject Code: BCCTS1-109**

**L T P C  
3 0 0 3**

**Duration: 45 (Hrs.)**

**Course Objectives:**

- To make students understand the concept of drug abuse and their impact on public health.
- To make students understand the types of drugs.
- To make them aware of the impact of drugs addiction on families and peers.
- To make students understand the management and prevention of drug abuse.

**Course Outcomes:**

- Students gain knowledge about detrimental impacts of drug on health and relations.
- Students become aware about the physiological and sociological causes of drug abuse.
- Students acquire knowledge about types of drugs.
- Students acquire knowledge about management and prevention of drug abuse.

**Unit-1**

**(13 hrs)**

- **Problem of Drug Abuse:** Concept and Overview; Types of Drug Often Abused
- **Concept and Overview:** What are drugs and what constitutes Drug Abuse?, Prevalence of menace of Drug Abuse, How drug Abuse is different from Drug Dependence and Drug Addiction?, Physical and psychological dependence- concepts of drug tolerance
- **Introduction to drugs of abuse:** Short Term, Long term effects & withdrawal symptoms
- **Stimulants:** Amphetamines, Cocaine, Nicotine
- **Depressants:** Alcohol, Barbiturates- Nembutal, Seconal, Phenobarbital Benzodiazepines Diazepam, Alprazolam, Flunitrazepam
- **Narcotics:** Opium, morphine, heroin
- **Hallucinogens:** Cannabis & derivatives (marijuana, hashish, hash oil), Steroids and inhalants.

**Unit-2**

**(11 hrs)**

- **Nature of the Problem:** Vulnerable Age Groups
- Signs and symptoms of Drug Abuse: Physical indicators, Academic indicators, Behavioral and Psychological indicators

**Unit-3**

**(11 hrs)**

- **Causes and Consequences of Drug Abuse**
- **Causes:** Physiological, Psychological & Sociological

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- **Consequences of Drug Abuse:** For individuals, For families & For society & Nation

**Unit 4**

**(10 hrs)**

- **Management & Prevention of Drug Abuse:** Management of Drug Abuse, Prevention of Drug Abuse & Role of Family, School, Media, Legislation & Deaddiction Centers

**Recommended Text Books / Reference Books:**

- Kapoor. T., Drug Epidemic among Indian Youth, Mittal Pub, New Delhi, 1985.
- Modi, Ishwar and Modi, Shalini, Drugs: Addiction and Prevention, Rawat Publication, Jaipur, 1997.
- Ahuja, Ram, Social Problems in India, Rawat Publications, Jaipur, 2003.
- National Household Survey of Alcohol and Drug Abuse. New Delhi, Clinical Epidemiological Unit
- All India Institute of Medical Sciences, 2004.
- World Drug Report, United Nations Office of Drug and Crime, 2011
- World Drug Report, United Nations Office of Drug and Crime, 2010.
- Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004

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