विद्या विमुक्तिदायिनी

Bhaikaka University

Instilling Purpose in Healthcare

Charutar Arogya Mandal, Karamsad

Curriculum and Credit

Framework For

"Elective Courses"

B.Sc. (Hons) in Medical Technology

Running under

CAM Institute of Allied Health Sciences &Technology

(Academic Year 2024-25)

24ELC0101 (Yoga and Health)

Name of the Institute: CAM Institute of Allied Health Sciences & Technology
Name of the Program: B. Sc. (Hons) in Medical Technology
Year of the Program: First year

Course Code	24ELC0101	Total Credit	2
Title of Subject	Yoga and health	Total Hours/Week	2

Course Objectives	- Establish a foundation in yoga philosophy and history - Explore the eight limbs of yoga and ethical guidelines - Develop practical skills in fundamental yoga practices - Application of yoga for physical and mental well-being

Course Content

Unit	Description	Weightage
1	**Introduction to Yoga** ▪ Origin and development of yoga ▪ Principles of yoga - Eight Limbs of Yoga (Ashtanga Yoga) - Ethical guidelines (Yamas and Niyamas)	20%
2	**Fundamental Yoga Practices** ▪ Asanas (Postures) - Introduction to basic asanas: Tadasana, Vrikshasana, Ardhachakrasana, Mandukasana, Pad-hastasana, and Trikonasana ▪ Pranayama (Breathing Techniques and its benefits) ▪ Meditation techniques and benefits: Yoga Nindra, Savasana	40%
3	**Yoga and Health** ▪ Yoga for Physical Health - Benefits of yoga in enhancing flexibility, strength and balance - Yoga for specific health conditions: Back pain, arthritis, and digestive issues ▪ Yoga for Mental Health - Role of yoga in managing stress and anxiety - Yoga for improving concentration	40%

Course Outcome: At the end of the course, Students will be able to:

CO1	To grasp the historical roots and key principles of yoga, including the Eight Limbs and ethical guidelines.
CO2	To develop a basic yoga practice that incorporates postures, breathing techniques, and meditation for improved physical and mental well-being.
CO3	To apply yoga to enhance physical health, address specific conditions, and improve mental well-being through stress management and concentration.

24ELC0102 (Basic Life Support)

Name of the Institute: CAM Institute of Allied Health Sciences & Technology
Name of the Program: B. Sc. (Hons) in Medical Technology
Year of the Program: First year

Course Code	24ELC0102	Total Credit	2
Title of Subject	Basic Life Support	Total Hours/Week	2

Course Objectives	- To equip students with the knowledge and skills necessary to perform Basic Life Support in emergency situations. - To familiarize students with the latest guidelines and protocols for BLS. - To ensure students can confidently assess and manage life-threatening emergencies, including cardiac arrest, choking, and respiratory distress.

Course Content

Unit	Description	Weightage
1	**Introduction to Basic Life Support** • Definition and importance of BLS in healthcare. Principles of yoga • Legal and ethical considerations	20%
2	**Cardiopulmonary Resuscitation(CPR)** 2.1 Adult CPR: • Assessment of an unresponsive patient. • Chest compressions and rescue breathing techniques. • Use of Automated External Defibrillator (AED). 2.2 Child and Infant CPR: • Differences between adult, child, and infant CPR. • Specialized techniques for younger patients. 2.3 Hands-on Practice: • CPR drills and simulations. • Peer-to-peer practice sessions.	20%
3	**Management of Airway Obstruction (Choking)** 3.1 Recognition of Airway Obstruction: • Signs and symptoms of choking. 3.2 Intervention Techniques: • Heimlich maneuver for adults and children. • Back slaps and chest thrusts for infants. 3.3 Practice Sessions: • Role-playing and demonstrations.	20%

4	**Respiratory Distress and Arrest** 4.1 Recognition of Respiratory Distress: ● Identifying signs of respiratory distress and failure. 4.2 Oxygen Administration: ● Techniques for administering oxygen. ● Use of bag-valve-mask (BVM) ventilation. 4.3 Demonstration and Practice: ● Simulation exercises on airway management.	20%
5	**Post-Resuscitation Care** 5.1 Stabilization Techniques: ● Monitoring and maintaining airway, breathing, and circulation post-resuscitation. 5.2 Transfer to Advanced Care: ● Communicating with and preparing for handover to advanced medical teams.	20%

Course Outcome: At the end of the course, Students will be able to:

CO1	To gain a comprehensive understanding of Basic Life Support principles and practices.
CO2	To demonstrate proficiency in performing CPR, managing choking, and providing respiratory support.
CO3	To confidently handle real-life emergencies, ensuring rapid and effective intervention until advanced care arrives.

24ELC0201 (Phlebotomy)

Name of the Institute: CAM Institute of Allied Health Sciences & Technology
Name of the Program: B. Sc. (Hons) in Medical Technology
Year of the Program: Second year

Course Code	24ELC0201	Total Credit	2
Title of Subject	Phlebotomy	Total Hours/Week	2
Course Objectives	- To provide students with foundational knowledge and practical skills in phlebotomy. - To ensure students can perform safe and effective blood collection using various techniques. - To familiarize students with the standards and protocols for specimen handling, patient care, and infection control.		

Course Content

Unit	Description	Weightage
1	**Introduction to Phlebotomy:** 1.1 Overview of Phlebotomy: ● History and evolution of phlebotomy. ● Role of a phlebotomist in healthcare settings. 1.2 Anatomy and Physiology: ● Structure of veins, arteries, and capillaries. ● Common venipuncture sites and their anatomical considerations. 1.3 Legal and Ethical Considerations: ● Patient consent and confidentiality. ● Ethical issues in blood collection.	20%
2	**Blood Collection Techniques:** 2.1 Venipuncture Procedure: ● Preparing the patient and equipment. ● Steps of the venipuncture process. ● Troubleshooting difficult venipunctures. 2.2 Capillary Puncture: ● Indications for capillary puncture. ● Techniques for fingerstick and heel stick collection. 2.3 Special Collections: ● Collection from pediatric and geriatric patients. ● Blood cultures, glucose tolerance tests, and arterial blood gases. 2.4 Hands-on Practice: ● Practice sessions on phlebotomy mannequins and simulation arms. ● Peer-to-peer venipuncture practice.	20%

3	**Specimen Handling and processing:** 3.1 Labeling and Identification: ● Proper labeling techniques. ● Importance of accurate patient identification. 3.2 Specimen Transport and Storage: ● Handling and transporting specimens to the laboratory. ● Understanding temperature and time-sensitive requirements. 3.3 Quality Assurance: ● Role of quality control in phlebotomy. ● Avoiding and addressing pre-analytical errors.	20%
4	**Infection Control and Safety:** 4.1 Standard Precautions: ● Hand hygiene and personal protective equipment (PPE). ● Safe disposal of sharps and biohazard materials. 4.2 Infection Control in Phlebotomy: ● Preventing healthcare-associated infections (HAIs). ● Managing blood exposure incidents and needle-stick injuries. 4.3 Demonstration and Practice: ● Simulation of infection control procedures. ● Practicing safety protocols during blood collection.	20%
5	**Patient Care and Communication:** 5.1 Patient Interaction: ● Building rapport and ensuring patient comfort. ● Addressing patient anxiety and managing difficult patients. 5.2 Post-Collection Care: ● Care of the puncture site. ● Managing complications such as hematoma or fainting.	20%

Course Outcome: At the end of the course, Students will be able to:

CO1	To acquire the technical skills necessary to perform venipuncture and capillary puncture with confidence.
CO2	To perform specimen handling, labeling, and transport, ensuring the accuracy and reliability of laboratory results.
CO3	To develop effective communication and patient care techniques, ensuring a positive experience for patients during the blood collection process.
CO4	To demonstrate adherence to safety and infection control protocols, minimizing the risk of complications and healthcare-associated infections.

24ELC0202 (Computer)

Name of the Institute: CAM Institute of Allied Health Sciences & Technology
Name of the Program: B. Sc. (Hons) in Medical Technology
Year of the Program: Second year

Course Code	24ELC0202	Total Credit	2
Title of Subject	Computer	Total Hours/Week	2
Course Objectives	- To perform basic operating system functions - To equip students with the ability to use system tools and utilities effectively. - To develop skills to create, format, and edit professional documents. - To use web browsers, search engines, and email.		

Course Content

Unit	Description	Weightage
1	**Introduction to Computers and Operating Systems** **Basic Computer Operations:** 1.1. Booting and shutting down a computer 1.2. Using a mouse, keyboard, and basic OS functions **Operating System Navigation:** 1.3. File management (creating, deleting, and organizing files and folders) 1.4. Using system tools and utilities	20%
2	**Word Processing and Presentation Software:** **Word Processing:** 2.1. Creating, formatting, and editing documents 2.2. Inserting tables, images, and other elements **Presentation Software:** 2.3. Creating presentations with slides 2.4. Using transitions, animations, and multimedia elements	20%
3	**Spreadsheet Applications** **Basic Spreadsheet Operations:** 3.1. Creating and editing spreadsheets 3.2. Using formulas, functions, and charts **Data Analysis:** 3.3. Sorting and filtering data 3.4. Performing basic data analysis tasks	20%

4	**Respiratory Distress and Arrest** 4.1 Recognition of Respiratory Distress: ● Identifying signs of respiratory distress and failure. 4.2 Oxygen Administration: ● Techniques for administering oxygen. ● Use of bag-valve-mask (BVM) ventilation. 4.3 Demonstration and Practice: ● Simulation exercises on airway management.	20%
5	**Internet and Networking** **Internet Navigation:** 5.1. Using web browsers and search engines 5.2. Email communication and management **Basic Networking:** 5.3. Setting up a simple LAN 5.4 Sharing files and printers on a network	20%

Course Outcome: At the end of the course, Students will be able to:

CO1	Enable to Perform Basic Computer Operations
CO2	Perform and Use of Word Processing and Presentation Software
CO3	Perform & Operate Spreadsheet Applications
CO4	Navigate the Internet and Understand Basic Networking

24ELC0301 (Leadership and Management Skills)

Name of the Institute: CAM Institute of Allied Health Sciences & Technology
Name of the Program: B. Sc. (Hons) in Medical Technology (Medical Laboratory Technology)
Year of the Program: Third year

Course Code	24ELC0301	**Total Credit**	2
Title of Subject	Leadership and Management Skills	**Total Hours/Week**	2
Course Objectives	- To define leadership and management styles in the context of healthcare - To identify core communication skills for effective leadership - To develop strategies for building and managing high-performing healthcare teams - To analyze methods for conflict resolution and fostering collaboration - To explore strategies for creating a positive and ethical work environment - To evaluate best practices for financial management and resource allocation in healthcare		

Course Content

Unit	Description	Weightage
1	**Introduction to Leadership and Management in Healthcare** 1.1The evolving healthcare landscape and leadership needs 1.2Leadership vs. Management: Understanding the distinctions 1.3Core competencies of effective healthcare leaders	20%
2	**Communication Skills for Healthcare Leaders** 2.1The importance of clear, concise, and empathetic communication 2.2 Active listening techniques for fostering trust and understanding 2.3Effective communication strategies for diverse audiences 2.4Delivering and receiving feedback constructively	20%
3	**Building and Leading High-Performing Teams** 3.1 Team dynamics and fostering collaboration 3.2 Identifying and leveraging individual strengths 3.3Delegation and empowerment for team success 3.4Managing conflict within healthcare teams	20%
4	**Creating a Positive and Ethical Work Environment** 4.1The impact of workplace culture on patient care 4.2Strategies for fostering diversity, equity, and inclusion 4.3 Ethical considerations in healthcare leadership 4.4Building resilience and managing stress in healthcare settings	20%

5	**Financial Management and Resource Allocation** 5.1Understanding healthcare budgeting and financial constraint 5.2Prioritization and resource allocation strategies 5.3Cost-effectiveness analysis in healthcare decision-making	20%

Course Outcome: At the end of the course, Students will be able to:

CO1	Differentiate leadership & management styles in healthcare. (Impact on teams, situational effectiveness)
CO2	Master core communication skills like active listening, clear communication, constructive feedback.
CO3	Build & manage high-performing teams: Leverage strengths, foster collaboration, delegate effectively, manage conflict.
CO4	Create a positive & ethical work environment: Promote diversity, equity, inclusion, and ethical behavior.
CO5	Evaluate financial management: Understand healthcare budgeting & resource allocation best practices

24ELC0302 (Computer)

Name of the Institute: CAM Institute of Allied Health Sciences & Technology
Name of the Program: B. Sc. (Hons) in Medical Technology
Year of the Program: Third year

Course Code	24ELC0302	Total Credit	2
Title of Subject	AI in Healthcare	Total Hours/Week	2
Course Objectives	- To introduce students to the fundamental concepts of Artificial Intelligence (AI) and its applications in healthcare. - To explore how AI technologies are transforming diagnostics, treatment planning, and patient care. - To develop understanding of AI tools and techniques used in healthcare settings.		

Course Content

Unit	Description	Weightage
1	**Introduction to AI and Machine Learning:** **1.1 Overview of AI:** ● Definition and scope of AI in general. ● Key concepts: Machine Learning, Deep Learning, Natural Language Processing (NLP). **1.2 AI in Healthcare:** • The role of AI in modern healthcare. • Historical perspective and current trends. **1.3 Ethical and Legal Considerations:** ● Privacy, data security, and ethical challenges in AI healthcare applications.	20%
2	**AI in Diagnostics:** 2.1 Imaging and Diagnostics: ● AI in radiology: X-rays, MRIs, and CT scans. ● AI in pathology: Automated image analysis. 2.2 Predictive Analytics: ● AI in disease prediction and risk assessment. ● Case studies on AI-driven diagnostic tools. 2.3 Demonstrations: ● Software tools for AI-based diagnostic applications. ● Hands-on practice with AI diagnostic platforms.	20%

3	**AI in Treatment Planning and Management:** 3.1 Personalized Medicine: ● AI in tailoring treatment plans based on genetic information. ● AI in drug discovery and development. 3.2 AI in Surgery: ● Robotic surgery and AI-guided procedures. ● Virtual reality (VR) and AI in surgical training. 3.3 Demonstrations: ● Case studies on AI in treatment planning. ● Simulated environments for AI-assisted surgery.	20%
4	**AI in Patient Monitoring and Care:** **4.1 AI in Healthcare Operations:** • AI in managing healthcare workflows and resource allocation. • AI in patient scheduling and administrative tasks. **4.2 Demonstrations:** • Tools for remote patient monitoring. • Simulation of AI in healthcare operations management.	20%
5	**Future Trends and Challenges in AI Healthcare** **5.1 Emerging AI Technologies:** • AI in genomics and precision medicine. • AI in mental health and chronic disease management. **5.2 Challenges and Opportunities:** • Scalability and integration of AI in healthcare systems. • Future directions and potential impacts of AI on healthcare.	20%

Course Outcome: At the end of the course, Students will be able to:

CO1	To gain a foundational understanding of AI concepts and their applications in healthcare.
CO2	To develop skills in using AI tools for diagnostics, treatment planning, and patient care.
CO3	To explore the potential and challenges of AI in transforming healthcare, preparing them for future developments in the field.