

**ERA UNIVERSITY**  
**FACULTY OF ALLIED HEALTH SCIENCES & RESEARCH**  
**BACHELOR OF SCIENCE IN MEDICAL LABORATORY TECHNIQUES (B.SC MLT)**  
**FRAMEWORK FIRST SEMESTER**  
**FOR THE ACADEMIC YEAR 2023 to 2024**  
**Till the next change in the curriculum**

Subject Code	Course Titles	Hours per week			Marks			CR
		L	Theory	Practical	Internal	External	Total	
CST 101	Basic computer & information science	3	1	-	30	70	100	4
BLT 101	Introduction to Quality & Patient Safety	3	1	-	30	70	100	4
BLT102	Medical Law & Ethics	3	1	-	30	70	100	4
BLT103	Basic Preventive Medicine and Community Health Care	3	1	-	30	70	100	4
ENG 101	English Communication and soft skills	3	1	-	30	70	100	4
BLT104	Environment Science	3	1	-	30	70	100	4
<b>Total</b>		<b>18</b>	<b>6</b>	<b>24</b>	<b>180</b>	<b>420</b>	<b>600</b>	<b>24</b>
<b>Total Hours in Semester</b>		<b>550</b>						

**NOTE:**

1. Abbreviations

L - Lecture, T - Tutorials and P – Practical

Considering four months per semester as working months, total contact hours per semester shall be 550 (Five hundred and Fifty)

## Department of Medical laboratory technique

### Course Outline Effective From: 2023-24

<b>Name of the Program</b>	Bachelors of Science Medical laboratory Technique			<b>Year/ Semester:</b>	I <sup>st</sup> year/1 <sup>st</sup> sem
<b>Course Name</b>	Basic computer & information science	<b>Course Code:</b>	CST 101	<b>Type: Semester</b>	Theory :- 1 <sup>st</sup> sem
<b>Credits</b>	L:3 T:1 P: 0			<b>Total Sessions Hours:</b>	60
<b>Evaluation Spread</b>	Internal Continuous Assessment:	30 marks		<b>End Term Exam:</b>	70 marks
<b>Type of Course</b>	<input type="radio"/> Compulsory	<input checked="" type="radio"/> Core	<input type="radio"/> Creative	<input type="radio"/> Life Skill	
<b>Course Objectives</b>	Understanding Computer fundamental concepts, Input/output devices, Storage device, Operating System and Computer Network, Windows and MS-Office and the Internet and its Applications in the context of computer science.				
<b>Course Outcomes (CO):</b> After the successful course completion, learners will develop following attributes:					
<b>Course Outcome (CO)</b>	This course is an introduction to microcomputers their operations hardware and popular software applications. The student will develop the basic skills to use an operating system a word processor and a spreadsheet and use their skill in reporting of sample.				
<b>CO1</b>	Demonstrate the knowledge of the basic structure, components, features, generations of computers and Input/output devices.				
<b>CO2</b>	Describe the concept of Windows and MS-Word				
<b>CO3</b>	Describe the concept of MS- Excel and MS-Power Point				
<b>CO4</b>	Describe the concept of computer Operating System and Computer Network.				
<b>CO5</b>	Demonstrate the knowledge of the Internet and its Applications.				
<b>Pedagogy</b>	White Board, Computer Lab, Projector etc.				
<b>Internal Evaluation Mode</b>	Online as well as Offline Mode.				
<b>Session Details</b>	<b>Topic</b>	<b>Hours</b>	<b>Mapped CO</b>		
<b>Unit 1</b>	Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, 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: The Central Processing Unit (CPU), main memory. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices	10	CO1		
<b>Unit 2</b>	Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.). Introduction to MS-Word: 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.	10	CO2		
<b>Unit 3</b>	Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.	10	CO3		
<b>Unit 4</b>	Introduction of Operating System: introduction, operating system concepts, types of operating system Computer networks: introduction, types of network {LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.	10	CO4		
<b>Unit 5</b>	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.	10	CO5		
<b>CO-PO and PSO Mapping</b>					

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	2	1	2	-	2	2	3	1	1	-	2	3	2
CO2	3	2	1	2	-	2	2	3	1	1	-	2	3	2
CO3	3	2	1	2	-	2	2	3	1	1	-	2	3	2
CO4	3	2	1	2	-	2	2	3	1	1	-	2	3	2
CO5	3	2	1	2	-	2	2	3	1	1	-	2	3	2

*Strong contribution-3, Average contribution-2, Low contribution-1,*

**Suggested Readings:**

<b>Text- Books</b>	Computer Fundamentals by P.K. Sinha & P. Sinha Fundamentals of Computers by E. Balagurusamy
<b>ReferenceBooks</b>	A first Course in Computers: Saxena, Vikas Publishing House Fundamentals of Computer science - M. Afshar Alam Fundamental of Information Technology by 'D.S. Yadav- New age international
<b>Para Text</b>	<b>Unit 1:</b> Input and Output devices <b>Unit 2:</b> Storage Devices <b>Unit 3:</b> Windows and MS-Word <b>Unit 4:</b> MS- Excel and MS-Power Point <b>Unit 5:</b> Operating System and Computer Network <b>Unit 6:</b> Internet and its Applications

**Recapitulation & Examination Pattern**

**Internal Continuous Assessment:**

Component	Marks	Pattern
Mid Semester	12	MCQ: 4 Short Answer Type Questions: 02 Long Answer Type Question: 01
Class Test	6	MCQ: 02 Short Answer Type Questions: 01 Long Answer Type Question: 01
Online Test/ Objective Test	4	MCQ: 4
Assignment/ Presentation	4	Hard copy/Softcopy
Attendance	4	
<b>Total Marks</b>	<b>30</b>	

<b>Name of the Program</b>	Bachelors of Science Medical laboratory Technique		<b>Year/ Semester:</b>	I <sup>st</sup> year/1 <sup>st</sup> sem
<b>Course Name</b>	Introduction to Quality & Patient Safety	<b>Course Code:</b>	BLT101	<b>Type:</b> Theory
<b>Credits</b>	L:3 T:1 P: 0		<b>Total Sessions Hours:</b>	60
<b>Evaluation Spread</b>	<b>Internal Continuous Assessment:</b>	30 marks	<b>End Term Exam:</b>	70 marks
<b>Type of Course</b>	<input type="radio"/> Compulsory	<input checked="" type="radio"/> Core	<input type="radio"/> Creative	<input type="radio"/> Life Skill
<b>Course Objectives</b>	Understanding Computer fundamental concepts, Input/output devices, Storage device, Operating System and Computer Network, Windows and MS-Office and the Internet and its Applications in the context of computer science.			
<b>Course Outcomes (CO):</b> After the successful course completion, learners will develop following attributes:s:				
<b>Course Outcome(CO)</b>	This course is an introduction to microcomputers their operations hardware and popular software applications. The student will develop the basic skills to use an operating system a word processor and a spreadsheet and use their skill in reporting of sample.			
<b>CO1</b>	Students are able to understand the principles of quality assurance and management, knowledge of Guidelines of NABH, and different quality improvement approaches.			
<b>CO2</b>	Students are able to understand the fundamental aspects of BLS ,basic emergency care and its management			
<b>CO3</b>	Students are able to understand the protocols of bio medical waste management and uses of personal protective equipment.			
<b>CO4</b>	Students are able to understand how to control and prevent infections.			
<b>CO5</b>	Better understanding of antibiotics- its action ,sensitivity and resistance			
<b>CO6</b>	Students are able to understand disaster management and risk reduction.			
<b>Pedagogy</b>	Seminar, PPT, White board, e-Lecture, Classroom teaching			
<b>Internal EvaluationMode</b>	Continuous internal assessment and written examination			
<b>Session Details</b>	<b>Topic</b>	<b>Hours</b>	<b>MappedCO</b>	
<b>Unit 1</b>	Quality assurance and management Concepts of Quality of Care Quality Improvement Approaches, Standards and Norms, Quality Improvement Tools, Introduction to NABH guidelines.	10	CO1	
<b>Unit 2</b>	Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an automated external defibrillator (AED).  Initial recognition and response to heart attack and stroke are also considered part of BLS. Vital signs and primary assessment, Basic emergency care - first aid and triage, Ventilations including use of bag-valve-masks (BVMs)Choking, rescue breathing methods, One- and Two-rescuer CPR, Using an AED (Automated external defibrillator) ,Managing an emergency including moving a patient.	10	CO2	
<b>Unit 3</b>	<b>Bio</b> medical waste management and environment safety Definition of Biomedical Waste, Waste minimization, BMW - Segregation, collection, transportation, treatment and disposal (including color coding), Liquid BMW,Radioactive waste, Metals/ Chemicals/ Drug waste, BMW Management & methods of disinfection Modern Technology for handling BMW,Use of Personal protective equipment (PPE), Monitoring & controlling of cross infection (Protective devices).	10	CO3	
<b>Unit 4</b>	Infection prevention and control Evidence-based infection control principles and practices 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.	10	CO4	

<b>Unit 5</b>	History of antibiotics, How resistance happens and spreads, Types of resistance- intrinsic, acquired passive, Trends in drug resistance, Actions to fight resistance, Bacterial persistence Antibiotic sensitivity, Consequences of antibiotic resistance Antimicrobial Stewardship Barriers and opportunities, tools and models in hospitals.	10	<b>C05</b>
<b>Unit 6</b>	Disaster preparedness and 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.	10	<b>C05</b>

#### CO-PO and PSO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
<b>CO1</b>	2	3	2	3	3	2	3	-	3	3	2	3	2	3
<b>CO2</b>	2	1	1	2	-	3	3	-	3	2	3	2	3	3
<b>CO3</b>	3	1	2	2	1	1	3	-	3	3	2	3	2	1
<b>CO4</b>	3	3	2	3	3	3	3	1	3	3	2	2	3	3
<b>CO5</b>	3	3	2	2	2	2	3	1	3	2	2	3	3	3
<b>CO6</b>	3	-	2	1	-	2	3	1	2	-	-	2	2	2

*Strong contribution-3, Average contribution-2, Low contribution-1,*

#### Suggested Readings:

<b>Text- Books/ ReferenceBooks</b>	<ol style="list-style-type: none"> <li>The Essentials of Patient Safety by Charles Vincent</li> <li>Laboratory quality control and patient safety by De Gruyter</li> </ol>
<b>Para Text</b>	<b>Unit 1:Quality improvement approaches</b> <b>Unit 2: Emergency care</b> <b>Unit 3:Biomedical waste management</b> <b>Unit4:Hospital Infection control</b>

#### Recapitulation & Examination Pattern

**Internal Continuous Assessment: 30 marks (12 marks written exam+18 marks continuous assessment )**

Component	Marks	Pattern
Mid Semester	12	MCQ: 4 Short Answer Type Questions: 02 Long Answer Type Question: 01
Class Test	6	MCQ: 02 Short Answer Type Questions: 01 Long Answer Type Question: 01
Assignment/ Presentation	4	Hard copy/Softcopy
Attendance	4	As per policy
<b>Total Marks</b>	<b>26</b>	

<b>Name of the Program</b>	<b>Bachelors of Science Medical laboratory Technique</b>				<b>Year/ Semester:</b>	<b>I<sup>st</sup> year/1<sup>st</sup> sem</b>								
<b>Course Name</b>	<b>Medical Law &amp; Ethics</b>		<b>Course Code:</b>	<b>BLT102</b>	<b>Type:</b>	<b>THEORY</b>								
<b>Credits</b>	<b>L:3 T:1 P: 0</b>				<b>Total Sessions Hours:</b>	<b>60</b>								
<b>Evaluation Spread</b>	<b>Internal Continuous Assessment:</b>		<b>30</b>		<b>End Term Exam:</b>	<b>70</b>								
<b>Type of Course</b>	<input type="radio"/> Compulsory		<input checked="" type="radio"/> Core		<input type="radio"/> Creative		<input type="radio"/> Life Skill							
<b>Course Objectives</b>	Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical science, growing sophistication of the modern society's legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice													
<b>Course Outcomes (CO):</b> After the successful course completion, learners will develop following attributes:														
<b>Course Outcome(CO)</b>	Student will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague, patients and co-parties.													
<b>CO1</b>	Students are able to understand the principles of Medical ethics ,Malpractices and consequences of irrational drug therapy													
<b>CO2</b>	Students are able to understand rights of patients , organ transplantation and legal rules for medical records													
<b>CO3</b>	Students are able to understand confidentiality , ownership and retention of medical records													
<b>CO4</b>	Students are able to understand and learn guidelines to handle unexpected events and understand the professional attitude and communication with patients and colleagues.													
<b>Pedagogy</b>	Seminar, PPT, White board, e-Lecture, Classroom teaching													
<b>Internal Evaluation Mode</b>	Continuous internal assessment and written examination													
<b>Session Details</b>	<b>Topic</b>					<b>Hours</b>	<b>Mapped CO</b>							
<b>Unit 1</b>	Introduction to Code of conduct Basic principles of medical ethics, Confidentiality Malpractice and negligence, Rational and irrational drug therapy				10		CO1							
<b>Unit 2</b>	Autonomy and informed consent - Right of patients Care of the terminally ill- Euthanasia Organ transplantation Medico legal aspects of medical records				10		CO2							
<b>Unit 3</b>	Medico legal case and type- Records and document related to MLC Ownership of medical records - Confidentiality Privilege communication Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects. Professional Indemnity insurance policy				10		CO3							
<b>Unit 4</b>	Development of standardized protocol to avoid near miss or sentinel events Obtaining an informed consent. Ethics in the profession of Medical Laboratory Science				10		CO4							
<b>CO-PO and PSO Mapping</b>														
<b>CO</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>PSO 1</b>	<b>PSO 2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO 5</b>	<b>PSO6</b>
<b>CO1</b>	2	2	2	1	-	3	-	-	3	2	2	3	1	1
<b>CO2</b>	2	2	2	1	-	3	-	-	3	2	3	3	1	1
<b>CO3</b>	2	2	2	1	-	3	-	-	3	2	3	3	1	1
<b>CO4</b>	2	2	2	1	-	3	-	-	3	2	3	2	1	1
<b>Suggested Readings:</b>														
<b>Text- Books/ Reference Books</b>	Medical Law and Ethics by Bonnie F Fremgen Medical Law and Ethics by Jonathan Herring													
<b>Para Text</b>	<b>Unit 1:Principle of medical ethics</b> <b>Unit 2:Medicolegal aspect</b> <b>Unit 3:Medical record</b> <b>Unit4:Ethics in profession of medical laboratory science</b>													
<b>Recapitulation &amp; Examination Pattern</b>														

<b>Internal Continuous Assessment: 30 marks</b>		
<b>(12 marks written exam+18 marks continuous assessment )</b>		
<b>Component</b>	<b>Marks</b>	<b>Pattern</b>
Mid Semester	12	MCQ: 4 Short Answer Type Questions: 02 Long Answer Type Question: 01
Class Test	6	MCQ: 02 Short Answer Type Questions: 01 Long Answer Type Question: 01
Online Test/ Objective Test	4	MCQ: 4
Assignment/ Presentation	4	Hard copy/Softcopy
Attendance	4	As per policy
Online Test/ Objective Test	30	

<b>Name of the Program</b>	<b>Bachelors of Science Medical laboratory Technique</b>		<b>Year/ Semester:</b>	<b>I<sup>st</sup> year/1<sup>st</sup> sem</b>
<b>Course Name</b>	<b>Basic Preventive Medicine and Community Health Care</b>	<b>Course Code:</b>	<b>BLT103</b>	<b>Type:</b> <b>Theory</b>
<b>Credits</b>	<b>L:3 T:1 P: 0</b>		<b>Total Sessions Hours:</b>	<b>60</b>
<b>Evaluation Spread</b>	<b>Internal Continuous Assessment:</b>	<b>30</b>	<b>End Term Exam:</b>	<b>70</b>
<b>Type of Course</b>	<input type="radio"/> Compulsory	<input checked="" type="radio"/> Core	<input type="radio"/> Creative	<input type="radio"/> Life S
<b>Course Objectives</b>	The subject will introduce the students to the basic concepts of quality in health care and develop skills to implement sustainable quality assurance program in the health system. It will sensitize them in basic emergency care, infection prevention & control with knowledge of bio-medical waste management and antibiotic resistance.			
<b>Course Outcomes (CO):</b> <i>After the successful course completion, learners will develop following attributes:</i>				
<b>Course Outcome(CO)</b>	Student will abide by the rule and regulation of the medicine and have abundant knowledge on professional attitude and communication among the colleague, patients and co-parties.			
<b>CO1</b>	Students are able to have the basic concept health, and public health act, concept of epidemiology and basic emergency care and first aid.			
<b>CO2</b>	Students are able to understand the epidemiology ,etiology ,pathogenesis and control of communicable diseases			
<b>CO3</b>	Students are able to understand national health policies and programs, cancer control program ,nutritional diseases and prevention and management of various diseases			
<b>CO4</b>	Students are able to understand the impacts of population growth and strategies to control			
<b>CO5</b>	Students are able to understand various immunization programs and objective and goals of various society			
<b>Pedagogy</b>	Interactive sessions, group activities, lecture , power point presentations,			
<b>Internal Evaluation Mode</b>	Written examination			
<b>Session Details</b>	<b>Topic</b>	<b>Hours</b>	<b>Mapped CO</b>	
<b>Unit 1</b>	<b>Introduction:</b> 1. Definition and concepts of health, important public health acts 2. Health problems of developed and developing countries, environment and health. 3. Definition and concepts of epidemiology, diseases, types and use of epidemiology. 4. Basic emergency care and first aid.	10 hrs	CO1	
<b>Unit 2</b>	<b>Communicable diseases:</b> 1. Epidemiology, etiology, pathogenesis and control of communicable disease like malaria, cholera, 2. Tuberculosis, leprosy, 3. Diarrhea, poliomyelitis, 4. Viral hepatitis, measles, dengue, rabies, AIDS	10 hrs	CO2	
<b>Unit 3</b>	<b>National Health Policy and Programs:</b> 1. National Health Policy and Programs: DOTS, National AIDS control programme 2. National cancer control programme, Universal immunization programme etc 3. Nutrition and major nutritional problems, etiology, manifestations and prevention, '– components of RCH care. 4. Examination of water, food adulteration, role of regular exercise and yoga in prevention and management of various diseases.	10 hrs	CO3	
<b>Unit 4</b>	<b>National Population Problem:</b> 1. Population, problems of population growth, birth rates 2. Death rates, fertility rates, MMR., CPR 3. Approaches and methods of contraception, Reproductive and child health. 4. Hygiene and sanitation, sanitation barriers, excreta disposal.	10 hrs	CO4	



<b>Unit 5</b>	<b>Immunization and Health Planning:</b> 1. Immunization programme, various national immunization programs and vaccine schedules 2. Family welfare and planning, communicable and non-communicable disease 3. Health planning in India including various committees, national health policy and health goals. 4. Objectives and goals of WHO, UNICEF, Indian Red Cross Society, UNFPA, FAO, ILO	10 hrs	CO5
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**CO-PO and PSO Mapping**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	3	1	3	1	3	-	1	2	3	2	1	1	1
CO2	3	2	1	3	1	3	-	1	3	3	2	1	1	1
CO3	3	2	1	3	1	3	-	1	2	2	3	1	1	1
CO4	1	1	1	2	1	3	-	1	2	2	3	1	1	1
CO5	1	1	1	3	1	3	-	1	3	2	3	1	1	1

*Strong contribution-3, Average contribution-2, Low contribution-1,*

**Suggested Readings:**

<b>Text- Books/ Reference Books</b>	K.Parks & Sunder Lal, (2015),Textbook of Preventive Social Medicine ,3 <sup>rd</sup> edition, Bhanot Publications
<b>Para Text</b>	<b>Unit 1:Introduction to health and diseases</b> <b>Unit 2:Introduction to communicable diseases</b> <b>Unit 3:National health policy and program</b> <b>Unit4:national population program</b> <b>Unit 5 : Immunization &amp; Health planning</b>

**Recapitulation & Examination Pattern**

**Internal Continuous Assessment: 30 marks**

**(12 marks written exam+18 marks continuous assessment )**

Component	Marks	Pattern
Mid Semester	12	MCQ: 4 Short Answer Type Questions: 02 Long Answer Type Question: 01
Class Test	6	MCQ: 02 Short Answer Type Questions: 01 Long Answer Type Question: 01
Online Test/ Objective Test	4	MCQ: 4
Assignment/ Presentation	4	Hard copy/Softcopy
Attendance	4	As per policy
Online Test/ Objective Test	30	

<b>Name of the Program</b>	<b>Bachelor of Medical Laboratory Techniques</b>			<b>Year/ Semester:</b>	<b>1st/1<sup>st</sup> Semester</b>
<b>Course Name</b>	<b>English Communication and soft skills</b>	<b>Course Code</b>	<b>ENG101</b>	<b>Type:-</b>	<b>Theory</b>
<b>Credits</b>	L:3 T:1 P:0			<b>Total Hours</b>	<b>45 hours</b>
<b>Evaluation Spread</b>	<b>Internal Assessment</b>	<b>30</b>		<b>End Term Exam</b>	<b>70</b>
<b>Type of Course</b>	<input type="radio"/> Compulsory	<input checked="" type="radio"/> Core	<input type="radio"/> Creative	<input type="radio"/> Life Skill	
<b>Course Objectives</b>	This course aims to: 1. Develop students in oral presentation, writing, logical organization and structured communication. 2. Help the students to use communication techniques, verbally and non-verbally through which he is able to communicate better which is essential for professional growth. 3. To know the appropriate use of grammar and basic structure of sentences. 4. Elevate confidence among students for listening, speaking, reading and writing better.				
<b>Course Outcomes (CO): After the successful course completion learner will develop following attributes.</b>					
<b>Course Outcome (CO)</b>	<b>Attributes</b>				
<b>CO1</b>	1. Learn appreciation of logical reasoning and organized and effective oral presentation.				
<b>CO2</b>	2. Understand the importance of communication techniques.				
<b>CO3</b>	3. Have better understanding of the basic tools of grammar and sentence structure.				
<b>CO4</b>	4. Be able to communicate better through improved listening, speaking, reading and writing skills.				
<b>Pedagogy</b>	Interactive, discussion-based, student-centric, activity based				
<b>Internal Evaluation Mode</b>	Mid-term Examination: 30 Marks Class test: 12 Marks Class participation or any other : 04 Marks Assignments/Project: 04 Marks Attendance: 04 Marks Class Presentation: 04 Bed Side behavior or Interaction in Class: 02				
<b>Session Details</b>	<b>Topic</b>			<b>Hours</b>	<b>Mapped CO</b>
<b>Unit 1</b>	<b>Introduction to Professional Communication</b> Communication Process Channels of Communication: Verbal and Non-Verbal Barriers of Communication and how to overcome them Nuances of Communication in a hospital environment Role and importance of Professional Communication <b>Basics of English Language Usage and Grammar:</b> Parts of Speech Tenses Euphemisms Portmanteau words Synonyms and antonyms Homophones			15 Hours	CO1
<b>Unit 2</b>	<b>Effective Speaking</b> Importance of Speaking effectively Framing short speeches, nuances of good delivery Practice through Extempore Speech Presentation Skills Delivering short presentations Group Discussion Skills and practice			10 Hours	CO2

<b>Unit 3</b>	<b>Effective Reading and Writing</b> Active Reading Strategies- Previewing and skimming, annotating and highlighting, summarizing and paraphrasing Critical Reading Skills- Identifying main idea, recognizing purpose and tone, evaluating argument and evidence Writing and Structured Crafting Process- Prewriting techniques: brainstorming, free writing, proofreading and editing Adaptive writing for different audiences Future application of adaptive reading and writing skills	10 Hours	CO3
<b>Unit 4</b>	<b>Effective Listening</b> Introduction to Listening Types of Listening Listening in difficult situations Overcoming barriers to Listening Critical Listening and Social Support Techniques to practice better Listening	10 Hours	CO4

**CO-PO and PSO Mapping**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	-	-	2	3	2	3	2	3	3	2
CO2	-	-	3	2	3	3	2	2	3	3
CO3	-	-	2	2	2	3	2	2	3	2
CO4	-	-	2	2	2	2	2	2	2	2

**Strong contribution-3, Average contribution-2, Lowcontribution-1,**

**Suggested Readings:**

<b>Text- Books/ Reference Books</b>	<ol style="list-style-type: none"> <li>1. Professional Communication. 2<sup>nd</sup> edition by Meenakshi Raman and Sangeeta Sharma. Oxford University Press 2014.</li> <li>2. Professional Communication. 3<sup>rd</sup> edition by Raavee Tripathi. SK Kataria and Sons. 2016.</li> <li>3. Communication Skills by Sanjay Kumar and Pushp Lata. Oxford University Press. 2017.</li> </ol>
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**Recapitulation & Examination Pattern**

**Internal Continuous Assessment:**

Component	Marks	Pattern
Class Test	12	Contains <b>01 long question</b> . Question carries <b>04</b> Marks. <b>02 Short questions</b> . Each question carries <b>02</b> Marks <b>04 multiple choice questions</b> . Each question carries <b>01</b> Marks
Class participation or any other	04	To be given on activities and instruction given by subject teacher.
Marks Assignments/Project:	04	Assignment to be made on topics and instruction given by subject teacher.
Class Presentation:	04	To be made on topics and instruction given by subject teacher.
Bed Side behavior or Interaction in Class	02	As per student interaction and observed behavior by subject teacher.
Attendance	04	As per policy
<b>Total Marks</b>	<b>30</b>	

## Department of Medical laboratory technique

### Course Outline Effective From: 2023-24

<b>Name of the Program</b>	<b>Bachelors of Science Medical laboratory Technique</b>			<b>Year/ Semester:</b>	<b>I<sup>st</sup> year/1<sup>st</sup> sem</b>
<b>Course Name</b>	<b>Environmental Science</b>	<b>Course Code:</b>	<b>BLT 104</b>	<b>Type</b>	<b>Theory</b>
<b>Credits</b>	<b>L:3 T:1 P: 0</b>			<b>Total Sessions Hours:</b>	<b>60</b>
<b>Evaluation Spread</b>	<b>Internal Continuous Assessment:</b>	<b>30</b>		<b>End Term Exam:</b>	<b>70</b>
<b>Type of Course</b>	<input type="radio"/> Compulsory	<input checked="" type="radio"/> Core	<input type="radio"/> Creative	<input type="radio"/> Life Sk	
<b>Course Objectives</b>	The student will be made aware of our environment in general, natural resources, ecosystems, environmental pollution and social issues related to environment.				
<b>Course Outcomes (CO):</b> After the successful course completion, learners will develop following attributes:					
<b>Course Outcome (CO)</b>	Students will understand/ evaluate/ develop technologies on the basis of ecological principles and environmental regulations which in turn help in sustainable development.				
<b>CO1</b>	Student will learn about Natural resources available in different categories like Water, Mineral, Food, Energy and Land.				
<b>CO2</b>	Student will learn about the Ecosystem.				
<b>CO3</b>	Student will learn about the Environmental pollution, definition, solid waste management and its prevention.				
<b>CO4</b>	Student will learn about social issues, ethics and a brief overview of about greenhouse effect.				
<b>CO5</b>	Student will learn about the human population and environment by focusing the human health and their rights.				
<b>Pedagogy</b>	Class room Teaching, e-Lecture, Videos, Seminar, Power point presentation				
<b>Internal Evaluation Mode</b>	Written examination				
<b>Session Details</b>	<b>Topic</b>	<b>Hours</b>		<b>Mapped CO</b>	
<b>Unit 1</b>	<b>Natural resources: Renewable and non-renewable resources :( 10 Hrs.)</b> <ol style="list-style-type: none"> <li>Water Resources: Use and over utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.</li> <li>Mineral Resources: Use and exploitation, environmental effects of extracting and using minerals resources, case studies.</li> <li>Food Resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer -pesticide problems, Water logging, Salinity, case studies.</li> <li>Energy Resources: Growing energy needs, renewable and nonrenewable energy sources, use of alternate energy sources, case studies.</li> <li>Land Resources: Land as a resource, Land degradation, Man induced landslides, Soil erosion and desertification. - Role of an individual in conservation of natural resources - Equitable use of resources for sustainable life styles.</li> </ol>	10		CO1	
<b>Unit 2</b>	<b>Ecosystem:</b> <ol style="list-style-type: none"> <li>Concept of an Ecosystem, Structure and Function of an Ecosystem</li> <li>Producer Consumer and decomposers</li> <li>Energy flow in the Ecosystem</li> <li>Ecological Succession.</li> </ol>	10		CO2	
<b>Unit 3</b>	<b>Environmental Pollution:</b> <ol style="list-style-type: none"> <li>Definition, Causes, effects and control measures of-Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Nuclear Hazards</li> <li>Solid Waste Management: Causes, effects and control measures of urban and Industrial Wastes.</li> </ol>	10		CO3	

			3. Role of an individual in prevention of pollution. 4. Pollution case studies & Disaster Management: floods, earthquake, cyclones and landslides											
<b>Unit 4</b>	<b>Social Issues &amp; Environment</b>			10	CO4									
	1. Resettlement and Rehabilitation of people; its problems and concerns, case studies. 2. Environmental ethics: issues and possible solutions 3. Green house effect and global Warming, effects of acid Rain and their remedial measures and ozone Layer depletion.													
<b>Unit 5</b>	<b>Human Population &amp; Environment:</b>			10	CO5									
	1. Population growth variation among nations, Population Explosion, Family welfare programme 2. Environment and Human Health 3. Human Rights. 4. HIV/AIDS, Women and Child welfare 5. Role of Information Technology in Environment and Human Health, Case studies													
<b>CO-PO and PSO Mapping</b>														
<b>CO</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>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	<b>PSO6</b>
<b>CO1</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO2</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO3</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO4</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CO5</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Strong contribution-3, Average contribution-2, Low contribution-1,</i>														
<b>Suggested Readings:</b>														
<b>Text- Books/ Reference Books</b>	1. Agarwal, K. C. 2001 Environment Biology, Nidi Publ. Ltd. Bikaner. 2. Jadhav, H &Bhosale, V.M. 1995. Environment Protection and Laws. Himalaya Pub House, Delhi 284 p. 3. Rao M. N. &Datta A.K. 1987. Waste water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345 p. 4. Daniel D. Chiras 2010. Environmental Science. 1st Indian Edition, Jones and Bartlett India Pvt. Ltd. 4262/3, Ansar Road, Daryaganj, New Delhi. 5. Principle of Environment Science by Cunningham, W.P. 6. Essentials of Environment Science by Joseph. 7. Environment Pollution Control Engineering By Rao, C.S.													
<b>Para Text</b>	<b>Unit 1: Natural resources: Renewable and non-renewable resources</b> <b>Unit 2: Ecosystem</b> <b>Unit 3: Environmental Pollution</b> <b>Unit 4: Social Issues &amp; Environment</b> <b>Unit 5: Human Population &amp; Environment</b>													
<b>Recapitulation &amp; Examination Pattern</b>														
<b>Internal Continuous Assessment:</b>														
<b>Component</b>	<b>Marks</b>	<b>Pattern</b>												
Mid Semester	12	MCQ: 4 Short Answer Type Questions: 02 Long Answer Type Question: 01												
Class Test	6	MCQ: 02 Short Answer Type Questions: 01 Long Answer Type Question: 01												
Online Test/ Objective Test	4	MCQ: 4												

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	-	3	3	3	-	-	1	3	-	3	3	3
CO2	3	3	-	3	3	3	-	-	1	3	-	3	3	3
CO3	3	3	-	3	3	3	-	-	1	3	-	3	3	3
CO4	3	3	-	3	3	3	-	-	1	3	-	3	3	3

*Strong contribution-3, Average contribution-2, Low contribution-1,*

**Suggested Readings:**

<b>Reference Books</b>	Practical Haematology by J.B. Dacie
<b>Para Text</b>	<b>Unit 1: Tools and techniques in hematology</b> <b>Unit 2: Leukocyte count</b> <b>Unit 3: APTT</b> <b>Unit4: Blood smear and Haemoglobin detection technique</b>

**Recapitulation & Examination Pattern**

**Internal Continuous Assessment:**

Component	Marks	Pattern
Mid Semester	12	MCQ: 4 Short Answer Type Questions: 02 Long Answer Type Question: 01
Class Test	6	MCQ: 02 Short Answer Type Questions: 01 Long Answer Type Question: 01
Online Test/ Objective Test	4	MCQ: 4
Assignment/ Presentation	4	Hard copy/Softcopy
Attendance	4	
<b>Total Marks</b>	<b>30</b>	