SHRI VISHWAKARMA SKILL UNIVERSITY

(State University enacted under the Government of Haryana Act 25, 2016) Dudhola, Palwal, Haryana – 121102)

2025 Onwards

B.Voc. (MLT) Hons. with Research

SCHEME and SYLLABUS

Skill Department of Life Sciences & Healthcare

Skill Faculty Applied Sciences and Humanities

SVSU

Semester I

Category	Subject	Subject Code	Credit			Marks							Hours		
						Theory			Practical			Total			
			Th	P/TU	To	I	E	To	I	E	To		T	P	To
Major Course-1	Human Anatomy and Physiology	24UMLT01	2	2	4	15	35	50	35	15	50	100	30	60	90
	Human Anatomy and Physiology Lab	24UMLT02													
Major Course-2 (QP/NOS)	Introduction of Medical Laboratory	24UMLT03	2	2	4	15	35	50	35	15	50	100	30	60	90
	Introduction of Medical Laboratory Lab	24UMLT04													
Major Course-3 (QP/NOS)	Phlebotomy & Ethics	24UMLT05	2	2	4	15	35	50	35	15	50	100	30	60	90
	Phlebotomy & Ethics Lab	24UMLT06													
Multidisciplinary-1	Psychology and Life	24UPSY01	2	1	3	30	70	100	0	0	0	100	30	30	60
Ability Enhancement Courses (AEC-1)	Employability Skills	24UENG03	1	1	2	15	35	50	35	15	50	100	15	30	45
	Employability Skills Practical	24UENG04													
Value Added Courses (VAC-1)	Environmental Sciences	24UEVS01	2	0	2	30	70	100	0	0	0	100	30	0	30
Total			11	8	19	120	280	400	140	60	200	600	165	240	405

Semester II

Category	Subject	Subject Code	Credit			Marks							Hours		
						Theory			Practical			Total			
			Th	P/TU	To	I	E	To	I	E	To		T	P	To
Major Course-4	Clinical Hematology	24UMLT07	2	2	4	15	35	50	35	15	50	100	30	60	90
	Clinical Hematology Lab	24UMLT08													
Major Course-5 (QP/NOS)	Medical Laboratory Procedure & Infection Control	24UMLT09	2	2	4	15	35	50	35	15	50	100	30	60	90
	Medical Laboratory Procedure & Infection Control Lab	24UMLT10													
Multidisciplinary-2	Indian Sociology	24USOC05	2	1	3	30	70	100	0	0	0	100	30	30	60
Ability Enhancement Courses (AEC-2)	English Language & Business Communications	24UENG01	1	1	2	15	35	50	35	15	50	100	15	30	45
	English Language & Business Communications Lab	24UENG02													
Value Added Courses (VAC-2)	Yoga and Health Skills – II	24UYHS01	2	0	2	30	70	100	0	0	0	100	30	0	30
Project	Project-1 (Minor)	24UPRJ01	0	2	2	0	0	0	70	30	100	100	0	60	60
Skill Enhancement Courses (SEC)	OJT-1	24UOJT01	0	4	4	0	0	0	70	30	100	100	0	120	120
Total			9	12	21	105	245	350	245	105	350	700	135	360	495

Semester III

Category	Subject	Subject Code	Credit			Marks							Hours		
						Theory			Practical			Total			
			Th	P/TU	To	I	E	To	I	E	To		T	P	To
Major Course-6	Basics of Microbiology	24UMLT11	2	2	4	15	35	50	35	15	50	100	30	60	90
	Basics of Microbiology Lab	24UMLT12													
Major Course-7 (QP/NOS)	Histopathology & Histo Technique	24UMLT13	2	2	4	15	35	50	35	15	50	100	30	60	90
	Histopathology & Histo Technique Lab	24UMLT14													
Major Course-8 (QP/NOS)	Cytopathology & Cytotechnique	24UMLT15	2	2	4	15	35	50	35	15	50	100	30	60	90
	Cytopathology & Cytotechnique Lab	24UMLT16													
Multidisciplinary-3	E-Commerce	24UBPM23	2	1	3	30	70	100	0	0	0	100	30	30	60
Ability Enhancement Courses (AEC-3)	Entrepreneurship	24UBPM10	1	1	2	30	70	100	0	0	0	100	15	30	45
Value Added Courses (VAC-3)	Human Values and Professional Ethics	24UHPE01	2	0	2	30	70	100	0	0	0	100	30	0	30
Total			11	8	19	135	315	450	105	45	150	600	165	240	405

Semester IV

Category	Subject	Subject Code	Credit			Marks							Hours		
						Theory			Practical			Total			
			Th	P/TU	To	I	E	To	I	E	To		T	P	To
Major Course-9	Clinical Biochemistry-I	24UMLT17	2	2	4	15	35	50	35	15	50	100	30	60	90
	Clinical Biochemistry-I	24UMLT18													
Major Course-10 (QP/NOS)	Advance Histo Technique & Quality Control	24UMLT19	2	2	4	15	35	50	35	15	50	100	30	60	90
	Advance Histo Technique & Quality Control	24UMLT20													
Multidisciplinary-4	Statistics for Everyone	25USTA01	2	1	3	30	70	100	0	0	0	100	30	30	60
Ability Enhancement Courses (AEC-4)	Foreign Language		2	0	2	30	70	100	0	0	0	100	30	0	30
Internship-1			0	2	2	0	0	0	70	30	100	100	0	60	60
Project	Project-2 (Major)	24UPRJ02	0	2	2	0	0	0	70	30	100	100	0	60	60
Skill Enhancement Courses (SEC)	OJT-2	24UOJT02	0	4	4	0	0	0	70	30	100	100	0	120	120
Total			9	12	21	105	245	350	245	105	350	700	135	360	495

Semester V													
Subjects	**Credit**			**Marks**							**Hours**		
				Theory			**Practical**			**Total**			
	Th	**P**	**To**	**I**	**E**	**To**	**I**	**E**	**To**		**T**	**P**	**To**
Skill Enhancement Courses (SEC)-OJT /Project/Workshop	0	20	20	0	0	00	245	105	350	350	0	600	600

Semester VI													
Subjects	**Credit**			**Marks**							**Hours**		
				Theory			**Practical**			**Total**			
	Th	**P**	**To**	**I**	**E**	**To**	**I**	**E**	**To**		**T**	**P**	**To**
Skill Enhancement Courses (SEC)-OJT /Project/Workshop	0	20	20	0	0	00	245	105	350	350	0	600	600

Semester VII													
Subjects	**Credit**			**Marks**							**Hours**		
				Theory			**Practical**			**Total**			
	Th	**P**	**To**	**I**	**E**	**To**	**I**	**E**	**To**		**T**	**P**	**To**
Major Course-11 (Transfusion Medicine & Blood Banking)	2	2	4	15	35	50	35	15	50	100	30	60	30
Major Course-12 (Immunology & Serology)	2	2	4	15	35	50	35	15	50	100	30	60	30
Major Course-13 (Research Methodology and Biostastics)	2	2	4	15	35	50	35	15	50	100	30	60	30
Minor Course-1(Clinical Biochemistry II)	2	2	4	15	35	50	35	15	50	100	30	60	30
Minor Course-2 (Clinical Microbiology and Virology)	2	2	4	15	35	50	35	15	50	100	30	60	30
Total	10	10	20	75	175	250	175	75	250	500	150	300	450

Semester VIII													
Subjects	**Credit**			**Marks**							**Hours**		
				Theory			**Practical**			**Total**			
	Th	**P**	**To**	**I**	**E**	**To**	**I**	**E**	**To**		**T**	**P**	**To**
Major Course-14 (Parasitology & Mycology)	2	2	4	15	35	50	35	15	50	100	30	60	90
Major Course-15 (Molecular Biology & Genetics)	2	2	4	15	35	50	35	15	50	100	30	60	90
Minor Course-3 (Systemic Pathology)	2	2	4	15	35	50	35	15	50	100	30	60	90
Research Project/ Dissertation	0	8	8	0	0	0	70	30	100	100	00	240	240
Total	6	14	20	45	105	150	175	75	250	400	90	420	510

Balanced hours (for 1200 Hrs/Year) will be completed by assignment/self-learning/ library/ file)

SUBJECT: ANATOMY & PHYSIOLOGY

SUBJECT CODE: 24UMLT01

Objective: The objective of this course is to give detailed knowledge of Human body structure & functioning of various systems, components, glands and their secretion of hormones.

Course Outcome: At the end of this course, the students will be able:

1. To demonstrate the anatomical structure of human body.
2. To illustrate the anatomical positions and terminology of the course.
3. To understand the basic knowledge of cells, tissues and blood.
4. To analyze the functioning of organs and organ systems in human body.

Unit	Topic	Key Learning
1	Introduction to Physiology & Anatomy of the Human body	Composition of body (Cellular level and tissue level), Homeostasis, Basic anatomical terminology, anatomical position, anatomical planes.
2	Musculoskeletal System, Nervous system and Cardiovascular system	Bones (Upper limbs & Lower limbs), Joints (Classification, structure and movements), Muscles (Types, structure and properties), Brief anatomy and physiology of Nervous system and Cardiovascular system.
3	Systemic anatomy & Physiology	Brief anatomy and physiology of Respiratory System, Digestive System, Excretory System.
4	Blood & Lymphatic System, Reproductive System	Development, Composition and function of blood, Lymphatic tissue and organs (Types and functions), Brief anatomy and physiology of Reproductive System.
5	Endocrine System	Different Glands, hormones and functions (Hypothalamus, Pituitary, Thyroid, Adrenal, Endocrine Pancreas and Parathyroid)

Test Books:

1. Human Anatomy 5 (Vol) 6th edition 2001; B.D. Chaurasia, CBS Publishers & Distributors.
2. Medical Physiology 4th edition, GK Pal.
3. Ross & Wilson Anatomy & Physiology in Health & Illness by Waugh.
4. Text book of Medical Physiology by Guyton (AC).

Reference Books:

1. Human Anatomy 5 (Vol) 6th edition 2001; B.D. Chaurasia, CBS Publishers & Distributors.
2. Human Anatomy 3 (Vol) 2nd edition -1999 by Inderbir Singh, Jaypee brothers Medical Publishers.
3. Review of Medical Physiology by Ganong.

SUBJECT: ANATOMY & PHYSIOLOGY LAB

SUBJECT CODE: 24UMLT02

Objective: The objective of this course is to impart knowledge of Anatomy & Physiology of Human body.

Course Outcomes: After completion of the course student will be able:

1. To identify the anatomical structure of human body.
2. To understand the basic knowledge of cells, tissues and blood.
3. To determine the function of organ and organ system in human body.

List of Practical:

1. To demonstrate the skeleton system of human body.
2. To identify the skeleton - Articulated and disarticulated.
3. To determine the various Respiratory organs of human body.
4. To illustrate the various Excretory organs of human body.
5. To demonstrate the various Cardiovascular organs of human body.
6. To elaborate the various Digestive organs of human body.
7. To perform and measure the blood pressure.
8. To recording and monitoring of pulses and body temperature.

Text Books:

1. Ross & Wilson Anatomy & Physiology in Health & Illness by Waugh.
2. Text book of Medical Physiology by Guyton (AC).
3. Theory and Practice of Histological Techniques by Bancroft (JD).

Reference Books:

1. Practical Textbook B.D. Chaurasia Human Anatomy 6th edition 2001; CBS Publishers & Distributors.
2. Practical Textbook of Anatomy by Inderbir Singh 2nd edition -1999 Jaypee brothers Medical Publishers.
3. Practical Textbook Medical Physiology 4th edition, GK Pal.
4. Anatomy and Physiology for Healthcare by Paul Marshall; Beverly Gallacher; Jim Jolly; Shupikai Rinomhota (EBSCO eBook).
5. Schaum's Outlines: Human Anatomy and Physiology by Kent Van de Graaff; R. Rhees; Sidney Palmer; R Ward Rhees; Sidney L. Palmer; Kent M. Van De Graaff.

SUBJECT: INTRODUCTION OF MEDICAL LABORATORY

SUBJECT CODE: 24UMLT03

Objective: The objective of this course is to:

1. Familiarized students with foundational understanding of medical laboratory sciences, including terminology, principles, and basic techniques used in clinical diagnostics.
2. Enable learners, understand the significance of the pre-analytical phase in laboratory testing.
3. Facilitate students gain knowledge about external services, including the selection and procurement of equipment and consumable supplies.
4. Educate the student about healthcare systems & safety protocols and procedures specific to working in a medical laboratory environment, emphasizing biohazard handling, infection control, and proper use of personal protective equipment (PPE).

Course Outcomes: After completing this course, the students will be able to:

1. Understand the role of a medical laboratory professional in the healthcare system, and the scope, purpose and career opportunities in the field of medical laboratory science.
2. Exhibit basic knowledge of patient preparation for the specimen collection and selection of various sites for drawing blood sample.
3. Follow medical laboratory etiquettes and external services.
4. Implement biosafety guidelines and standardize protocols to avoid mis-happenings.
5. Understand the healthcare delivery system in India.

Unit	Topic	Key Learning
1	Introduction to medical laboratory	Introduction to Medical laboratory, definition of a pathologist, technician, technologists, layout plan & design, infrastructure, environmental condition, basic sensitization to hematology, clinical pathology, clinical biochemistry, clinical microbiology, histopathology and cytology. Job description, evaluation & performance-personnel, qualification, induction training, education continual improvement, performance and review, understand patient's rights & responsibilities in healthcare, Introduction to healthcare related Medical Terminology
2	Pre-analytical procedures	Procedure for patient booking, patient preparation and proper site selection for venipuncture, Needle insertion technique, order of draw, Tube filling, needle removal and sharp disposal, verbal request for add on tests
3	Assist of patient and procedures	Patient instructions for specimen collection (sputum, semen, urine & stool) Understand filling of different types test request forms, method of assisting the patient before, and during collection of the blood specimen.

4	Laboratory etiquettes and external services	Understand need for compliance of organizational hierarchy and reporting Understand the legal and ethical issues. Understanding importance of records, documentation & reports. External services & Supplies-Selection of purchase, equipment & consumable supplies, Document policy & procedures
5	Biosafety level and healthcare delivery system	Biosafety: its various levels and importance in a medical laboratory. Standardized protocols to avoid near miss or sentinel events. Healthcare delivery system in India at primary, secondary and tertiary care, community participation in healthcare delivery system, issues in health care delivery system in India

Text Books:

1. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai.
2. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth Heinmann, Oxford.
3. Medical Laboratory Manual for Tropical Countries by Monica Cheesbrough; Cambridge University Press, UK.
4. Medical Laboratory Science Theory and Practical by J Ochei and A Kolhatkar, Tata McGraw Hill Publishing Company Ltd., New Delhi 2000 Ed.
5. Medical Laboratory Technology by Satish Gupte, JP Publishers.
6. Clinical Laboratory Science: The Basics and Routine Techniques" by Jean Jorgenson Linné and Karen Munson Ringsrud.
7. Laboratory Management by Puthwilliams.

Reference Books:

1. Clinical Laboratory Science Review by Robert R. Harr, ASCP Press.
2. Clinical Laboratory Science: The Basics and Routine Techniques by Jean J. Schiemann, Delmar Cengage Learning.
3. Clinical Laboratory Science: Strategies for Practice by Mary Louise Turgeon, Pearson Education.
4. Medical Laboratories Management- Cost effective methods by Sangeeta Sharma, Rachna.

SUBJECT: INTRODUCTION OF MEDICAL LABORATORY LAB

SUBJCET CODE: 24UMLT04

Objective: The objective of this course is to:

1. To ensure that the laboratory environment is clean, organized, and free from contaminants, additionally, maintaining an equipment log book.
2. To optimize the use of space, enhance workflow efficiency, and ensure the safety of personnel by designing a functional and ergonomic laboratory layout.
3. To familiarize students with the different types of laboratory apparatus.
4. To expose students to the latest advancements in laboratory and hospital setups, including the use of modern technology, equipment, and protocols, preparing them for real-world applications.
5. To demonstrate the principles and techniques of using various equipment in medical laboratory.

Course Outcomes:

1. To understand the importance of cleanliness, hygiene and maintain log book in a lab setting.
2. Learner will develop to think critically about space utilization, equipment placement, and the functionality of a laboratory.
3. Students will become familiar with the various types of glassware, apparatus, and plastic ware.
4. The various lab visits allow students to compare and contrast different lab setups, equipment, and methodologies used in various labs.
5. Understanding how modern laboratory practices are applied in real-world hospital settings, bridging the gap between academic learning and professional application.
6. Video and visual demonstration reinforces learning by allowing students to visually observe, demonstrate and replicate proper techniques in a controlled manner.
7. Students will learn the principles behind the separation of serum and plasma using a centrifuge, a fundamental technique in clinical and research laboratories.

Practical/Laboratory Content:

1. Preparation and implementation of cleaning of lab and maintain equipment's log book.
2. Planning and making layout/design for each laboratory.
3. To demonstrate glass wares, apparatus and plastic wares used in laboratory.
4. Visit to each lab in the Department.
5. Modern Laboratory set up and hospital setup.
6. Making inventory for each lab.
7. Video demonstration for specimen collection.
8. To separate serum and plasma by centrifuge method.

Text Books:

1. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai.
2. Introduction to Medical Lab Technology by F.J. Baker & R.E. Silverton, ISBN NO. 13, edition 7th, Publisher Hodder Arnold.
3. Medical Laboratories Management- Cost effective methods by Sangeeta Sharma, Rachna, ISBN 13, Latest edition, Publisher Viva books.
4. Medical Laboratory Science: Theory and Practice by J Ochei and A Kolhatkar Latest edition, ISBN 13, Publisher McGraw Hill Education.
5. NABL Guidelines 6. ISO15189:2022.

Reference Books:

1. Laboratory Design Guide by J. E. M. Heikens, J. R. H. Schenk, and M. K. J. E. de Waal, Wiley
2. Laboratory Management: Principles and Processes by J. Michael Miller and J. L. Andrews, CRC Press.
3. Laboratory Inventory Management by Robert J. Ainsworth, Elsevier.

SUBJECT: PHLEBOTOMY & ETHICS

SUBJECT CODE: 24UMLT05

Objective: The objective of this course is:

1. To Understand the specimen collection for Medical laboratory analysis.
2. To enhance the ability of analytical methods in the Diagnostics sector. Hence collecting a specific specimen for a given analysis needs special attention to obtain satisfactory results.
3. To develop complete details of specific requirements for every analysis pertaining to every branch of Medical Laboratory Science.
4. To impart the knowledge of medico legal aspects and maintain of medical records as per medical ethics guidelines.

Course Outcomes: At the end of the course, students will be able to:

1. Identify the major blood vessels of hand.
2. Perform the various procedure of blood collection.
3. Demonstrate the various instruments used for blood collection.
4. Understand the different types of Malpractice and negligence in medical laboratory practice.
5. Students will be familiarized with the ethics in the profession of medical laboratory science.

Unit	Topic	Key Learning
1	Blood Collection	Requirement and methods of collection, transport, preservation, and processing of various clinical Specimens, Blood collection for hematological investigations, Venipuncture, Capillary blood, Arterial blood, Precautions during collection, Vacutainer tubes, its type and uses, sample acceptance and rejection criteria.
2	Anticoagulants	Preparation of anticoagulants EDTA, Sodium citrate, Sodium fluoride etc. Definition and various types of anticoagulants along with their mode of action and uses in various investigations.
3	Quality assurance	Introduction of quality assurance , quality control system and internal and external quality control, Introduction and importance of calibration and validation of clinical laboratory instrument.
4	Medical ethics	Basic principles of medical ethics - Confidentiality, Medical ethics – Definition - Goal - Scope. Introduction to Code of conduct, Autonomy and informed consent - Right of patients, Care of the terminally ill- Euthanasia, Organ transplantation.
5	Medico legal aspects of medical records	Introduction to basics of good laboratory practice, Medico legal case and type with Case studies, Confidentiality Privilege Communication Release of medical information, Ethics in the profession of Medical Laboratory Science, the sexual harassment of women at work place (Prevention, Prohibition and Redressed) POSH Act.

Text Books:

1. Medical Laboratory Technology Vol. 1 by KL Mukherjee; Tata McGraw Hill Publishers, New Delhi.
2. An Introduction to Medical Laboratory Technology by FJ Baker; Butterworth Heinmann, Oxford
3. Medical Laboratory Manual for Tropical Countries by Monica Cheesbrough; Cambridge University Press, UK Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai.
4. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai.

Reference Books:

1. Practical Haematology by JV Decei; ELBS with Curchill Living Stone; UK
2. Medical Laboratory Science Theory and Practical by J Ochei and A Kolhatkar, Tata McGraw Hill Publishing. Company Ltd., New Delhi 2000 Ed.
3. Medical Lab. Technology by Satish Gupte, JP Publishers
4. Laboratory Management by Puthwilliams.
5. Phlebotomy Handbook: Blood Specimen Collection from Basic to Advanced Diana Garza (Author), Kathleen Becan-McBride EdD MLS (ASCP) CM (Author).

SUBJECT: PHLEBOTOMY & ETHICS LAB

SUBJECT CODE: 24UMLT06

Objective:

1. To understand the specimen collection for Medical laboratory analysis.
2. To be enhance the ability of analytical methods in the Diagnostics sector. Hence collecting a specific specimen for a given analysis needs special attention to obtain satisfactory results.
3. To be develop complete details of specific requirements for every analysis pertaining to every branch of Medical Laboratory Science.
4. To impart the knowledge of medico legal aspects and maintain of medical records as per medical ethics guidelines.

Course Outcomes: At the end of the course student will be able:

1. To identify the major blood vessels of hand.
2. To perform the various procedure of blood collection.
3. To demonstrate the various instruments used for blood collection.
4. Understand the different types of Malpractice and negligence in medical laboratory practice.
5. Students will be familiarized with the ethics in the profession of medical laboratory science.

List of Practical:

1. Collection of venous and capillary blood.
2. Procedure of urine collection (routine and timed sample)
3. Procedure of stool collection
4. Procedure of swabs from various sites
5. To prepare of various anticoagulants used for blood collection & transportation
6. Preparation of various Disinfectants.
7. Demonstration of various Safety precautions to be taken in different laboratories
8. To demonstrate of patient consent form.

Text Books:

1. Medical Law and Ethics by Bonnie F Freemen.
2. Medical Law and Ethics by Herring.
3. Phlebotomy Handbook: Blood Specimen Collection from Basic to Advanced Diana Garza (Author), Kathleen Becan-McBride EdD, MLS (ASCP) CM (Author).

Reference Books:

1. Medical Laboratories Management- Cost effective methods by Sangeeta Sharma, Rachna Agarwal, Sujata Chaturvedi and Rajiv Thakur.
2. ICMR guidelines on Medical ethics.

SUBJECT: PSYCHOLOGY AND LIFE

SUBJECT CODE: 24UPSY01

Objective:

1. To develop appreciation about human behavior and human mind in the context of learners' immediate society and environment.
2. To develop in learners an appreciation of multidisciplinary nature of psychological knowledge and its applications in various aspects of life.
3. To enable learners to become perceptive, socially aware and self-reflective.
4. To facilitate students' quest for personal growth and effectiveness, and to enable them to become responsive and responsible citizens.
5. To develop in learners, the understanding of abnormal behavior, myths, symptoms and treatment of psychological disorders.

Course Outcomes:

1. Understand how psychological theories and principles relate to everyday life and apply knowledge of Behavior modification and life skill training to solve everyday problems.
2. Students are exposed to the elementary scientific research methods, techniques, counselling skills, ethics and evaluating skills of Psychology.
3. Apply psychological principles to understand personal as well as social issues and problems.
4. This course will impart in students an appreciation of the complex issues surrounding abnormal behavior both as experts and novices think about it.
5. Students would be able to diagnose a disorder, prescribe a treatment, and make a prognosis. They would also get an insight into the skills which are required by a psychologist.
6. The type of knowledge this course imparts is precisely the type used by professional practitioners.
7. Students can review current research findings and trends relative to the development and description of maladaptive

Unit	Topic	Key Learning
1	An Introduction to Psychology	Meaning, Branches of Psychology; Myths and Misconceptions of Psychology; Role of a Psychologist
	Self-Concept	Nature, Self-discrepancies, factors shaping the self-concept. Self Esteem: Nature, development and importance.
2	Verbal non-Verbal Communication	General principles, Significance of communication.
	Attitude, Prejudice and Stereotypes	Nature, Characteristics, Formation and Change

3	Gender and Behavior	Gender stereotypes, gender and similarities and differences, personality traits and social behavior
	States of Mind	Nature of consciousness; changes in consciousness- sleep-wake schedules. Extended states of Consciousness: Hypnosis, Meditation and Hallucinations
4	Abnormal behavior	Myths and realities, causes of abnormality
	Anxiety, Personality and Mood Disorders	Nature, Characteristics, symptoms and Treatment of Disorders.

Text Books & References Books:

1. Atwater, E (1995) Psychology for Living: Adjustment, Growth and Behaviour, New Delhi: Parentie Hall of India Ltd.
2. Weiten Wayne & Lloyd Margaret A. (1997), Psychology Applied to Modern Life: Adjustment in the 90s (5th edn.) pp. 225-226, Books/Cole Publishing Company, USA.
3. WeyneWeiten and Margaret A. Lloyd, "Psychology Applied to Modern Life Adjustment in the 21st Century". 7th Edition, Thomson Wadsworth. Robert. S. Feldman, "Understanding Psychology", 6th edition.
4. Weyne Weiten and Margaret A. Lloyd, "Psychology Applied to Modern Life- Adjustment in the 21st Century". 7th Edition, Thomson Wadsworth.
5. Robert. S. Feldman, "Understanding Psychology", 6th edition.
6. Atkinson and Atkinson, "Introduction to Psychology.

SUBJECT: EMPLOYABILITY SKILLS

SUBJECT CODE: 24UENG03

Objective: This course will introduce students to Basics of Employability Skills with a focus on Attitude, Communication, Etiquettes etc. to enable them practice or showcase professional behavior in formal context.

Learning Outcomes: After completing this course, the learners will be able to:

1. Learners will be able to use soft skills effectively.
2. Learners will demonstrate a professional behaviour at workplace.
3. Learners will learn Interview skills with ability to prepare for interviews and perform well in the same.
4. Learners will be able to deal with various types of customers in an effective manner.

Unit Name	**Content**
Soft Skills	• Soft Skills- Introduction to soft skills, Aspects and importance of soft skills. • Personality Development: Types of personality; • SWOT Analysis, Goal Setting
Organizational Behaviour	• Types of Behavior • Emotional Intelligence • Time Management • Decision Making • Critical Thinking • Team Intelligence and Leadership
Interview Skills	• Interview- Types, and Process • Resume Writing • Job Application • Research about Industry and • Mapping of Job Competencies with Personal Skills
Interpersonal Skills	• Workplace Communication • Active Listening • Positive Attitude • Negotiation Skills

Suggested Readings:

- Bovee, C., & Thill, J.V., and Raina, R.L. Business Communication Today. New York: Pearson, 2016.
- Lata, Pushp, and Sanjay Kumar. Communication Skills. 2nd ed. New Delhi: OUP, 2019.

- Lehman, C. M., Dufrene D. D., and Sinha, M. BCOM: The South Asian Perspective on Business Communication. New Delhi: Cengage Learning, 2016.
- Monippally, Matthukutty, M. Business Communication: From Principles to Practice. New Delhi: McGraw Hill Pub., 2018.
- Mukerjee, H. S. Business Communication: Connecting at Workplace. New-Delhi: Oxford University Press, 2012.
- Murphy, H. A., Hildebrandt, H.W., and Thomas, J.P. Effective Business Communication. Boston: McGraw-Hill Companies, 1997.
- Post, Emily. The Etiquette Advantage in Business. New York: Collins, 2005.
- Ramesh, Gopalaswamy, and Mahadevan Ramesh. The Ace of Soft Skills: Attitude, Communication and Etiquette for Success. Noida: Pearson, 2019.
- Sandra, M. O. Handbook of Corporate Communication and Strategic Public Relations: Pure and Applied. New Delhi: Routledge, 2004.
- Sinha, K. K. Taxmann's Business Communication.4th Revised ed. New Delhi: Taxmann's Pub., 2018.
- Taylor, Grant. English Conversation Practice. Indian ed. Chennai: McGraw Hill Education Pvt. Ltd., 2017.

SUBJECT: EMPLOYABILITY SKILLS PRACTICAL

SUBJECT CODE: 24UENG04

Course Objective: This course is designed to strengthen the communication abilities of the learners by providing them hands-on practice.

Learning Outcomes: After completing this course, the learners will be able to:

1) Demonstrate knowledge and understanding of a range of professional or public communication situations.

2) Perform effectively in diverse professional and public communication situations like interviews and negotiations, drafting emails and resume etc.

Details:

1. Role Play in Business Affairs
2. Group Discussion
3. Resume writing
4. Listening Skills
5. Telephone etiquettes
6. Team building
7. Presentation skills
8. SWOT
9. Goal Setting

Note: The teacher should play the role of the facilitator and allow the learners maximum time to practice these activities. The focus should be primarily on helping the learners overcome the LSWR barrier and gradually move towards honing these skills to enable the learners use them in professional communication situations.

SUBJECT: ENVIRONMENTAL SCIENCE

SUBJECT CODE: 24UEVS01

<table>
<tr><td>Specialization</td><td>Value Added Course/ Audit Course</td><td>Structure (LTP)</td><td>2</td><td>0</td><td>0</td></tr>
<tr><td>Offered for</td><td>UG</td><td>Status</td><td>Core √</td><td colspan="2">Elective</td></tr>
<tr><td>Faculty</td><td>SFASH</td><td>Type</td><td>New √</td><td colspan="2">Modification</td></tr>
<tr><td>Credits</td><td>2</td><td rowspan="2">Marks</td><td>Internal</td><td colspan="2">30</td></tr>
<tr><td>Hours</td><td>30</td><td>External</td><td colspan="2">70</td></tr>
<tr><td>Pre-requisite</td><td>Nil</td><td>To take effect from</td><td colspan="3">2024-2025</td></tr>
<tr><td>Submission date</td><td>13-07-2024</td><td>Date of approval by BoS</td><td colspan="3">23-07-2024</td></tr>
<tr><td>Course Objective</td><td colspan="5">To develop foundation on principles of environmental studies and concept of structure and function of different compartments of the environment.</td></tr>
<tr><td>Course Outcome</td><td colspan="5">On completion of this course, students will be able to:
CO1: Understand the fundamentals of environmental studies. CO2: Comprehend ecosystems and their dynamics.
CO3: Implement corrective measures for the abatement of pollution.
CO4: Understand the waste management techniques.
CO5: Grasp environmental policies, legislation, and issues.</td></tr>
<tr><td>Contents the of course</td><td colspan="5">Unit:1 Indian Knowledge System- Indigenous Practices, Air & Environment
Environment: Nature, Scope and Importance, Need for Public Awareness. Renewable and Non-Renewable Resources, Atmosphere: Introduction, layers of the atmosphere, Traditional agricultural practices - Organic farming, Crop rotation, Intercropping), Water management techniques - Stepwells, Tankas, Baolis, Forest management and conservation methods - Sacred groves, Agroforestry.
Unit:2 Ecosystems
Concept, Structure and Function of an Ecosystem, Energy Flow in the Ecosystem, Bio- geochemical Cycles, Types of Ecosystem: Forest Ecosystem, Grassland Ecosystem, Desert ecosystem, Aquatic Ecosystems.
Unit-3: Environmental Pollution
Environmental Pollution: Definition, Causes, Effects and Control Measures, Different Types of Pollutions, Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Environmental issues: Climate change, global warming, acid rain, ozone layer depletion.</td></tr>
</table>

	Unit-4: Waste Management, Environmental policies and legislation Solid waste management Municipal solid waste management techniques: Bio Composting, Vermicomposting, Incineration, Landfill sites, Liquid waste management: Waste water and Standards for its discharge given by CPCB, Waste water treatment: Effluent Treatment Plant and Sewage treatment plant (STP), Wildlife Protection Act 1972, Forest Conservation Act 1980, Water (Prevention and control of Pollution) Act 1974, Air (Prevention and Control of Pollution) Act, 1981, Environment Protection Act, 1986.
Field Work	• Visit to a local area to document environmental assets river/forest/grassland/hill/mountain • Visit to a local polluted Site-Urban/Rural/Industrial/Agricultural Participation in plantation drive and nature camps. • Campus environmental management activities such as solid waste disposal, • water Management and sanitation, and sewage treatment.
Text Books	1. Singh, J.S., Singh, S.P. & Gupta, S.R. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications. 2. Odum, E.P., Odum, H.T. & Andrews, J. (1971). Fundamentals of Ecology. Philadelphia: Saunders. 3. Gilbert M. Masters and W. P. (2008). An Introduction to Environmental Engineering and Science, Ela Publisher (Pearson).
References	1. Deevedi M. (2021). Environment and ecology in the Indian knowledge system. Vidyanidhi prakashan. 2. Melissa K. Nelson and Daniel Shilling. (2018). Traditional Ecological Knowledge: Learning from Indigenous Practices for Environmental Sustainability. Cambridge University Press. 3. Krishnamurthy, K.V. (2003) Textbook of Biodiversity, Science Publishers, Plymouth, UK. 4. Manahan, S.E. (2022). Environmental Chemistry (11th ed.). CRC Press. 5. Central Pollution Control Board Web page for various pollution standards. https://cpcb.nic.in/standards 6. Ahluwalia, V. K. (2015). Environmental Pollution, and Health. The Energy and Resources Institute (TERI).

SUBJECT: CLINICAL HEMATOLOGY

SUBJCET CODE: 24UMLT07

Objective: The objective of this course is to:

1. Identify the primary functions of blood, its fluid and cellular components and its physical characteristics.
2. To understand the formation of the formed element components of blood.
3. Understand red cell disorders, mechanism.
4. Illustrate both established information and recent clinical advances in hematological disorders.
5. Elaborate blood and morphology with hematopathology.
6. Ensures patients receive with the most effective and efficient care when and where it is needed.

Course Outcomes: At the end of the course, students will be able to:

1. Collect, process and preserve the blood samples.
2. Understand the importance of timely delivery of a fair and satisfactory lab report.
3. Perform the requisite skill to perform tests analysis in a health camp setting.
4. Demonstrate the skill of counting various cells under a microscope.
5. Perform routine investigations in clinical hematology laboratory.

Unit	Topic	Key Learning
1	Introduction	Introduction to Hematology, Laboratory Safety guidelines, Important equipment used in hematology lab, Quality assurance, Internal & External quality control, standard deviation coeefient accuracy, accuracy and precisions.
2	Development of blood Cells	Mechanism of hemopoietin, stages of cell development Erythropoiesis, Leucopoiesis, Thrombopoiesis, sites of hemopoiesis, , , Blood and its composition, Anticoagulants, mechanism of action, types and uses, effect
3	Hemoglobin & Anemia	Hemoglobin structure, types and function Hemoglobin estimation by various methods, physiological and pathological variations, abnormal hemoglobin including spectroscopy. HB electrophoresis. anemia – definition etiology classification and laboratory diagnosis. Sickle cell preparation. Hematocrit and red cell indices.
4	Leukemia's & Estimation of Blood cells	Leukemia's – definition, causes, classification, detection of leukemia. Total leucocyte counts in leukemia's. Multiple myeloma. Determination of ESR, RBC count, WBC count, Platelets count, absolute eosinophil count, reticulocyte count, principle, procedure, calculation, significance, precautions involved during counting, DLC count. Physiological and pathological changes in values.

5	Smear preparation	Preparation of thin and thick smears, staining of smears, Romansky dyes, preparation and staining procedures of blood smears, Morphology of normal blood cells and their identifications, differential leucocytes count by manual and automated method, and pathological variations in value.

Text Books:

1. Textbook of Medical Laboratory Technology by Godkar, Publisher: Bhalani.
2. Essentials of Hematology by Haufbrand.
3. Practical's in Hematology by J.V. Dacie.

Reference Books:

1. Textbook of Medical Laboratory Technology by Godkar, Publisher: Bhalani.
2. Medical Laboratory Technology by Lynch.
3. Wintrobe's clinical Hematology.
4. Medical Laboratory Science: Theory and Practice by J Ochei and A Kolhatkar, Latest edition, ISBN 13, Publisher McGraw Hill Education.

SUBJECT: CLINICAL HEMATOLOGY LAB

SUBJCET CODE: 24UMLT08

Objective:

1. To understand microscope, its parts and utilization in the medical laboratory diagnosis.
2. To be enhance the ability of analytical methods in the hematological estimation.
3. To be develop complete details of specific requirements for every analysis pertaining to hematology.
4. To impart the knowledge of hematological diseases.

Course Outcomes: At the end of the course, students will be able to:

1. Identify the major blood comments through various investigation methods.
2. Perform the hemoglobin and other hematological test.
3. Demonstrate the various instruments used in the hematology lab.
4. Impart the knowledge of hematological diseases.

List of Practical:

1. Hematological tests are used to detect and diagnose the disease such as anemia, leukemia, sickle-cell anemia.
2. Also to determine several infections.
3. Demonstration of Microscope, parts and handling.
4. Determination of Hemoglobin by various methods.
5. Determination of TLC, DLC and AEC count.
6. Preparation of thick and thin smear.
7. Determination of Total RBC count.
8. Determination of total platelet count.
9. Determination of ESR by various methods.
10. Blood grouping (slide / tube method).

Text Books:

1. Textbook of Medical Laboratory Technology by Godkar, Publisher: Bhalani.
2. Essentials of Hematology by Haufbrand.
3. Practicals in Hematology by J.V. Dacie.

Reference Books:

1. Textbook of Medical Laboratory Technology by Godkar, Publisher: Bhalani.
2. Medical Laboratory Technology by Lynch.
3. Wintrobe's clinical Hematology.
4. Medical Laboratory Science: Theory And Practice by J Ochei and A Kolhatkar , Latest edition, ISBN 13, Publisher McGraw Hill Education.

SUBJECT: MEDICAL LABORATORY PROCEDURE & INFECTION CONTROL

SUBJCET CODE: 24UMLT09

Objective:

1. To implement measures to prevent the spread of infections within healthcare settings.
2. Properly categorize and safely dispose biomedical waste to prevent contamination.
3. To develop hand hygiene and personnel safety.
4. To ensure that patients and the environment are clean to reduce the risk of infection and contamination.
5. Provide immediate care to patients in case of injury or medical emergencies before professional medical help is available.
6. Identify and mitigate factors that could interfere with test results after analysis.

Course Outcomes: At the end of the course, student should be able to:

1. Understand the concept of infection control and prevention
2. Be mindful around personnel hygiene
3. Understand the biomedical waste management in collection and testing facility.
4. Know the strategy included within the quality advancement in collection and testing facility.
5. Work on records, documentation of lab manuals and results.

Unit	Topic	Key Learning
1	Infection control and prevention	Understand infection, hospital borne infections, prevention and treatment of needle stick injury Spillage-Spillage protocol major and minor, what do's and don'ts in in sample collection
2	Biomedical waste management	Introduction to biomedical waste, types of bio medical waste, BMW handling, collection, and segregation (as per colour coding) BMW management & methods of disinfection
3	Personnel hygiene	To develop understanding of hand hygiene, techniques of grooming, use of PPE, Vaccinated against common infectious diseases, personal safety chart Biosafety act, HIV pre and post exposure guidelines, Hepatitis B& C pre and post exposure guidelines.
4	Patient Hygiene	Importance and methodology of cleanliness, and hygiene environment in collection space, first aid, safety guideline and protocols
5	Specimen retention	Storage and retrieval of specimen, specimen's disposal. Source of post analytical error, interference and corrective action & preventive action

Text Books:

1. Principles of Infection Control" by Steve L. Hays and Anne M. Wright., Publisher: Mosby
2. Specimen Collection and Handling: A Comprehensive Guide" by Daniel M. Tuttle, Publisher: Wiley - Blackwell.
3. Lewis SM 2001 Collection and handling of blood. In: Dacie and Lewis Practical Haematology, 12th Edition edited by S.M. Lewis, B. J. Bain and I Bates Churchill Livingstone, London.
4. The guidelines biomedical waste management rules 2018.

Reference Books:

1. Practical Guide to Infection Control in Healthcare Settings" by Laura L. Davis and Karen S. R. Harper, Wiley- Blackwell.
2. Biomedical Waste Management: Principles and Practice" by B. A. G. Narayan, Jaypee Brothers Medical Publishers.
3. Biomedical Waste Management: Guidelines for Developing Countries" by World Health Organization, (WHO).
4. Practical Guide to Infection Control in Healthcare Settings" by Laura L. Davis and Karen S. R. Harper, Wiley- Blackwell.
5. Laboratory Medicine: Principles and Procedures" by M. A. Laposata, McGraw-Hill Education.

SUBJECT: MEDICAL LABORATORY PROCEDURE & INFECTION CONTROL LAB

SUBJCET CODE: 24UMLT10

Objective:

1. Understand and apply the color coding system for different types of biomedical waste.
2. Learn and practice the correct sequence for donning PPE to maximize protection and safety.
3. To ensure consistency and reliability in laboratory results.
4. Understand and apply effective disinfection methods to maintain a sterile environment.
5. Learn and practice safe disposal techniques for sharp materials (e.g., needles, blades) to prevent injuries and infections.
6. To Learn and practice effective hand hygiene techniques to prevent the spread of infections.

Course Outcomes:

1. Ability to categorize biomedical waste accurately using color-coded systems.
2. Demonstrate proper sequence and technique for donning PPE and apply methods for calibrating and standardizing glassware.
3. Effectively package and label laboratory waste according to established protocols, enhancing safety and facilitating proper disposal.
4. Apply appropriate disinfection methods to maintain a sterile environment and prevent contamination.
5. Accurately record and manage waste disposal data to comply with regulatory requirements and support environmental sustainability.
6. Perform hand hygiene procedures correctly to prevent the spread of infections and maintain a sterile working environment.

Practical/Laboratory Content:

Whenever testing facility experiments are not possible, the principles and concepts can be demonstrated through any other material or mode including videos/virtual etc.,

1. Segregation of various biomedical waste according to color Code.
2. Sequence for putting on personal protective equipment.
3. Standardization of various glassware in the laboratory.
4. Proper waste packaging and labeling.
5. Demonstrate and practice disinfection techniques.
6. Proper disposal of sharp materials.
7. Maintain accurate waste disposal records
8. Demonstrate hand hygiene steps

Text Books:

1. Medical laboratories management – cost effective methods by Sangeeta Sharma, Rachna Agarwal, Sujata Chaturvedi and Rajiv Thakur, ISBN: 9789386105417, Publisher: Viva Books original, year: 2018.
2. Laboratory management by Puthwilliams, ISO 15189:2012.
3. Medical laboratory manual for tropical countries by Monica cheesbrough; Cambridge University press, UK.
4. Laboratory quality management system, WHO 2011 5. Bio-Medical waste management (amendment) rules 2018.

Reference Books:

1. Biomedical Waste Management: Principles and Practices by A. R. K. Rao (Publisher: Springer).
2. Disinfection, Sterilization, and Preservation by Seymour S. Block (Publisher: Lippincott Williams & Wilkins).
3. Hand Hygiene: A Handbook for the Health Care Worker by R. M. Pittet (Publisher: World Health Organization).

SUBJECT: INDIAN SOCIOLOGY

SUBJCECT CODE: 24USOC05

Objective: This course aims to provide students with a comprehensive understanding of the social structure, transformations, and changes within Indian society. The course explores key social movements and population dynamics that have shaped contemporary India.

Course Outcome: After completion of this course, students will be able to:

1. Social Class and Structure: Students will understand the different social classes in India and how they are organized, including rural, industrial, and middle-class structures.
2. Students will learn about the profound changes in rural and agrarian India, including the transformative effects of the Green and Industrial Revolutions, and the process of urbanization.
3. Social Change: Students will gain insights into the meaning and theories of social change, including how and why societies change over time.
4. Students will explore the major social movements in India, such as those led by peasants, women, and environmentalists, and gain a deep understanding of their significant impact on society.
5. Population Dynamics: Students will understand the factors influencing population growth and composition in India and explore emerging issues like aging, sex ratios, and health.

Unit	Topic	Key Learning
1	Social Class and Structure	Rural and Agrarian Structure, Industrial Class Structure, Middle-Class Structure.
2	Rural and Agrarian Transformation	Green Revolution Industrial Revolution Urbanization.
3	Social Change	Meaning, Feature, Social Mobility and Change, Theory of Social Change.
4	Population Dynamics	Population Size, Growth, Composition and Distribution Components of Population Growth: Birth, Death and Migration Emerging Issues: Ageing, Sex Ratios, Child and Infant Morality and Reproductive Health.

Readings:

1. Desai, A. R. (2002). Rural Sociology in India. Mumbai: Popular Prakashan.
2. Breman, J. (1999). The Laboring Poor in India: Patterns of Exploitation, Subordination, and Exclusion. Oxford: Oxford University Press.
3. Kuppuswamy, B. (2010). Social Change in India. New Delhi: Vikas Publishing House.
4. Oommen, T. K. (1970). The Middle Classes in India: A Sociological Perspective. Sociological Bulletin, 19(2), 93-111.
5. Sivaramakrishnan, K. (1995). Situating the Subaltern: History and Anthropology in the Subaltern Studies Project. Journal of Historical Sociology, 8(4), 395-429.

6. Frankel, F. R. (1971). India's Green Revolution: Economic Gains and Political Costs. Princeton: Princeton University Press.
7. Moore, B. (1966). Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World. Boston: Beacon Press.
8. Rao, M. S. A. (1974). Urban Sociology in India. New Delhi: Orient Longman.
9. Shiva, V. (1991). The Violence of the Green Revolution: Third World Agriculture, Ecology, and Politics. London: Zed Books.
10. Hobsbawm, E. J. (1968). Industry and Empire: The Birth of the Industrial Revolution. New York: Pantheon Books.
11. Srinivas, M. N. (1966). Social Change in Modern India. Berkeley: University of California Press.
12. Tilly, C. (1978). From Mobilization to Revolution. Reading, MA: Addison-Wesley.
13. Smelser, N. J. (1963). Theory of Collective Behavior. New York: Free Press.
14. Parsons, T. (1951). The Social System. London: Routledge.
15. Eisenstadt, S. N. (1973). Tradition, Change, and Modernity. New York: John Wiley & Sons.
16. Shah, G. (2004). Social Movements in India: A Review of Literature. New Delhi: Sage Publications.
17. Omvedt, G. (1993). Reinventing Revolution: New Social Movements and the Socialist Tradition in India. New York: M. E. Sharpe.
18. Guha, R. (1989). The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya. Berkeley: University of California Press.
19. Omvedt, G. (1980). Peasants, Dalits and Women: Democracy and India's New Social Movements. Journal of Contemporary Asia, 10(4), 473-488.
20. Shiva, V. (1988). Staying Alive: Women, Ecology, and Development. London: Zed Books.
21. Bose, A. (2001). Population of India: 2001 Census Results and Methodology. New Delhi: B.R. Publishing Corporation.
22. Visaria, P., & Visaria, L. (1983). Population Transition in India. New Delhi: B.R. Publishing Corporation.
23. Dandekar, K. (1996). The Elderly in India. New Delhi: Sage Publications.
24. Dyson, T., & Moore, M. (1983). On Kinship Structure, Female Autonomy, and Demographic Behavior in India. Population and Development Review, 9(1), 35-60.
25. Sen, A. (1990). More Than 100 Million Women Are Missing. The New York Review of Books, 37(20), 61-66.

SUBJECT: ENGLISH LANGUAGE AND BUSINESS COMMUNICATION

SUBJECT CODE: 24UENG01

Objective: To train students to enhance their skills in written as well as oral communication through practical conduct of this course. This course will help students in understanding the principles and techniques of business communication.

Learning Outcomes: After completing this course, the learners will be able to:

1. Students would be able to understand the nature, structure, types and process of various dimensions of communication and apply them in communication.
2. Students would be able to make effective presentations in various business/professional situations incorporating the ethics of good negotiations and assertive behavior.
3. Students would develop competency to understand and perform the diversity of the globalized multicultural world.
4. Students would be able to draft various types of documents used inside the organization for various types of communication.
5. Students would develop interview skills and competency incorporating the use of different social media platforms for networking.

Units	**Topics**
I - Basics of Communication	Meaning, Process and Types of Communication; Principles of Effective Communication; Process and types of listening, deterrents to listening process, essentials of good listening.
II - Presentation Skills	Prerequisites of effective presentation, format of Presentation. Negotiations-types, structures and basics of negotiations; Assertive behavior.
III - Multicultural World and Communication	Business Communication in a globalized and multicultural world; understanding cultural diversity and developing cultural competency and inter-cultural business communication skills; Barriers to cross - cultural communication and strategies to overcome them.
IV - Written Communication	Mechanics of writing, report writing, agenda and minutes; business correspondence – business letter format, style of letter arrangement, types of letters, electronic mail; Resume Writing.
V - Communication in Practice	Preparing for interviews- types of interviews, process of interview and group discussion; effective ways of performing well in interviews; Social media and Networking, Social media profiles, Editing and Posting on social media.

Recommended Readings:

- Bovee, C., & Thill, J.V., and Raina, R.L. *Business Communication Today*. New York: Pearson, 2016.
- Lata, Pushp, and Sanjay Kumar. *Communication Skills*. 2nd ed. New Delhi: OUP, 2019.
- Lehman, C. M., Dufrene D. D., and Sinha, M. *BCOM: The South Asian Perspective on Business Communication*. New Delhi: Cengage Learning, 2016.
- Monippally, Matthukutty, M. *Business Communication: From Principles to Practice*. New Delhi: McGraw Hill Pub., 2018.
- Mukerjee, H. S. *Business Communication: Connecting at Workplace*. New-Delhi: Oxford University Press, 2012.
- Murphy, H. A., Hildebrandt, H.W., and Thomas, J.P. *Effective Business Communication*. Boston: McGraw-Hill Companies, 1997.
- Post, Emily. *The Etiquette Advantage in Business.* New York: Collins, 2005.
- Ramesh, Gopalaswamy, and Mahadevan Ramesh. *The Ace of Soft Skills: Attitude, Communication and Etiquette for Success.* Noida: Pearson, 2019.
- Sandra, M. O. *Handbook of Corporate Communication and Strategic Public Relations: Pure and Applied*. New Delhi: Routledge, 2004.
- Sinha, K. K. *Taxmann's Business Communication*.4th Revised ed. New Delhi: Taxmann's Pub., 2018.
- Taylor, Grant. *English Conversation Practice.* Indian ed. Chennai: McGraw Hill Education Pvt. Ltd., 2017.

SUBJECT: ENGLISH LANGUAGE AND BUSINESS COMMUNICATION LAB

SUBJECT CODE: 24UENG02

Objective: This course is designed to strengthen the communication abilities of the learners by providing them hands-on practice.

Learning Outcomes: After completing this course, the learners will be able to:

1. Demonstrate knowledge and understanding of a range of professional or public communication situations.
2. Perform effectively in diverse professional and public communication situations like interviews and negotiations, drafting emails and resume etc.

Details:

1) Situational Conversations
2) Listening Skills
3) Resume Writing
4) Mock Interviews
5) Group Discussion
6) Presentation Skills
7) Negotiation Skills
8) Email Writing
9) Public Speaking
10) Extempore Speech

Note: The teacher should play the role of the facilitator and allow the learners maximum time to practice these activities. The focus should be primarily on helping the learners overcome the LSWR barrier and gradually move towards honing these skills to enable the learners use them in professional communication situations.

SUBJECT: YOGA AND HEALTH SKILLS – II

SUBJECT CODE: 24UYHS01

Objective: Students will get information about the origin, history and development of Yoga along with different streams of yoga, literature and meditation.

Learning Outcomes: After the completion of the course, the learners will be able to

1. To make aware of the definition, history and nature of yoga.
2. Telling information about different school of yoga.
3. Giving information about cleansing technique and yogic diet.
4. Explaining the importance of health.
5. Yogic management of various diseases and the utility of meditation.

Unit	Topic
1	**Introduction to Yoga**: Meaning and Definition of Yoga, Aim and Objectives of Yoga, Misconceptions of Yoga; Brief knowledge about Streams of Yoga-Ashtang and HathaYoga. Yogic Prayer Mantra. Importance of Yoga in modern era.
2	**Yoga practices**: Raja Yoga (AshtangaYoga), GyanYoga, Bhakti Yoga, Karma Yoga, Hatha Yoga.
3	**Introduction to cleansing technique**: Meaning, Definition, Objectives and Classification. Yogic diet: Diet, Yogic Diet, Anti-diet, Balanced diet.
4	**Health**: Meaning, Definition, aim and objectives, Dincharya (Daily regimen): Meaning, definition and sequential elements, Application of Dincharya, Ritucharya (Seasonal Regimen): Meaning, Definition, Types with their salient features, Season wise Does and Don'ts.
5	**Yogic management in health problems**: cervical, back pain, diabetes and stress. **Meditation**: Meaning, types, importance, general instructions and suggestions for meditation, physical, mental and spiritual effects of meditation.

Text Books:

1. Yoga & yogic chikitsa - Singh Prof. Ramharsh ,Chaukhamba Sanskrit pratishthan, Edition 2011.
2. Swami Vivekananda: Jnana Yoga, Bhakti Yoga, Karma Yoga, Raja Yoga, Advaita Ashrama, Calcutta, 2002.
3. Prof. Ramharsh Singh -SwashthavrittaVigyan, Chaukhambha Sanskrit Prakashan, Varanasi, 1998.
4. Sriram Sharma Acharya- JivemSharadahShatam, AkhandJyoti Mathura 1998.
5. Prof. Ramharsh Singh-Yogewam Yogic Chitksha, Chaukhambha Sanskrit Prakashan, Varanasi, 1998.
6. SwasthaVrittaVigyanewam Yogic Chiktsha- Dr. RakeshGiri, SikhshaBharti, Uttrakhand.

References Books:

1. Swami Kuvalyananda : Asana, Kaivalyadhama, Lonavla, 1993.
2. Swami Satyananda Saraswati: Asana, Pranayama, Bandha, Mudra, Bihar School of Yoga, Munger, 2006.
3. Basavaraddi, I.V. & others: YOGASANA: A Comprehensive description about Yogasana, MDNIY, New Delhi, 2011.
4. Basavaraddi, I.V. & others: Yogic Sukshma Evam Sthula Vyayama, MDNIY, New Delhi, 2011.

SUBJECT: BASICS OF MICROBIOLOGY

SUBJCET CODE: 24UMLT11

Objective: Course is designed to impart knowledge and skills required to learn various aspects and concepts about applied aspects of Microbiology and the related diseases, their prevention and control.

Course Outcomes: After completion of this course, students will be able to:

1. Perform various types of sterilization methods and transmission and hospital acquired infections and prevention.
2. Describe the characteristics of bacterial cell wall and its appendages like capsule, fimbriae, Pilli etc.
3. Perform various process - different staining methods & inoculation of culture media
4. Identify medically important bacteria via morphological and cultural characteristics and perform various biochemical tests.
5. Perform antibiotic microbial susceptibility testing and interpret the same.

Unit	Topic	Key Learning
1	History of Microbiology & Microbiology Lab organization	Lab organization, Laboratory Safety measures in Microbiology, Occurrence of lab infections, route of infections in laboratory, Introduction and history of microbiology Discovery of microorganisms, Contributions of Robert Koch, Antony Van Leeuwenhoek, Louis Pasteur, Bordet, Paul Ehrlich, Alexander Fleming, Elie Metchnikoff, John Needham, JohnTyndall, Joseph Listerand Karls Landsteiner, Scope of medical microbiology.
2	Basics of Microorganism	Prokaryotic and eukaryotic cells, Bacteria Introduction of Bacteria, Virus, fungi & protozoa, Morphology & classification of Bacteria,Virus, Protozoa Size, shape, arrangement, motility, flagella, spores, capsules, cell wall, plasma membrane, pili, ribosomes. Cell size, shape and arrangement, cell-wall, composition and detailed structure of Gram-positive and Gram-negative cell walls, Staining Methods: Simple, Grams staining, Ziehl-Neelsen staining or AFB staining, capsule staining, Negative Impregnation.
3	Microbial Growth	Microbial growth: Bacterial growth curve, Batch culture, fed batch culture, continuous culture, Factors influencing microbial growth, Microbial metabolism and energy production. - total count, viable count. classification based on oxygen requirement, nutritional requirement, pH, CO2 requirement, temperature.

4	Sterilization, Disinfection & Culture Media	Sterilization and Disinfection: Physical agents, Chemical Agents- filtration. Alcohol, aldehyde, Dyes, Halogens, Phenols, Ethylene oxide. Culture Media Classification, Liquid and solid Media, Synthetic media, Selective media, differential media, transport media. Pure culture isolation and preservation: Streaking, serial dilution and plating methods, cultivation, maintenance and preservation/stocking of pure cultures, cultivation of aerobic and anaerobic bacteria. Hospital infection control, Microbiological quality assurance and quality control.
5.	Biochemical & Antimicrobial Sensitivity Test	Microorganisms and identification by Biochemical test such as Catalase, Citrate utilization test, Coagulase test, Indole test, Oxidase test, Urease test, MR-VP test, TSI slants and others biochemical test. Antimicrobial sensitivity test, Culture medium used for Antibiotic susceptibility testing, Preparation and standardization of inoculums, Control bacterial strains, Choice of antibiotics MIC and MBC: Concepts and methods for determination various methods of Antibiotic susceptibility testing with special reference to Stokes and Kirby- Bauer method

Suggested Readings:

1. Ananthanarayan and Paniker's Textbook of Microbiology.12th edition, ISBN10-9393330018, ISBN 13-1978-9393330017 Publisher Universities Press (India) Pvt.Ltd.
2. Essentials of Medical Microbiology by Apurba Sastry ASIN -B099ZZST5T 4th edition Jaypee Brothers Medical Publishers (P) Ltd.
3. Review of Microbiology & Immunology Paperback 9th edition by Apurba Sankar Sastry ISBN-10 9390020530 ,ISBN-13 978-9390020539, Jaypee Brothers Medical publishers.
4. Jawetz Melnick&Adelbergs Medical Microbiology 28th edition ISBN-10 126046024X, ISBN-13 978-1260460247 Publisher McGraw Hill Education India Pvt Ltd.
5. Prescott and Dunns Industrial Microbiology 4ED (PB 2004)4th edition ISBN-10 9788123910017 ISBN-13 978-8123910017 Publisher CBS.
6. Prescott's Microbiology:9th Revised edition Joanne M. Willey, Linda Sherwood, Chris Woolverton ISBN: 9780073402406, 0073402400 Publisher: Mcgraw Hill Higher Education
7. Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner, T.A. Medical Microbiology https://www.scirp.org/reference/referencespapers?referenceid=1617158
8. Levinson's Review of Medical Microbiology and Immunology: A Guide to Clinical Infectious Disease 18th edition M.D. Chin-Hong, Peter Ph.D. Joyce, Elizabeth A. , M.D. Karandikar, Manjiree ISBN-101265126003 ISBN-13 978-1265126001 Publisher McGraw-Hill

SUBJECT: BASICS OF MICROBIOLOGY LAB

SUBJCET CODE: 24UMLT12

Objectives: Course is designed to impart knowledge and skills required to learn various aspects and concepts about Microbiology, the related disorders and diseases.

Course Outcomes: After completion of this course, students will be able to:

1. Able to recognize various culture media, its preparation method and uses.
2. Understanding of concepts of culturing methods.
3. Able to understand principle, perform and interpret various biochemical tests.
4. Able to differentiate various microorganisms. Learning
5. Perform the various types of microbiological investigations.

Practical's:

1. To study principle and working maintenance of microbiology equipment's.
2. Preparation and Identification of Liquid, selective, differential, transport culture media & its uses
3. Inoculation of organisms in aerobic culture media.
4. Inoculation of organisms in anaerobic culture media.
5. Streaking, preparation of serial dilution and plating methods.
6. Culturing and identification of organisms in various biochemical test such as Catalase, Citrate utilization test, Coagulase test, Indole test, Oxidase test.
7. Antimicrobial sensitivity testing with different methods Stokes and Kirby- Bauer method.
8. Interpretation of MIC & MBC.
9. Staining: Gram & Ziehl-Neelsen staining.
10. Preparation of stains and staining procedures.

Suggested Readings:

1. Essentials of Practical Microbiology by Apurba Sastry and Sandhya Bhat. ISBN-10 8194802822 ISBN-13 978-8194802822 Publisher Jaypee Brothers Medical Publishers.
2. Press Publication Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner, T.A. (2013) Adelberg's Medical Microbiology. ISBN-13 978-1260460247 Publisher McGraw Hill Education India Pvt Ltd.
3. Practical Microbiology 3Eb (Pb 2025) by D.R.Arora and Bharti Arora.2nd edition ISBN-10 9389396603 ISBN-13 978-9389396607 Publisher CBS Publishers & Distributors.
4. Mims' Medical Microbiology: Mims' Medical Microbiology and immunology 6th Edition, by Richard Goering , Hazel M. Dockrell , Mark Zuckerman , Peter L. Chiodini ISBN-13 978-0702072024 Edition Publisher Elsevier
5. Elsevier Willey JM, Sherwood LM, and Woolverton CJ. (2013) Prescott, Harley and Klein's Microbiology. 9th edition. McGraw Hill Higher Education.
6. Competency Based Practical Manual for Microbiology as Per the Competency Based Curriculum (MCI) by Upasana Bhumbla Handbook of Practical Examination in Microbiology. by Neeta Patwardhan, Sharad Digambar Bhat, et al.

Web Links: http://www.grsmu.by/files/file/university/cafedry/klinicheskaya-immynologiya/files/fiu/4.pdf

SUBJECT: HISTOPATHOLOGY & HISTOTECHNIQUES-I

SUBJCET CODE: 24UMLT13

Objectives: This course introduces students to the fundamental principles of Histopathology and Histotechniques. It focuses on the collection, handling, and processing of tissue specimens, as well as staining methods used for microscopic examination.

Course Outcomes: After completion of this course, students will be able to:

1. To explain the fundamental principles of histopathology and the role it plays in disease diagnosis and research.
2. To demonstrate competence in tissue processing techniques, including fixation, dehydration, clearing, embedding, sectioning, and staining.
3. To apply appropriate histological stains, including routine stains (e.g., H&E).
4. To operate histology laboratory equipment (e.g., microtome, cryostat, tissue processor) safely and effectively.
5. To interpret stained tissue sections using a light microscope and correlate histological findings with clinical conditions.

Unit	Topic	Key Learning
1	Introduction of histopathology	Introduction of histopathology & histotechniques, Laboratory organization, care & maintenance of equipment's used in histotechnology lab, Safety measures in histotechnology lab. Reception, Recording, Labeling and transportation of tissue specimens, Basic concepts of fixation and various types of fixative used in histopathology and Cytopathology
2	Tissue and its processing	Tissue and its types, Location and function, Grossing of tissues, whole mount, sections, smears, tissue processing and its steps, manual and automated method, components & principle of automatic tissue processor, Decalcification methods, types of decalcifying fluid, Processing of bones and teeth, Embedding media, its type, application and properties
3	Microtomy	Microtome, its type and working, various type of microtome, Microtome knives, its type and knife sharpening, Section cutting, fault and remedies, Section adhesive, Cryostat, frozen sections of fresh, fixed and unfixed tissue, freeze drying, rapid frozen sections and staining.
4	Principles of staining	Dye chemistry, Stains and dyes, natural dye, acidic dye, basic dye, neutral dyes, fluorescence dye, mordant, accelerators, accentuators, metachromasia, metachromatic dyes, Progressive, regressive, vital, supravital staining, types of hematoxylin, Hematoxylin and eosin staining, use of control sections in tissue staining, mounting and mounting media, advantages & disadvantages

5	Application of Histotechniques	Staining of carbohydrates, Connective tissue, Demonstration and identification of lipids, Demonstration of microorganism on tissue specimens Demonstration of sex chromatin, Museum techniques Immunohistochemistry: principle, types, applications, antigen retrieval, APAAP, PAP Staining.

Suggested Readings:

1. Culling, C. F. A. Textbook of Histopathology & Histotechniques.
2. Koss, L. G., & Koss, M. N. Diagnostic Cytology.
3. Bibbo, M Cytopathology.
4. Naib, Z. M. Diagnostic Cytology.
5. Dev, P. Textbook of Histopathology and Histotechniques.
6. Histopathology & Histotechniques, Bancroft.

Web Links: https://webpath.med.utah.edu/HISTHTML/HISTOTCH/HISTOTCH.html

SUBJECT: HISTOPATHOLOGY & HISTOTECHNIQUES – I LAB

SUBJCET CODE: 24UMLT14

Objective: To develop foundational skills and knowledge in histopathology and histotechniques by learning and practicing the preparation, staining, and microscopic examination of tissue specimens, enabling accurate identification of normal and pathological tissue structures.

Course Outcomes: After completion of this course, students will be able to:

1. To demonstrate competence in tissue processing techniques, including fixation, dehydration, clearing, embedding, sectioning, and staining.
2. To apply appropriate histological stains, including routine stains (e.g., H&E).
3. To interpret stained tissue sections using a light microscope and correlate histological findings with clinical conditions.
4. To recognize artifacts and technical errors in tissue preparation and propose corrective measures.
5. To able to perform special stains (e.g., PAS, Masson's trichrome) to highlight tissue components.

Practicals:

1. To perform recording, labeling and transportation of biopsies specimens
2. To perform tissue fixation.
3. To demonstrate Procedure of tissue grossing
4. To perform tissue processing by manual method.
5. To perform tissue processing by automated method.
6. To demonstrate museum techniques.
7. Preparation of embalming solution.
8. To Procedure of Microtomy.
9. To perform staining of Hematoxylin and Eosin stain (H&E).
10. To perform the procedure of decalcification.

Suggested Readings:

1. Culling, C. F. A. Textbook of Histopathology & Histotechniques.
2. Koss, L. G., & Koss, M. N. Diagnostic Cytology.
3. Bibbo, M Cytopathology.
4. Naib, Z. M. Diagnostic Cytology.
5. Dev, P. Textbook of Histopathology and Histotechniques.

Reference Books:

1. Histopathology & Histotechniques, Bancroft

Web Links:

https://webpath.med.utah.edu/HISTHTML/HISTOTCH/HISTOTCH.html

SUBJECT: CYTOLOGY PATHOLOGY & CYTOGENETICS

SUBJCET CODE: 24UMLT15

Objective: To provide students with a comprehensive understanding of cellular structure, function, and abnormalities, with an emphasis on the principles of pathology and the genetic basis of disease. This subject aims to develop the skills necessary to analyze cytological samples, interpret pathological findings, and understand chromosomal alterations in health and disease.

Course Outcomes: After completion of this course, students will be able to:

1. To perform all process in cytology, like sample collection, fixation, staining.
2. To be able to differentiate normal & abnormal cells.
3. To understand the role of cytology department in oncology study.
4. Students will able to perform PAP smear & cervical cytology.
5. To able perform different stains used in cytology for diagnosis.

Unit	Topic	Key Learning
1	Cell structure & related disease	Basic structure of cell with function, cell physiology, cell cycle, cell division, Basic chromosome structure & related disease Benign Pathological processes affecting the cell, Introduction of tumors & morphology: Benign & malignant tumor (Definition, morphology & diagnosis method)
2	Division of cytology	Aspiration & exfoliative cytology, (Classify broadly) General cytology preparation: Sample collection, fixation, processing, staining. FNAC: Procedure, process, staining & role of FNAC in diagnosis of tumor. Fluid cytology: Pleural fluid, abdominal cytology, CSF, pericardium fluid, synovial fluid, sputum (Examination & cytology)
3	Instruments & techniques used in cytology	General equipment's used in cytology lab, routine method for cytology, cell block method, cytospin method, introduction of flow cytometry, Fixation & Fixatives: classification, types, uses. Process of mounting & cover slipping, Destaining & restaining. Different adhesives & mounting media with their properties, automation in cytology
4	Staining techniques	Progressive & regressive stains, General stains used in cytology lab: MGG stain, Diff Quick, Shorr staining, H & E stain & PAP(Papanicolaou)stain (Principle, procedure, interpretation) , AFB stain for cytological specimen, preparation of buffers & stains

5	Gynecology diagnosis & other important techniques	Introduction of cervical cancer, Collection, fixation, transportation, processing & interpretation of gynecological samples, Difference between PAP smear & LBC (Liquid base cytology).Sex chromatin demonstration, Different tumor markers & introduction of Immunohistochemistry.

Suggested Readings:

1. Clinical Diagnosis & Management, Henre
2. Cytopathology, Bibbo.
3. Basic & advanced techniques in histopathology & cytology by Pranab dev
4. Text Book of Histopathology & Histotechniques, C FA Culling
5. Diagnostic cytology, KOSS & KOSS

Web links:

- https://iul-instruments.com/what-is-the-cytological-staining-procedure-and-how-its-performed
- https://my.clevelandclinic.org/health/diagnostics/21714-cytology

SUBJECT: CYTOLOGY PATHOLOGY & CYTOGENETICS LAB

SUBJCET CODE: 24UMLT16

Objective: To equip students with hands-on skills in the preparation, staining, observation, and interpretation of cytological and histopathological specimens, as well as techniques in cytogenetic analysis.

Course Outcomes: After completion of this course, students will be able to:

1. To perform all process in cytology, like sample collection, fixation, staining.
2. To understand and differentiate the normal & abnormal cells.
3. To be able to understand role of cytology department in oncology study.
4. To perform PAP smear & cervical cytology.
5. To able to perform bar bodies test & clinical importance.

Practical's:

1. To prepare different buffers & stains.
2. To perform fixation, process & interpretation of cytology sample.
3. To apply MGG stain for identification of different tumor cells.
4. To perform liquid base cytology for gynae sample.
5. To prepare PAP smear for determination of cervical cancer.
6. To demonstrate the mounting process for slide preservation.
7. To perform the PAP stain for cervical screening.
8. To examine the CSF in cytology.
9. To perform the cytology for different fluids such as pleural, abdominal & synovial fluid.
10. To examine Barr bodies test for inactive chromosome.

Suggested Readings:

1. Clinical Diagnosis & Management, Henre
2. Cytopathology, Bibbo.
3. Basic & advanced techniques in histopathology & cytology by Pranab dev
4. Text Book of Histopathology & Histotechniques, C FA Culling
5. Diagnostic cytology, KOSS & KOSS

Web links:

- https://iul-instruments.com/what-is-the-cytological-staining-procedure-and-how-its-performed
- https://my.clevelandclinic.org/health/diagnostics/21714-cytology

SUBJECT: E-COMMERCE

SUBJCET CODE: 24UBPM23

Objective: To highlight the growing importance of e-commerce for the area of direct marketing as well as to explain the relationship between direct marketing and e-commerce. To explore the factors affecting various business models and digital payment systems with creating and managing E-Commerce platforms.

LO	Statement	Bloom's Taxonomy
1	Explain the fundamentals and importance of E-commerce	Remember
2	Differentiate between various E-Commerce models and strategies	Understand
3	Analyze digital payment systems, security, legal, and ethical issues in E-Commerce.	Analyse
4	Assess various policies and regulations governing global E-Business with technology and managing E-Commerce platforms.	Evaluate
5	To provide hands-on experience in developing various e-commerce based marketing strategies	Apply

Unit	Contents
I	Introduction: Conceptual Framework of E-business, E-Commerce and Social Commerce; Web Based Tools for e-Commerce; E-Enabled Business Process Transformations and Challenges; E-Business Technology and Environment; E-Business Applications.
II	E-Business Models: Business Models and Revenue Models over Internet; Emerging Trends in E-Business; Digital Commerce; Mobile Commerce; Models-B2B, B2C, C2C, C2B, B2G, P2P Models; E-Marketplaces and E-Retailing; E-Governance and E-Services
III	Security Issues in E-Business: Electronic Commerce Threats; Encryption, Cryptography, Public Key and Private Key Cryptography, Digital Signatures, Digital Certificates; Security Protocols and Public Key Infrastructure (PKI) for Security; digital Payment Methods and Fraud Prevention
IV	Technology and Policy Frameworks in Global E-Commerce: Global E-Services; Electronic Processing of International Trade Documents; Policy Framework for Global E-Business; Content Management Systems (CMS) for E-Commerce, Mobile Commerce and Responsive Design; Cloud Computing in E-Commerce
V	E-Commerce Marketing Strategies: Search Engine Optimization (SEO); Search Engine Marketing (SEM); Social Media Marketing & Influencer Marketing, Email Marketing & Customer Relationship Management (CRM); Analytics and Performance Tracking

Suggested Activities: List of Activities (60 Hours):

- Present students with case studies or real-world examples and Industry Applications linked to Amazon, Flipkart, Alibaba: Success Stories
- Provide student a project focusing on Emerging E-Commerce Startups and the application of E-Commerce in Healthcare, Education, and Retail. Students need to make presentation and develop a report for same.
- Creating an E-Commerce Website using Shopify/WooCommerce/wordpress
- Make students aware about the Integrating Payment Gateways and provide them assignment to collect the information about various integrated gateways.
- Hands-on SEO and Digital Marketing Campaigns
- Group Discussion on Security & Legal Issues – Research and present case studies.
- Guest Lectures from Industry Experts – Insights into real-world E-Commerce.
- Project: Create a Mini E-Commerce Business Plan – Develop and present a business model.
- Analyze a typical online buyer's journey from product search to checkout.
- Use tools like Google Analytics to track website performance.
- Identify common security threats in E-Commerce and suggest preventive measures and develop a report on same.
- Research and present case studies on how AR is used in online shopping.
- Explore and compare different E-Commerce platforms and marketplaces and make presentations in groups.
- Short quizzes designed to check preparation for the class may be given periodically
- Quiz and Internal Examinations
- Assignments
- Any other Practical/Practice as decided from time to time
- Short quizzes designed to check preparation for the class may be given periodically
- Participation in extra, co-curricular and cultural activities

Text Books:

1. Electronic Commerce – Framework, Technologies and Applications, Tata McGraw Hill. By Bharat Bhaskar, (Lt. Ed.)
2. E-Business and E-Commerce Management – Strategy, Implementation and Practice, Pearson Education. By Dave Chaffey. (Lt. Ed.)

Reference Books:

1. Electronic Commerce Strategy, 1st Edition, Cengage Learning. By Schneider Gary P. and Perry, James T. (Lt. Ed.)
2. Information Technology: Best Practices and Applications in Business, 5th ed; Prentice Hall. By Adikesavan T., (Lt. Ed.)

3. E-Commerce 2023: Business, Technology, Society – Kenneth C. Laudon & Carol Guercio Traver, (Lt. Ed.)
4. Fundamentals of E-Commerce || A Comprehensive Textbook for All Indian Universities, Arambagh Book House [ABH Books]; Kolkata by Dr. Subhabrata De (Lt. Ed.)
5. E-Commerce- An Indian Perspective, PHI Learning Pvt. Ltd., PHI Learning Pvt. Ltd. by S.J. JOSEPH, P.T, (Lt. Ed.)

Web Links:

1. https://onlinecourses.swayam2.ac.in/nou21_cm14/preview
2. https://www.youtube.com/watch?v=AhgtoQIfuQ4
3. https://www.youtube.com/watch?v=OnqFpeAqr3M
4. https://www.shopify.com/in/blog/best-ecommerce-sites#

SUBJECT: ENTREPRENEURSHIP

SUBJECT CODE: 24UBPM10

Objective: The objective of this course is to expose the learner to the fields of entrepreneurship development. Focus will be to train the students to develop new projects and encouraging them to start their own ventures.

Learning Outcome:

LO	Statement
1	Understand the importance of feasibility report
2	Outline the skills that are required to be needed to start new ventures
3	Develop Business Plans
4	Demonstrate leadership skills and effective resource management techniques
5	Distinguish between fixed and working capital requirements

Unit	Content
I LO1	Introduction to Entrepreneurship: Entrepreneurial Mindset, Characteristic of an Entrepreneur; Types of Entrepreneurial organizations, Conception & Ideation: Business Plan and its elements; Roles and Responsibilities of Entrepreneurs, Identify Your Customer: Customer segmentation, Criteria for selling customer value proposition, Customer Lifecycle, Introduction to Intrapreneurship.
II LO2	Self Confidence and Resilience: 4 Ps of Entrepreneurship, Importance of Business Networking and its advantages; Competition Analysis: Factors affecting competition strategies, Prerequisites of successful enterprise; Business Risk, Getting Money for Business: Concept of Funding, Types of Funding.
III LO3	Dream and Achieve: Vision, Mission and Goals, Business Ethics, SMART goals, entrepreneurial work ethics Leadership and Team Spirit, Embracing diversity, Role of Emotional Intelligence; Roles of Entrepreneurs in society, Effective Ways to Build Entrepreneurial Skills.
IV LO4	Taking Ownership: Taking control over the business; Porters competition strategies, Factors affecting business; Introduction to Critical Thinking, Model of Critical Thinking; Importance and benefits of Creative thinking Decision making, Effective decision-making process.
V LO5	Regulatory Issues: 4Ps of Marketing, Costs in Entrepreneurship, Introduction to Accounting, Working capital; Regulatory and statutory rules for an Entrepreneur, Business Loans for startups and MSMEs, Legal Issues Intellectual Property Rights, patents, trademarks, copyrights, trade secrets, licensing, franchising.

Suggested Activities: List of Activities (30 Hours)

- Discuss Success and Failure Stories of Famous Entrepreneurs like Steve Jobs Success Story, Mumbai Dabbawala delivery success Story, etc.
- Create a group of students and provide them inputs to develop a business plan. The students will submit the report on same and will make presentations for their respective plan.
- Collect the information about successful entrepreneurs of India and globe and submit a report of their success stories.
- Instruct may Organize pitch competitions where students can present their business ideas or business plans to a panel of judges.
- Engage students in activities such as ideation exercises, role plays, team-building exercises, and pitch competitions to enhance their entrepreneurial skills.
- Assign individual or group projects where students have to pitch their business ideas, outlining the problem they aim to solve, target market, value proposition, and competitive advantage.
- Encourage students to identify problems or opportunities in the market and come up with innovative solutions or business concepts.
- Short quizzes designed to check preparation for the class may be given periodically
- Case studies discussion
- Quiz and Internal Examinations
- Assignments
- Presentations
- Participation in extra, co-curricular and cultural activities

Books Recommended

Text Books

1. Arora M., Natarajan K. and Gordan E., Entrepreneurship Development, 1st ed; Himalaya Publishing House Pvt Ltd, (Lt. Ed)

Reference Books:

1. Hisrich, Robert D., Michael Peters and Dean Shephered, Entrepreneurship, Tata McGraw Hill, New Delhi. (Lt. Ed)
2. Barringer, Brace R., and R. Duane Ireland, Entrepreneurship, Pearson Prentice Hall, New Jersy (USA). (Lt. Ed)
3. Lall, Madhurima, and Shikha Sahai, Entrepreneurship, Excel Books, New Delhi
4. Charantimath, Poornima, Entrepreneurship Development and Small Business Entreprises, Pearson Education, New Delhi. (Lt. Ed)
5. Forbat John, “Entrepreneurship”, New Age International, (Lt. Ed)
6. Havinal, Veerbhadrappa, “Management and Entrepreneurship”, New Age International Publishers, (Lt. Ed).

7. John S.M., rural women Entrepreneurship, 6th ed; Discovery Publishing House, (Lt. Ed)
8. Janakiram B., Management & Entrepreneurship, Excel Books India, (Lt. Ed)
9. Prahlad, CK., Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits, Ist Edition; Dorling Kindersley Ltd, (Lt. Ed)

Web Links

1. https://www.tutorialspoint.com/entrepreneurship_development/entrepreneurship_development_tutorial.pdf
2. https://www.bing.com/videos/search?q=entrepreneurship+development+videos&qpvt=entrepreneurship+development+videos&view=detail&mid=2F136B2E6941D1F8DB4E2F136B2E6941D1F8DB4E&&FORM=VRDGAR
3. https://www.bing.com/videos/search?q=entrepreneurship+development+videos&qpvt=entrepreneurship+development+videos&view=detail&mid=01D578B93003F888E6DF01D578B93003F888E6DF&&FORM=VRDGAR
4. https://www.bing.com/videos/search?q=entrepreneurship+development+videos&qpvt=entrepreneurship+development+videos&view=detail&mid=2E714CA0963D221569E52E714CA0963D221569E5&&FORM=VRDGAR
5. https://www.bing.com/videos/search?q=entrepreneurship+development+videos&qpvt=entrepreneurship+development+videos&view=detail&mid=D72A5948DCB34F0684C0D72A5948DCB34F0684C0&&FORM=VRDGAR

SUBJECT: HUMAN VALUES AND PROFESSIONAL ETHICS

SUBJECT CODE: 24UHPE01

Objectives: The course aims to inculcate core human values and professional ethics in the learners to guide them in developing a strong sense of ethics and values that can help them navigate their chosen profession with integrity and responsibility.

Learning Outcomes: After completing this course, the learners will be able to:

1. Understand of Human values to interact and connect with the outer world in a peaceful manner (Yama).
2. To exhibit Professional Ethics at working place.
3. Ability to work in team with human values and professional ethics.
4. Appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity.

UNIT I

Human Values-1: Values: Understanding values, Types of values, Role of tracking values for individual & social wellbeing. Integrity, Trustworthiness, Honesty, Courage, Love and Compassion, non-violence, Renunciation, Righteousness.

Co-operation: - Understanding cooperation and significance of cooperation, Team work, Cohesion of Self-Family-Society.

UNIT II

Human Values-2: Empathy, Emotional Intelligence– Emotional Competencies –Conscientiousness. Self-confidence, Spirituality, Character.

Truthfulness: Understanding truthfulness, need for truthfulness and role of truthfulness in relationship and social interaction.

Customs and Traditions – Value Education – Human Dignity – Human Rights – Fundamental Duties.

UNIT III

Professional Ethics aiming at excellence and Harmony: Value Based Life and Profession, Professional Ethics and Right Understanding, Competence in Professional Ethics, Issues in Professional Ethics.

Integrity, Trusteeship, Harmony, Accountability, Inclusiveness, Commitment, Respectfulness, Belongingness, Sustainability.

UNIT IV

Professional Ethics: Global Prospective:

Globalization and MNCs –Cross Culture Issues, Business Ethics, Media Ethics, Environmental Ethics, Bio Ethics, Computer Ethics, War Ethics.

UNIT V

Duties and Rights in Profession:

Concept of Duty, Professional Duties, Consensus and Controversy Professional and Individual Right, Conflict of Interest-Ethical egoism, Gifts and Bribes, Plagiarism.

Recommended Readings:

1. Alavudeen, A, R. Kalil Rahman, and M. Jayakumaran. *Professional Ethics and Human Values.* Laxmi Publications, 2015.
2. Banerjee, B P. *Foundation of Ethics and Management*. Excel Books, 2005.
3. Gaur, R, R, R. Sangal, and G.P. Bagaria. *A Foundation Course in Human Values and Professional Ethics.* Excel Books, 2010.
4. Hugman, Richard. *New Approaches in Ethics for the Caring Professions: Taking Account of Change for Caring Professions.* Red Globe Press, 2005.
5. Hugman, Richard, and Carter Jan. *Rethinking Values and Ethics in Social Work*. Ney York: Red Globe Press, 2017
6. Titus, Smith and Nolan. *Living Issues in Philosophy*. Oxford University Press, 1995.

SUBJECT: CLINICAL BIOCHEMISTRY-I

SUBJECT CODE: 24UMLT17

Objective: Syllabus is designed to impart the knowledge to students with essential theoretical foundations in clinical biochemistry covering metabolism of carbohydrates, lipids, proteins, and enzymes and to develop the ability to apply laboratory analytical techniques for meaningful interpretation of various organ function tests in clinical diagnosis.

Course Outcomes: After completion of this course, students will be able to:

1. Gain knowledge of sophisticated instruments, apply basic principles of clinical biochemistry techniques and demonstrate knowledge of their principles and clinical applications.
2. Analyze and Interpret Carbohydrate, Lipid, and Protein Metabolism related test result such as blood sugar, lipid profile and protein estimation.
3. Demonstrate about the concept of Quality Control in Clinical Biochemistry.
4. Know about the types, function and abnormalities of used in enzyme in analytical diagnostics section of biochemistry.
5. Understand the integration of various aspects of metabolism, their regulatory pathways, perform and interpret biochemical tests related to renal and hepatic functions.

Unit	Topic	Key Learning
1	Introduction of clinical biochemistry and carbohydrate metabolism	Introduction of clinical biochemistry, Principles and applications of spectrophotometry, chromatography, and electrophoresis, Normal and abnormal values, Metabolism of sugar, estimation of blood sugar and its clinical importance.
2	Lipid Metabolism	Introduction, definition, classification, biomedical importance, essential fatty acids, importance and function of simple, compound and derived lipids, fatty liver, Ketosis, lipid profile & its clinical significance, principles and procedures of estimation cholesterol & triglycerides, atherosclerosis.
3	Proteins and its Metabolism	Metabolism of proteins and amino acids, plasma and serum proteins, different methods of estimation including principles and procedures, catabolism of amino acids especially Phenylalanine and Tyrosine, quality control and quality assurance in clinical biochemistry laboratories, verification and validation protocol of equipment and test parameters.
4	Introduction of Enzymes	Introduction, definition, properties, classification, coenzymes, cofactors, isoenzymes, metalloenzymes, measuring units of enzyme activity factors affecting, enzyme action, factors responsible for abnormal enzyme level, Principles and procedures of estimation SGOT & SGPT.

5	Clinical diagnosis of Renal and Hepatic Systems	Urea cycle, metabolic disorders in urea cycle, creatinine metabolism and disorder, proteinuria and microalbuminuria (MAU), clinical significance and biological reference range of electrolytes like Na+, K+ and Cl metabolism of bile pigments, formation and excretion of bilirubin, conjugated and unconjugated bilirubin, principles and procedures of serum bilirubin estimation.

Suggested Readings:

1. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai, **ISBN (3rd):** 9789381496190, **ISBN (4th):** 9789381496800
2. Medical Laboratory Technology by K.L. Mukherjee volume III, McGraw-Hill Education (India), **Edition:** 2nd ed. (print ISBN: 9789352606825); Digital ISBN: 9781259000775
3. Practical Clinical Biochemistry by Harold Varley, Heinemann Medical Books / CBS, **ISBN (4th ed., 2006 HB):** ISBN-10 8123904274 / ISBN-13 9788123904276
4. Principal of Biochemistry by M. A. Siddiqi, Scientific Book Company, 15th ed, **ISBN-10:** 8196393954; **ISBN-13:** 978-8196393953
5. Instrumental Analysis by Chatwal Anand, Himalaya Publishing House, **ISBN** 9350248360/9789350248362, 9789351420880
6. Text book of Medical Biochemistry by Chaterjee Shinde, **ISBN (9th reprint):** 9356962324 / 9789356962323
7. Essentials of Biochemistry, Second Edition, Dr. (Prof) Satyanarayana, Elsevier
8. Essentials of Biochemistry, 2nd Edition, Dr. Pankaj Naik, Jaypee Brothers Medical Publishers, **ISBN (2nd):** 9386150301; (3rd reprint 9789354659973)
9. M.L. Bishop, Edward P. Fody: Clinical Chemistry: Principles, Techniques, And Correlations. 07 Edition, 2013, Lippincott Williams & Wilkins

Web Links:

- https://www.ncbi.nlm.nih.gov/books/NBK248/
- https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBC3104.pdf s

SUBJECT: CLINICAL BIOCHEMISTRY-I LAB

SUBJECT CODE: 24UMLT18

Objectives: To develop students' hands-on skills in biochemical analysis through reagent preparation and estimation of key clinical parameters such as blood sugar, lipids, liver enzymes, proteins, and bilirubin. The practical also aim to train students in laboratory quality control using tools like the Levey-Jennings (LJ) chart.

Course Outcomes: After completion of this course, students will be able to:

1. Demonstrate proficiency in the estimation of key biochemical analytes
2. Prepare, standardize, and utilize biochemical reagents required for clinical laboratory testing
3. Interpret biochemical test results accurately and correlate them with normal and pathological conditions to aid clinical diagnosis.
4. Apply principles of internal quality control by preparing and analyzing Levey-Jennings (LJ) charts to monitor laboratory test performance.
5. Develop technical and analytical skills necessary for routine clinical biochemistry

Practical:

1. Reagent preparation and estimation of blood sugar (GOD-POD and enzyme methods etc.).
2. Serum cholesterol reagent preparation and estimation.
3. Estimation of serum triglycerides.
4. Serum SGOT & SGPT estimation.
5. Plasma and serum protein estimation.
6. Serum urea estimation.
7. Preparation of LJ Chart.
8. Preparation of all selective reagents.
9. Estimation of serum bilirubin.

Suggested Readings:

1. Textbook of Medical Laboratory Technology by Praful B Godkar; Bhalani Publishing House, Mumbai, **ISBN (3rd):** 9789381496190, **ISBN (4th):** 9789381496800
2. Medical Laboratory Technology by K.L. Mukherjee volume III, McGraw-Hill Education (India), **Edition:** 2nd ed. (print ISBN: 9789352606825); Digital ISBN: 9781259000775
3. Practical Clinical Biochemistry by Harold Varley, Heinemann Medical Books / CBS, **ISBN (4th ed., 2006 HB):** ISBN-10 8123904274 / ISBN-13 9788123904276
4. Principal of Biochemistry by M. A. Siddiqi, Scientific Book Company, 15th ed, **ISBN-10:** 8196393954; **ISBN-13:** 978-8196393953
5. Text book of Medical Biochemistry by Chaterjee Shinde, **ISBN (9th reprint):** 9356962324 / 9789356962323
6. Essentials of Biochemistry, Second Edition, Dr. (Prof) Satyanarayana, Elsevier.
7. Essentials of Biochemistry, 2nd Edition, Dr. Pankaj Naik, Jaypee Brothers Medical Publishers, **ISBN (2nd):** 9386150301; (3rd reprint 9789354659973).

SUBJECT: ADVANCED HISTOPATHOLOGY & TECHNIQUES

SUBJECT CODE: 24UMLT19

Objective: The primary objective of this course is to provide students with in-depth knowledge and hands-on expertise in advanced histopathological techniques used for the microscopic analysis of tissue samples. The course aims to develop a thorough understanding of tissue processing, staining methods, diagnostic histopathology, and the application of modern molecular and immunohistochemically techniques.

Course Outcomes: After completion of this course, students will be able to:

1. To be able to inspect the sample for acceptance criteria for required testing necessary for advanced histopathology
2. To have a working knowledge of general workflow in advanced histopathology laboratory.
3. To employ and demonstrate various microtomy procedures & freezing microtome.
4. To perform & understand IHC & different special staining techniques as well as interpret them.
5. To able to understand different quality programs related to advance histopathology diagnosis & different advance microscopes.

Unit	Topic	Key Learning
1	Tissue processing & Microscopy	Different types of microscopes used in pathology, Electron microscopy – Principle and technical aspects. Special fixatives & uses. Details of advanced instruments, working of automatic tissue processor, General workflow of tissue processing, automation role in histopathology
2	Frozen section & Microtomy	Different types, use and care of microtome knives, sharpening, cutting, artifacts in cutting, cutting of different tissues, disposable blades, new generation microtomes, Analysis of frozen section, Plastic embedding media and techniques
3	Special stains & tissues	Importance of special stains comparative to basic stains used in histopathology, stains for nucleic acid, lipid, endogenous pigments, connective tissue, enzymes, amyloid, deposits, fibrin. Tissue of special interest–hard tissue, nervous system, skin kidney
4	Advanced techniques (IF & IHC)	Immunohistochemistry: principle, types, applications, antigen retrieval, Enzyme histochemistry and its applications, Immunofluorescence (IF): definition, types, principle, working & uses, Introduction of tissue microarray techniques, In situ hybridization techniques Museum techniques.

5	Modern instruments & QC programs	Role of advanced techniques in histopathology, Modern instruments: Trinocular research microscope, automatic slide trainer (IHC trainer), PC connected camera with binocular microscope, poly lysine coated slides, Organization and quality assurance in histopathology – Internal Quality control and external quality assessment programs

Suggested Readings:

1. Clinical Diagnosis & Management, Henre
2. Cytopathology, Bibbo.
3. Basic & advanced techniques in histopathology & cytology by Pranab dev
4. Text Book of Histopathology & Histotechniques, C FA Culling
5. Diagnostic cytology, KOSS & KOSS

Web Links: https://webpath.med.utah.edu/HISTHTML/HISTOTCH/HISTOTCH.html

SUBJECT: ADVANCED HISTOPATHOLOGY & TECHNIQUES - LAB

SUBJECT CODE: 24UMLT20

Objectives: To train students in the application of advanced histological techniques through hands-on experience in tissue processing, microtomy, special staining, immunohistochemistry (IHC), enzyme histochemistry, and frozen sectioning.

Course Outcomes:

1. To inspect the sample for acceptance criteria for required testing necessary for advanced histopathology.
2. To interpret different kinds of special tissues with special stains (PAS, ORO & Sudan black)
3. To diagnose with the help of IHC, IF, FISH & many more techniques.
4. Able to understands quality & modern programs related with histopathology.
5. Students will be able to perform tissue sections by freezing microtome.

Practicals:

1. To perform special stain for carbohydrates. (PAS & Mucicarmine)
2. To demonstrate section cutting of bone with microtome.
3. To perform Sudan black & ORO stain for fat particles.
4. To apply brown & Hopps stain for identification of bacteria in tissue.
5. To perform masons trichrome stain for connective tissue.
6. To perform IHC for the identification of unknown protein present on tissue.
7. To demonstrate direct & indirect Immunofluorescence techniques.
8. To perform frozen section for urgent diagnosis required.
9. To demonstrate FISH for the diagnosis of unknown protein.

Text Books:

1. Text Book of Histopathology & Histotechniques, C FA Culling,
2. Recent advances in histopathology by Fred T Bosman,
3. Histopathology & Histotechniques, Bancroft,
4. Basic & advanced techniques in histopathology & cytology by Pranab dev.

Web Links:

- https://webpath.med.utah.edu/HISTHTML/HISTOTCH/HISTOTCH.html
- https://www.labtestsguide.com/special-stains-a-guide-for-histopathologists-histotechnologists

SUBJECT: STATISTICS FOR EVERYONE

SUBJECT CODE: 25USTA01

Objectives: The primary objectives of this course are to:

1. Introduce students to the fundamental concepts and principles of statistical reasoning.
2. Equip students with the ability to collect, organize, analyze, and visualize data.
3. Develop the skills to make valid inferences and conclusions from data.
4. Foster a critical perspective on statistics reported in media, research, and professional contexts.

Course Outcomes: Upon successful completion of this course, students will be able to:

CO1: Identify and differentiate between various data types, sampling methods, and study designs.

CO2: Calculate and interpret descriptive statistics and create appropriate data visualizations like histograms and box plots.

CO3: Apply basic probability concepts and understand the significance of the Normal Distribution and the Central Limit Theorem.

CO4: Perform and interpret hypothesis tests (such as t-tests and chi-square tests) to compare groups and make data-driven decisions.

CO5: Analyse the relationship between two quantitative variables using correlation and simple linear regression.

CO6: Use statistical software to conduct basic data analysis and effectively communicate the results.

Unit 1: Introduction to Data and Statistics

Meaning, scope, limitations and applications of Statistics; Data classification; tabulation and presentation, types of classification, Tabulation and Graphs: formation of frequency distribution, types and construction of tables, significance, types and construction of diagrams and graphs - Frequency tables, Histograms, Bar charts, Box plots, and Scatterplots.

Unit 2: Descriptive Statistics

Measures of central tendency - arithmetic mean, median, mode, geometric mean and harmonic mean; Measures of Dispersion - range, quartile deviation, mean deviation and standard deviation, co-efficient of variation; Skewness and Kurtosis Characteristics, applications and limitations of Measures of central tendency and Measures of Dispersion

Unit 3: Correlation & Regression

Meaning of correlation, types of correlation, Karl Pearson's coefficient of correlation, Spearman's Rank correlation coefficient, Regression Analysis: Meaning and significance. Regression vs. Correlation, Regression lines.

Unit 4: Probability and Random Variables

Fundamentals of Probability: Basic rules, sample spaces, and events, Conditional Probability and Independence; Introduction to Random Variables, Binomial and Normal Distribution

Textbooks:

1. Allan G. Bluman, *Elementary Statistics: A Step by Step Approach*, McGraw-Hill Education, 9th Edition, 2014.
2. D. S. Moore, W I Notz, and M A Fligner, *The Basic Practice of Statistics*, 9th Ed., 2021.

Reference Books:

1. W. H. Freeman, De Veaux, R. D., Velleman, P. F., & Bock, D. E. *Intro Stats*, 6th Ed., Pearson, 2021.
2. Allen Downey, *Think Stats*, Shroff/O'Reilly; Second edition, 2014.

Online Resources:

1. StatQuest with Josh Starmer -https://www.youtube.com/channel/UCtYLUTtgS3k1Fg4y5tAhLbw
2. StatKey - https://www.lock5stat.com/StatKey/