



Lyallpur Khalsa College Technical Campus

Cantt. Road, Near Bus Stand, Jalandhar

(Approved by AICTE, Affiliated to IKG-PTU & PSBTE & IT)

Metric ID 2.6.1

Program Specific Outcome:

PSO have been defined as:

PSO 1: LIFE SKILLS

Students will be able to demonstrate professional responsibility, accountability, and confidentiality within the healthcare system as a Medical Laboratory Scientist and to apply organizational skills as reflected to time management, balancing workload, and utilizing material management in the clinical environment.

PSO 2: ANALYTICAL TECHNIQUES

Students will be able to Evaluate clinical laboratory data to various disease processes by identifying normal and abnormal laboratory test results in the following areas: clinical chemistry, hematology and homeostasis, urinalysis and body fluids, microbiology, immunology, and immunohematology and to Evaluate the quality and accuracy of all clinical testing

PSO 3: COMMUNICATION SKILLS

Students will be able to Apply appropriate communication skills while interacting with patients, visitors, laboratory colleagues, and other healthcare team members. Use professional judgment while relaying laboratory test results to healthcare providers.

PSO 4: TECHNOLOGY SKILLS

Students will be able to demonstrate standard safety practices in the laboratory while operating medical laboratory equipment with emphasis on the skills required for the collection and testing of specimens and body fluids using universal Standard Precautions. Operate laboratory equipment and instrumentation including preventative and corrective maintenance.

PSO 5: TEAMWORK TECHNIQUES

Students will be able to demonstrate collaboration skills as a laboratory team member within the healthcare system. Identify the responsibilities of health care professionals and the impact they have on the job duties of a Medical Laboratory Scientist.

PSO 6: SOCIAL VALUES

Students will be able to Recognize diversity and assess the needs of the individual patient with respect to his/her family, culture, society, and health circumstances.

PSO 7: EMPLOYABILITY

Students will be able to Exhibit knowledge, behaviors, and technical expertise skills essential to earn entry level employment as a valued Medical Laboratory Scientist professional. Identify requirements for continuous education as a function of growth and maintenance of professional competence in the clinical laboratory science field.

COURSE OUTCOMES(Semester-wise)

IK Gujral Punjab Technical University B.Sc. MLS Batch 2018 onwards

Courses & Examination Scheme:

First Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BMLS101-18	Core Theory	Essential Biology	3	1	0	40	60	100	4
BMLS102-18	Core Theory	General Microbiology	3	1	0	40	60	100	4
BMLS103-18	Core Theory	Basics of Biochemistry	3	1	0	40	60	100	4
BMLS104-18	Core Practical/Laboratory	Essential Biology- Practical	0	0	4	60	40	100	2
BMLS105-18	Core Practical/Laboratory	General Microbiology- Practical	0	0	4	60	40	100	2
BMLS106-18	Core Practical/Laboratory	Basics of Biochemistry - Practical	0	0	4	60	40	100	2
BTHU103-18	Ability Enhancement Compulsory Course (AECC)-I	English	1	0	0	40	60	100	1
BTHU104-18	Ability Enhancement Compulsory Course (AECC)	English Practical/Laboratory	0	0	2	30	20	50	1
HVPE101-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules	3	0	0	40	60	100	3
HVPE102-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules (Lab/ Seminar)	0	0	1	25	--**	25	1
BMPD102-18		Mentoring and Professional Development	0	0	1	25	--**	25	1
	TOTAL		13	03	16	460	440	900	25

*A course can either have four Hrs Lecture or Three Hrs Lecture + One Hrs Tutorial as per requirement

**The Human Values, De-addiction and Traffic Rules (Lab/ Seminar) and Mentoring and Professional Development course will have internal evaluation only.

Course Name: Essential Biology (BMLS101-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

BMLS101-18.1	Recognize and apply concepts and theories of basic biological sciences
BMLS101-18.2	Understanding of the animal tissues
BMLS101-18.3	Understanding of the basic structure and functions of the cell & their molecules
BMLS101-18.4	Understand the fundamental of genetics and inheritance.

Course Name: General Microbiology (BMLS102-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

BMLS102-18.1	Illustrate general insight into history and basics of medical microbiology
BMLS102-18.2	Apply the knowledge about equipments used in Medical Microbiology
BMLS102-18.3	Knowledge about basic procedures done in medical microbiology laboratory i.e. microscopy, sterilization, disinfection
BMLS102-18.4	Identify Culture methods required to perform different microbiological tests in clinical microbiology lab
BMLS102-18.5	Knowledge about methods of Biomedical waste management

Course Name: Basics of Biochemistry (BMLS103-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

BMLS103-18.1	Understand the social, ethical and professional duties of laboratory technician
BMLS103-18.2	Prepare the solutions in different concentration as per required in biochemistry lab
BMLS103-18.3	Analyze basic numerical and experimental tools used in biochemistry lab
BMLS103-18.4	Describe the basic biological phenomena used in biochemistry

Course Name: Human Values (HVPE101-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

HVPE101-18.1	To enable students appreciate the essential complementarity between 'VALUES' and 'SKILLS'
HVPE101-18.2	To ensure happiness and prosperity in Self, Family, Society & Nature
HVPE101-18.3	To facilitate the development of a Holistic perspective among students towards life, profession and happiness
HVPE101-18.4	Students shape themselves into valuable professionals, follow professional ethics

IK Gujral Punjab Technical University
B.Sc. MLS Batch 2018 onwards

Second Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BMLS201-18	Core Theory	Systemic Bacteriology	3	1	0	40	60	100	4
BMLS202-18	Core Theory	Biochemical metabolism	3	1	0	40	60	100	4
BMLS203-18	Core Theory	Human Anatomy and Physiology-I	3	1	0	40	60	100	4
BMLS204-18	Core Practical/Laboratory	Systemic Bacteriology-Practical	0	0	4	60	40	100	2
BMLS205-18	Core Practical/Laboratory	Biochemical metabolism-Practical	0	0	4	60	40	100	2
BMLS206-18	Core Practical/Laboratory	Human Anatomy and Physiology-I - Practical	0	0	4	60	40	100	2
EVS102-18	Ability Enhancement Compulsory Course (AECC) -III	Environmental Science	2	0	0	40	60	100	2
BMPD202-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		11	03	13	365	360	725	21

*A course can either have four Hrs Lecture or Three Hrs Lecture + One Hrs Tutorial as per requirement

Course Name: Systematic Bacteriology (BMLS201-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

BMLS201-18.1	Understanding the different types of bacterial culture procedure
BMLS201-18.2	Understanding the staining techniques used in bacteriology
BMLS201-18.3	Understanding the biochemical tests used for identification of bacteria
BMLS201-18.4	Knowledge about morphological, cultural characters and laboratory diagnosis of different bacteria

Course Name: Biochemical Metabolism (BMLS202-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

BMLS202-18.1	Understanding the metabolic pathways, the energy yielding and energy requiring reactions in Carbohydrate
BMLS202-18.2	Understanding the diversity of metabolic regulation, and how this is specifically achieved in different cell

BMLS202-18.3	Knowledge of the integrated nature of cellular metabolism
BMLS202-18.4	Knowledge of distinguishing between the various properties of enzymes
BMLS202-18.5	Develop existing skills in the laboratory aspects relating to protein purification and metabolism.

Course Name: Human Anatomy & Physiology-I (BMLS203-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

BMLS203-18.1	Apply concepts and knowledge of the general terminology, cell structure and function, histology, gross anatomy and physiology
BMLS203-18.2	Knowledge about the physiology of the Tissues & Blood
BMLS203-18.3	Knowledge about the physiology of the various system i.e. musculoskeletal system, respiratory system, cardiovascular system & lymphatic system.
BMLS203-18.4	Knowledge about the physiology of the sensory organs

Course Name: Environmental Science (EVS102-18)

Year of study 2020-2021

Course Outcomes

After the course completion, students will be able to:

EVS102-18.1	Knowledge of the environment and the role of human beings in shaping the environment
EVS102-18.2	Understand various components of the environment and interfaces
EVS102-18.3	Use critical thinking, problem-solving, and the methodological approaches of the natural sciences, and humanities in environmental problem solving
EVS102-18.4	Demonstrate an integrative approach to environmental issues with a focus on sustainability

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B.Sc. MLS Batch 2018 onwards

Third Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BMLS301-18	Core Theory	Basic Hematology-& Hematological Techniques-I	3	1	0	40	60	100	4
BMLS302-18	Core Theory	Analytical Biochemistry	3	1	0	40	60	100	4
BMLS303-18	Core Theory	Human Anatomy and Physiology-II	3	1	0	40	60	100	4
BMLS304-18	Core Practical/Laboratory	Basic Hematology-& Hematological Techniques-I	0	0	4	60	40	100	2
BMLS305-18	Core Practical/Laboratory	Analytical Biochemistry -	0	0	4	60	40	100	2
BMLS306-18	Core Practical/Laboratory	Human Anatomy and Physiology-I I-Practical	0	0	4	60	40	100	2
BMLS307-18	Skill Enhancement Course-I	Applied Bacteriology	1	0	0	40	60	100	1
BMLS308-18	Skill Enhancement Course-Laboratory	Applied Bacteriology-Practical	0	0	2	30	20	50	1
BMPD302-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		10	03	15	395	380	775	21

*A course can either have four Hrs Lecture or Three Hrs Lecture + One Hrs Tutorial as per requirement

Course Name: Basic Hematology & Hematological Techniques-I (BMLS301-18) Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 301-18.1	Apply principles of safety and quality in Hematology
BMLS 301-18.2	Imparts the knowledge about equipments used in Hematology
BMLS 301-18.3	Understanding of the underlying processes in blood cell formation
BMLS 301-18.4	Knowledge about basic principles and procedures of tests to include sources of error and clinical significance of results
BMLS 301-18.5	Knowledge about methods of Blood collection, preservation & processing (Staining).

Course Name: Analytical Biochemistry (BMLS302-18)

Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 302-18.1	Identify the general insight into analytical procedures in biochemistry
BMLS 302-18.2	Laboratory skills for the purpose of knowledge about Spectrophotometry & Colorimetry
BMLS 302-18.3	Demonstrate laboratory techniques that relate to the knowledge about Photometry
BMLS 302-18.4	Demonstrate laboratory techniques that relate to knowledge about Chromatography
BMLS 302-18.5	Demonstrate competency about the technique & process of electrophoresis methods to protein purification and metabolism.

Course Name: Human Anatomy & Physiology-II (BMLS303-18)

Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 303-18.1	Apply concepts and knowledge of the importance of water in the body, body fluids, composition & the movement of solutes
BMLS 303-18.2	Discuss in depth the functional anatomy of the organs and accessory organs of the digestive system
BMLS 303-18.3	Knowledge & Discuss in depth the functional anatomy of the organs of the urinary system
BMLS 303-18.4	Knowledge in depth the physiology & the anatomy of the male and female reproductive systems, including their accessory structures
BMLS 303-18.5	Discuss in depth the physiology of the nervous system
BMLS 303-18.6	Knowledge about the physiology of the production, regulation, and effects of the hormones

Course Name: Applied Bacteriology (BMLS307-18)

Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 307-18.1	Knowledge about antibiotics & procedure of antibiotic susceptibility
BMLS 307-18.2	Understand about the knowledge to bacteriological examination of Air
BMLS 307-18.3	Knowledge about basic procedures done for sterility testing
BMLS 307-18.4	Describe & understand about Nosocomial infections
BMLS 307-18.5	Knowledge about methods used for preserving microorganisms

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Fourth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BMLS401-18	Core Theory	Basic Cell Pathology	3	1	0	40	60	100	4
BMLS402-18	Core Theory	Basic Hematology-II	3	1	0	40	60	100	4
BMLS403-18	Core Theory	Clinical Biochemistry-I	3	1	0	40	60	100	4
BMLS404-18	Core Practical/Laboratory	Basic Cell Pathology - Practical	0	0	4	60	40	100	2
BMLS405-18	Core Practical/Laboratory	Basic Hematology-II - Practical	0	0	4	60	40	100	2
BMLS406-18	Core Practical/Laboratory	Clinical Biochemistry-I - Practical	0	0	4	60	40	100	2
BMLS407-18	Skill Enhancement Course-II	Immunology and Mycology	1	0	0	40	60	100	1
BMLS408-18	Skill Enhancement Course- Laboratory	Immunology and Mycology- Practical	0	0	2	30	20	50	1
BMPD402-18		Mentoring and Professional Development	0	0	1	25	--	25	1
	TOTAL		10	03	15	395	380	775	21

*A course can either have four Hrs Lecture or Three Hrs Lecture + One Hrs Tutorial as per requirement

Course Name: Basic Cellular Pathology (BMLS401-18)

Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 401-18.1	Discuss mechanisms of pathological processes, compare the causes and pathology of Digestive system
BMLS 401-18.2	Discuss mechanisms of pathological processes, compare the causes and pathology of Circulatory system
BMLS 401-18.3	Discuss mechanisms of pathological processes, compare the causes and pathology of Respiratory system
BMLS 401-18.4	Discuss mechanisms of pathological processes, compare the causes and pathology of Reproductive system
BMLS 401-18.5	Discuss mechanisms of pathological processes, compare the causes and pathology of Urinary system
BMLS 401-18.6	Discuss mechanisms of pathological processes, compare the causes and pathology of Nervous system
BMLS 401-18.7	Discuss mechanisms of pathological processes, compare the causes and pathology of Endocrine system & Sensory organs

Course Name: Basic Hematology-II (BMLS402-18)

Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 402-18.1	Apply concepts and knowledge of normal and abnormal haemoglobin
BMLS 402-18.2	Knowledge about the different aspects of Normal haemostatic mechanism
BMLS 402-18.3	Knowledge about the theories of blood coagulation.
BMLS 402-18.4	Knowledge about the estimation of different parameters of coagulation studies

Course Name: Clinical Biochemistry-I (BMLS403-18)

Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 403-18.1	Identify and summarize the use of standard precautions applied in clinical laboratory
BMLS 403-18.2	Recognize & describe the diagnostic laboratory, according to the main stages: pre-analytical, analytical and post-analytical
BMLS 403-18.3	Illustrate to Perform various biochemical tests
BMLS 403-18.4	Correlate laboratory test results with common diseases or conditions
BMLS 403-18.5	Describe the principles of analytical technique in Clinical Biochemistry

Course Name: Immunology & Mycology (BMLS407-18)

Year of study 2021-2022

Course Outcomes

After the course completion, students will be able to:

BMLS 407-18.1	Recognize & describe basic aspects of immunity, antigens, antibodies
BMLS 407-18.2	Illustrate to Perform various serological reactions, techniques and their utility in laboratory diagnosis of human diseases
BMLS 407-18.3	Summarize the medically important fungi
BMLS 407-18.4	Knowledge about infections caused by Fungi and their laboratory diagnosis