

DESCRIPTION

1.3.1 INSTITUTION INTEGRATES CROSS CUTTING ISSUES RELEVANT TO PROFESSIONAL ETHICS, GENDER, HUMAN VALUES, ENVIRONMENT AND SUSTAINABILITY INTO THE CURRICULUM

The institution integrates the cross cutting issues relevant to professional ethics, human values, environment and sustainability into the curriculum. The subjects mentioned in the syllabus of University includes subjects related to professional ethics [Eg: Pharmaceutical Jurisprudence and ethics (BPHM-602), Human values [Eg: Human values and Professional Ethics (HVPE-101)], Environmental Sciences [Eg: Environmental Sciences (BP-206)]. Besides this, the college has also organized 15 days certificate course on Yoga at regular time intervals. Events like plantation activity, seminar on women hygiene have also been conducted by the institution.


Dr R. K. Dhawan

Director-Principal
KHALSA COLLEGE OF PHARMACY
AMRITSAR

1.3.1 Institution integrates cross cutting issues relevant to professional ethics, gender, human values, environment and sustainability into the curriculum

A. Institution integrates cross cutting issues relevant to Professional Ethics

S.No.	Course Code	Name of Course	Programme Name
1.	BP505T	Pharmaceutical Jurisprudence	B.Pharmacy (2017)
2.	HVPE-101	Human Values and Professional Ethics	B.Sc MLS (2011 onwards)
3.	BMPD103-18	Mentoring and Professional Development	B.Sc MLS (2018 onwards)
4.	BMPD202-18	Mentoring and Professional Development	
5.	BMPD302-18	Mentoring and Professional Development	
6.	BMPD402-18	Mentoring and Professional Development	
7.	BMPD 502-18	Mentoring and Professional Development	
8.	BMPD602-18	Mentoring and Professional Development	

B. Institution integrates cross cutting issues relevant to Gender

S.No.	Course Code	Name of Course	Programme Name
1	HVPE-101	Human Values and Professional Ethics	B.Sc MLS (2011 onwards)
2	HVPE101-18	Human Values, Deaddiction and traffic rules	B.Sc MLS (2018 onwards)
3	HVPE 102-18	Human Values, Deaddiction and Traffic Rules (Lab/Seminar)	

C. Institution integrates cross cutting issues relevant to Human Values

S.No.	Course Code	Name of Course	Programme Name
1	HVPE-101	Human Values and Professional Ethics	B.Sc MLS (2011 onwards)
2	HVPE101-18	Human Values, Deaddiction and traffic rules	B.Sc MLS (2018 onwards)
3	HVPE 102-18	Human Values, Deaddiction and Traffic Rules (Lab/Seminar)	



D. Institution integrates cross cutting issues relevant to Environment

S.No.	Course Code	Name of Course	Programme Name
1.	BP206T	Environmental Sciences	B.Pharmacy (2017)
2.	EVS102-18	Environmental Science	B.Sc MLS (2018 onwards)

E. Institution integrates cross cutting issues relevant to Sustainability

S.No.	Course Code	Name of Course	Programme Name
1.	BP802T	Social and Preventive Pharmacy	B.Pharmacy (2017)
2.	HVPE-101	Human Values and Professional Ethics	B.Sc MLS (2011 onwards)
3.	HVPE101-18	Human Values, Deaddiction and traffic rules	
4.	HVPE 102-18	Human Values, Deaddiction and Traffic Rules (Lab/Seminar)	
5.	BMPD103-18	Mentoring and Professional Development	
6.	BMPD202-18	Mentoring and Professional Development	
7.	BMPD302-18	Mentoring and Professional Development	
8.	BMPD402-18	Mentoring and Professional Development	
9.	BMPD 502-18	Mentoring and Professional Development	
10.	BMPD602-18	Mentoring and Professional Development	



Scheme and Syllabus

B. Pharmacy

Batch 2017 onwards



PTU

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By
Department of Academics

IK Gujral Punjab Technical University

[Signature]
Director
Khalsa College of
Pharmacy & Technology
Amritsar

I.K. Gujral Punjab Technical University
B. Pharmacy/Batch 2017

First Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP101T	Human Anatomy and Physiology I–Theory	3+1	--	25	75	100	4
BP102T	Pharmaceutical Analysis I – Theory	3+1	--	25	75	100	4
BP103T	Pharmaceutics I – Theory	3+1	--	25	75	100	4
BP104T	Pharmaceutical Inorganic Chemistry–Theory	3+1	--	25	75	100	4
BP105T	Communication skills – Theory *	2	--	15	35	50	2
BP106RBT / BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	2	--	15	35	50	2
BP107P	Human Anatomy and Physiology –Practical	--	4	15	35	50	2
BP108P	Pharmaceutical Analysis – Practical	--	4	15	35	50	2
BP109P	Pharmaceutics I – Practical	--	4	15	35	50	2
BP110P	Pharmaceutical Inorganic Chemistry – Practical	--	4	15	35	50	2
BP111P	Communication skills – Practical*	--	2	10	15	25	1
BP112RBP	Remedial Biology – Practical*	--	2	10	15	25	1
Total		18/20^{\$}/20[#]	18/18^{\$}/20[#]	185/200^{\$}/210[#]	490/525^{\$}/540[#]	675/725^{\$}/750[#]	27/29^{\$}/30[#]

- \$ Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM) course.
- # Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB) course.
- * Non University Examination (NUE).


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Second Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP201T	Human Anatomy and Physiology II – Theory	3+1	--	25	75	100	4
BP202T	Pharmaceutical Organic Chemistry I – Theory	3+1	--	25	75	100	4
BP203T	Biochemistry – Theory	3+1	--	25	75	100	4
BP204T	Pathophysiology – Theory	3+1	--	25	75	100	4
BP205T	Computer Applications in Pharmacy – Theory *	3	--	25	50	75	3
BP206T	Environmental sciences – Theory *	3	--	25	50	75	3
BP207P	Human Anatomy and Physiology II – Practical	--	4	15	35	50	2
BP208P	Pharmaceutical Organic Chemistry I – Practical	--	4	15	35	50	2
BP209P	Biochemistry – Practical	--	4	15	35	50	2
BP210P	Computer Applications in Pharmacy – Practical*	--	2	10	15	25	1
Total		22	14	205	520	725	29

- * Non University Examination (NUE).


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Third Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP301T	Pharmaceutical Organic Chemistry II – Theory	3+1	--	25	75	100	4
BP302T	Physical Pharmaceutics I – Theory	3+1	--	25	75	100	4
BP303T	Pharmaceutical Microbiology – Theory	3+1	--	25	75	100	4
BP304T	Pharmaceutical Engineering – Theory	3+1	--	25	75	100	4
BP305P	Pharmaceutical Organic Chemistry II – Practical	--	4	15	35	50	2
BP306P	Physical Pharmaceutics I – Practical	--	4	15	35	50	2
BP307P	Pharmaceutical Microbiology – Practical	--	4	15	35	50	2
BP308P	Pharmaceutical Engineering – Practical	--	4	15	35	50	2
Total		16	16	160	440	600	24


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Fourth Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP401T	Pharmaceutical Organic Chemistry III- Theory	3+1	--	25	75	100	4
BP402T	Medicinal Chemistry I – Theory	3+1	--	25	75	100	4
BP403T	Physical Pharmaceutics II – Theory	3+1	--	25	75	100	4
BP404T	Pharmacology I – Theory	3+1	--	25	75	100	4
BP405T	Pharmacognosy and Phytochemistry I – Theory	3+1	--	25	75	100	4
BP406P	Medicinal Chemistry I – Practical	--	4	15	35	50	2
BP407P	Physical Pharmaceutics II – Practical	--	4	15	35	50	2
BP408P	Pharmacology I – Practical	--	4	15	35	50	2
BP409P	Pharmacognosy and Phytochemistry I – Practical	--	4	15	35	50	2
Total		20	16	185	515	700	28


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Fifth Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP501T	Medicinal Chemistry II – Theory	3+1	--	25	75	100	4
BP502T	Industrial Pharmacy I– Theory	3+1	--	25	75	100	4
BP503T	Pharmacology II – Theory	3+1	--	25	75	100	4
BP504T	Pharmacognosy and Phytochemistry II– Theory	3+1	--	25	75	100	4
BP505T	Pharmaceutical Jurisprudence – Theory	3+1	--	25	75	100	4
BP506P	Industrial Pharmacy I – Practical	--	4	15	35	50	2
BP507P	Pharmacology II – Practical	--	4	15	35	50	2
BP508P	Pharmacognosy and Phytochemistry II – Practical	--	4	15	35	50	2
Total		20	12	170	480	650	26


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Sixth Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP601T	Medicinal Chemistry III – Theory	3+1	--	25	75	100	4
BP602T	Pharmacology III – Theory	3+1	--	25	75	100	4
BP603T	Herbal Drug Technology – Theory	3+1	--	25	75	100	4
BP604T	Biopharmaceutics and Pharmacokinetics – Theory	3+1	--	25	75	100	4
BP605T	Pharmaceutical Biotechnology – Theory	3+1	--	25	75	100	4
BP606T	Quality Assurance – Theory	3+1	--	25	75	100	4
BP607P	Medicinal chemistry III – Practical	--	4	15	35	50	2
BP608P	Pharmacology III – Practical	--	4	15	35	50	2
BP609P	Herbal Drug Technology – Practical	--	4	15	35	50	2
Total		24	12	195	555	750	30


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Seventh Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP701T	Instrumental Methods of Analysis – Theory	3+1	--	25	75	100	4
BP702T	Industrial Pharmacy II – Theory	3+1	--	25	75	100	4
BP703T	Pharmacy Practice – Theory	3+1	--	25	75	100	4
BP704T	Novel Drug Delivery System – Theory	3+1	--	25	75	100	4
BP705P	Instrumental Methods of Analysis – Practical	--	4	15	35	50	2
BP706PS	Practice School*	--	12	25	125	150	6
Total		16	16	140	460	600	24

- * Non University Examination (NUE).


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Eighth Semester

Course Code	Course Name	L+T	P	Marks			Credits
				Internal	External	Total	
BP801T	Biostatistics and Research Methodology	3+1	--	25	75	100	4
BP802T	Social and Preventive Pharmacy	3+1	--	25	75	100	4
BP803ET	Pharma Marketing Management	3+1 + 3+1 = 8	--	25+25 = 50	75+75 = 150	100+100 = 200	4+4 = 8
BP804ET	Pharmaceutical Regulatory Science						
BP805ET	Pharmacovigilance						
BP806ET	Quality Control and Standardization of Herbals						
BP807ET	Computer Aided Drug Design						
BP808ET	Cell and Molecular Biology						
BP809ET	Cosmetic Science						
BP810ET	Experimental Pharmacology						
BP811ET	Advanced Instrumentation Techniques						
BP812ET	Dietary Supplements and Nutraceuticals						
BP813ET	Pharmaceutical Product Development						
BP814PW	Project Work	--	12	--	150	150	6
Total		16	12	100	450	550	22


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Semester Wise Credit Distribution

Semester	Credit Points
	27/29 [§] /30 [#]
First	29
Second	24
Third	28
Fourth	26
Fifth	30
Sixth	24
Seventh	22
Eighth	01*
Extracurricular/ Co curricular activities	
Total Credit Points for the program	211/213[§]/214[#]

- § Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM) course.
- # Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB) course.
- * The credit points assigned for extracurricular and or co-curricular activities shall be given by the Principals of the colleges and the same shall be submitted to the University. The criteria to acquire this credit point shall be defined by the colleges from time to time.


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Course Code	Course Title	Teaching Load			Marks		Exam (hrs)		Credits
		L	T	P	Int.	Ext.	Int.	Ext.	
BP206T	Environmental Sciences	3	-	-	25	50	1	2	3

Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

Objectives: Upon completion of the course, the student shall be able to:

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature.

Module 01

10 Hours

The Multidisciplinary nature of environmental studies
Natural Resources

- Renewable and non-renewable resources: Natural resources and associated problems
Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources.

Module 02

10Hours

Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Module 03

10 Hours

- **Environmental Pollution: Air pollution; Water pollution; Soil pollution**

Recommended Books (Latest edition):

1. Y.K. Singh, Environmental Science, New Age International Pvt, Publishers, Bangalore.

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2. Agarwal, K.C. Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India.
4. Brunner R.C., Hazardous Waste Incineration, McGraw Hill Inc. 480p.
5. Clark R.S., Marine Pollution, Clarendon Press Oxford.
6. Cunningham, W.P. Cooper, T.H. Gorhani, E and Hepworth, M.T., Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p.
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down of Earth, Centre for Science and Environment.


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Course Code	Course Title	Teaching Load			Marks		Exam (hrs)		Credits
		L	T	P	Int.	Ext.	Int.	Ext.	
BP505T	Pharmaceutical Jurisprudence	3	1	-	25	75	1	3	4

Scope: This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.

Objectives: Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
2. Various Indian pharmaceutical Acts and Laws.
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals.
4. The code of ethics during the pharmaceutical practice.

Module 01

10 Hours

Drugs and Cosmetics Act, 1940 and Its Rules 1945

- Objectives, Definitions, Legal definitions of schedules to the Act and Rules
- Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties.
- Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,
- Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

Module 02

10 Hours

Drugs and Cosmetics Act, 1940 and Its rules 1945.

- Detailed study of Schedule G, H, M, N, P, T, U, V, X, Y, Part XII B, Sch F & DMR (OA) Sale of Drug– Wholesale, Retail sale and restricted license. Offences and penalties
- Labeling & Packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.
- Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, licensing authorities, controlling authorities, Drugs Inspectors.

Module 03

10 Hour

Pharmacy Act –1948

- Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, Registration of Pharmacists, Offences and Penalties.

Medicinal and Toilet Preparation Act –1955

- Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of

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alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences and Penalties.

Narcotic Drugs and Psychotropic Substances Act-1985 and Rules

- Objectives, Definitions, Authorities and Officers, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences and Penalties.

08 Hours

Module 04

Study of Salient Features of Drugs and Magic Remedies Act and its rules

- Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties.

Prevention of Cruelty to animals Act-1960

- Objectives, Definitions, Institutional Animal Ethics Committee, CPCSEA guidelines for Breeding and Stocking of Animals, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties.

National Pharmaceutical Pricing Authority

- Drugs Price Control Order (DPCO)- 2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines (NLEM).

07 Hours

Module 05

Pharmaceutical Legislations

- A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliar committee

Code of Pharmaceutical ethics

- Definition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath

Medical Termination of Pregnancy Act

Right to Information Act

Introduction to Intellectual Property Rights (IPR)

Recommended books: (Latest Edition)

1. Forensic Pharmacy by B. Suresh.
2. Text book of Forensic Pharmacy by B.M. Mithal.
3. Hand book of drug law-by M.L. Mehra.
4. A text book of Forensic Pharmacy by N.K. Jain.
5. Drugs and Cosmetics Act/Rules by Govt. of India publications.
6. Medicinal and Toilet preparations act 1955 by Govt. of India publications.
7. Narcotic drugs and psychotropic substances act by Govt. of India publications.
8. Drugs and Magic Remedies act by Govt. of India publication.
9. Bare Acts of the said laws published by Government. Reference books (Theory).


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Course Code	Course Title	Teaching Load			Marks		Exam (hrs)		Credits
		L	T	P	Int.	Ext.	Int.	Ext.	
BP802T	Social & Preventive Pharmacy	3	1	-	25	75	1	3	4

Scope: The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

Objectives: After the successful completion of this course, the student shall be able to

1. Acquire high consciousness/realization of current issues related to health and pharmaceutical problems within the country and worldwide.
2. Have a critical way of thinking based on current healthcare development.
3. Evaluate alternative ways of solving problems related to health and pharmaceutical issues.

Module 01

10 Hours

Concept of Health and Disease

- Definition, concepts and evaluation of public health.
- Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

Social and Health Education

- Food in relation to nutrition and health, Balanced diet, Nutritional deficiencies, Vitamin deficiencies, Malnutrition and its prevention.

Sociology and Health

- Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health.

Hygiene and Health

- Personal hygiene and health care; avoidable habits.

Module 02

10 Hours

Preventive Medicine

- General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse.

Module 03

10 Hours

National Health Programs, Its Objectives, Functioning and Outcome of The Following

- HIV and AIDS control programme, TB, Integrated disease surveillance program (IDSP), National leprosy control programme, National mental health program, National programme for prevention and control of deafness, Universal immunization programme, National programme for control of blindness, Pulse polio programme.



Module 04

08 Hours

- National health intervention programme for mother and child, National family welfare programme.
- National tobacco control programme.
- National Malaria Prevention Program.
- National programme for the health care for the elderly.
- Social health programme; role of WHO in Indian national program.

Module 05

07 Hours

- Community services in rural, urban and school health.
- Functions of PHC.
- Improvement in rural sanitation.
- National urban health mission.
- Health promotion and education in school.

Recommended Books (Latest edition)

1. Short Textbook of Preventive and Social Medicine, Prabhakara GN, ISBN: 9789380704104, JAYPEE Publications.
2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, ISBN: 9789350901878, JAYPEE Publications,
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, ISBN: 9789351522331, JAYPEE Publications.
4. Essentials of Community Medicine—A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, ISBN: 9789350250440, JAYPEE Publications.
5. Park Textbook of Preventive and Social Medicine, K Park, ISBN-14: 9788190128285, BANARSIDAS BHANOT PUBLISHERS.
6. Community Pharmacy Practice, Ramesh Adepu, BSP Publishers, Hyderabad

Recommended Journals

1. Research in Social and Administrative Pharmacy, Elsevier, Ireland.



Punjab Technical University
B.Sc. Medical Laboratory Sciences

First Semester

Course Code.	Course Name	L	T	P	Marks		Total	Cr.
					Int.	Ext.		
BMLS-101	Essential Biology	3	-	-	40	60	100	3
BMLS-102	General Microbiology	4	-	-	40	60	100	4
BMLS-103	Basic Haematology & Haematological	4	-	-	40	60	100	4
BMLS-104	Human Anatomy & Physiology-I	4	-	-	40	60	100	4
BMLS-105	Basics of Biochemistry	4	-	-	40	60	100	4
BMLS-106	Essential Biology – Practical	-	-	3	40	60	100	2
BMLS-107	General Microbiology – Practical	-	-	5	40	60	100	3
BMLS-108	Basic Haematology & Haematological	-	-	4	40	60	100	2
BMLS-109	Human Anatomy & Physiology-1-	-	-	3	40	60	100	2
BMLS-110	Basics of Biochemistry – Practical	-	-	3	40	60	100	2
Guest Lecture/ Tutorial/ Seminar/visit to any medical research institution or reputed clinical laboratory (Compulsory)		-	2	-				
Total					400	600	1000	30

Second Semester

Course Code.	Course Name	L	T	P	Marks		Total	Cr.
					Int.	Ext.		
HVPE-101	Human Values and Professional Ethics	3	-	-	40	60	100	3
BMLS-202	Systematic Bacteriology	4	-	-	40	60	100	4
BMLS-203	Basic Haematology Techniques –II	4	-	-	40	60	100	4
	Human Anatomy & Physiology –II	4	-	-	40	60	100	4
BMLS-205	Biochemical Metabolism	4	-	-	40	60	100	4
HVPE-102	Human Values and Professional Ethics – Practical	-	-	3	40	60	100	2
BMLS-207	Systematic Bacteriology- Practical	-	-	5	40	60	100	3
BMLS-208	Basic Haematology Techniques – II Practical	-	-	4	40	60	100	2
BMLS-209	Human Anatomy & Physiology –II –	-	-	3	40	60	100	2
BMLS-210	Biochemical Metabolism – Practical	-	-	3	40	60	100	2
Guest Lecture/ Tutorial/ Seminar/visit to any medical research institution or reputed clinical laboratory (Compulsory)		-	2	-				
Total					400	600	1000	30


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Third Semester									
Course Code.	Course Name	L	T	P	Marks		Total	Cr. hr	
					Int.	Ext			
BMLS-301	Communication Skills	3	-	-	40	60	100	3	
BMLS-302	Applied Bacteriology	4	-	-	40	60	100	4	
BMLS-303	Applied Haematology-I	4	-	-	40	60	100	4	
BMLS-304	Basic Cellular Pathology	4	-	-	40	60	100	4	
BMLS-305	Analytical Biochemistry	4	-	-	40	60	100	4	
BMLS-306	Communication Skills - Practical	-	-	3	40	60	100	2	
BMLS-307	Applied Bacteriology - Practical	-	-	5	40	60	100	3	
BMLS-308	Applied Haematology-I - Practical	-	-	4	40	60	100	2	
BMLS-309	Basic Cellular Pathology – Practical	-	-	3	40	60	100	2	
BMLS-310	Analytical Biochemistry –	-	-	3	40	60	100	2	
Guest Lecture/ Tutorial/ Seminar/visit to any medical research institution or reputed clinical laboratory (Compulsory)		-	2	-					
Total					400	600	1000	30	


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Fourth Semester

Course No.	Course Name	L	T	P	Marks		Total	Cr. Hr
					Int.	Ext		
BMLS-401	Fundamentals of Computers	2	-	-	40	60	100	2
BMLS-402	Immunology & Mycology	4	-	-	40	60	100	4
BMLS-403	Applied Haematology-II	4	-	-	40	60	100	4
BMLS-404	Histotechnology-I	4	-	-	40	60	100	4
BMLS-405	Clinical Biochemistry-I	4	-	-	40	60	100	4
BMLS-406	Fundamentals of Computers – Practical	-	-	3	40	60	100	2
BMLS-407	Immunology & Mycology –	-	-	5	40	60	100	3
BMLS-408	Applied Haematology-II – Practical	-	-	4	40	60	100	2
BMLS-409	Histotechnology-I - Practical	-	-	3	40	60	100	2
BMLS-410	Clinical Biochemistry-I - Practical	-	-	3	40	60	100	2
	Guest Lecture/ Tutorial/ Seminar/visit to any medical research institution or reputed clinical laboratory (Compulsory)	-	2	-				
Total					400	600	1000	29

Fifth Semester

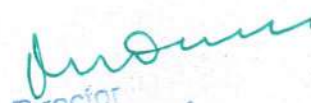
Course No.	Course Name	L	T	P	Marks		Total	Cr. Hr
					Int.	Ext		
BMLS-501	Medical Laboratory Management	3	-	-	40	60	100	3
BMLS-502	Parasitology & Virology	4	-	-	40	60	100	4
BMLS-503	Blood Banking	4	-	-	40	60	100	4
BMLS-504	Histotechnology-II & Cytology	4	-	-	40	60	100	4
BMLS-505	Clinical Biochemistry-II	4	-	-	40	60	100	4
BMLS-506	Medical Laboratory Management - Practical	-	-	3	40	60	100	2
BMLS-507	Parasitology & Virology - Practical	-	-	5	40	60	100	3
BMLS-508	Blood Banking - Practical	-	-	4	40	60	100	2
BMLS-509	Histotechnology-II & Cytology – Practical	-	-	3	40	60	100	2
BMLS-510	Clinical Biochemistry-II –	-	-	3	40	60	100	2
	Guest Lecture/ Tutorial/ Seminar/visit to any medical research institution or reputed clinical laboratory (Compulsory)	-	2	-				
Total					400	600	1000	30


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Sixth Semester

Course No.	Course Name	L	T	P	Marks		Total	Cr. Hr
					Int.	Ext.		
BMLS-601	Environmental Sciences	4	1	-	40	60	100	5
BMLS-602	Professional Training (Three Months)	Three Months			0	200	200	25
BMLS-603	Environmental Sciences - Practical	2			40	60	100	2
BMLS-604	Internal assessment				100	0	100	
	Project/Practical file				0	200	200	
	Practical (Performance) and viva				0	300	300	
	Total Marks					180	820	1000

For evaluation of Professional Training, out of 700 marks, 200 will be awarded by the healthcare industry where the candidate has taken training. After taking 3 months training from healthcare industry the candidate shall report back to parent institute where he/she will submit his/her project report and will attend the institute for rest of the semester period. Then at the end of the semester he/she will appear for the Practical examinations in the presence of Internal & external Examiners. Out of rest 500 marks 200 will be for Project/Practical file and 300 for Practical and *Viva voce* (by external examiner)


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HUMAN VALUES AND PROFESSIONAL ETHICS

HVPE – 101

Objective/s and Expected outcome:

To make the students learn to discriminate between valuable and superficial in the life. To help develop the critical ability to distinguish between essence and form, or between what is of value and what is superficial, in life - this ability is to be developed not for a narrow area or field of study, but for everyday situations in life, covering the widest possible canvas. To help students develop sensitivity and awareness; leading to commitment and courage to act on their own belief. It is not sufficient to develop the discrimination ability, it is important to act on such discrimination in a given situation. Knowingly or unknowingly, our education system has focused on the skill aspects (learning and doing) - it concentrates on providing to its students the skills to do things. In other words, it concentrates on providing "How to do" things. The aspects of understanding "What to do" or "Why something should be done" is assumed. No significant cogent material on understanding is included as a part of the curriculum. A result of this is the production of graduates who tend to join into a blind race for wealth, position and jobs. Often it leads to misuse of the skills; and confusion and wealth that breeds chaos in family, problems in society, and imbalance in nature. This course is an effort to fulfill our responsibility to provide our students this significant input about understanding. This course encourages students to discover what they consider valuable. Accordingly, they should be able to discriminate between valuable and the superficial in real situations in their life. It has been experimented at IITB, IITK and UPTU on a large scale with significant results.

Unit-I

1. Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

- Understanding the need, basic guidelines, content and process for Value Education.
- Self Exploration—what is it?- its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration.
- Continuous Happiness and Prosperity- A look at basic Human Aspirations


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- Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
 - Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
 - Method to fulfill the above human aspirations: understanding and living in **harmony** at various levels
- (6 Hrs)

Unit-II

2. Understanding Harmony in the Human Being - Harmony in Myself!

- Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
 - Understanding the needs of Self ('I') and 'Body' - *Sukh* and *Suvidha*
 - Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
 - Understanding the characteristics and activities of 'I' and harmony in 'I'
 - Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
 - Programs to ensure *Sanyam* and *Swasthya*
- (6 Hrs)

Unit-III

3. Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

- Understanding harmony in the Family- the basic unit of human interaction
- Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*; Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
- Understanding the meaning of *Vishwas*; Difference between intention and competence
- Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
- Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
- Visualizing a universal harmonious order in society- Undivided Society (*Akhand*)

Samaj), Universal Order (*Sarvabhaum Vyawastha*)- from family to world family!

(6 Hrs.)

Unit-IV

4. Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

- Understanding the harmony in the Nature
- Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
- Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
- Holistic perception of harmony at all levels of existence

(4 Hrs)

5. Implications of the above Holistic Understanding of Harmony on Professional Ethics

- Natural acceptance of human values
- Definitiveness of Ethical Human Conduct
- Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
- Competence in professional ethics:
 - Ability to utilize the professional competence for augmenting universal human order
 - Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems
 - Ability to identify and develop appropriate technologies and management patterns for above production systems.
- Case studies of typical holistic technologies, management models and production systems
- Strategy for transition from the present state to Universal Human Order:
 - At the level of individual: as socially and ecologically responsible engineers, technologists and managers
 - At the level of society: as mutually enriching institutions and organizations

(6 Hrs.)

Text Book:


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1. R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

Other Suggested Readings / Books:

1. Ivan Illich, 1974, *Energy & Equity*, The Trinity Press, Worcester, and HarperCollins, USA
2. E.F. Schumacher, 1973, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
3. A Nagraj, 1998, *Jeevan Vidya ek Parichay*, Divya Path Sansthan, Amarkantak.
4. Sussan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991
5. PL Dhar, RR Gaur, 1990, *Science and Humanism*, Commonwealth Purblishers.
6. A.N. Tripathy, 2003, *Human Values*, New Age International Publishers
7. Subhas Palekar, 2000, *How to practice Natural Farming*, Pracheen(Vaidik) Krishi Tantra Shodh, Amravati.
8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth – Club of Rome's report*, Universe Books.
9. E G Seebauer & Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists & Engineers*, Oxford University Press
10. M Govindrajan, S Natrajan & V.S. Senthil Kumar, *Engineering Ethics (including Human Values)*, Eastern Economy Edition, Prentice Hall of India Ltd
11. B P Banerjee, 2005, *Foundations of Ethics and Management*, Excel Books.
12. B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow. Reprinted 2008.


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Environmental Sciences

BMLS-601

Unit-I

1. Introduction:- Definition and scope and importance of multidisciplinary nature of environment. Need for public awareness. 2
2. Natural Resources:- Natural Resources and associated problems, use and over exploitation, case studies of forest resources and water resources. 4
3. Ecosystems:-Concept of Ecosystem, Structure, interrelationship, producers, consumers and decomposers, ecological pyramids-biodiversity and importance. Hot spots of biodiversity 4

Unit-II

4. Environmental Pollution:-
Definition, Causes, effects and control measures of air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards
Solid waste management : Causes, effects and control measure of urban and industrial wastes.
Role of an individual in prevention of pollution. Pollution case studies. Disaster management : Floods, earthquake, cyclone and landslides. 4
5. Social Issues and the Environment From Unsustainable to Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management
Resettlement and rehabilitation of people; its problems and concerns. Case studies. Environmental ethics : Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies, Wasteland reclamation.
Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of pollution) Act. Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation Public awareness 4

Unit-III

6. Human Population and the Environment, Population growth, variation among nations. Population explosion – Family Welfare Programme. Environment and human health, Human Rights, Value Education, HIV/AIDS. Women and child Welfare. Role of Information Technology in Environment and human health, Case studies. 6 87

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Unit-IV

7. Understanding the Hospital Environment 1
8. Understanding the environment in the following clinical laboratories: 4
 - a. Microbiology
 - b. Biochemistry
 - c. Histopathology
 - d. Haematology
9. Clinical laboratory hazards to the environment from the following and means to prevent: 4
 - a. Infectious material
 - b. Toxic Chemicals
 - c. Radioactive Material
 - d. Other miscellaneous wastes


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BMLS-602

The will be three months professional training.

Course	Course Name
BMLS-602	Professional Training (Three Months)
BMLS-604	Practical Evaluation -Project/Practical file -Practical (Performance) and viva

Environmental Sciences Practical

BMLS-603

1. Any Activity related to the public awareness about the environment:
 - a. Preparation of Charts/Models
 - b. Visit to any effluent treatment plant
 - c. Seeding a plant/s and take care of it/them.
2. Preparation of models/charts in relation to natural resources of drinking water.
3. Preparation of Models of Ecosystem on biodiversity.
4. Effects of environmental pollution on humans through poster presentation.
5. Any Activity related to wild life preservation.
6. Visit to any hospital/ clinical laboratory and understanding the environment therein.
7. Any activity related biomedical waste management in a hospital or clinical laboratory

Suggested Readings

1. Agarwal, K. C. 2001 Environment Biology, Nidi Publ. Ltd. Bikaner.

2. Jadhav, H & Bhosale, V.M. 1995. Environment Protection and Laws. Himalaya Pub House, Delhi 284 p.
3. Rao M. N. & Datta A.K. 1987. Waste water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345 p..
4. Daniel D. Chiras 2010. Environmental Science. 1st Indian Edition, Jones and Bartlett India Pvt. Ltd. 4262/3, Ansar Road, Daryaganj, New Delhi.
5. Principle of Environment Science by Cunningham, W.P.
6. Essentials of Environment Science by Joseph.
7. Environment Pollution Control Engg. By Rao, C.S.
8. Perspectives in Environmental Studies by Kaushik, A.
9. Elements of Environment Science & Engg. By Meenakshi.
10. Elements of environment engg. By Duggal.

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**Study Scheme & Syllabus of
Bachelor of Science in Medical Laboratory Science
(B.Sc. MLS)**

Batch 2018 onwards



By

Board of Study MLT / MLS

[Signature]
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**Department of Academics
IK Gujral Punjab Technical University**

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

Bachelors of Science in Medical Laboratory Science (B.Sc. MLS):

It is a Under Graduate (UG) Programme of 3 years duration (6 semesters)

Eligibility for Admission: Those candidates who have passed the 10+2 with Physics & Chemistry as compulsory subjects and either Mathematics or Biology conducted by a recognized Board / University / Council.

OR

Those candidates who have passed their Matriculation examination AND have also passed three-year Diploma in any Trade from Punjab State Board of Technical Education & Industrial Training, Chandigarh or such Examination from any other recognized State Board of Technical Education, or Sant Longowal Institute of Engineering & Technology, Longowal / or / Two years' diploma in pharmacy or medical lab technology after 10+2 recognized by any state board.


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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.


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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



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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


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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


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**IK Gujral Punjab Technical University
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Fifth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BMLS501-18	Skill Enhancement Course-III	Applied Hematology-I	1	0	0	40	60	100	1
BMLS502-18	Skill Enhancement Course-Laboratory	Applied Hematology-I - Practical	0	0	2	30	20	50	1
BMLS503-18	Open Elective-I	Medical Lab Management	3	1	0	40	60	100	4
BMLS504-18	Elective-I	Histotechnology-I	3	1	0	40	60	100	4
BMLS505-18	Elective-II	Clinical Biochemistry-II	3	1	0	40	60	100	4
BMLS506-18	Elective-I Laboratory	Histotechnology-I Practical	0	0	4	60	40	100	2
BMLS507-18	Elective-II Laboratory	Clinical Biochemistry-II Practical	0	0	4	60	40	100	2
BMLS508-18	Project	Minor Project	0	0	2	Satisfactory / Un Satisfactory			2
BMPD502-18		Mentoring and Professional Development	0	0	1	25	--	25	1
TOTAL			10	03	13	335	340	675	21

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


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

Sixth Semester

Course Code	Course Type	Course Title	Load Allocations			Marks Distribution		Total Marks	Credits
			L*	T*	P	Internal	External		
BMLS601-18	Skill Enhancement Course-IV	Applied Hematology-II	1	0	0	40	60	100	1
BMLS602-18	Skill Enhancement Course-Laboratory	Applied Hematology-II-Practical	0	0	2	30	20	50	1
BMLS603-18	Open Elective-II	Blood Banking	3	1	0	40	60	100	4
BMLS604-18	Elective-III	Parasitology and virology	3	1	0	40	60	100	4
BMLS605-18	Elective-IV	Histotechnology-II & Cytology	3	1	0	40	60	100	4
BMLS606-18	Elective-III Laboratory	Parasitology and virology - Practical	0	0	4	60	40	100	2
BMLS607-18	Elective-IV Laboratory	Histotechnology-II & Cytology - Practical	0	0	4	60	40	100	2
BMLS608-18	Project	Major Project	0	0	6	Satisfactory / Un Satisfactory			6
BMPD602-18		Mentoring and Professional Development	0	0	1	25	--	25	1
TOTAL			10	03	17	335	340	675	25

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

Total Marks of B.Sc. Program : 4525

Total Credit of B.Sc. Program : 134

NOTE :

ONLY FOR BOS

The course types and their number are fixed as mentioned in the scheme however respective BOS can shuffle the courses as required.


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HVPE101-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules
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Total no. of Lectures:

28

[L-T-P: 3-0-0]

Content for Lectures:

Module 1: Course Introduction - Need, Basic Guidelines, Content and Process for Value Education

[6]

1. Understanding the need, basic guidelines, content and process for Value Education
2. Self Exploration-what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration
3. Continuous Happiness and Prosperity- A look at basic Human Aspirations
4. Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
5. Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
6. Method to fulfill the above human aspirations: understanding and living in harmony at various levels

Module 2: Understanding Harmony in the Human Being - Harmony in Myself!

[6]

7. Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
8. Understanding the needs of Self ('I') and 'Body' - *Sukh* and *Suvidha*
9. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
10. Understanding the characteristics and activities of 'I' and harmony in 'I'
11. Understanding the harmony of I with the Body: *Sanyam* and *Swasthya*; correct appraisal of Physical needs, meaning of Prosperity in detail
12. Programs to ensure *Sanyam* and *Swasthya*
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 3: Understanding Harmony in the Family and Society- Harmony in Human-Human Relationship

[6]

13. Understanding harmony in the Family- the basic unit of human interaction
14. Understanding values in human-human relationship; meaning of *Nyaya* and program for its fulfillment to ensure *Ubhay-tripti*;
Trust (*Vishwas*) and Respect (*Samman*) as the foundational values of relationship
15. Understanding the meaning of *Vishwas*; Difference between intention and competence
16. Understanding the meaning of *Samman*, Difference between respect and differentiation; the other salient values in relationship
17. Understanding the harmony in the society (society being an extension of family): *Samadhan*, *Samridhi*, *Abhay*, *Sah-astitva* as comprehensive Human Goals
18. Visualizing a universal harmonious order in society- Undivided Society (*Akhand Samaj*), Universal Order (*Sarvabhaum Vyawastha*)- from family to world family!
- Practice Exercises and Case Studies will be taken up in Practice Sessions.


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Module 4: Understanding Harmony in the Nature and Existence - Whole existence as Co-existence

[4]

19. Understanding the harmony in the Nature
20. Interconnectedness and mutual fulfillment among the four orders of nature- recyclability and self-regulation in nature
21. Understanding Existence as Co-existence (*Sah-astitva*) of mutually interacting units in all-pervasive space
22. Holistic perception of harmony at all levels of existence
- Practice Exercises and Case Studies will be taken up in Practice Sessions.

Module 5: Implications of the above Holistic Understanding of Harmony on Professional Ethics

[6]

23. Natural acceptance of human values
24. Definitiveness of Ethical Human Conduct
25. Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order
26. Competence in professional ethics:
 - a) Ability to utilize the professional competence for augmenting universal human order,
 - b) Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems,
 - c) Ability to identify and develop appropriate technologies and management patterns for above production systems.
27. Case studies of typical holistic technologies, management models and production systems
28. Strategy for transition from the present state to Universal Human Order:
 - a) At the level of individual: as socially and ecologically responsible engineers, technologists and managers
 - b) At the level of society: as mutually enriching institutions and organizations

Text Book

R R Gaur, R Sangal, G P Bagaria, 2009, *A Foundation Course in Value Education*.

Reference Books

1. Ivan Illich, 1974, *Energy & Equity*, The Trinity Press, Worcester, and HarperCollins, USA
2. E.F. Schumacher, 1973, *Small is Beautiful: a study of economics as if people mattered*, Blond & Briggs, Britain.
3. A Nagraj, 1998, *Jeevan Vidya ek Parichay*, Divya Path Sansthan, Amarkantak.
4. Sussan George, 1976, *How the Other Half Dies*, Penguin Press. Reprinted 1986, 1991
5. PL Dhar, RR Gaur, 1990, *Science and Humanism*, Commonwealth Purblishers.
6. A.N. Tripathy, 2003, *Human Values*, New Age International Publishers.
7. Subhas Palekar, 2000, *How to practice Natural Farming*, Pracheen(Vaidik) Krishi Tantra Shodh, Amravati.
8. Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, *Limits to Growth - Club of Rome's report*, Universe Books.
9. E G Seebauer & Robert L. Berry, 2000, *Fundamentals of Ethics for Scientists & Engineers*, Oxford University Press
10. M Govindrajran, S Natrajan & V.S. Senthil Kumar, *Engineering Ethics (including Human Values)*, Eastern Economy Edition, Prentice Hall of India Ltd.

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11. B P Banerjee, 2005, *Foundations of Ethics and Management*, Excel Books.
12. B L Bajpai, 2004, *Indian Ethos and Modern Management*, New Royal Book Co., Lucknow. Reprinted 2008.

Relevant CDs, Movies, Documentaries & Other Literature:

1. Value Education website, <http://uhv.ac.in>
2. Story of Stuff, <http://www.storyofstuff.com>
3. Al Gore, *An Inconvenient Truth*, Paramount Classics, USA
4. Charlie Chaplin, *Modern Times*, United Artists, USA
5. IIT Delhi, *Modern Technology – the Untold Story*


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HVPE102-18	Ability Enhancement Compulsory Course (AECC)	Human Values, De-addiction and Traffic Rules (Lab/ Seminar)
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One each seminar will be organized on Drug De-addiction and Traffic Rules. Eminent scholar and experts of the subject will be called for the Seminar atleast once during the semester. It will be binding for all the students to attend the seminar.


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Ability Enhancement Compulsory Course
(EVS102-18 Environment Studies)

Unit 1 : Introduction to environmental studies

- Multidisciplinary nature of environmental studies;
- Scope and importance; Concept of sustainability and sustainable development.

(2 lectures)

Unit 2 : Ecosystems

- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem: food chains, food webs and ecological succession. Case studies of the following ecosystems :
 - a) Forest ecosystem
 - b) Grassland ecosystem
 - c) Desert ecosystem
 - d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

(6 lectures)

Unit 3 : Natural Resources : Renewable and Non-renewable Resources

- Land resources and land use change; Land degradation, soil erosion and desertification.
- Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water : Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state).
- Energy resources : Renewable and non renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

(8 lectures)

Unit 4 : Biodiversity and Conservation

- Levels of biological diversity : genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots
- India as a mega-biodiversity nation; Endangered and endemic species of India
- Threats to biodiversity : Habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.
- Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.

(8 lectures)

Unit 5 : Environmental Pollution

- Environmental pollution : types, causes, effects and controls; Air, water, soil and noise pollution
- Nuclear hazards and human health risks
- Solid waste management : Control measures of urban and industrial waste.
- Pollution case studies.

(8 lectures)


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Unit 6 : Environmental Policies & Practices

- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture
 - Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements: Montreal and Kyoto protocols and Convention on Biological Diversity (CBD).
 - Nature reserves, tribal populations and rights, and human wildlife conflicts in Indian context.
- (7 lectures)

Unit 7 : Human Communities and the Environment

- Human population growth: Impacts on environment, human health and welfare.
- Resettlement and rehabilitation of project affected persons; case studies.
- Disaster management : floods, earthquake, cyclones and landslides.
- Environmental movements : Chipko, Silent valley, Bishnois of Rajasthan.
- Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi).

(6 lectures)

Unit 8 : Field work

- Visit to an area to document environmental assets: river/ forest/ flora/fauna, etc.
- Visit to a local polluted site---Urban/Rural/Industrial/Agricultural.
- Study of common plants, insects, birds and basic principles of identification.
- Study of simple ecosystems---pond, river, Delhi Ridge, etc.

(Equal to 5 lectures)

Suggested Readings:

1. Carson, R. 2002. *Silent Spring*. Houghton Mifflin Harcourt.
2. Gadgil, M., & Guha, R.1993. *This Fissured Land: An Ecological History of India*. Univ. of California Press.
3. Gleeson, B. and Low, N. (eds.) 1999. *Global Ethics and Environment*, London, Routledge.
4. Gleick, P. H. 1993. *Water in Crisis*. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.
5. Groom, Martha J., Gary K. Meffe, and Carl Ronald Carroll. *Principles of Conservation Biology*. Sunderland: Sinauer Associates, 2006.
6. Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. *Science*, 339: 36---37.
7. McCully, P. 1996. *Rivers no more: the environmental effects of dams*(pp. 29---64). Zed Books.
8. McNeill, John R. 2000. *Something New Under the Sun: An Environmental History of the Twentieth Century*.
9. Odum, E.P., Odum, H.T. & Andrews, J. 1971. *Fundamentals of Ecology*. Philadelphia: Saunders.
10. Pepper, I.L., Gerba, C.P. & Brusseau, M.L. 2011. *Environmental and Pollution Science*. Academic Press.
11. Rao, M.N. & Datta, A.K. 1987. *Waste Water Treatment*. Oxford and IBH Publishing Co. Pvt. Ltd.
12. Raven, P.H., Hassenzahl, D.M. & Berg, L.R. 2012. *Environment*. 8th edition. John Wiley & Sons.
13. Rosencranz, A., Divan, S., & Noble, M. L. 2001. *Environmental law and policy in India*. Tripathi 1992.
14. Sengupta, R. 2003. *Ecology and economics: An approach to sustainable development*. OUP.

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15. Singh, J.S., Singh, S.P. and Gupta, S.R. 2014. *Ecology, Environmental Science and Conservation*. S. Chand Publishing, New Delhi.
16. Sodhi, N.S., Gibson, L. & Raven, P.H. (eds). 2013. *Conservation Biology: Voices from the Tropics*. John Wiley & Sons.
17. Thapar, V. 1998. *Land of the Tiger: A Natural History of the Indian Subcontinent*.
18. Warren, C. E. 1971. *Biology and Water Pollution Control*. WB Saunders.
19. Wilson, E. O. 2006. *The Creation: An appeal to save life on earth*. New York: Norton.
20. World Commission on Environment and Development. 1987. *Our Common Future*. Oxford University Press.


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Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises
- 7* A part of above six points practicals on Fundamentals of Computers are also added as per Annexure-I

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.


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Annexure-I

Fundamental of Computers.

Introduction to computer: introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.

Input output devices: input devices (keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).

Processor and memory: The Central Processing Unit (CPU), main memory.

Storage Devices: sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.

Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.

Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.

Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

Introduction of Operating System: introduction, operating system concepts, types of operating system.

Suggested Readings:

1. Ram, B. & Kumar, S. (2014) **Computer Fundamentals: Architecture & Organization.** (5th Edition). New Age International Publishers, New Delhi.
2. Rajaraman, V. (2013). **Fundamentals of Computers.** PHI Learning Pvt. Ltd., New Delhi.
3. Sinha, P.K. & Sinha, P. (2013) **Computer Fundamentals 6th Edition.** BPB Publications, New Delhi.
4. Goel, A. (2015). **Computer Fundamentals.** Dorling Kindersley Pvt. Ltd. New Delhi.


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- Communication Skills
- Presentation Skills

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For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.
3. Practical work on some topics of Environment or field visit as per Unit-8 of subject code EVS102-18.

Evaluation shall be based on rubrics for Part – A & B

Mentors/Faculty incharges shall maintain proper record student wise of each activity conducted and the same shall be submitted to the department.


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Guidelines regarding Mentoring and Professional Development

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- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A **(Class Activities)**

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises
- 7* A part of above six points practicals on Fundamentals of Computers-II are also added as per Annexure-II

Part – B **(Outdoor Activities)**

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B

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**Annexure-II
Fundamentals of Computers-II**

Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).

Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.

Application of Computers and introduction of various software used in Medical Education


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Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A **(Class Activities)**

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B **(Outdoor Activities)**

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B

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Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
- Aptitude (Technical and General)
- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A **(Class Activities)**

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises
7. The Medical Laboratory Management as per Annexure-III

Part – B **(Outdoor Activities)**

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B

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Annexure-III

(Medical Laboratory Management)

1. Clinical sample collection e.g. a. Blood, b. Urine. c. Stool examination, d. Saliva sample, e. Sputum sample, f. Semen analysis etc.
2. Sample accountability: a. Labeling of sample, b. Making entries in Laboratory records
3. Reporting results: a. Basic format of a test report, b. Release of examination results, c. Alteration in reports
4. Quality Management system: a. Internal and External quality control
5. Biomedical waste management in a clinical laboratory: a. Disposal of used samples, reagents and other biomedical waste
6. Calibration and Validation of Clinical Laboratory instruments
7. Ethics in Medical laboratory Practice: a. Ethics in relation to the following: i. Pre-Examination procedures ii. Examination procedures iii. Reporting of results iv. Preserving medical records v. Access to Medical laboratory Records
8. Audit in a Medical Laboratory: a. Documentation

Suggested Readings:

1. Medical Laboratory Management, by Sangeeta Sharma et.al, Viva Books Pvt Ltd.4737/23, Ansar Road, Daryaganj, New Delhi
2. Clinical Laboratory Management, by Lynne Shore Garcia, ISBN Number 978-1-55581-279-9


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Guidelines regarding Mentoring and Professional Development

The objective of mentoring will be development of:

- Overall Personality
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- General Awareness (Current Affairs and GK)
- Communication Skills
- Presentation Skills

The course shall be split in two sections i.e. outdoor activities and class activities.
For achieving the above, suggestive list of activities to be conducted are:

Part – A (Class Activities)

1. Expert and video lectures
2. Aptitude Test
3. Group Discussion
4. Quiz (General/Technical)
5. Presentations by the students
6. Team building Exercises

Part – B (Outdoor Activities)

1. Sports/NSS/NCC
2. Society Activities of various students chapter i.e. ISTE, SCIE, SAE, CSI, Cultural Club, etc.

Evaluation shall be based on rubrics for Part – A & B
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