X. FACULTY OF SCIENCE

DEPARTMENT OF ANTHROPOLOGY

ABOUT THE DEPARTMENT

The Department was established in 1960. During the last more than six decades, the Department has not only grown in terms of personnel, equipment and laboratories, and library, it has contributed significantly to the furtherance of anthropological teaching and research in the country.

Infrastructure and Laboratory facilities for teaching and research are available in Osteology, Serology and Bio-chemical Anthropology, Palaeoanthropology and Prehistoric Archaeology, Socio-Cultural Anthropology, Dermatoglyphics, Forensic Anthropology, Molecular Anthropology. The unique 'S.R.K. Chopra Museum of Man' in the Department has a Gallery of Fossil Apes, Primates and Man which includes life-size models, and an Ethnographic Gallery which includes items of material culture. Fieldwork is organized by the Department where students are given instructions in the field and research methods and based on empirical work they write progress reports. The Department was recognized as one of the centers under U.G.C. Programme of Special Assistance and Departmental Research Support in 1988, this programme was extended up to 2009.

The Department has also been selected for support under UGC assistance for strengthening of the infrastructure of the Humanities & Social Science (ASIHSS) Programme in Anthropology for a period of five years i.e. 1.4.2005 – 31.3.2010. From2010-2011, the Department has been granted DST - FIST and is also a UGC Centre for Advanced Studies (CAS) in Anthropology (2011-2016). The Department has been awarded CAS-II by the UGC from April 2018 to March 2023.

The faculty of the Department has been handling various research & consultancy projects from prestigious National / State funding agencies. Recently, the faculty has published in the most coveted and high impact factors journals such as The Lancet & Nature. Climacteric, PLOS-ONE, American Journal and Physical Anthropology.

FACULTY:

Designation	Name	Field of Research Specialization
Professors	Abhik Ghosh	Social Anthropology
	Kewal Krishan	Physical Anthropology
Assistant Professors	Maninder Kaur	Physical Anthropology
	Ramesh Sahani (Extraordinary leave)	Physical Anthropology
	Jagmahender Singh Sehrawat **(Chairperson)**	Physical Anthropology

COURSES OFFERED: (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
B.Sc.(Hons.) in Anthropology as per NEP 2020 under the framework of Honours School System	30+4 NRI +2 Foreign National	4 years	Passed 10+2 class with 50% marks with English, Physics, Chemistry, Mathematics/ Biology from recognized Board / CBSE	Based on PU-CET (UG) Academics: 25% PU-CET (UG): 75%
M.Sc. (Hons.)under the framework of Honours School System	23+3NRI +1 Foreign National	2 years	Bachelor's Degree in any Stream with 50% marks from Panjab University or any other recognized Universities.***	Based on Merit
Diploma in Forensic Science & Criminology	20+2** +2 NRI +1 Foreign National	1 year	a) Bachelor's Degree of P.U. subject to having +2 with Science or any equivalent exam OR b) An equivalent examination of any other University recognized by Syndicate as equivalent to (a) above with 50 % marks	Based on Merit
Ph.D.	Subject to availability	3-6 Years	See Ph.D. Prospectus 2025	

*5 % Concession is admissible in eligibility marks to SC/ST/BC/PwD Candidates

** For Govt. Sponsored in service Police Personnel

Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) alongwith M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLES OF SYLLABI: Detailed syllabus available at http://puchd.ac.in/syllabus.php

B.Sc. (Hons.) in Anthropology as per NEP 2020 under the framework of Honours School System

SEMESTER-I		SEMESTER-II	
Core Subject: (Theory & Practical)		**Core Subject:** (Theory & Practical)	
ANTH DSE-101	Introduction to Biological Anthropology	ANTH DSE 151	Introduction to Socio Cultural Anthropology
ANTH M-111	Introduction to Anthropology	ANTH M 161	Biological Anthropology
ANTH IDC 101	Physiological Anthropology	ANTH IDC 2	Anthropology of Health
	AECC -1 (English) AECC- 2 (MIL)		AECC –3 (English) AECC -4 (MIL)

ANTH SEC 101	Research Methods	ANTH SEC 151	Data collection
ANTH VAC 1	Tribal Development and Applied Anthropology	ANTH VAC 2	Nutrition and Community Health
SEMESTER-III		**SEMESTER-IV**	
(Theory & Practical)		(Theory & Practical)	
ANTH DSC 201	Tribes and Peasants in India	ANTH DSC 251	Theories of Culture and Society
ANTH DSC 202	Paleoanthropology	ANTH DSC 252	Human Growth and Development
ANTH M 211	Field Methodology	ANTH DSC 253	Symbolic Anthropology
IDC	Human Genetics	ANTH M 261	Human Growth & Human Genetics
SEC	Applied Forensic Archaeology		
SEMESTER-V		**SEMESTER-VI**	
(Theory & Practical) **under CBCS**		(Theory & Practical) **under CBCS**	
ANTH-C11	Human Population Genetics	ANTH-C13	Forensic Anthropology
ANTH-C12	Anthropology in Practice	ANTH-C14	Anthropology of India
ANTH- DSE-1	Human Genetics **OR**	ANTH- DSE-5	Physiological Anthropology **OR**
ANTH- DSE-2	Demographic Anthropology	ANTH- DSE-6	Visual Anthropology
ANTH- DSE-3	Paleoanthropology **OR**	ANTH- DSE-7	Anthropology of Health **OR**
ANTH- DSE-4	Tribal cultures of India	ANTH- DSE-8	Dissertation

M.Sc. (Hons.)

SEMESTER-I (Theory & Practical)		**SEMESTER-II (Theory & Practical)**	
ANTH-C101	Archaeological Anthropology and Palaeoanthropology	ANTH-C201	Anthropological methods & Techniques
ANTH-C102	Biological Anthropology	ANTH-C202	Museum Studies
ANTH-C103	Social cultural Anthropology	ANTH-C203	Human Genetics
DSE-2	Medical Anthropology **OR**	DSE-4	Fieldwork methods and Techniques **OR**
DSE-15	Human Growth, Development and Nutrition	DSE-7	Prehistoric Archaeology and Palaeoanthropology - Concepts and Palaeolithic Cultures
SEC-1	Field Methodology	SEC-2	Anthropology of SIA
SEMESTER-III (Theory & Practical)		**SEMESTER-IV (Theory & Practical)**	
ANTH-C301	Anthropological Theories	ANTH-C401	Demography and Biostatistics
ANTH-C302	Human Ecology and Adaptation	ANTH-C402	Applied Anthropology
ANTH-C303	Anthropology of India	ANTH-C403	Dissertation and viva-voce
DSE-5	Human Biological Variation **OR**	DSE-10	Anthropology of Food **OR**
DSE-11	Symbolic Anthropology	DSE-20	Forensic Anthropology
SEC-3	Documentation of Intangible Cultural Heritage		

Diploma in Forensic Science & Criminology

SEMESTER-I		**SEMESTER-II**	
DFSc 1.1	Fundamentals of Forensic Science-I	DFSc 2.1	Fundamentals of Forensic Science-II
DFSc 1.2	Forensic Anthropology-I	DFSc 2.2	Forensic Anthropology-II
DFSc 1.3	Forensic Physical Sciences-I	DFSc 2.3	Forensic Physical Sciences-II
DFSc 1.4	Criminology and Criminal Law-I	DFSc 2.4	Criminology and Criminal Law-II
DFSc 1.5	Practical in Forensic Science-I	DFSc 2.5	Practical in Forensic Science-II

THRUST AREAS: Palaeoanthropology and Molecular Anthropology; Human Ecology in North-West India: Continuity & Change; and Bio-cultural Correlates of Health and Disease.

PLACEMENTS: Our students have worked for companies like Boeing and Nokia. They have worked as Director of Forensic Science Institute & ICMR and leading Departments in PGIMER & GMCH-32, Chandigarh. Many have gone aboard and are working in premier institutes and universities there. We are attempting to contact other organizations where high level placements may be provided in the future. We are attempting to get our students placed through individual's efforts and through the University Placement Cell. During the last one year, our students received employment as Assistant Professors in the Universities and Institutions; Research Officer in Tribal Development (H.P.), Assistant Anthropologist in Anthropological Survey of India; Research Officer in Indira Gandhi National Centre for the Arts. Our students have been admitted in advanced Masters" courses in USA / Canada on the basis of their post-graduation in Anthropology from this Department.

ALUMNI ASSOCIATION: We have an Alumni Association, though in a very nascent stage. Prestigious alumni sometimes come to the Department and at that point an interaction is organized with the faculty and students. The last such interaction was with Dr. Ramesh Zimboo from Thailand, on 11.05.2023. Alumni of the Department deliver special lectures to the students of the Department. In 2021, two prominent alumni were honoured at an online function. Prof. Shalina Mehta and Prof. M.P. Sachdeva were felicitated by Panjab University Alumni Association in Global Alumni Meet 2003. Prof. V. Bhalla and prof. Surya Prakash were felicitated by Panjab University Alumni Association in Global Alumni Meet 2025.

DEPARTMENT OF BIOCHEMISTRY

ABOUT THE DEPARTMENT

Department of Biochemistry was started in 1962 and has grown steadily and is now recognized as an important centre of research and teaching in the country. Our teaching oriented Department provides many opportunities for prospective students who can acquire thorough training and degree in contemporary Biochemistry through our honors program: B.Sc., M.Sc. and Ph.D. Our Department attracts the best students and provides an excellent foundation for future, be it in research, academics or industry.

The department has qualified, regular and competent faculty with Ph.D. from various institutes of national and international repute. The faculty members of the department are engaged in the research in the areas of Biosensors, Cancer Biology, Industrial biotechnology, Immunology, Membrane Biology, Microbial Biochemistry Neurobiology (fields in the order of Alphabets). The Department is recognized for funding under the Special Assistance Programme of the University Grant Commission and by DBT under DBT-BUILDER program to boost University Interdisciplinary Life Science Departments for education and research programme. The Department has several sophisticated instruments such as State of the Art inhalation toxicology laboratory having sophisticated facilities such as InExpose Inhalation system, Plethysmograph and rodent anesthesia system, Multiplex Immunoassay System, RT-PCR thermocycler, chemidoc gel Documentation system, GC-MS, High Speed Centrifuges, UV-Vis Spectrophotometers, Tissue homogenizer, Thermocycler, Gel-Doc, Lyophiliser, Spectrofluorophotometer, HPLC, Ultracentrifuge, Cell Culture facility and flowcytometer for enhancing research facilities.

The opportunities for Ph.D. are varied and designed to provide solid training as an independent and research scientist, both, in academic as well as industrial settings. Our alumni occupy important positions in India and abroad.

FACULTY

Designation	Name	Field of Research Specialization
Emeritus Professor	Akhtar Mahmood	Membrane Transport
Professors	Archana Bhatnagar	Immunology
	Rajat Sandhir	Neurochemistry
	Navneet Agnihotri	Cancer Biology
	Amarjit S. Naura **(Chairperson)**	Lung & Molecular Immunology
	Dipti Sareen	Microbial Biochemistry
Assistant Professor	Nirmal Prabhakar	Analytical Biochemistry

COURSES OFFERED (SEMESTER SYSTEM) :

Course	Seats	Duration	Eligibility*	Admission Criteria
B.Sc. (Hons.) in Biochemistry as per NEP 2020 under the framework of Honours School System	25+4NRI+2 Foreign National	4 Years	A candidate should have passed 10+2 examination with atleast 50% marks with English, Physics, Chemistry, Mathematics / Biology from recognized Board / CBSE	Based on PU-CET (UG) Academics: 25% PU-CET (UG): 75%
M.Sc. (Biochemistry) under the framework of Honours School System	30+4NRI+2 Foreign National	2 Years	(i) B.Sc. (Hons.) Biochemistry or its equivalent exam OR (ii) B.Sc. (Hons.) in any subject under CBCS with 24 Credits in Biochemistry as Generic Elective subject OR (iii) 50% marks in B.Sc. (Pass or Hons.) exam of P.U. or any other exam recognized by P.U. students should have passed Biochemistry as an elective subject for three years	After admitting all the ongoing students of B.Sc (HS) 3rd year, vacant seats will be filled with candidates on the basis of Entrance Test PU-CET (PG) Academics: 40% PU-CET (PG): 60%
Ph.D.	Subject to availability	3-6 years	See Ph.D. Prospectus 2025	

*5% concession is admissible in eligibility marks to SC/ST/BC/PwD Candidates
Student of B.Sc. (MLT) departments are not eligible.
Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) alongwith M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

Title of Syllabi: Detailed course curriculum is available at https://puchd.ac.in/syllabus.php

B.Sc (Hons) in Biochemistry as per NEP 2020 under the framework of Honours School System

Semester	Major	Minor	*Inter/Multi-disciplinary	#Ability Enhancement Courses (languages)	Skill Enhancement Courses/ Internships/ Dissertation	#Common Value Added Courses
I	BCH-DSC-1: Biomolecules **(4+2 Credits)**	BCH-M-1: Molecules of Life **(4+2 Credits)**	BCH-IDC-1: Introduction to Biochemistry **(2+1 Credits)**	AEC-1 **English (2 Credits)** AEC-2 **MIL (2 Credits)**	BCH-SEC-1: Cell Biology & its Tools **(3+0 Credits)**	VAC-1 **(2 Credits)**

II	BCH- DSC-2: Membrane Biology & Bioenergetics **(4+2 Credits)**	BCH-M-2: Proteins and Enzymes **(4+2 Credits)**	BCH-IDC-2: Introduction to Biochemistry **(2+1 Credits)**	AEC-3 **English (2 Credits)** AEC-4 **MIL (2 Credits)**	BCH-SEC-2: Basic Biochemical Techniques **(3+0 Credits)**	VAC-2 **(2 Credits)**
III	BCH-DSC-3: Structure & Metabolism of Carbohydrates (**4+2 Credits)** BCH-DSC-4: Nitrogenous Compounds: Structure & Metabolism I (**4+2 Credits)**	BCH-M-3: Metabolism of Carbohydrates & Lipids **(4+2 Credits)**	BCH-IDC-3: Introduction to Biochemistry **(2+1 Credits)**		BCH-SEC-3: Advanced Biochemical Techniques **(3+0 Credits)**	
IV	BCH- DSC-5: Lipids: Structure & Metabolism **(4+2 Credits)** BCH- DSC-6: Nitrogenous Compounds: Structure & Metabolism II **(4+2 Credits)** BCH-DSC-7: ENZYMES & Enzyme kinetics **(4+2 Credits)**	BCH-M -4: Metabolism of Nitrogenous Compounds **(4+2 Credits)**				
V	BCH-DSC-8: Immunology **(4+2 Credits)** BCH- DSC-9: Molecular Biology: From Genes to Proteins **(4+2 Credits)** BCH- DSC-10: Physiological Biochemistry **(4+2 Credits)**	BCH-M-5: Basic Molecular Biology **(3+1 Credits)**				VAC-3 **(2 Credits)**
VI	BCH-DSC-11: Nutritional Biochemistry **(4+2 Credits)** BCH-DSC-12: Regulation of Gene expression and Development (**4+2 Credits)** BCH-DSC-13: Neurobiology **(4+2 Credits)**	BCH-M-6: Advanced Molecular Biology **(3+1 Credits)**			Internship (INT-1) **(2 Credits)**	

M.Sc.

SEMESTER-I		**SEMESTER-II**	
1.	MBCH C1: Application of Biochemistry to Biotechnology	1.	MBCH C5: Molecular Cell Biology
2.	MBCH C2: Clinical Biochemistry	2.	MBCH C6: Advanced Enzymology
3.	MBCH C3: Biochemical Toxicology	3.	MBCH C7: Molecular & Cellular Immunology
4.	MBCH C4: Combined Practical	4.	MBCH C8: Combined Practical
5.	MBCH GE 1: Swayam – I*	5.	MBCH GE2: Swayam – II*
SEMESTER III		**SEMESTER IV**	
1.	MBCH C9: Genomics and Bioinformatics	1.	MBCH C14: Seminar on Advanced Topics in Biochemistry
2.	MBCH C10: Computational Techniques & Biostatistics	2.	MBCH C15: **Research work (Thesis)
3.	MBCH C11: Comprehensive Examination (Based on UGC/ CSIR Syllabus)	3.	MBCH C16: Research work (Viva-Voce)

4.	MBCH C12: Paper presentation on Recent Topics in Biochemistry		
5.	MBCH C13: Combined Practical		
6.	MBCH GE3: Swayam-III*		

***Generic Elective (GE) subjects are to be selected by the students from the following pool of subjects available on "Swayam", free education portal (https://swayam.gov.in/) as recommended by UGC.** Courses delivered through SWAYAM are available free of cost to the learners, however students wanting certification shall be registered, shall be offered a certificate on successful completion of the course, with a little fee. At the end of each course, there will be an assessment of the student through proctored examination and the marks/grades secured in this exam could be transferred to the academic record of the student. UGC has already issued the UGC (Credit Framework for online learning courses through SWAYAM) Regulation 2016 Faculty of Science 111 Handbook of Information 2023 advising the universities to identify courses where credits can be transferred on to the academic record of the students for courses done on SWAYAM, as per the announcements on the UGC website.

** **Research Work**: Research Supervisor will be allotted to the student in Semester III. The work can be carried out on the following:

1. Immunology
2. Neuroscience
3. Cancer Biology
4. Microbial Biochemistry
5. Biosensors
6. Bioinformatics

SYLLABI OF CORE COURSE OF READING
Pattern of instructions for Paper Setter:

Question papers will have FOUR sections. Examiner will set a total of Nine questions comprising TWO questions from each SECTION and ONE compulsory question of short answer types covering the whole syllabus. Students will attempt FIVE questions in all, including ONE question from each SECTION and the compulsory question. All Questions will carry equal marks, unless specified.

THRUST AREAS: Research in the department covers a spectrum of topics in modern Biochemistry. These are (i) Analyzing diseases at cellular and molecular level such as: Autoimmune diseases, Cancers, Pulmonary disorders, Central nervous system disorders, etc. (ii) Assessing natural products as therapeutics (iii) Biochemical Toxicology (iv) Biosensors in diagnostics (v) Microbial Biochemistry.

PLACEMENTS: As a scientific discipline, biochemistry lies at the interface between biology, chemistry, pharmacology & medicine. This opens up a variety of career paths such as: Bioanalyst, R & D researcher, Ph.D. programs at premier institutes of India and abroad, teacher, scientist, food & drug analyst, pharmaceutical industry, etc.

ALUMNI RELATIONS: The alumni network of the department is well connected and is growing stronger every year. The members are spread both nationally and internationally. Their contributions have been acknowledged by various organizations and institutions. The department organizes Alumni meet so the current students can interact with their seniors and learn from them.

DEPARTMENT OF BIOPHYSICS

ABOUT THE DEPARTMENT

Biophysics has in recent times emerged as an important interdisciplinary subject in Life Science and primarily deals with the structure, bioenergetics, dynamics and function of the biomolecules. Over the years, the discipline of biophysics has played a significant role in the growth of critical areas, which include molecular biophysics, physiological biophysics, medical physics, radiation physics, gene and protein engineering, computational Biophysics, neuro degenerative disorders and membrane biophysics. Advances in these areas have paved newer initiatives for the designing and development of drugs and medical technologies.

The Department of Biophysics was established in 1964 and ever since is the only department in the country which offers both undergraduate and postgraduate courses in the discipline of Biophysics (Hons.). The department also offers excellent research opportunities leading to the award of Ph.D. degree. The courses being offered to the three year B.Sc.(Hons.) and two year M.Sc. students in Biophysics are planned in a way, so as to provide a broad base in the subject and are accepted in the diverse fields of biomedical sciences. Alumni from this department have been always suitably employed and many of them have occupied coveted positions in the academia, industry, medical institutions, national laboratories and prestigious research institutions in India and abroad.

The department has been given special assistance grants under UGC-SAP program, Phase DSA-I from April 2015-2020. The department is also recognized under DST-FIST Programme. For more details see the website http://biophysics.puchd.ac.in

FACULTY

Designation	**Names**	**Field of Research Specialization**
ICMR Emeritus Scientist	Dr. Manoj Raje	Exploiting a non-classical micronutrient trafficking pathway for targeted delivery of therapeutic agents against M.tb and other pathogenic bacilli
Professors	Ashwani Koul	Phytomedicine & Carcinogenesis
Assistant Professors	Sarvnarinder Kaur	Phytomedicine & Carcinogenesis, Reproductive Biology
	Avneet Saini	Peptide Design, Structural characterization & validation
	Tanzeer Kaur **(Chairperson)**	Proteomics of Pathological Calcification
	Pavitra Ranawat	Molecular Cell Physiology of Cancer

	Simran Preet	Anti-Microbial and Anti-cancer peptides
	Naveen Kaushal	Cell Biology & Molecular Immunology
(UGC-FRP)	Ravi Pratap Barnwal	Structural insights into protein complexes, protein RNA complexes, microRNA and noncoding (nc) RNA using solution state NMR spectroscopy

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
B.Sc. (Hons.) in Biophysics as per NEP 2020 under the framework of Honours School System	25 +4 NRI +1 Foreign National	4 years	A candidate should have passed 10+2 examination with at least 50% marks (45 % marks in case of SC/ST) with English, Physics, Chemistry, Mathematics/Biology.	Based on CET (UG) Academic: 25% PU-CET (UG): 75%
M.Sc. Biophysics under the framework of Honours School System	25+4 NRI +1 Foreign National	2 years	i) B.Sc. (Hons.) Biophysics, Panjab University, Chandigarh or any other University considered equivalent. ii) Bachelor of Science in any other subject (such as B.Sc. Medical, Non-medical, Biotechnology, Bioinformatics etc.) iii) Students who have passed B.Sc. (Hons.) in Biophysics from Panjab University, Chandigarh will be directly promoted to M.Sc. in Biophysics. However, all other applicants need to qualify the CET-PG in Biophysics conducted by the Panjab University, Chandigarh	Based on CET (PG) Academic: 40% PU-CET (PG):60%
Ph.D.	48	3-6 years	See Ph.D. Prospectus 2025	

*5 % Concession is admissible in eligibility marks to SC/ST/BC/PWD Candidates
Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLE OF SYLLABI: Detailed course curriculum available at https://puchd.ac.in/syllabus.php

B.SC. (Hons) in Biochemistry as per NEP 2020 under the framework of Honours School System

SEMESTER-I		Credits	SEMESTER-II	Credits
Discipline Specific Core	BPH-DSC (BPH-101 : Introduction to Biophysics –I)	6	BPH-DSC-2 (Introduction to Biophysics-II)	6
Minor course	BPH M 1 : Integrated Biophysical Techniques	6	BPH M 2 : Concepts in Microscopic Anatomy	6
Inter / Multi-disciplinary	BPH IDC I	3	BPH IDC-I	3
Ability Enhancement courses (Languages)	AEC 1 AEC 2	2 2	AEC – 3 AEC - 4	2 2
Skill enhancement courses	BPH SEC 1 : Introduction to Radiation Biophysics	3	BPH SEC 2 (Bioinstrumentation)	3
Common Value added courses	VAC – 1 (Introduction to Biophysics-I)	2	VAC - 2	2

SEMESTER-III		Credits	SEMESTER-IV	Credits
Discipline Specific Core	BPH DSC 3 : Cytology and Cell Physiology BPH DSC 4 : Biophysical Chemistry BPH SEC 3 : Animal Handling and Ethical Care	6 6 3	BPH-DSC-5 Microscopic Anatomy BPH-DSC-6 Physiochemical Techniques BPH-DSC-7 Organ system of Human Body BPH-DSC-254	6 6 6
Minor course	BPH M 3 : Physiochemical Techniques	6	BPH-M-4 Cytology and Cell Physiology	6
Inter / Multi-disciplinary	BPH IDC 3 : Tools and techniques in Biophysics	3		
Skill enhancement courses	_____	0		

Under CBCS

SEMESTER V			SEMESTER VI	Credits
Discipline Specific Core	BPH-DSC-8 Human Physiology BPH-DSC-9 Biomedical Imaging BPH-DSC-10 Bioinformatics and Programming	6 6 6	BPH-DSC-11 Biomaterials and Biomechanics BPH-DSC-12 Molecular Biophysics BPH-DSC-13 Fundamentals of Genetic Engineering	6 6 6
Minor course	BPH-M 5 Mammalian Physiology	6	BPH- M 6 Biophysical	4

Minor Course	BPH-M 5 Mammalian Physiology	6	BPH-M 6 Biophysical Chemistry	4
			Internship (INT-1)	2

DSC : Discipline Specific Core, M : Minor Course, IDC : Interdisciplinary course, AEC : Ability Enhancement Courses (languages)
SEC : Skill Enhancement course, VAC : Value Added courses, DSE : Discipline Specific Elective

Minor courses offered by Biophysics Department for students of other Departments

SEMESTER I		**SEMESTER II**	
BPH M 1	Integrated Biophysical Techniques	BPH M 2	Concepts in Microscopic Anatomy
SEMESTER III		**SEMESTER IV**	
BPH M 3	Physiochemical Techniques	BPH M 4	Cytology and Cell Physiology
SEMESTER V		**SEMESTER VI**	
BPH-M-5	Mammalian Physiology	BPH-M-6	Biophysical Chemistry

IDC offered by Biophysics Department for students of other Departments

SEMESTER I		**SEMESTER II**	
BPH IDC 1		BPH IDC 1	
SEMESTER III		**SEMESTER IV**	
BPH IDC 3	Tools and Techniques in Biophysics		

SKILL ENHANCEMENT COURSES (for students of Department)

SEMESTER I		**SEMESTER II**	
BPH SEC 1	Introduction to Radiation Biophysics	BPH-SEC-2	Bioinstrumentation
SEMESTER III		**SEMESTER IV**	
BPH-SEC-3	Animal Handling and Ethical Care		

Common Value added courses offered by Biophysics Department for students of other Departments

SEMESTER-I		**SEMESTER-II**	
BPH-DSE1	Introduction to Biophysics-I		

The nomenclature and duration of the course is under consideration and will be changed as approved by Senate

M.Sc

SEMESTER – I Compulsory Core courses		**SEMESTER – II Compulsory Core courses**	
MBPH-TH-C1	Molecular Basis of Gene and Protein Engineering	MBPH-TH-C5	Cell and Membrane Biophysics
MBPH-TH-C2	Methods in High Throughput Biology	MBPH-TH-C6	Medical Physics
MBPH-TH-C3	Bio-molecular Spectroscopy	MBPH-TH-C7	Programming and Statistical Data Analysis
MBPH-PR-C1	Molecular Basis of Gene and Protein Engineering	MBPH-PR-C5	Cell and Membrane Biophysics
MBPH-PR-C2	Methods in High Throughput Biology	MBPH-PR-C6	Medical Physics
MBPH-PR-C3	Bio-molecular Spectroscopy	MBPH-PR-C7	Programming and Statistical Data Analysis
MBPH-TH-C4	Advanced Topics in Biophysics	MBPH-PR-C4	Research Laboratory Rotation

SEMESTER III		**SEMESTER IV**	
MBPH-TW-C9+	Thesis Work-Part I	MBPH-TH-C10	Nobel Prize Winning Studies
MBPH-TW-C9+	Comprehension of the NET syllabus for Life Sciences		
Discipline Specific Elective Courses (Select any two Courses)@		**Discipline Specific Elective Courses (Select any one course**)**	
MBPH-DSE1+	Radiation Biophysics*	MBPH-TW1	Radiation Biophysics
MBPH-DSE2+	Physicochemical Techniques*	MBPH-TW2	Biomedical Instrumentation and Molecular Spectroscopy
MBPH-DSE3+	Human Physiology and Anatomy*	MBPH-TW3	Cancer Biology
MBPH-DSE4+	Molecular Biology*	MBPH-TW4	Phytomedicine and Molecular Biology
MBPH-DSE5+	Physics of Human Body*	MBPH-TW5	Computational Biophysics and Biophysical Chemistry
MBPH-DSE6+	Biophysical Chemistry*	MBPH-TW6	Pathological Calcification and Toxicology
MBPH-DSE7+	Neurobiophysics#	MBPH-TW7	Phytomedicine
MBPH-DSE8+	Advanced Microscopy#	MBPH-TW8	Anticancer Peptides and Cancer Biology
MBPH-DSE9+	Nanobiophysics	MBPH-TW9	Cell and Molecular Immunology
MBPH-DSE10+	Principles of radiation Protection and Radiation Safety	MBPH-TW10	Structural Biology, Protein and RNA Biogenesis
MBPH-DSE11+	Molecular Modeling and Computer Aided Drug Design		
MBPH-DSE12+	Cancer Biology		
Generic Elective Courses (Select any one Course)			
MBPH-GE1$+			

MBPH-GE2$+	
+MBPH-MOOC1^^	Bio organic and Biophysical Chemistry
+MBPH-MOOC2^^	Biomolecules: Structure, function in Health and Disease
+MBPH-MOOC3^^	Biostatistics

@ Discipline Elective Courses will be offered only if a minimum 7 seven students opt for it and also on the availability of the faculty
*only for students who have taken admission directly in M.Sc. Biophysics program of P.U. (without doing B.Sc. Biophysics from P.U.).
#for students who have not studied this subject in B.Sc. V or VI semester
$ Student may opt for any **one** of the Generic Elective Courses studied in M.Sc. offered by the Science Departments (other than the Biophysics department) of Panjab University. The course must be approved by the Academic Committee of the department followed by its approval by BOC.
^^A course under the code MBPH-MOOC1-3 can be selected from the available UGC MOOCs Courses: A Vertical of SWAYAM-Inflibnet. The course must be approved by the Academic Committee of the department followed by its approval by BOC.
**Allotment shall be on merit basis of the result of Semester I and II. Thesis must be submitted by 31st July of every academic year, failing which it shall be counted as Re-appear.
+Credits : 4 / Marks : 100 / Teaching Hrs / Week : 4 or 2

THRUST AREAS: Cancer Biology, Neuro-biophysics and Drug Discovery.

PLACEMENT: The Department of Biophysics has an active placement cell which helps, support and encourages the students for venturing into the fields of their respective interests. In this regard, Department organizes regular seminars and talks in collaboration with central placement cell of PU, where distinguished alumni from various fields are invited to discuss the scope of Biophysics, emphasizing on the placement scenario and opportunities in the field.

ALUMNI RELATIONS: Department keeps constant contact with its alumni whether in India or abroad. Whenever, they visit the department there is always an interaction with faculty and students. Prior to their visit, most of the alumnus informs the department about their visit and if the alumni are active in academia/research then the dept. plans their lecture or informal interaction with the students. The alumni also help in placement of the students in academia and research. The Department holds alumni meets at regular intervals.

DEPARTMENT OF BIOTECHNOLOGY

ABOUT THE DEPARTMENT

The Department came into existence as Centre in 1989. In 1993 after obtaining financial aid from UGC and DBT, Govt. of India, it was upgraded to the level of full-fledged Department. The Department is rated as one of the best in India for imparting state of art technology to the students in the field of biotechnology. Most of the students qualify UGC and CSIR entrance test in their first attempt and are admitted to Ph.D. programs in prestigious research institutions in India. Most of the faculty members have been trained abroad and are recipient of prestigious National and International awards. The faculty of the department publishes research papers in National and International journals on regular basis. Every year department organizes Workshop/Symposium/Seminar dealing with state of art technologies. Department also organizes a seminar on "Recent Techniques in Biotechnology" for B.Sc. and M.Sc. students on regular basis. Scientists of international repute are invited to deliver lectures. The department has the distinction of being funded by DST-FIST (2002-07; 2011-16) and UGC-SAP (2007-12; 2013-18).

FACULTY

Designation	Name	Field of Research specialization
Professor Emeritus	R.C. Sobti	Molecular Diagnosis of Cancer
Professors	Jagdeep Kaur	Molecular Biology & Protein Biochemistry
	Neena Capalash	Microbial Biotechnology & Cancer Biology
	Jagtar Singh	Immunology & Molecular Epidemiology, Animal Biotechnology
	Desh Deepak Singh **(Chairperson)**	Bioinformatics and Structural Biology
Associate Professor	Kashmir Singh	Plant Biotechnology

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission criteria
B.Sc. (Hons.) in Biotechnology as per NEP 2020 under the framework of Honours School System	15 General + 2 NRI+1 Foreign National	4 years	50% marks in 10+2 or equivalent examination with the subjects English, Physics, Chemistry, Mathematics/ Biology	On the basis of PUCET (U.G.) PU-CET (UG) : 75% Qualifying Exam: 25%
M.Sc.	Ongoing Class	2 years	For ongoing class: Passed B.Sc. (H.S.) Biotechnology from Panjab University.	Ongoing Class
	5 General +2 SC+2 NRI		B.Sc. Biotechnology (50% marks)/ B.Sc. with 50% marks with biotechnology as elective / vocational subject (Studied for 3 years) are eligible.	Based on PU- CET (P.G.) Academics: 40% PU-CET (PG): 60%

Ph.D.	Subject to availability of seats	3-6 years	See Ph.D. Prospectus 2025	Candidates who have cleared UGC-NET/CSIR - NET) / GATE Examination/ SLET/ Teacher Fellowship holders/ direct awardees of fellowship by any national agency or any other equivalent test. Candidates who have cleared P.U. Entrance Test.

*5% Concession is admissible in eligibility requirement to SC/ST/BC/PWD candidates.

** The candidates seeking admission in M.Sc. Biotechnology should fill separate admission forms in colleges offering M.Sc. course in Biotechnology. No Centralized Counselling will be done by the Department.

Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLE OF SYLLABI: Detailed course curriculum is available at https://puchd.ac.in/syllabus.php

B.Sc. (Hons.) Biotechnology as per NEP-2020 under the framework of Honours School System

SEMESTER-I		**SEMESTER-II**	
Paper-1	BTC-DSC-I Biomolecules	Paper-1	BTC-DSC-2 Molecular Biology
Paper-2	BTC-M-1 Recombinant DNA Technology	Paper-2	BTC-M-1 Plant Biotechnology
Paper-3	BTC-IDC Introduction to Biotechnology	Paper-3	BTC-IDC Introduction to Biotechnology
Paper-4	AEC-1 English AEC-2 Hindi / Punjabi / Urdu	Paper-4	AEC-3 English AEC-4 Hindi / Punjabi / Urdu
Paper-5	BTC-SEC-1 Statistical Tool	Paper-5	BTC-SEC-2 Basics of Bioinformatics
Paper-6	VAC-1	Paper-6	VAC-2
SEMESTER-III		**SEMESTER- IV**	
Paper-1	BTC-DSC-3 Enzymology	Paper-1	BTC-DSC-5 Biochemistry & Metabolism
Paper-2	BTC-DSC-4 Genetics	Paper-2	BTC-DSC-6 Developmental Biology
Paper-3	BTC-M-3 Environmental Biotechnology	Paper-3	BTC-DSC-7 Plant Physiology
Paper-4	BTC-IDC- Introduction to Biotechnology	Paper-4	BTC-M-4 Bioanalytical tools
Paper-5	BTC-SEC-3 Molecular Diagnostics		
SEMESTER-V		**SEMESTER- VI**	
Paper-1	BTC-DSC-8 Animal Biotechnology	Paper-1	BTC-DSC-11 Bioprocess Technology
Paper-2	BTC-DSC-9 Bioinformatics	Paper-2	BTC-DSC-12 Immunology
Paper-3	BTC-DSC-10 Recombinant DNA Technology	Paper-3	BTC-DSC-13 Food Biotechnology
Paper-4	BTC-M-5 Animal Biotechnology	Paper-4	BTC-M-6 Bioprocess Technology
Paper-5	VAC-3	Paper-5	INT-1 Internship

M.Sc. under CBCS

SEMESTER-I		**SEMESTER - II**	
Paper-1	Animal Cell Culture Technology	Paper-1	Bioinformatics
Paper-2	Advanced Immunology	Paper-2	Microbial Biotechnology
Paper-3	Advanced Recombinant DNA Technology	Paper-3	Entrepreneurship Development
Paper-4	Advanced Molecular Biology	Paper-4	Scientific Writing & Project Management
SEMESTER-III		**SEMESTER- IV**	
Paper-1	Animal Biotechnology		Research Project, Thesis, Presentation & Viva, Internal Assessment
Paper-2	Plant Biotechnology		
Paper-3	Emerging Technologies		
Paper-4	**Electives (any one to be opted)**		
	Molecular Medicine		
	Food microbiology and food safety		
Paper-5	Trends in Biotechnology		

Ph.D course work (One Semester): Research Methodology, Basic & Modern Analytical Techniques in Biotechnology, Presentations.

THRUST AREAS: Molecular Epidemiology, Microbial Biotechnology, Plant Biotechnology, Recombinants, Glycobiology of Infectious Diseases.

PLACEMENTS: Faculty of the department provides career counseling to the students and helps them to choose profession of their choice. More than 50% PG students prefer to join Ph.D after clearing competitive exams (UGC/CSIR/DBT/ICMR NET etc). Few of our students are doing Ph.D. in countries like US, Canada, EU etc. After completing Ph.D. students are placed in teaching/research institutes and a few go abroad for Postdoctoral fellowships. The Department provides a platform to encourage the students for joining private sector in the field of biotechnology.

ALUMNI RELATIONS: The department maintain the record of pass out students and time to time invites past students to interact with present students by conducting seminars, symposia etc.

DEPARTMENT OF BOTANY

ABOUT THE DEPARTMENT

The Department of Botany was established in 1919 at Lahore. It shifted to Chandigarh in 1960 from Khalsa College, Amritsar where it was housed temporarily after partition of the country. The Department has grown into a well-recognised centre for higher learning and research in structural, functional and evolutionary aspects of plants. The department had DST-FIST programme and had completed UGC DRS-II phase. Some of the major areas of research are: taxonomy, morphology, improvement and propagation of economically important plants, ecology of invasive alien plants, physiological up-gradation of harvest index of some important crops; stress biology of legumes; identification of eco-friendly herbicides and pesticides; mushroom cultivation; evaluation and conservation of plant diversity; importance of microbes in human welfare and molecular characterization of gene families involved in development and stress responses. In addition to teaching through modern techniques, seminars, symposia, workshops, the invited lectures and botanical excursions are an integral part of academic programme. The department has a well-stocked library with nearly 6814 books and over 60 regular scientific journals. The department also houses an internally recognized Herbarium (abbreviated as PAN) and a Museum. The P.N. Mehra Botanical Garden, spread over 16 acres of land is one of the better-known botanical gardens attached to any university of the country. The department has been getting regular sanction for BSR fellowships under UGC-SAP (DRS-III) programme. Additionally, the UGC also sanctions funds to the department for infrastructural development from time to time. Besides this, many research projects are being funded by DST, MoEF, UGC, CSIR, DBT, SERB and MoFPI. The Department has received DST FIST Grant for the period of 5 years starting from 2020.

FACULTY

Particulars	Name	Field of Research Specialization
Prof. Emeritus	S.S. Kumar	Bryology
	M.L. Sharma	Angiosperm taxonomy and grasses
	S.P. Khullar	Pteridophytes
Professors	Harsh Nayyar	Plant Physiology
	Daizy Rani	Plant Ecology (Eco-Physiology)
	P.Pathak	Morphology and Morphogenesis
	C. Nirmala	Cytogenetics, Molecular Biology and Biotechnology
	Richa Puri	Biosystematics & Seed Physiology
	Kamal Jit Singh **(Chairperson)**	Plant Physiology and Biochemistry
	M.C. Sidhu	Cytogenetics/Plant Breeding
	A.N. Singh	Restoration and Plant Ecology
Associate Professor	Anju Rao	Plant Morphogenesis
Assistant Professors	Shalinder Kaur	Eco-physiology
	Santosh K. Upadhyay	Plant Molecular Biology
	Papiya Mukherjee	Cryo-Biology and Molecular Biology
	Jaspreet Kaur	Tissue Culture and Molecular Biology

COURSES OFFERED (SEMESTER SYSTEM)

Courses	Seats	Duration	Eligibility*	Admission criteria
B.Sc.(Hons.) in Botany as per NEP 2020 under the framework of Honours School System	20+3 NRI+1 Foreign National	4 years	10+2 examination with atleast 50% marks with Physics, Chemistry, Biology and English from recognized Board/ CBSE	Based on PU-CET (UG) Academics: 25% PU-CET(UG):75%
M.Sc. (Botany) under the framework of Honours School System	25+4 NRI+1 Foreign National	2 years	B.Sc. (Hons) or (Pass or Hons.) with 50% marks from PU or any other recognized University or any other exam as equivalent thereto with Botany as one of the elective subject	Based on PU-CET (PG) Academics: 40% PU-CET(PG):60%
Ph.D	21	3-6 years	See Ph.D Prospectus 2025	

* 5% concession is admissible in eligibility marks to SC/ST/BC/PwD candidates

Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLES OF SYLLABI: Detailed course curriculum is available at https://puchd.ac.in/syllabus.php

B.Sc.(Hons.) in Botany as per NEP 2020 under the framework of Honours School System

SEMESTER-I		SEMESTER-II	
BOT-DSC-1	Phycology & Microbiology	BOT-DSC-2	Mycology & Plant Pathology
BOT-M-1	Plant Diversity-I	BOT-M-2	Plant Diversity-II
BOT-IDC-1	Medicinal Botany	BOT-IDC-2	Plant Tissue Culture
BOT-SEC-1	Basic Lab & Field Skills in Botany	BOT-SEC-2	Intellectual Property Rights
BOT-VAC-1	Landscaping and Floriculture	BOT-VAC-2	Ethnobotany
SEMESTER-III		**SEMESTER-IV**	
BOT-DSC-3	Archegoniates	BOT-DSC-5	Morphology of Angiosperms
BOT-DSC-4	Cell Biology	BOT-DSC-6	Plant Anatomy
BOT-M-3	Economic Botany and Plant Biotechnology	BOT-DSC-7	Economic Botany

BOT-IDC-3	Plant Ecology and Taxonomy	BOT-M-4	Plant Anatomy and Embryology
BOT-SEC-3	Biofertilizers		
SEMESTER-V		**SEMESTER-VI**	
BOT-DSC-8	Basics of Genetics	BOT-DSC-11	Plant Metabolism
BOT-DSC-9	Plant Physiology	BOT-DSC-12	Plant Breeding
BOT-DSC-10	Reproductive Structures and Taxonomy of Angiosperms	BOT-DSC-13	Plant Ecology
BOT-M-5	Plant Ecology	BOT-M-6	Plant Physiology

M.Sc.

SEMESTER-I	**SEMESTER-II**
BOT-Core-1001: Plant Physiology	BOT-Core-2001: Phycology
BOT-Core-1002: Principles of Ecology	BOT-Core-2002: Plant Biotechnology
BOT-Core-1003: Bryology	BOT-Core-2003: Mycology and Plant Pathology
BOT-Core-1004: Pteridology	BOT-Core-2004: Genomics
BOT-Core-1005: Plant Resource Utilization and Conservation	BOT-Core-2005: Cytogenetics and Plant Breeding
SEMESTER-III	**SEMESTER-IV**
BOT Core 3001 : Plant Biochemistry	BOT Core 4001 : Gymnosperms
BOT Core 3002 : Cell & Molecular Biology	BOT Core 4002 : Environment Botany
BOT core 3003 : Angiosperms : Phylogeny, Embryology and Taxonomy	Paper III : Field study
Paper IV : Seminars	Paper IV : Project work
Elective Courses (Two Courses to be selected out of four offered)	**Elective Courses (Three Courses to be selected out of six offered)**
BOT-Elective-3004: *Invitro* Technologies and Industrial Applications	BOT-Elective-4003: Advances in Ecology
BOT-Elective-3005: Urban Environment	BOT-Elective-4004: Advances in Plant Biochemistry
BOT-Elective-3006: Agroecology & Sustainable Agriculture	BOT-Elective-4005: Advances in Molecular Biology
BOT-Elective-3007: Plant Morphogenesis	BOT-Elective-4006: Microbial Technology
	BOT-Elective-4007: Recombinant Proteomics
	BOT-Elective-4008: Advanced topics in Plant Physiology

THRUST AREAS: Plant Physiology, Plant Ecology, Plant Biotechnology, Plant Biochemistry, Phycology, Mycology, Bryology, Taxonomy, Physiology, Cytology, Restoration Ecology.

PLACEMENT: The department has a Placement Cell which Co-ordinates with Central Placement Cell of the University to get time to time information about the opportunities available to the students of the department.

ALUMNI RELATIONS: The Department has alumni association i.*e.* Panjab University Botany Department Alumni Association (PUBDAA), which has Executive Committee and several members. The department organises Alumni Meet every year to maintain contact with the alumni as well as to provide the information about the latest happenings of the department to members. Several of its alumni are highly distinguished and working in different capacities at National and International levels.

DEPARTMENT OF CHEMISTRY

ABOUT THE DEPARTMENT

Founded by Dr. S. S. Bhatnagar at Lahore in 1925, the Department of Chemistry is one of the prestigious Departments of Panjab University. It has on its faculty highly competent members whose work has been internationally recognized. Several faculty members are recipients of awards and honours, such as Shanti Swarup Bhatnagar, Jawaharlal Nehru Fellowship, Raman and Palit awards. Many faculty members are bestowed with F.N.A., F.A.Sc., F.N.A.Sc. The Department has been selected by the UGC first for COSIST and Special Assistance Programme (SAP) and it is the Centre of Advanced Studies in Chemistry (CAS) for the last 16 years. The Department of Science and Technology (DST), Government of India has accorded it the status of "DST-FIST Supported Department". The Department has stimulating undergraduate and postgraduate teaching programmes. Frequent symposia, conferences, invited lectures and refresher courses have been organized for the benefit of University, College and School teachers and talented students. The Department has good instrumental facilities and its library is perhaps one of the best in Northern India with its excellent collection of books, research journals and monographs. The Department is well-known for its research activities and has very well equipped research Laboratories.

FACULTY

Designation	**Name**	**Field of Research Specialization**
Honorary Professor	T. Ramasami	
Professors Emeritus	S. V. Kessar	Organic
	Gurdev Singh	Inorganic
NASI Senior Scientist	K. K. Bhasin	Inorganic
Professors	S. K. Mehta	Physical
	Kamal Nain Singh	Organic
	Sonal Singhal	Inorganic

	Ganga Ram Chaudhary **(Chairperson)**	Physical
	Navneet Kaur	Organic
	Gurjaspreet Singh	Inorganic
	Vikas	Physical
	Neetu Goel	Physical
	Amarjit Kaur	Organic
	Navneet Kaur	Organic
Associate Professor	Ramesh Kataria	Inorganic
	Aman Bhalla	Organic
	Shweta Rana	Physical
	Rohit Kumar Sharma	Organic
Assistant Professors	Varinder Kaur	Inorganic
	Subash Chandra Sahoo	Inorganic
	Gurpreet Kaur	Physical
	Savita Chaudhary	Physical
	Deepak B. Salunke	Organic
	Palani Natarajan	Inorganic
	Jyoti Agarwal	Organic
UGC Assistant Professors (FRP)	Ankur Ganesh Pandey	Organic
	Vijay Pal Singh	Inorganic
Assistant Professors (Temporary Faculty)	Khushwinder Kaur	Physical
	Vaneet Saini	Organic

COURSES OFFERED (SEMESTER SYSTEM)

Courses	Seats	Duration	Eligibility*	Admission Criteria
B.Sc.(Hons.) in Chemistry as per NEP 2020 under the framework of Honours School System	58+8 NRI +3 Foreign National	4 years	Passed 10+2 examination from recognized Board / CBSE with at least 50% marks with Physics, Chemistry, Mathematics, Biology and English.	Based on PU-CET (UG) Academic : 25% PU-CET(UG): 75%
M.Sc. (Chemistry) under the framework of Honours School System	Ongoing students	2 years	(i) Passed B.Sc. (Hons.) in Chemistry from Department of Chemistry, P.U.	
	15+2 NRI +1 Foreign National		i) B.Sc. (Pass or Hons.) examination with 50% marks from PU or any other University recognized as equivalent thereto with (a) Chemistry in all the three years/ six semesters, and (b) any two science subjects during two years/ four semesters during graduation OR ii) B.Sc. (Hons.) in any subject under Choice-based Credit System with 24 Credits in Chemistry as Generic Elective Subject	Based on PU-CET (PG) Academic : 40% PU-CET(PG): 60%
Ph.D.	10	3-6 years	See Ph.D. Prospectus 2025	

*5% concession is admissible in eligibility marks to SC/ST/BC/PwD candidates

Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLE OF SYLLABI: Detailed course curriculum is available at https://puchd.ac.in/syllabus.php?qstrfacid=10

B.Sc (Hons.) (According to NEW EDUCATION POLICY (NEP)

SEMESTER-I		Credits	Con. Hours	SEMESTER-II		Credits	Hours
CHE DSE-1	Inorganic Chemistry-I:	4T+2P	60T+60P	CHE DSE-2	Physical Chemistry-II	4T+2P	60T+60P
CHE SEC-1	Physical Chemistry: 1	3T+0P	45T+0P	CHE SEC-2	Organic Chemistry-I	3T+OP	45T+OP
CHE M-1	Basic Chemistry-I	4T+2P	60T+60P	CHE M-2	Basic Chemistry II	4T+2P	60T+60P
CHE IDC*	Basic Analytical methods	2T+1P	30T+30P	CHE IDC*	Basic Analytical Methods	2T+1P	30T+30P
CHE VAC**	ENVIRONMENTAL SCIENCE	2T+0P	30T+0P	CHE-VAC**	Environmental Science	2T+OP	30T+OP

ENG-AEC-1	ENGLISH	2T+0P	60T+0P	ENG-AEC-3	English	2T+OP	30
PUN-AEC-2/HIN-AEC-2/URD-AEC-2	MIL (Modern Indian Languages)	2T+0P	60T+0P	PUN-AEC-2/HIN-AEC-2/URD-AEC-2	MIL (Modern Indian Languages)	2T+0P	60T+0P
	TOTAL	**24 (20T+4P)**	**495 (345T+150P)**		**TOTAL**	**24 (20T+4P)**	**495 (345T+150P)**

SEMESTER-III		**Credits**	**Hours**	**SEMESTER-IV**		**Credits**	**Hours**
CHE DSC 3	Organic Chemistry II	4T+2P	60T+60P	CHE DSC-5	Inorganic Chemistry-III	4T+2P	60T+60P
CHE DSC-4	Inorganic Chemistry-II	4T+2P	60T+60P	CHE DSC-6	Organic Chemistry-III	4T+2P	60T+60P
CHE SEC-3	Physical Chemistry-III	2T+1P	30T+30P	CHE DSC-7	Physical Chemistry-IV	4T+2P	60T+60P
CHE M-3	Basic Chemistry-III	4T+2P	60T+60P	CHE-M-4	Basic Chemistry-IV	4T+2P	60T+60P
CHE IDC*	Basic Analytical Methods	2T+1P	30T+30P				
	Total	24 (16T+8P)	480 (240T+240P)			24 (16T+8P)	480 (240T+240P)

SEMESTER-V		**Credits**	**Hours**	**SEMESTER-VI**		**Credits**	**Hours**
CHE DSC-8	Inorganic Chemistry-IV	4T+2P	60T+60P	CHE DSC-11	Inorganic Chemistry-V	4T+2P	60T+60P
CHE DSC-9	Physical Chemistry-V	4T+2P	60T+60P	CHE DSC-12	Physical Chemistry-VI	4T+2P	60T+60P
CHE DSC-10	Organic Chemistry-IV	4T+2P	60T+60P	CHE DSC-13	Organic Chemistry-V	4T+2P	60T+60P
CHE-M-5	Basic Chemistry-V	2T+2P	30T+60P	CHE M-6	Basic Chemistry-VI	2T+2P	30T+60P
CHE-VAC**	Environmental Science	2T+OP	30T+OP	Internship	Internship	2	30
	Total	24 (16T+8P)	480 (240T+240P)		Total	24 (16T+8P)	480 (210T+300P)

M.Sc. Chemistry

SEMESTER-I (500 marks)

Parent Department (Core Courses)				
Paper	**Title**	**Max. Marks**	**Con. Hours**	**Total Credits**
Core 1	Group Theory and X-ray Crystallography	100	4	4
Core 2	Organic Synthesis	100	4	4
Core 3	Quantum Chemistry	100	4	4
Core 4	Organic Spectroscopy	100	4	4
Core 5	Advanced Practicals	100	6	4
	Total credits: 20			

SEMESTER-II (500 marks)

Parent Department (Core Courses)				
Paper	**Title**	**Max. Marks**	**Con. Hours**	**Total Credits**
Core 6	Transition Metal Chemistry	100	4	4
Core 7	Pericyclic and Asymmetric Synthesis	100	4	4
Core 8	Colloids, Surfaces and Macromolecules	100	4	4
Core 9	Inorganic Spectroscopy and Nuclear Chemistry	100	4	4
Core 10	Computer Practical & Computational Chemistry	100	6	4
Total credits: 20				

SEMESTER-III (500 marks)

Parent Department (Core courses)				
Paper	**Title**	**Max. Marks**	**Con. Hours**	**Total Credits**
Core 11	Bioinorganic Chemistry	100	4	4
Core 12	Chemistry of Natural Products	100	4	4

Core 13	Advanced Statistical Thermodynamics and Molecular reaction dynamics	100	4	4
Elective 1 and 2	Research Project Work (Departmental Elective) (including CBT)	200	24	8
Total credits: 20				

SEMESTER-IV (500 marks)

Parent Department (Core Courses)				
Paper	**Title**	**Max. Marks**	**Con. Hours**	**Total Credits**
Core 14	Cages and Clusters	100	4	4
Core 15	Bio-organic Chemistry and Organic Macromolecules	100	4	4
Core 16	Electrochemistry and Materials Chemistry	100	4	4
Elective 3 and 4	Research Project Work (Departmental Elective)	200	24	8
Total credits: 20				

THRUST AREAS: Synthetic Chemistry (Both Inorganic and Organic), Heterocyclic, Natural Products and Green Chemistry, Nanotechnology and Nuclear Chemistry, Colloidal, Biophysical, Theoretical and Computational Chemistry.

PLACEMENT: Many Post-graduate students pursue career in teaching and research after qualifying CSIR/UGC National Eligibility Test (NET). Our Students are absorbed for job/research in premier institutions like IISc, TIFR, BARC, DRDO, ISRO, IMSC, IIT, NCL, NPL and IISER. GATE/GRE qualified students get avenues for professional studies in India/Abroad. Some graduate students go for Post-graduate studies at TIFR, IISc, IMSc, IITs and various Central Universities. Students also find jobs through PU Central Placement Cell besides the Placement Cell of the department.

ALUMNI RELATIONS: Chemistry department has produced many distinguished alumni, who have adored administrative/ executive and scientific positions in our country and abroad. The department has an association named "Chemistry Department Alumni Association, Panjab University (CDAAPU). Annual meeting of the alumni is a regular feature. Executive members of the alumni association meet frequently to discuss the activities of the association. CDAAPU provides fellowships to needy students out of the interest accrued from contribution of alumni of 1968 batch.

DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS

ABOUT THE DEPARTMENT

The Department of Computer Science and Applications was set up as a Centre in 1983. It got the status of the Department of Computer Science and Applications in 1997. The department offers various professional educational programmes like **Ph.D. programme, Master of Computer Applications (MCA – Morning) a two years** full time course, **MCA (Self Financing) – a two years** full time self-financing course and **M.Sc. (Computer Science) under the framework of Hons. School System**. For these Post Graduate degree courses, admissions are held through an entrance test conducted by the Panjab University. The quality of input is really good as both Indian as well as foreign students are attracted towards these programmes.

The department has qualified, regular and competent faculty members with Ph.D./M.Tech./MCA (UGC NET) qualifications. Being a professional course, the curriculum is revised regularly to keep abreast of the latest advancements in the industry as well as the academia. Almost all the students at DCSA are well placed in various reputed companies. The department has an excellent infrastructure including laboratories, library, Internet facility, wireless networks and teaching – learning aids like smart classrooms. The faculty is performing and guiding research in different areas of Computer Science and Applications.

FACULTY

Designation	**Name**	**Field of Research Specialization**
Professors	Ravinder Kumar Singla	Software Engineering, Web Semantics, Computer Network / Security
	Indu Chhabra	Neural Networks, Image Processing, Data Mining, Software Engineering
	Sonal Chawla	Semantic Web Applications, Programming Languages, Advanced Databases, Operating System
	Anu Gupta	Software Engineering, Open Source Software, Cloud Computing, Java Programming
Associate Professor	Anuj Sharma **(Chairperson)**	Pattern Recognition, Machine Learning
Assistant Professors	Jasleen Kaur Bains	Java Programming, Image Processing, Pattern Recognition
	Rohini Sharma	Network Security, Design and Analysis of Algorithms
	Balwinder Kaur	RDBMS, Software Engineering, Operating System, Data Warehouse and Data Mining, Computer Organization
	Anuj Kumar	Image Processing, Pattern Recognition, Open Source Software
	Supreet Kaur Mann	Wireless Sensor Networks, Networking.
	Kavita Taneja	Mobile Ad Hoc Networks, Web Information Computing, Database Management System

COURSES OFFERED (SEMESTER SYSTEM)

Course	**Seats**	**Duration**	**Eligibility***	**Admission Criteria**
M. Sc. Computer Science (Specialization in Data Science) under the framework of	20+2 NRI+1 Foreign National	2 years	BCA/B.Sc. (hons) Computer Science/Information Technology/Computer Applications)/B.Tech (Computer Science) / Computer Engineering/Information Technology) / B.E. (Computer Science / Computer Engineering / Information Technology) / B.Sc. (General) with	Based on P.U. CET-(P.G.) Academics:40% PU CET (PG):60%

Honours School System			Computer Science / Information Technology / Computer Applications as an elective subject / B.Sc. (Math and Computing) / B.Voc. (Software Development / Hardware and Networking / Multimedia (Graphics and Animation) or any other examination recognized as equivalent with 50% marks thereto.	
M.C.A.	34+ 2# + 5NRI +2 Foreign National	2 years	The minimum qualification for admission to the first year of the course is : i) A recognized first degree of minimum three years duration in any discipline with at least 50% marks and with Mathematics at 10+2 or at graduation level (all three years) OR ii) B.C.A. from Panjab University with 50% marks OR iii) B.Voc (Software Development)/B.Voc (Hardware and Networking)/B.Voc (Multimedia) (Graphics & Animation) with atleast 50% marks and with mathematics at 10+2 level OR iv) Any examination recognized by the Panjab University Chandigarh as equivalent to any of the above examination (i), (ii) or (iii)	Based on P.U. CET-(P.G.) Academics:50% PU CET (PG):50%
M.C.A. (Self-financing)	46+ 2#+ 6NRI +2 Foreign National			
Ph.D.	Subject to availability	3-6Years	See Ph.D prospectus 2025	
*5% Concession is admissible in eligibility requirement to SC/ST/BC/PwD candidates.				
# for candidates who have studied Computer Science as one of the subjects for three years / or that subject as a full course at the under graduate level.				

TITLE OF SYLLABI: Detailed syllabi available at https://puchd.ac.in/syllabus.php

M.C.A.

SEMESTER-I		SEMESTER-II	
CS 2127	Programming in C and Data Structures	CS 2128	Object oriented programming (Through C++ and Java)
CS 2111	Computer organization and Architecture	CS 2116	Computer Networks and Security
CS 2126	Mathematical structures and linear programming	CS 2129	Artificial Intelligence and soft computing
CS 2113	Relational Data Base Management Systems	CS 2130	Web technologies and Python Programming
CS 2114	Operating Systems	CS 2119	Analysis and Design of Algorithms
PR 2127	Practical Based on CS 2127 Programming in C & Data Structures (Minor Project)	PR 2128	Practical Based on CS -2128 Object Oriented Programming using C++ and Java
PR 2113	Practical Based on CS 2113 and CS 2114 Linux and RDBMS (SQL Server/Oracle/My SQL) (Minor Project)	PR 2129	Practical based on CS 2129 and CS 2130 Artificial Intelligence and Soft Computing & Web Development ad Python Programming

SEMESTER - III		SEMESTER - IV	
CS 2120	Interactive Computer Graphics	CS 2125	**Project Work**
CS 2131	Theory of computations and Formal Languages		The Project work will of 16 to 20 weeks duration. The project will involve development of applications / system software in industries, commercial or scientific environment. It will carry 400 marks
CS 2132	Advance JAVA and Network Programming		
CS 2123	Mobile Communication and Application Development		
CS 2117	Software Engineering and Project Management		
PR 2120	Practical based on CS 2120 and CS 2123 Interactive Computer Graphics and Mobile Communication and Application Development		
PR 2132	Practical based on CS 2132 Advance JAVA for Web and Enterprise Applications		

M.Sc. Computer Science (Specialization in Data Science) under the framework of Hons. School System

SEMESTER-I		SEMESTER-II	
MDS 2401	Principles of Data Science	MDS 2408	Analysis and Design of Algorithms
MDS 2402	Programming in Python	MDS 2409	Statistical methods for Data Science
MDS 2403	Advance Database Systems	MDS 2410	Data Mining and Artificial Intelligence
MDS 2404	Operating System with Linux	MDS 2411	Big Data Analytics
MDS 2405	Minor project based on MDS 2402	MDS 2412	Minor project based on MDS 2409
MDS 2406	Minor project based on MDS 2403	MDS 2413	Minor project based on MDS 2410
MDS 2407	Minor project based on MDS 2404	MDS 2414	Minor project based on MDS 2411

SEMESTER-III		SEMESTER-IV	
MDS 2415	Data Visualization	MDS 2421	Major Project
MDS 2416	Machine Learning – Tools and Techniques	MDS 2422	Seminar (based on MDS 2421)
MDS 2417	Software Project Management		
MDS 2418	Research Methods and Ethics in Data Science		
MDS 2419	Minor project based on MDS 2415		
MDS 2420	Minor project based on MDS 2416		

THRUST AREAS: Distributed Artificial Intelligence, Educational Technologies, Computer Graphics, Semantic Web Applications, Software Engineering, Open Source Software, Pattern Recognition, Image Processing and Computer Network/Security.

PLACEMENT: Campus placements of MCA and M.Sc. (Computer Science) under the framework of Hons. School System students have been very good for the last many years evidencing that the MCA/M.Sc. (Computer Science) under the framework of Hons. School Curriculum, teaching infrastructure and its environment have been of great importance to the students and highly relevant to the Industry. Various computer companies such as Infosys, Edifecs, and many other reputed companies visit the department on a regular basis for placement and more than 80% students get placed in these companies, thereby helping in development of Human Resource in the field of ICT.

ALUMNI RELATIONS: A large number of our Alumni are holding key positions in industry, commerce and public life in India as well as abroad.

DEPARTMENT OF ENVIRONMENT STUDIES

ABOUT THE DEPARTMENT

In addition to teaching, research on current environmental issues of local, national and global importance remains the major thrust areas of the Department of Environment Studies. The department also undertakes consultancy on environmental issues through the University. The research conducted by the department has been credited with various national and international awards. The department also serves as the nucleus for co-ordination and implementation of compulsory course on Environment Education for Under Graduate classes of Panjab University and its affiliated colleges. The department has suitably developed the laboratory facilities with many sophisticated analytical equipment's including UV-VIS Spectrophotometer, HPLC, (High Performance Liquid Chromatography) Flame Photometer, COD-BOD assembly for teaching, demonstration and research purposes. The department has a well-equipped Cyberart and a Library with latest books and reading material in the field of Environment. The classrooms are equipped with LED Projector for teaching and imparting instructions to the students. Students are encouraged to use these aids for their seminars / project presentations. The students are regularly exposed to various aspects of industry requiring environmental attention, along with educational trips to the related production units and research institutions.

FACULTY

Designation	Name	Field of Research Specialization
Professors	Harminder Pal Singh	Biotic Environment
	Suman Mor	Environment, Sanitation, Health
Associate Professors	Madhuri Rishi	Earth & Atmospheric Science
	Rajeev Kumar **(Chairperson)**	Physical Environment

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility *	Admission Criteria
M.Sc.	20+3 NRI+1 Foreign National	2 Year	Bachelor's Degree with minimum 50% marks in aggregate from any Science / Engineering Stream or any other stream with Honours in Geography as one of the subjects from P.U. or any other recognised University.	Based on PUCET (PG) Academics: 50% P.U.CET(PG):50%
Ph. D	Subject to availability	3-6 Years	See Ph.D. prospectus 2024	
*5% concession is admissible in eligibility marks to SC/ST/BC/PWD Candidates				

TITLE OF SYLLABI: Detailed syllabi available at https://puchd.ac.in/syllabus.php

M.Sc.

SEMESTER-I			SEMESTER-II		
Paper-I	ENV 6101	Environment Geoscience	Paper-I	ENV 6101	Biodiversity and conservation
Paper-2	ENV 6102	Ecological Principals	Paper-2	ENV 6102	Environmental analysis: Techniques and Instrumentation
Paper-3	ENV 6103	Environmental chemistry & toxicology	Paper-3	ENV 6103	Environmental pollution
Paper-4	ENV 6104	Solid Waste Management and Techniques	Paper-4	ENV 6104	Environmental awareness, Impact Assessment and auditing
SEMESTER-III			**SEMESTER-IV**		
Paper-I	ENV 6301	Environmental Technology	Paper-I	ENV 6401	Statistical application and research Methodology
Paper-2	ENV 6302	Major Environmental Issues	Paper-2	ENV 6402	Environmental Biotechnology
Paper-3	ENV 6303	Environment and Energy Management	Paper-3	ENV 6403	Remote sensing and GIS in Environmental Studies

Paper-4	ENV 6304	Industrial and biomedical waste management	Paper-4	ENV 6404	Training of at least 4 weeks, project report presentation

THRUST AREAS: Environment Pollution Monitoring & Remediation; Assessment of Biodiversity with special reference to Invasive Plants; Bio-prospecting of Medical and Aromatic Plants; Evaluation of Natural Plant Products as Novel Agrochemicals; Eco-toxicological Impacts of Heavy metals; Rain Water Harvesting and Groundwater Pollution; Management of Solid Waste; Wastewater treatment.

PLACEMENTS: The pass outs from the department are well placed in various Educational / Research Institutions and Industrial Establishments.

ALUMNI RELATIONS: The department has recently constituted an association of the alumni. The department envisages holding at least one Alumni meet every year so as to strengthen the linkage and bondage of the Alumni and the Department.

DEPARTMENT OF GEOLOGY

ABOUT THE DEPARTMENT

Established in 1958 by Late M.R. Sahni, the department was upgraded to the status of Centre of Advanced Study in 1963-64 in Himalayan Geology and Palaeontology. In 1986, it received COSIST Grants for improvement in infrastructure facilities in the Thrust areas of Geochemistry and Exploration Geology. In recent years of research and teaching besides Palaeontology, Petrology, Environmental Geology and Hydrogeology were included as additional thrust areas. The Department has been allocated Rs.90.00 lacs under the FIST Programme of the DST in 2003. In 2012, the department has received Rs.148.00 lacs under CAS (Phase-VII) scheme of the UGC. It is thus the oldest Advanced Centre in the Country under the Special Assistance Programme of the UGC. The Department has a large collection of fossils, rocks and minerals housed in its Museum. The department has 48 (Forty eight) (registered / enrolled) research students on its rolls.

FACULTY

Designation	**Name**	**Field of Research Specialization**
Honorary Professor	O.N. Bhargava	Himalayan Geology
Professors Emeritus	Ashok Sahni	Vertebrate Palaeontology & Biomineralisation
Professors	Rajeev Patnaik	Vertebrate Palaeontology
	Naveen Chaudhri	Igneous Petrology & Isotope Geochemistry
	Ashu Khosla	Palaeontology, Vertebrate, Micropalaeontology, Sedimentology & Palaeobiogeography
	Parampreet Kaur **(Chairperson)**	Petrology, Isotope Geochemistry & Geochronology
	Gurmeet Kaur	Petrology, Mineralogy, Geochemistry & Hydrogeochemistry
Assistant Professors	B.P. Singh	Palaeontology & Stratigraphy
	Seema Singh	Sedimentology & Applied Geology
	Mahesh Thakur	Geophysics
	Debabrata Das	Groundwater Hydrology
UGC Assistant Professor	Susanta Paikaray	Environmental Geochemistry

COURSES OFFERED (SEMESTER SYSTEM)

Course	**Seats**	**Duration**	**Eligibility***	**Admission Criteria**
B.Sc.(Hons.) in Geology as per NEP 2020 under the framework of Honours School System	30 + 4 NRI + 2 Foreign National	4 Years	Candidate should have passed 10+2 examination with at least 50% marks with English, Physics, Chemistry, Maths/Biology	Admission based on Academics : 25% P.U.CET(UG) : 75%
M.Sc. (Hons.) under the framework of Honours School System	30 + 4 NRI + 2 Foreign National	2 Years	For vacant seats, B.Sc. 3 years course with Geology as one of the subjects 50% marks in B.Sc. & 50% marks in subject of Geology in B.Sc	B.Sc. (Hons.) students of Geology, P.U., For vacant seats P.U. CET (PG). Academic : 40% P.U. CET (PG) : 60%
Ph.D.	Subject to availability	3-6 Years	See Ph.D. Prospectus 2025	

*5% Concession is admissible in eligibility marks to SC/ST/BC/PwD candidates

Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLES OF SYLLABI: (Detailed syllabi available at https://puchd.ac.in/syllabus.php)

B.Sc. (Hons.) in Geology as per NEP under the framework of Honours School System

SEMESTER-I				**SEMESTER-II**			
GEO DSC 1	Earth System Science	4	100	GEO DSC -2	Mineral Science	4	100
GEO DSC 1P		2	50	GEO DSC 2P		2	50
GEO M1	Essentials of Geology	4	100	GEO M 2	Minerals and Rocks	4	100

GEO M1P		2	50	GEO M 2P		2	50
GEO IDC	Soil Science	2	50	GEO IDC	Soil Science	2	50
GEO IDC P		1	25	GEO IDC P		1	25
AECC 1	Language	2	50	AECC-2	Language	2	50
AEC-1	MIL (Modern Indian Languages)	2	50	AEC-2	MIL (Modern Indian langugages)	2	50
GEO SEC 1	Fundamentals of Hydrogeology	2	50	GEO-SEC-2	Fundamental of Remote Sensing	2	50
GEO SEC 1P		1	25	GEO SEC -2P	& GIS	1	25
VAC 1	Value Added Course	2	50	VAC-2	Value Added Course	2	50

SEMESTER-III				SEMESTER-IV			
GEO DSC 3	Structural Geology	4	100	GEO DSC 5	Igneous Petrology	4	100
GEO DSC 3P		2	50	GEO DSC 4P		2	50
GEO DSC 4	Elements of Geochemistry	4	100	GEO DSC 6	Sedimentary Petrology	4	100
GEO DSC 4P		2	50	GEO DSC 4P		2	50
GEO M 3	Fossil and their application	4	100	GEO DSC 7	Palaeontology	3	75
GEO M 3P		2	50	GEO DSC 7P		2	50
GEO IDC	Soil Science	2	50	GEO-M-4	Structural Geology	4	100
GEO IDC P		1	25	GEO-M-4P		2	50
GEO SEC 3	Field Work	3	50+25				

M.Sc. Geology

SEMESTER-I	SEMESTER-II
Theory Papers : Core Course (CM)	**Theory Papers : Core Course (CM)**
Th.I Micropalaeontology	Th.I Vertebrate Diversity & Evolution
Th.II Neotectonics & Earthquakes	Th.II Sedimentology
Th.III Isotope Geochemistry	Th.III Chemical Petrology & Crustal Evolution
Practical Papers : Core Course (CM)	**Practical Papers : Core Course (CM)**
Pr.I Micropalaeontology	Pr.I Vertebrate Diversity & Evolution
Pr.II Neotectonics & Earthquakes	Pr.II Sedimentology
Pr.III Isotope Geochemistry	Pr.III Chemical Petrology & Crustal Evolution
Skill Enhancement Course (SECM)	**Skill Enhancement Course (SECM)**
Geological Field Work	Geological Field Report & Viva Voce
SEMESTER-III	**SEMESTER-IV**
Theory papers : Core Course (CM)	**Theory Papers: Core Course (CM)**
Th.I: Mineral Resources & Mineral Economics	Th.I: Environmental Geology
Th.II: Petroleum Geology	Th. II: Advanced Groundwater Hydrology
Th. III: Exploration Geology	**Practical Papers: Core Course (CM)**
Practical papers: Core Course (CM)	Pr. I: Environmental Geology
Pr. I: Mineral Resources & Mineral Economics	Pr. II: Advanced Groundwater Hydrology
Pr. II: Petroleum Geology	**Discipline Specific Elective (DSEM)**
Pr. III: Exploration Geology	Project Oriented Field Report
Discipline Specific Elective (DSEM)	
Project Oriented Geological Field Work	

THRUST AREAS: Paleontology & Stratigraphy, Petrology, Hydrogeology & Environmental Geology.
PLACEMENTS: There is a Placement Cell in the department, which co-ordinates with the Central Placement Cell of the University and provides guidance and counseling to the students about the job opportunities in various Companies / Institutes.
ALUMNI RELATIONS: Alumni Association of the Department (PUGAA) often interacts and hold functions for the welfare and fulfillment of the aspirations of the alumni.

INSTITUTE OF FORENSIC SCIENCE & CRIMINOLOGY

ABOUT THE INSTITUTE

Vision: "To create an environment for professionalism & excellence in Forensic Science and train the scientific manpower for serving the criminal justice system."
Institute of forensic science and criminology (IFSC) was founded in the year 2009 to serve the criminal justice system considering the escalating crime rate and the nature of crime. The Institute was crated for training human resources in Forensic Science and research and the utilization of upcoming advanced scientific techniques in the discipline. Scientific techniques of every discipline are finding ever new applications in crime investigation and establishing proof in the court of law. The country needs experts of these forensic techniques for building a robust judicial and instigation system. The institute is running M.Sc. Forensic Science (Interdisciplinary program) and Ph.D. programs. For supporting the criminal justice system, we need to keep pace in developing robust forensic techniques. Therefore, the masters (M.Sc.) level empowers a student to use the latest techniques in investigation of crime and Ph.D. research program is to be explore and validate new scientific techniques for forensic applications. The Institute is committed to train the human resource in producing 'scientific workforce' to meet the need of highly technical personnel to serve the society in an effective and efficient way.
The Institute is unique that it provides training in all aspects related to Forensic Science & Criminology with specialization in Forensic Biology, Forensic Chemistry and Forensic Physics and is running its course under choice based credit system (CBCS).

FACULTY

Designation	Name	Field of Research Specialization
Associate Professor	Shweta Sharma	Colloidal Chemistry, Electrochemical Sensors, Solid Phase Microextraction (SPME), Forensic Toxicology, Drug-Drug Interaction, Documents examination, photocatalysis
	Vishal Sharma	Trace Evidence analysis, Instrumentation, Analytical Chemistry, Synthesis & Applications of nanoparticles, Sensors, Chemometrics, Questioned documents
	Jagdish Rai **(Chairperson)**	DNA Sequencing, Protein Science

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission criteria
M.Sc	19+2NRI+1 ** +1 Foreign National	2 years	B.Sc. / B.Sc. (Hons) degree in Forensic Science or any other Graduation Degree with 3/4/5 year duration with minimum 50% marks in the faculty of Science / Engineering / Medical / Dental and Pharmaceutical Science of Panjab University or any other University recognized University	Based on PU-CET (PG): Academics: 50% PU-CET (PG):50%
Ph.D.	Subject to availability	3-6 years	See Ph.D. prospectus 2025	

* 5% Concession is admissible in eligibility marks to SC/ST/BC/PwD Candidates
**Seats reserved for in – service candidates from Government Organization. In case of non – availability of in – service candidate, the seat will be converted into General Category

TITLES OF SYLLABI: (Detailed syllabus available at https://puchd.ac.in/syllabus.php)

M.Sc.

SEMESTER-I		SEMESTER-II	
(i)	General Forensic and Fingerprint Science	(i)	Molecular Biology and Biochemistry
(ii)	Human Genetics	(ii)	Forensic Chemistry
(iii)	Instrumentation	(iii)	Forensic Physics
(iv)	Criminology, Criminal Law and Forensic Psychology	(iv)	Quality Management
(v)	Crime file/Scrap file	(v)	SWAYAM : MOOCS
SEMESTER-III		**SEMESTER-IV**	
(i)	Forensic Toxicology and Drugs of Abuse	(i)	Questioned Documents
(ii)	Ballistics	(ii)	Digital Forensic and Cyber Security
(iii)	Forensic Biology	(iii)	Forensic Audio – Video Analysis
(iv)	Forensic Anthropology, Osteology and Odontology	(iv)	Forensic Explosives
(v)	Thesis Work Part-I (Physics Science) Thesis work Part I (Chemical Science) Thesis work Part I (Biological Science)	(v)	Forensic Molecular Biology
(vi)	SWAYAM : MOOCS	(vi)	Thesis work – Part II

THRUST AREAS: Fingerprint detection using nanoparticles, Analytical techniques for Questioned Document examination, Forensic Toxicology, Extraction of questioned analyte, Drug-drug interactions, Developing drug sensors, SPME techniques for analyte extraction, DNA Forensics.

PLACEMENTS: The placement cell of the department endeavors to offer placement services to the students. The students are informed of various opportunities. The students are placed mainly in the various government organizations.

ALUMNI RELATIONS: The department remains in touch with old students by inviting them in get-togethers/Annual Function where they share their experience.

DEPARTMENT OF MATHEMATICS
(CENTRE FOR ADVANCED STUDY IN MATHEMATICS)

ABOUT THE DEPARTMENT

The Department was established in 1952 at Hoshiarpur and set up at Chandigarh in 1958. It is one of the best departments of Mathematics of the Indian Universities. It has been recognized as Centre for Advanced Study in Mathematics since 1963 by the U.G.C. The National Board for Higher Mathematics has granted the status of Regional Library to the Library of the Department and support the consortium for the online access to Math. Sci. Net, for which the department is the leading partner.

FACULTY

Designation	Name	Field of Research Specialization
Professor Emeritus	R.J. Hans Gill	Number Theory, Geometry of Numbers, Discrete Geometry
	S.K. Khanduja	Algebraic Number Theory
	A.K. Aggarwal	Number Theory
Professor (CSIR Emeritus)	Madhu Raka	Number Theory, Geometry of Numbers, Algebraic Coding Theory
Professors	S.K. Tomar (on leave)	Applied Mathematics, Continuum Mechanics
	Savita Bhatnagar	Harmonic Analysis, Real Analysis

	Renu Bajaj	Applied Mathematics, Fluid Dynamics
	Gurmeet Kaur Bakshi	Algebra, Algebric Coding Theory
	Dinesh K. Khurana	Algebra, Ring Theory
Associate Professor	Poonam Sehgal	Algebra, Number Theory & Complex Analysis
	Surinder Pal Singh Kainth **(Chairperson)**	Real Analysis, Graph Theory
	Kulbhushan Agnihotri	Mathematical Modelling
Assistant Professors	Suman Bala	Continuum Mechanics
	Manisha Sharma	Operational Research
	Anjana Khurana	Algebra
	Sarita Pippal	Computational Fluid Dynamics
	Aarti Khurana	Continuum Mechanics
	Kathiravan T.	Number Theory
Assistant Professors (UGC)	Dilbag Singh	Applied Mathematics, Continuum Mechanics
	Gagandeep Singh	Queuing Theory, Stochastic Modeling, Applied Probability

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
B.Sc. (Hons.) in Mathematics as per NEP 2020 under the framework of Honours School System	30+3NRI + 2 Foreign National	4 years	50% marks in 10+2 examination from a recognized Board / CBSE with Mathematics as one of the subjects.	Based on PU CET (UG) Academics : 25% PU CET (UG) : 75%
B.Sc. (Hons.) in Mathematics & Computing as per NEP 2020 under the framework of Honours School System	15+2NRI + 1 Foreign National	4 years	50% marks in 10+2 examination from a recognized Board / CBSE with Mathematics as one of the subjects.	Based on PU CET (UG) Academics : 25% PU CET (UG) : 75%
M.Sc. Mathematics under the framework of Honours School System	40+5NRI + 2 Foreign National	2 years	B.Sc. (Hons.) in Mathematics and B.Sc. (HS) in Mathematics or Computing from the department of Mathematics, PU Chandigarh	Ongoing class
	30+5 NRI + 2 Foreign National	2 years	BA / B.Sc. (General) with 50% marks in Mathematics as a major subject OR BA /B.Sc. with Hons. 50% marks in Mathematics of PU or any other University recognized by PU as equivalent thereto OR B.Sc. (Hons.) in any subject under CBCS with 24 credits in Mathematics as Generic Elective subject	Based on PU CET (PG) Academics : 40% PU CET (PG) : 60%
Ph.D.	Subject to availability	3-6 years	See Ph.D. Prospectus 2025	

*5% Concession is admissible in eligibility marks to SC/ST/BC/PwD candidates
INMO awardees can join B.Sc. (Hons.) Department of Mathematics, without appearing in the PU CET (UG) Entrance Test.
Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLE OF SYLLABI: Detailed Course Curriculum is available at www.puchd.ac.in

B.Sc. (Hons.) in Mathematics as per NEP 2020 under the framework of Honours School System

SEMESTER-I		Credits	SEMESTER-II		Credits
Discipline Specific courses – core	MAT-DSC-101 – Calculus	6	Discipline Specific courses	MAT DSC 151 – Algebra and ordinary differential equations	6
Minor course*	MAT-M-1-Calculas	6	Minor course*	MAT-M-2 Algebra and ordinary Differential equations	6
Interdisciplinary course*	MAT-IDC-Algebra and Geometry	3	Interdisciplinary course*	MAT-IDC-Algebra and Geometry	3
Ability Enhancement course	AEC-1 AEC-2	2+2	Ability enhancement course	AEC-3 AEC-4	2+2
Skill Enhancement course / internship / Dissertation	MAT-SEC-1 : Discrete mathematics	3	Skill enhancement course / internship / Dissertation	MAT-SEC-2: working with mathematical softwares	2+1
Common Value added course	VAC-1 Environment studies	2	Common Value added course	VAC-2 Human Rights	2

SEMESTER-III		Credits	SEMESTER-IV		Credits
Discipline Specific courses – core	MAT-DSC-3 – Metric spaces	6	Discipline Specific courses - core	MAT DSC 5 – Linear Algebra	6
Discipline Specific courses – core	MAT-DSC-4 - Number Theory	6	Discipline Specific courses – core	MAT DSC 6 – Numerical Analysis	4+2
Discipline Specific courses – core	-		Discipline Specific courses – core	MAT DSC 7 – Partial differential equations	4+2
Minor course*	MAT-M-3-Partial Differential Equation and Numerical Analysis	6	Minor course*	MAT-M-4 Number Theory and Group theory	6
Interdisciplinary course*	MAT-IDC-Algebra and Geometry	3	Ability Enhancement course	-	
Ability Enhancement course	-	2	Skill Enhancement course / internship / dissertation	-	
Skill Enhancement course / Internship/ Dissertation	MAT-SEC-3 – Programming in C	2+1			
SEMESTER-V			**SEMESTER-VI**		
Discipline Specific courses-core	MAT-DSC-8-Riemann Integration and Series of Functions	6	Discipline Specific courses-core	MAT-DSC-11 – Complex Analysis	6
Discipline Specific courses-core	MAT-DSC-9 Group Theory	6	Discipline Specific courses-core	MAT-DSC-12 – Rings and Modules	6
Discipline Specific courses-core	MAT-DSC-10-Multivariate Calculus	6	Discipline Specific courses-core	MAT-DSC-13-Mechanics	6
Minor Course*	MAT-M-5-Mathematical Modelling	4	Minor Course*	MAT-M-6 – Discrete Mathematics	4
Common Value Added course	VAC-3-AI	2	Skill Enhancement course / Internship/ Dissertation	**INT-1**	2

*These minor courses and interdisciplinary course are to be offered to the students of the other Departments. But Mathematics students must choose minor courses and interdisciplinary course from other Departments.

B.Sc. (Hons.) in Mathematics & Computing as per NEP 2020 under the framework of Honours School System

SEMESTER-I		Credits	SEMESTER-II		Credits
Discipline Specific courses – core	MAC-DSC-1-Calculus	6	Discipline Specific courses	MAC-DSC-2-Algebra and Ordinary differential equations	6
Minor course*	-	6	Minor course*	-	6
Interdisciplinary course*	-	3	Interdisciplinary course*	-	3
Ability Enhancement course	ACE-1 ACE-2	2+2	Ability enhancement course	ACE-3 ACE-4	2+2
Skill Enhancement course / internship / Dissertation	MAC-SEC-1-Discrete Mathematics	3	Skill enhancement course / internship / Dissertation	MAC-SEC-2-Mechanics	2+1
Common Value added course	VAC-1	2	Common Value added course	VAC-2	2

SEMESTER-III		Credits	SEMESTER-IV		Credits
Discipline Specific courses – core	MAC-DSC-3-Metric Spaces	5	Discipline Specific courses - core	MATC DSC 251 – Real Analysis	6
Discipline Specific courses – core	MAC-DSC-4-Programming in C	4+2	Discipline Specific courses – core	MATC DSC 252 – Linear Algebra	4+2
Discipline Specific courses – core	-	-	Discipline Specific courses – core	MATC –DSC-253 – Data structures	4+2
Minor course*	-	6	Minor course*	-	6
Interdisciplinary course*	-	3	Ability Enhancement course	-	-
Ability Enhancement course	-	-	Skill Enhancement course / internship / dissertation	-	-
Skill Enhancement course / Internship / Dissertation	MAC-SEC-3-Partial differential Equations	2+1			

SEMESTER-V		Credits	SEMESTER-VI		Credits
Discipline Specific courses – core	MAC-DSC-8-Riemann Integration and Series of functions	6	Discipline Specific courses - core	MAC-DSC-11-Complex Analysis	6
Discipline Specific courses – core	MAC-DSC-9-Group Theory	6	Discipline Specific courses – core	MAC DSC 12 – Rings and Modules	6
Discipline Specific courses – core	MAC-DSC-10-Programming with Python	6	Discipline Specific courses – core	MAC –DSC-13 – Artificial Intelligence	4+2
Minor course*	-	4	Minor course*	-	-
Common Value Added Course	VAC-3	2	Skill Enhancement Course / Internship / Dissertation	INT-1	2

*Minor course and interdisciplinary course must be from two different subjects other than mathematics

M.Sc. (Mathematics) under CBCS each course of 4 credits

SEMESTER I		SEMESTER II	
Every Student will have to take five papers given below:			
Core Course I	MAT MC1-Field Theory & Commutative Algebra-I OR MAT MC2-Groups and Rings	Core Course VI	MAT MC9-Commutative Algebra-II OR MAT MC10-Modules & Fields
Core Course II	MAT MC3-Topology OR MAT MC4-Real Analysis	Core Course VII	MAT MC5–Advanced Complex Analysis OR MAT MC6–Complex Analysis
Core Course III	MAT MC11-Number Theory OR MAT MC12-Algebraic Number theory	Core Course VIII	MAT MC13-Lebesgue Integration
Core Course IV	MAT MC7-Linear Programming	Core Course IX	MAT MC14-Ordinary Differential Equations
Core Course V	MAT MC8-Classical Mechanics	Core Course X	MAT MC15 - Probability Theory and Random Processes

The above mentioned courses will be offered to the students depending upon their background.
The students who have studied MAT MC1 in Semester I will have to take MAT MC9 in Semester II. Similarly, the students who have studied MAT MC2 in Semester I will have to take MAT MC10 in Semester II. MAT MC 12 will be offered to those students who have studied its prerequisites in bachelor's degree

SEMESTER III		SEMESTER IV	
Core Course XI	MAT MC16-Non-Commutative Ring Theory OR MAT MC17-Linear Algebra and Commutative Algebra-I	Core Course XIV	MAT MC21-Representation Theory of Finite Groups OR MAT MC22-Commutative Algebra-II
Core Course XII	MAT MC18-General Measure Theory OR MAT MC19–Topology	Core Course XV	MAT MC23-Functional Analysis
Core Course XIII	MAT MC20-Partial Differential Equations		
The students who have studied MAT MC1 and MAT MC9 in Semesters I & II will have to take MAT MC16 & MAT MC18 in Semester III. Similarly, the students who have studied MAT MC2 and MAT MC10 in Semesters I & II will have to take MAT MC17 & MAT MC19 in Semester III		The students who have studied MAT MC16 in Semesters III will have to take MAT MC 21 in Semester IV. Similarly, the students who have studied MAT MC17 in Semesters III will have to take MAT MC22 in Semester IV.	
Discipline Specific Elective Courses (Students have to choose one or two out of following depending upon their background)		Discipline Specific Elective Courses (Students have to choose two or three out of following depending upon their background)	
MAT MDSE 1	Computational Techniques-I	MAT MDSE 1*	Computational Techniques-I
MAT MDSE 2*	Algebraic Number Theory-I	MAT MDSE 2*	Algebraic Number Theory-I
MAT MDSE 3	Algebraic Coding Theory-I	MAT MDSE 3*	Algebraic Coding Theory-I
MAT MDSE 4	Complex Analysis – II	MAT MDSE 4*	Complex Analysis-II
MAT MDSE 5	Fluid Mechanics-I	MAT MDSE 5*	Fluid Mechanics-I
MAT MDSE 6	Non Linear Programming	MAT MDSE 6*	Non Linear Programming
MAT MDSE 7	Mathematical Statistics	MAT MDSE 7*	Mathematical Statistics
MAT MDSE 8	Mechanics of Solids-I	MAT MDSE 8*	Mechanics of Solids-I
MAT MDSE 9	Numerical Methods for Differential Equations	MAT MDSE 9*	Numerical Methods for Differential Equations
MAT MDSE 16	Topics in Integration Theory	MAT MDSE 10	Computational Techniques II
MAT MDSE 17	Stochastic Processes	MAT MDSE 11	Algebraic Number Theory-I
MAT MDSE 18	Stochastic Calculus	MAT MDSE 12	Algebraic Coding Theory-II
MAT MDSE19**	Number theory-II	MAT MDSE 13	Fluid Mechanics-II
MAT MDSE 20	Integral Equation and Applications	MAT MDSE 14	Mechanics of Solids II
		MAT MDSE 15	Partial Differential Equations II
		MAT MDSE 16*	Topics in Integration Theory
		MAT MDSE 17*	Stochastic Processes

		MAT MDSE 18*	Stochastic Calculus
		MAT MDSE 19	Number Theory-II
		MAT MDSE 20*	Integral Equation and Applications
			*Will Be Offered If Not Run In Semester-III

SKILL ENHANCEMENT COURSES		SKILL ENHANCEMENT COURSES	
If a student has opted for only one Discipline specific elective course, then he/she may choose one of the following (depending upon the background)		If a student has opted for only one Discipline specific elective course, then he/she may choose one of the following (depending upon the background)	
MAT MSEC 1	Set theory	MAT MSEC 1*	Set theory
MAT MSEC 2	Network Analysis	MAT MSEC 2*	Network Analysis
		MAT MSEC 3*	Advanced Optimization Techniques
			* Will if offered if not run in Semester III

THRUST AREA: Algebra, Continuum Mechanics, Analysis, Optimization.
PLACEMENTS: Our students are placed in teaching jobs in Government/private educational institutions.
ALUMNI RELATIONS: We invite our distinguished alumni at every academic function in the department. They deliver motivating lectures to the Students / Faculty.

DEPARTMENT OF MICROBIOLOGY

ABOUT THE DEPARTMENT

The department is one of the oldest and pioneer departments of Microbiology. The department has made a remarkable progress in teaching and research since its establishment and has been recognized for research nationally and internationally. It has been implementing various schemes and R&D Projects by various govt. agencies like department of Biotechnology (DBT), Dept. of Science and Technology (DST-PURSE, University Grants Commission), other Funding Agencies including Council of Scientific and Industrial Research (CSIR), Indian Council for Medical Research (ICMR), Chandigarh Council of Science and Technology (CCST) etc.

Research facilities: The Department has excelled in Medical and Industrial Research and owes the faculty with expertise in almost all the branches of Microbiology like Immunology, Diagnostic Reproductive Biology, Phage Therapy, Microbial Biosensors, Quorum Sensing, Molecular Biology, Food Microbiology, Fermentation Technology, Microbial Diversity and Metabolites, Environmental Microbiology, Enzymes and their Applications etc. The graduates from this department are already employed in various National/International academic, premier research and industrial organizations and International Universities. The department has good modern teaching and research infrastructure.

Collaborations: Besides intradepartmental collaborations, the department does have collaborations with PGIMER (CHD), CSIR-IMTECH (CHD), PEC(CHD), CSIR-IHBT (Palampur). The faculty of the department has been conferred awards/recognition at various platforms nationally. The vision of the department is to explore Microbial diversity in Health, Industry and Environment with the mission to use Microbiology in the Service of Society.

Major research facilities available in the Department: In 2014, the department has shifted to new building in South Campus of the university situated in Sector-25, Chandigarh. The new building has the world class infrastructure and well established departmental Instrumentation Facility. The major equipment available in the department include UV-Visible Spectrophotometers, Ultra Centrifuge, Refrigerated Centrifuge, Ultra Deep Freezer, Orbital Shakers, Water Bath Shakers, Protein Purification System with fraction collector, electrophoresis equipment, BOD Incubators, Gas chromatograph, laboratory fermenter, Fluroscent Microscope, Sonicator, Trans-illuminator, CO_2 incubators, Micro Centrifuge, Cold Room, Real Time PCR Machine, Electro-evaporator, ELISA Reader, Lyophilizer, Milipore Water Purification System etc. The Department of Biotechnology, Govt. of India, New Delhi has selected this Department for assistance for enhancement of research and teaching in the field of Microbial Biotechnology. UGC has selected the department for Special Assistance Programme (SAP).

FACULTY

Particular	Name	Field of research Specialization
Professor Emeritus	K. G. Gupta	Applied Microbiology
	J. K. Gupta	Industrial Microbiology
Scientist Emeritus	Sanjay Chhibber	Medical Microbiology
Professors	Prince Sharma	Molecular Microbiology
	Kusum Harjai	Applied Medical Microbiology & Immunology
	Geeta Shukla	Medical Microbiology
	Deepak Kumar Rahi	Industrial Microbiology & Applied Mycology
	Naveen Gupta **(Chairperson)**	Industrial & Molecular Microbiology
Assistant Professors	Khem Raj	Medical Microbiology
	Seema Kumari	Virology

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission criteria
B.Sc. (Hons.) in Microbiology as per NEP 2020 under the framework of Honours School System	30 + 4NRI + 2 Foreign National	4 years	50% marks in 10+2 with English, Physics, Chemistry, Maths, Biology, Biotechnology	Admission based on P.U. CET-(U.G.) Academics: 25% PU-CET(UG):75%
M.Sc. Microbiology	30 + 4 NRI +	2 years	Ongoing students must have cleared B. Sc.	Ongoing Classes

under the framework of Honours School System	2 Foreign National		(Hons.)	
Ph.D	Subject to availability	3-6 years	See Ph.D Prospectus 2025	

*5% Concession is admissible in eligibility marks to SC/ST/BC/PwD Candidates
Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLES OF SYLLABI: Detailed syllabus available at www.puchd.ac.in/syllabus.php

COURSE STRUCTURE

B.Sc. (Hons.) Microbiology as per NEP 2020 under the framework of Honours School System

SEMESTER-I		SEMESTER-II	
Discipline Specific courses – core	MIC-DSC-1 Fundamentals of Microbiology	Discipline Specific courses	MIC-DSC-2 – Fundamentals of Applied Microbiology (4T+2P Credits)
#Minor course	MIC-M-1 – Introduction to General Microbiology	Minor course*	MIC-M-2 – Introduction to Applied Microbiology (4T+2P Credits)
*Interdisciplinary courses	MIC-IDC – Microbes for sustainable development (2T+1P Credits)	Interdisciplinary courses*	MIC-IDC-121 – Microbes for sustainable Development (2+1 Credits)
Ability Enhancement course (Language)	AECC-1 (English) / Offline / Online/Blended / MOOC's (2T+OP Credits)	Ability enhancement course (language)	AEC-3 (English)/ Offline/ Online/Blended/MOOC's (2T+OP Credits)
	AECC-2 (Modern Indian Language)/Offline/Online / Blended / MOOC's (2T+OP Credits)		AECC-4 (Modern Indian Language)/Offline/Online/ Blended / MOOC's (2T+0P Credits)
Skill Enhancement course / internship / Dissertation	MIC –SEC-1/Skills in Microbiology-I (2T+1P Credits)	Skill enhancement course / internship / Dissertation	MIC –SEC2/Skills in Microbiology-II (2T+1P Credits)
Common Value added courses	VAC -1 (2T+OP Credits)	Common Value added courses	VAC-2 (2T+OP Credits)
Total Credits	24	Total Credits	24

Framework of 4-Year B.Sc (Hons) Microbiology, 2nd year Programme (2024-2025) under NEP-2020

SEMESTER-III		SEMESTER-IV	
Discipline Specific courses – core	MIC-DSC-3/– (4T+2P Credits) Mycology	Discipline Specific courses	MIC-DSC-5/ Molecular Biology and Molecular Genetics (4T+2P Credits)
	MIC-DSC-4/Virology (4T+2P Credits)		MIC-DSC-6/Environmental Microbiology (4T+2P Credits)
			MIC-DSC-7/Industrial Microbiology (4T+2P Credits)
#Minor	MIC-M-3/Mycology & Virology (4T+2P Credits)	#Minor	MIC-M-4 /Fundamentals of Molecular Biology and Microbial Genetics (4T+2P Credits)
Inter-disciplinary courses*	MIC-IDC-3/ Microbial Roles on Ecosystems and Human Health (2T+1P Credits) (This will be taught only for the students who get admitted 2024-25) MIC-IDC/Microbes for sustainable development (2T+IP Credits)	Interdisciplinary courses*	--
Skill Enhancement course/Internship/ Dissertation	MIC-SEC-3/Microbial Quality Control in Food & Pharmaceutical Industries (2T+1P Credits)		--
Total Credits	24	Total Credits	24

Framework of 4-Year B.Sc (Hons) Microbiology, 3nd year Programme (2024-2025) under NEP-2020

SEMESTER-V		SEMESTER-VI	
Discipline Specific courses – core	MIC-DSC-8/Parasitology (4T+2P Credits)	Discipline Specific courses	MIC-DSC-11/ Medical Bacteriology-11 (4T+2P Credits)
	MIC-DSC-9/Medical Bacteriology-I (4T+2P Credits)		MIC-DSC-12/Food & Dairy Microbiology (4T+2P Credits)
	MIC-DSC-10/ Immunology (4T+2P Credits)		MIC-DSC-13/Recombinant DNA Technology and Genome Analysis (4T+2P Credits)
#Minor	MIC-M-5/Bacteriology, Immunology & Parasitology (3T+IP Credits)	#Minor	MIC-M-6/Industrial & Food Microbiology (3T+IP Credits)
Skill Enhancement course / Internship / Dissertation	--		Internship INT-1 (2 Credits) (Students will be given 4 hour per week training including field trips/Industrial visits/Learning of advanced techniques etc.)
Common Value-Added Courses	VAC-3 (2T+OP Credits)		-
Total Credits	24		24

Framework of 4-Year B.Sc (Hons) Microbiology, 4th year Programme (2024-2025) under NEP-2020

SEMESTER-VII		SEMESTER-VIII	
Discipline Specific courses – core	MIC-DSC-14/Microbial Physiology and Metabolism (4T Credits)	Discipline Specific courses	MIC-DSC-17/Biosafety and Intellectual Property Rights (4T)
	MIC-DSC-15/Instrumentations and Biotechniques (4T Credits)		MIC-DSC-18/MOOC (4T Credits)
	MIC-DSC-16/Bioinformatics and Biostatistics (4T+2P Credits)		MIC-DSC-19/Entrepreneurship and Startup (4T+2P Credits)
	MIC-DSC-20A/Newer approaches in diagnostic Microbiology (4T+2P Credits)		MIC-DSC-20B/Bioprocess Engineering and Fermentation Technology (4T+2P Credits)
#Minor	MIC-M-7/Bioinformatics and Biostatistics (3T+1P Credits)	#Minor	MIC-M-8 /Environment Microbiology (3T+1P Credits)
Skill Enhancement course/Internship/ Dissertation	Research Project (PROJECT PROPOSAL) (6 Credits)		Research Project (DISSERTATION) (6 Credits)
Total Credits	24		24

Criteria for the award of certificate/degree

1. Students exiting the programme after securing 48 credits will be awarded UG certificate in the relevant discipline/subject provided they secure 4 credits in work based vocational courses offered during summer term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester
2. Students exiting the programme after securing 96 credits will be awarded UG diploma in the relevant discipline/subject provided they secure additional 4 credits in skill-based vocational courses offered during last year or second year summer term.
3. Students who want to undertake 3-year UG programme will be awarded UG degree in the relevant discipline/subject upon securing 144 credits. Subject to minimum credit requirement in respective subject.
4. Students will be awarded UG degree (Honours) with Research in the relevant discipline/subject upon securing 192 credits subject to minimum credit requirement in respective subject.

SEMESTER-I	SEMESTER-II
MMIC C-1 Advances in Microbial Ecology MMIC C-2 Pathogenesis of Infectious diseases MMIC C-3 Newer approaches in diagnostic Microbiology MMIC C-4 Combined Practical-1 MMIC GE-1 Swayam Paper-I*	MMIC C-5 Fermentation Technology MMIC C-6 Advances in Molecular Biology & Biotechnology MMIC C-7 Advances in Immunoprophylaxis & Immunotherapy of Infections MMIC C-8 Combined Practical-2 MMIC GE-2 Swayam Paper-II*
SEMESTER III	**SEMESTER IV**
MMIC C-9 IPR, Biosafety, Bioinformatics and Biostatistics MMICC-10 Advanced Topics in Microbiology –I (Seminar) MMIC C-11 Advanced Topics in Microbiology –II (Paper) MMICC-12 Project Training Report & Presentation MMIC C-13 Research Work (Review)** MMIC GE-3 Swayam Paper-III*	MMIC C-14 Journal Club MMIC C-15 Research Work (Thesis)** MMIC C-16 Research Work (Viva Voce)**

* Generic Elective (GE) subjects are to be selected by the students from the following pool of subjects available on "Swayam", Free on line free education portal (https://swayam.gov.in/) as recommended by UGC. Courses delivered through SWAYAM are available free of cost to the learners, however students wanting certifications shall be registered, shall be offered a certificate

on successful completion of the course, with a little fee. At the end of each course, there will be an assessment of the student through proctored examination and the marks/grades secured in this exam could be transferred to the academic record of the students. UGC has already issued the UGC (Credit Framework for online learning courses through SWAYAM) Regulation 2016 advising the Universities to identify courses where credits can be transferred on to the academic record of the students for courses done on SWAYAM.

1. Bioorganic and biophysical chemistry
2. Organic spectroscopy
3. Application of spectroscopic methods in molecular structure determination
4. Environmental chemistry
5. Forensic chemistry and explosives
6. Forensic biology and serology
7. Food laws and standards
8. Technology of fermented, cheese, ice-cream and by-products

**RESEARCH WORK: The research work for thesis will start from third semester and will be continued in the fourth semester. The weight age will be of 50 marks in third semester. At the end of semester third, students will submit their literature work in the form of a Review on the topic selected. There will be a presentation before a panel of teachers from the department.

THRUST AREAS: Medical Microbiology, Food Microbiology, Industrial Microbiology, Immunology, Environmental Microbiology, Microbial Physiology and Biochemistry, Genetic Engineering and Biotechnology.

PLACEMENTS: Though there is 100% off campus placement of the students of Microbiology after M.Sc./Ph.D, efforts are being made to activate the process of on campus placement through Central Placement Cell, Panjab University, Chandigarh.

ALUMNI RELATIONS & Distinguished Alumni of Department: To promote the alumni relations, the committee has recently been constituted to activate the process.

DEPARTMENT-CUM -NATIONAL CENTRE FOR HUMAN GENOME STUDIES AND RESEARCH

ABOUT THE CENTRE

Department cum National Centre for Human Genome Studies and Research is relatively new education centre established in year 2002. The first sequencing of the human genome in 2002 provided a glimpse of humans at our most basic molecular level. The main goal of our department is to inspire and educate young minds in Genetics and Genomics. Students learn to approach problems and formulate questions that span the full range of biological systems, from genes to cells to medicine to evolution. Research in Genetics and Genomics is quickly becoming the key source of new insights, better understanding and targeted treatments of both rare monogenic diseases and common complex diseases such as coronary heart disease, cancer etc. Our ethos reflects and fosters a passion for discovery and curiosity and a commitment to excellence. The goal of this Centre is to provide the most advanced and comprehensive education possible related to human genome at the post graduate level. We highly value interdisciplinary knowledge and collaboration as the core of our effort. Our research addresses the molecular mechanisms underlying fundamental processes in biology and disease. We apply genetic, biochemical, cell biological, computational and biophysical approaches to study various questions/problems in biology. We are motivated towards understanding of human biology and disease and to develop solutions to societal health problems. Mission is to establish specific scientific programs that will be available to the public, to improve human health and well-being through education and research.

FACULTY

Designation	Name	Field of Research Specialization
Professor	Ramandeep Kaur	Molecular and Cancer Biology
Associate Professor	Ranvir Singh	Protein Crystallography
Assistant Professor	Shashi Chaudhary **(Chairperson)**	Genetics & Molecular Biology of Human Disease

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
M.Sc. Human Genomics	15+2 NRI + 1 Foreign National	2 years	B.Sc. (Pass or Honours) under 10+2+3 pattern of examination with at least 55% marks in Physical, Chemical, Biological, Pharmaceutical Science or in medicine from any University/ Institute recognized by P.U.	Based on P.U. CET-(P.G.) Academics: 50% P.U.CET(PG):50%
Ph.D.	Subject to availability	3-6 years	See Ph.D. Prospectus 2025	
*5% Concession is admissible in eligibility marks to SC/ST/BC/PwD candidates				

TITLES OF SYALLABI (Detailed syllabus available at https://puchd.ac.in/syllabus.php)

M.Sc.

SEMESTER-I		SEMESTER-II	
MHG 101	Biochemistry and Cell Biology	MHG 201	Structural Biology and Bioinformatics-I
MHG 102	Molecular Biologgy	MHG 202	Immunology
MHG 103	Genetics	MHG 203	Human Molecular Genetics-I

MHG 104	Analytical Techniques	MHG 204	Genetic Engineering Tools and Techniques
MHG 105	Practical based on 101 & 102	MHG 205	Practical based on 201 & 202
MHG 106	Practical based on 103 & 104	MHG 206	Practical based on 203 & 204
SEMESTER-III		**SEMESTER-IV**	
MHG 301	Structural Biology and Bioinformatics-II	MHG 401	Project Work and Presentation
MHG 302	Gene Expression and Epigenetics	MHG 402	Clinical Rounds
MHG 303	Human Molecular Genetics-II	MHG 403	Educational Tour & Journal Club
MHG 304	Genomics and Proteomics		
MHG 305	Practical based on 301 & 302		
MHG 306	Practical based on 303 & 304		

THRUST AREAS: Molecular Biology, Functional Genomics and Proteomics

PLACEMENTS: Most of the students pursue Ph.D. programe after completion of their course while others opt for private sector jobs in clinical research organizations like Dr. REDDYS (Hyderabad), MedGenome (Bangalore) & IDS Infotech Ltd., Mohali etc.

ALUMNI RELATIONS: Departmental alumni keep visiting and interacting with students and provide their valuable input from their experience, time to time.

DEPARTMENT OF PHYSICS

ABOUT THE DEPARTMENT

The Department of Physics was established at Lahore in 1934, moved to Delhi for some time and then to Govt. College, Hoshiarpur (Pb.) after partition. Subsequently, the Department was shifted to Chandigarh in 1958.

The Department had previously received grants under the UGC- COSIP (College Science Improvement Programme) from 1977-83, SAP (Special Assistance Programme) from 1980-88 and COSIST (Committee of Strengthening of infrastructure in Science and Technology) from 1984-91. Since 1988, it has been accorded the status of a Centre of Advanced Study (CAS) by UGC with three major thrust areas: Particle Physics, Nuclear Physics and Solid State Physics - a unique achievement. At present the Department has the strength of 20 faculty members, 2 UGC Faculty, 36 Assisting staff and 2 daily wage staff, apart from Post-doctoral fellows under various funding schemes as well as project scientists/investigators. There are about 108 research students and 437 B.Sc. (Hons. School) Physics, M.Sc. (Hons. School) Physics, B.Sc. (Hons. School) Physics (Specialization in Electronics) and M.Sc. (Hons. School) (Specialization in Electronics) students on the rolls of the Department. About 150 B.Sc. (Hons. School) students of other departments study Physics subjects as Generic Elective Courses.

The faculty members have been honoured with Meghnad Saha Award, Goyal Prize (Kurukshetra University), Sir C.V. Raman Award, Hari Om Trust Award, S.N. Satya Murthi Young Scientist Award, DAE Young Scientist Award, Himachal Scientists of the Year award 2011**,** Chinese Academy of Sciences President's International fellowship, Mercator Professorship, Homi Bhaba Fellowship, Emeritus Scientistships, Ramanna Fellowship, Raman Fellowship. They have been elected for Indian Academy of Sciences fellowship, Joliot Curie fellowship, Alexander Von Humboldt fellowships, DFG (German Research Society) Fellowship, BMFT (Ministry of Research and Technology of Germany like DST) fellows, UNESCO/IAEA Fellowship, WE-Heraeus Fellowship, Heinrich Hertz Foundation fellowship, Fulbright Fellowship, Commonwealth fellowship, IN2P3-CNRS Fellowship, France, Third World Academy of Sciences fellowships and UGC National Lecturer Fellowship awards. Our faculty had also served/ is serving at various administrative positions such as Vice-Chancellors of Panjab University and other universities.

The Department is having research collaborations with institutions like Royal Military College of Canada, Canada; University of Notre Dame, USA; Fermilab USA; CERN Geneva; Bonn University Germany; University of Bayreuth, Wuerzburg, Munich and Berlin in Germany, Chemistry Deptt., City College of New York (CUNY), New York; KEK Japan, Chinese academy of Sciences, Shanghai China; ICTP, Trieste; Univ. of Illinois, USA; BNL, USA; Max. Planck Institute, Germany; Univ. of Leipzig, Germany; SUBATECH, Nantes, France; Instt. for Theoretische Physics, Tubingen, Germany; Instt of Nuclear Studies, Warsaw University, Poland; Univ. of Milano, Italy; J.L. Univ., Germany; J.W. Goethe Univ., Frankfurt, Germany; Instt. of Nucl. Physics, Strasbourg, France; University of Surrey, Gilford, U.K.; University of Hawaii, Cincinnati; Virginia Tech., Princeton University, University of Antwerp, Belgium, JINR Dubna Russia, IUC, Kolkata; VECC, Kolkata; TIFR, Mumbai; IAUC., New Delhi; IIT, Kanpur; Delhi University, Delhi; Mumbai University, Mumbai; IIT, Chennai; I.O.P. Bhubaneshwar; H.P. University, Shimla; T.B.R.L., P.G.I.M.E.R., C.S.I.O., Chandigarh, Jammu University, Jammu. The department has MOU with IUAC, New Delhi, for joint faculty appointment and to various academic exchange programs for Accelerator based research.

UGC has sanctioned 3 crores under CAS-V Phase **(2015-2020)** grant under improvement of Infrastructural facilities of the Physics department. Funds of Rs. 3.5 crores for infrastructure development have been sanctioned by the Department of Science and Technology under FIST programme to upgrade Teaching and Research facilities. The Department of Science & Technology has given technical approval for funding the proposal for establishing Panjab University Accelerator Science Centre (6 MV Tandem Accelerator) at P.U. Campus.

Research Facilities

Facilities exist in the Department for research in Nuclear Physics, High Energy Physics, Photon-Atom Interaction Studies, Solid State/Condensed Matter Physics, Laser Spectroscopy, Astrophysics and Planetary Science (Space Sciences), Radiometric Dating and Theoretical Physics, leading to the Ph.D. degree.

Major facilities available in the Department : (i) Cyclotron, (ii) High Energy Physics (Data Analysis and Detector fabrication Labs.) for studies connected with Collider Physics at CERN and Fermilab, Neutrino Physics at INO and Fermilab., (iii) Facilities for PAC/PAD studies of Hyperfine Interactions (iv) Semi-conductor laboratory, fabrication of thin films, (v) Raman Spectrometer, (vi) Several Nuclear Spectrometers incorporating detectors like HPGe, Si(Li), NaI(Tl), BaF_2, and $LaBr_3$ associated with modern electronics, (vii) Data Analysis labs. for Ultra relativistic heavy Ions experiments done at CERN, (viii) High Performance Computational Facility for theoretical studies for modeling physical problems including simulations, (ix) Energy

dispersive X-ray fluorescence spectrometers using radioactive exciter sources and X-ray tube for material analysis, and (x) XRD. An 11 inch Telescope has been installed in the Department as a part of Teaching and Public awareness Programs in Astrophysics.

The Department houses Indian Association of Physics Teachers (IAPT) office and actively leads in IAPT, Indian Physics Association activities.

FACULTY

Particular	**Name**	**Field of Research Specialization**
Professors Emeritus	K.N. Pathak	Condensed Matter Physics (Theory)
	Nirmal Singh	Nuclear Physics (Experimental)
	M.M. Gupta	Particle Physics (Theory)
	Suman Bala Beri	High Energy Physics (Experimental)
Professors	Devinder Mehta	Nuclear Physics (Experimental)
	Navdeep Goyal	Condensed Matter Physics (Experimental)
	Rajeev K. Puri	Nuclear Physics (Theory)
	G.S.S. Saini	At. Mol. Spectroscopy (Experimental)
	C. Nagaraja Kumar	Theoretical Physics
	S.K. Tripathi **(Chairperson)**	Condensed Matter Physics (Experimental)
	Sandeep Sahijpal	Astrophysics & Planetary Sciences (Theory)
	Ranjan Kumar	Condensed Matter Physics (Theory)
	B.R. Behera	Nuclear Physics (Experimental)
	Vipin Bhatnagar	High Energy Physics (Experimental)
	Ashok Kumar	Nuclear Physics (Experimental)
	J.S. Shahi	Nuclear Physics (Experimental)
	Samarjit Sihotra	Nuclear Physics (Experimental)
Associate Professor	K.S. Bindra	Physics Education
	Lokesh Kumar	High Energy Physics (Experimental)
	Rajesh Kumar	Condensed Matter Physics (Experimental)
Assistant Professors	Manish Dev Sharma	Electronics & Communication (Experimental)
	Neeru Chaudhary	Instrumentation (Experimental)
	Sakshi Gautam *(on leave)*	Nuclear Physics (Theory)
	Gulsheen Ahuja	High Energy Physics (Theory)
	Ravi Prakash Nath Tripathi	Nanomaterials and Optical Microscopy Technique
	Ram Gopal	Laser and Photonics, Plasmonics and Perovskite Solar Cell
Professor (UGC)	Prof. Tankeshwar Kumar	Condensed Matter (Theory)
Assistant Professor (UGC)	Sushil Singh Chauhan	High Energy Physics (Experimental)

COURSES OFFERED (SEMESTER SYSTEM)

Course	**Seats**	**Duration**	**Eligibility***	**Admission Criteria**
B.Sc. (Hons) Physics as per NEP 2020 under the framework of Honours School System *(Traditional course)*	40+6 NRI+2 Foreign National	4 Years	10+2 examination (Non-Medical/ Medical) with 50% marks from recognized Board / CBSE	Based on PU-CET(UG) Academics :25% PU-CET(UG):75%
B.Sc. (Hons) Physics (Specialization in Electronics) as per NEP 2020 under the framework of Honours School System *(Self-Finance course)*	20+3 NRI+1 Foreign National	4 Years	10+2 examination (Non-Medical/ Medical) with 50% marks from recognized Board/CBSE	Based on PU-CET(UG) Academics :25% PU-CET(UG):75%
M.Sc. Physics under the framework of Honours School System *(Traditional course)*	40+6 NRI+2 Foreign National	2 Years	B.Sc. (Pass) or B.Sc. (Hons.) Physics examination of P.U. with Physics and Mathematics as elective subjects, or any other examination recognized as equivalent thereto with 50% marks OR B.Sc. (Hons.) in Physics under Choice Based Credit System (CBCS) with 50% marks OR B.Sc. (Hons.) in any subject under Choice-Based Credit System with 24 credits in Physics as Generic	Based on PU-CET(PG) Academics: 40% PU-CET(PG): 60% In addition, all students after passing B.Sc. (Hons.) in Physics of P.U. will continue for respective M.Sc. (Hons.) (Physics) under the framework of Honours

			Elective (GE) subject and Mathematics as Major/GE subject with 50% marks.	School System
M.Sc. Physics (Specialization in Electronics) under the framework of Honours School System *(Self-Finance course)*	20+3 NRI+1 Foreign National	2 Years	B.Sc. (Pass) or B.Sc. (Hons.) Physics examination of P.U. with Physics and Mathematics as elective subjects, or any other examination recognized as equivalent thereto with 50% marks OR B.Sc. (Hons.) in Physics under Choice-based credit system (CBCS) with 50% marks OR B.Sc. (Hons.) in any subject under Choice-based credit system with 24 credits in Physics as Generic Elective (GE) subject and Mathematics as Major/GE subject with 50% marks OR B.Sc. (Hons.) Electronics OR B.Tech / B.E. (Electronics / Electrical / Mechanical or equivalent) with 50% marks.	Based on P.U.CET(PG) Academics: 40% P.U-CET(PG): 60% In addition, all students after passing B.Sc. (Hons.) in Physics & Electronics of P.U. will continue for respective M.Sc. (Hons.) Physics & Electronics.
Post Graduate Diploma in Advance Scientific Computing *(Self-Finance course)*	20	1 year	Two years M.Sc. or B.E. / B. Tech in any discipline or four year B.Sc. in any science stream	Based on Merit
Ph.D.	Subject to availability	3-6 Years	See Ph.D. Prospectus 2025	

* 5% concession is admissible in eligibility marks to SC/ST/BC/PwD candidates.
The course fees of "*Self-financing courses***" are substantially higher than the "***Traditional courses***".
***Please carefully read the handbook of information (2024) for details regarding the total number of (convertible/non-convertible) available seats in various courses, the fees structure and the eligibility criteria for the various categories.
Important note for candidates:
Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**
a) The online submission of the CET (PG) form alone cannot be considered as the application for admission in M.Sc. courses. The candidates applying for admission in the M.Sc. courses have to separately fill the online application form for admission in the Physics Department apart from the CET (PG) online form.
b) The candidates applying for the B.Sc. courses should opt for B.Sc. (Physics) and B.Sc. Physics (Specialization in Electronics) under the framework of Honours School System in the online CET (UG) form.

B.Sc. (Hons. School) Physics as per NEP 2020 under the frame work of Honours School System

TITLES OF SYLLABI: Detailed syllabus available at https://puchd.ac.in/syllabus.php

SEMESTER-I (credits = 24, Marks = 600)		**SEMESTER-II (credits = 24, Marks = 600)**	
PHY-DSC-1	Mechanics (Credits = 4 T + 2 P) (Marks = 100 T + 50 P)	PHY-DSC-2	Electricity and Magnetism Credits (4 T + 2 P) / Marks (100 T +50 P)
PHY-SEC-1	Mathematical Physics & Computational Technique-1 Credits 3 Marks = 75 (50 T + 25 P)	PHY-SEC-2	Waves and Optics Credits = 3 Marks = 75 (50T + 25 P)
PHY-M-1	Mechanics (Credits = 4 T + 2 P) (Marks = 100 T + 50 P)	PHY-M-2	Electricity and Magnetism (Credits = 4T + 2P) Marks =150 (100T+50P)
PHY-IDC-1	Electricity & Magnetism Credits = 3 (2T+1P)/ Marks = 75 (50T + 25P)	PHY-IDC-2	Elements of Modern Physics Credits = 3, Marks 75 (50T+25P)
PHY-VAC-1	Renewable Energy & Energy Harvesting Credits = 2 (T) Marks = 50	PHY-VAC-2	Introduction to material Science Credits = 2 T, Marks 50
PHY-AEC-1	English / Environmental Science Credits = 2, Marks 50	PHY-AEC-3	PHY-AECC2 : English / Environmental Science Credits=2, Marks 50
PHY-AEC-2	MIL Credits=2, Marks 50	PHY-AEC-4	MIL Credit=2, Marks 50

Important Notes:
1. The minor and major subjects opted by a student will remain same for two consecutive semesters (i.e Sem I and II; Sem III and IV; Sem V and Sem VI and Sem VII and Sem VIII). The change in these subjects during a running session will not be allowed.
2. IDC shall be different from the DSC and Minor courses.
3. *The contact hours of AEC courses are doubled in order to meet the conditions of the syllabi for teaching and improving writing skills.
4. #Only those students will be allowed to do research who will have more than 75% CGPA till 6th semester. For Sem VII, a theory paper of 4 credits will be taught to the project holders on 'Research Methodology and basics of research'. The student will submit a report on the literature survey and synopsis of the proposed research work, that will fulfill 2 credits. For sem VIII, the student will be engaged in the research work and will submit a dissertiotion/project report (6 credits) for the same.
5. ** This paper is meant for those students who have less than 75% CGPA till 6th Semester and are not allowed to opt for research project.

6. See Nomenclature tables for codes
7. The codes for IDC and VAC courses will be assigned later.

Criteria for the award of certificate/degree

1. Students exiting the programme after securing 48 credits will be awarded UG certificate in the relevant discipline/subject provided they secure 4 credits in work based vocational courses offered during summer term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester
2. Students exiting the programme after securing 96 credits will be awarded UG diploma in the relevant discipline/subject provided they secure additional 4 credits in skill-based vocational courses offered during lastr year or second year summer term.
3. Students who want to undertake 3-year UG programme will be awarded UG degree in the relevant discipline/subject upon securing 144 credits. Subject to minimum credit requirement in respective subject.
4. Students will be awarded UG degree (Honours) with Research in the relevant discipline/subject upon securing 192 credits subject to minimum credit requirement in respective subject.

SEMESTER-III		SEMESTER-IV	
PHY-DSC-4	Elements of Modern Physics Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-5	Mathematical & Computational Physics-III Credits 4T+2P / Marks 150 (100T+50P)
PHY-DSC-5	Thermal Physics Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-6	Quantum Mechanics and Applications Credits 4T+2P / Marks 150 (100T+50P)
PHY-SEC-3	Mathematical and Computational Physics-II Credits = 3, Marks 75 (50T+25P)	PHY-DSC-7	Analog Systems and applications Credits = 4T+2P, Marks 150 (100T+50P)
PHY-IDC-3	Waves & Optics Credits = 3(2T+1P), Marks 75 (50T+25P)	PHY-M-4	Elements of Modern PHysics Credits = 4T+2P, Marks 150 (100T+50P)
PHY-M-3	Waves & Optics Credits = 4T+2P, Marks 150 (100T+50P)		

SEMESTER-V		SEMESTER-VI	
PHY-DSC-8	Electromagnetic Theory Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-11	Nuclear Physics Credits 4T+2P / Marks 150 (100T+50P)
PHY-DSC-9	Statistical Mechanics Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-12	Particle Physics Credits 4T+2P / Marks 150 (100T+50P)
PHY-SEC-10	Atomic and Molecular Physics Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-13	Solid State Physics Credits = 4T+2P, Marks 150 (100T+50P)
PHY-M-5	Analog Electronics and Applications Credits = (2T+2P), Marks 150 (100T+50P)	PHY-M-6	Basics of Quantum Mechanics Credits = 2T+2P, Marks 100 (50T+50P)
PHY-VAC-3	Basic Instrumentation Skill for Science Students Credits = 2T, Marks 50	Internship-Phy-INT-1	*Operational Procedure to be defined by physics department (Credits=2, Marks = 50)

SEMESTER-VII	SEMESTER-VIII

Note: Semester 7 and Semester 8 each has total credits of 24. Syllabus to be approved in 2026-27 Academic Session.

B.Sc. Physics (with Specialization in Electronics) as per NEP 2020 under the frame work of Honours School System

SEMESTER-I (credits = 24, Marks = 600)		SEMESTER-II (credits = 24, Marks = 600)	
PHY-DSC-1	Mechanics (Credits = 4 T + 2 P) (Marks = 100 T + 50 P)	PHY-DSC-2	Electricity and Magnetism Credits (4 T + 2 P) / Marks (100 T +50 P)
PHY-SEC-1	Mathematical Physics & Computational Technique-1 Credits 3 Marks = 75 (50 T + 25 P)	PHY-SEC-2	Waves and Optics Credits = 3 Marks = 75 (50T + 25 P)
PHY-M-1	Mechanics (Credits = 4 T + 2 P) (Marks = 100 T + 50 P)	PHY-M-2	Electricity and Magnetism (Credits = 4T + 2P) Marks =150 (100T+50P)
PHY-IDC-1	Electricity & Magnetism Credits = 3 (2T+1P) Marks = 75 (50T + 25P)	PHY-IDC-2	Elements of Modern Physics Credits = 3, Marks 75 (50T+25P)
PHY-VAC-1	Renewable Energy & Energy Harvesting Credits = 2 (T) Marks = 50	PHY-VAC-2	Introduction to material Science Credits = 2 T, Marks 50
PHY-AEC-1	English / Environmental Science Credits = 2, Marks 50	PHY-AEC-3	PHY-AECC2 : English / Environmental Science Credits=2, Marks 50
PHY-AEC-2	MIL Credits=2, Marks 50	PHY-AEC-4	MIL Credit=2, Marks 50

Important Notes:

1. The minor and major subjects opted by a student will remain same for two consecutive semesters (i.e Sem I and II; Sem III and IV; Sem V and Sem VI and Sem VII and Sem VIII). The change in these subjects during a running session will not be allowed.
2. IDC shall be different from the DSC and Minor courses.
3. *The contact hours of AEC courses are doubled in order to meet the conditions of the syllabi for teaching and improving writing skills.
4. #Only those students will be allowed to do research who will have more than 75% CGPA till 6th semester. For Sem VII, a theory paper of 4 credits will be taught to the project holders on 'Research Methodology and basics of research'. The

student will submit a report on the literature survey and synopsis of the proposed research work, that will fulfill 2 credits. For sem VIII, the student will be engaged in the research work and will submit a dissertiotion/project report (6 credits) for the same.

5. ** This paper is meant for those students who have less than 75% CGPA till 6th Semester and are not allowed to opt for research project.
6. See Nomenclature tables for codes
7. The codes for IDC and VAC courses will be assigned later.

Criteria for the award of certificate/degree

1. Students exiting the programme after securing 48 credits will be awarded UG certificate in the relevant discipline/subject provided they secure 4 credits in work based vocational courses offered during summer term or internship/apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester
2. Students exiting the programme after securing 96 credits will be awarded UG diploma in the relevant discipline/subject provided they secure additional 4 credits in skill-based vocational courses offered during lastr year or second year summer term.
3. Students who want to undertake 3-year UG programme will be awarded UG degree in the relevant discipline/subject upon securing 144 credits. Subject to minimum credit requirement in respective subject.
4. Students will be awarded UG degree (Honours) with Research in the relevant discipline/subject upon securing 192 credits subject to minimum credit requirement in respective subject.

SEMESTER-III (Credits =24, Marks 600)		SEMESTER-IV (Credits =24, Marks 600)	
PHYE-DSC-4	Elements of Modern Physics Credits 4T+2P / Marks 150 (100T+50P)	PHYE-DSC-5	Mathematical & Computational Physics-III Credits 4T+2P / Marks 150 (100T+50P)
PHYE-DSC-5	Thermal Physics Credits 4T+2P / Marks 150 (100T+50P)	PHYE-DSC-6	Quantum Mechanics and Applications Credits 4T+2P / Marks 150 (100T+50P)
PHYE-SEC-3	Mathematical and Computational Physics-II Credits = 3, Marks 75 (50T+25P)	PHYE-DSC-7	Analog Systems and Applications Credits = 4T+2P, Marks 150 (100T+50P)
PHYE-IDC-3	Waves & Optics Credits = 3(2T+1P), Marks 75 (50T+25P)	PHYE-M-4	Elements of Modern Physics Credits = 4T+2P, Marks 150 (100T+50P)
PHYE-M-3	Waves & Optics Credits = 4T+2P, Marks 150 (100T+50P)		

SEMESTER-V		SEMESTER-VI	
PHYE-DSC-8	Electromagnetic Theory Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-11	Nuclear Physics Credits 4T+2P / Marks 150 (100T+50P)
PHYE-DSC-9	Statistical Mechanics Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-12	Particle Physics Credits 4T+2P / Marks 150 (100T+50P)
PHYE-SEC-10	Atomic and Molecular Physics Credits 4T+2P / Marks 150 (100T+50P)	PHY-DSC-13	Solid State Physics Credits = 4T+2P, Marks 150 (100T+50P)
PHYE-M-5	Analog Electronics and Applications Credits = (2T+2P), Marks 150 (100T+50P)	PHY-M-6	Basics of Quantum Mechanics Credits = 2T+2P, Marks 100 (50T+50P)
PHY-VAC-3	Basic Instrumentation Skill for Science Students Credits = 2T, Marks 50	Internship-Phy-INT-1	*Operational Procedure to be defined by physics department (Credits=2, Marks = 50)

SEMESTER-VII	SEMESTER-VIII

Note: Semester 7 and Semester 8 each has total credits of 24. Syllabus to be approved in 2026-27 Academic Session.

M.Sc. Physics (under the framework of Honours School System)

SEMESTER-I		SEMESTER-II	
PHY MC 1	Mathematical Physics-I	PHY MC 6	Mathematical Physics-II
PHY MC 2	Classical Mechanics	PHY MC 7	Statistical Mechanics
PHY MC 3	Quantum Mechanics	PHY MC 8	Relativistic Quantum Mechanics and Quantum Field Theory
PHY MC 4	Electronics	PHY MC 9	Classical Electrodynamics
PHY MC 5	Physics Laboratory,	PHY MC 10	Physics Laboratory
PHY MC 5A	Practical Laboratory – I	PHY MC 10 A	Practical Laboratory II
PHY MC5B	Computer Laboratory-I	PHY MC 10 B	Computer Laboratory II
SEMESTER-III		**SEMESTER-IV**	
PHY MC 11	Condensed matter Physics I	PHY MC 15	Nuclear Physics-II
PHY MC 12	Nuclear Physics-I	PHY MC 16	Particle Physics-II
PHY MC 13	Particle Physics-I	PHY MC 17	Condensed Matter Physics – II
PHY MC 14	Physics Laboratory III		*Discipline Specific Elective Course 3
	*Discipline Specific Elective course 1		*Discipline Specific Elective Course 3
	*Discipline Specific Elective course 2		**Generic Elective Course 2
	**Generic Elective Course -1		

* Candidate choose any two of the listed Discipline specific elective courses

** Candidate may choose one of the Generic elective course (if available) in place of one of the Discipline Specific Elective Courses

*** DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES (Semesters III and IV)**

Choose any two DSE courses in semester III and IV. A DSE Course will be offered only if a minimum of 15 students opts for the same and depending of the faculty available.

A. Choose any two of the following in each of semesters III and IV: (teaching: 4hrs)

1. PHY-MDS1 Electrodynamics and General theory of Relativity
2. PHY-MDS2 Exp. Tech. in Nuclear & Particle Physics
3. PHY-MDS3 Exp. Tech. In Physics
4. PHY-MDS4 Space Science and Technology
5. PHY-MDS5 Astrophysics
6. PHY-MDS6 Electronics II
7. PHY-MDS7 Fiber Optics and Non-linear Optics
8. PHY-MDS8 Informatics
9. PHY-MDS9 Nonlinear Dynamics
10. PHY-MDS10 Particle Accelerator Physics
11. PHY-MDS11 Physics of Nano-materials
12. PHY-MDS12 Science of Renewable Energy Sources
13. PHY-MDS13 Advanced Statistical Mechanics
14. PHY-MDS14: Quantum Computing

B. One of the following will be offered in each of semester IV. Allotment will be on merit of results of Semesters I and II: (teaching 9hrs)

1. PHY-MDS15 Physics Laboratory-IV
2. PHY-MDS15 (i) Project work (Nuclear Physics) Experimental
3. PHY-MDS15 (ii) Project work (Particle Physics) Experimental
4. PHY-MDS15 (iii) Project work (Condensed Matter Physics) Experimental
5. PHY-MDS15 (iv) Project work (Atomic and Molecular Physics) Experimental
6. PHY-MDS15 (iv) Project work Electronics) Experimental
7. PHY-MDS15 (v) Project work (Nuclear Physics) Theory
8. PHY-MDS15 (vi) Project work (Particle Physics) Theory
9. PHY-MDS15 (vii) Project work (Condensed Matter Physics) Theory
10. PHY-MDS15 (viii) Project work (Atomic and Molecular Physics) Theory
11. PHY-MDS15 (ix) Project work (Astrophysics) Theory
12. PHY-MDS15 (x) Project work (Non-linear Physics) Theory

M.Sc. Physics (Specialization in Electronics) under the framework of Honours School System

SEMESTER-I		**SEMESTER-II**	
PHE MC 1	Mathematical Physics-I	PHE MC 6	Digital Electronics
PHE MC 2	Classical Mechanics	PHE MC 7	Statistical Mechanics
PHE MC 3	Quantum Mechanics	PHE MC 8	Relativistic Quantum Mechanics and Quantum Field Theory
PHE MC 4	Electronics-I	PHE MC 9	Classical Electrodynamics
PHE MC 5	Physics Laboratory-I,	PHE MC 10	Physics Laboratory-
PHE MC 5A	Practical Laboratory II	PHE MC 10 A	Practical Laboratory II
PHE MC 5B	Computer Laboratory II	PHE MC 10 B	Computer Laboratory II
SEMESTER-III		**SEMESTER-IV**	
PHE MC 11	Condensed Matter Physics – I	PHE MC 15	Electronics V – Advanced Microcontrollers and Microprocessors
PHE MC 12	Electronics III – Microprocessors and Microcontrollers	PHE MC 16	Electronics VI – Integrated and VLSI circuit design
PHE MC 13	Electronics IV – Electronics Instrumentation and Power Electronics	PHE MC 17	Electronics VII – Digital Signal processing
PHE MC 14	Physics Laboratory III and project work		*Discipline Specific Elective Course 3
	*Discipline Specific Elective Course 1		*Discipline Specific Elective Course 4
	*Discipline Specific Elective Course 2		**Generic Elective Course 2
	**Generic Elective Course 1		

* Candidate choose any two of the listed Discipline specific elective courses

** Candidate may choose one of the Generic elective course (if available) in place of one of the Discipline Specific Elective Courses

DISCIPLINE SPECIFIC ELECTIVE (DSE) COURSES (Semesters III and IV)

Choose any two DSE courses in semester III and IV. A DSE Course will be offered only if a minimum of 15 students opts for the same and depending on the faculty available.

A. Choose any two of the following in each of semesters III and IV:

1. PHE-MDS1 Nuclear Physics I
2. PHE-MDS2 Particle Physics I
3. PHE-MDS3 Exp. Tech. in Nuclear & Particle Physics
4. PHE-MDS4 Exp. Tech. in Atomic, Molecular &Solid State Physics
5. PHE-MDS5 Space Science and Technology
6. PHE-MDS6 Astrophysics
7. PHE-MDS7 Fiber Optics and Non-linear Optics
8. PHE-MDS8 Informatics

9. PHE-MDS 9 Nonlinear Dynamics
10. PHE-MDS10 Particle Accelerator Physics
11. PHE-MDS11 Physics of Nano-materials
12. PHE-MDS12 Science of Renewable Energy Sources
13. PHE-MDS13 Advanced Statistical Mechanics
14. PHY-MDS14: Quantum Computing

B. One of the following will be offered in each of semester IV. Allotment will be on merit of results of Semesters I and II:

1. PHE-MDS15 Physics Laboratory-IV
2. PHE-MDS15 (i) Project work (Electronics) Experimental
3. PHE-MDS15 (ii) Project work (Nuclear Physics) Experimental
4. PHE-MDS15 (iii) Project work (Particle Physics) Experimental
5. PHE-MDS15 (iv) Project work (Condensed Matter Physics) Experimental
6. PHE-MDS15 (v) Project work (Atomic and Molecular Physics) Experimental

PG Diploma in Advance Scientific Computing (2025 -2026)

SEMESTER I (Credits = 12, Marks = 300)		**SEMESTER II (Credits = 20, Marks = 500)**	
PHY-ACT-01	Introduction to Python Programming Credits - 4, Marks -100	PHY-ACT-04	Web Development with Python Credits -4 Marks -100
PHY-ACT-02	Advanced Python Programming Credits - 4, Marks -100	PHY-ACT-05	Data Science, Machine Learning, Deep Learning with Python Credits - 4, Marks - 100
PHY-ACT-03	Practical Applications, Minor Project Credits - 4, Marks -100	PHY-ACT-06	Major Project/Internship Credits - 12, Marks - 300

THRUST AREAS: Nuclear Physics (Experimental), Nuclear Physics (Theory), Particle Physics (Experimental), Particle Physics (Theory), Condensed Matter Physics (Experimental), Condensed Matter Physics (Theory). Other research areas include Astrophysics and Planetary Sciences (Space Sciences), Molecular Spectroscopy and Physics Education.

PLACEMENTS: The students pursue career in teaching and research after qualifying CSIR/UGC NET. Students qualify various entrance examination/interviews for pursuing research in premier institutes like IISc, TIFR, BARC, DRDO, ISRO, IMSc, RRI, PRL, IIT and IISER. Students also qualify GATE to pursue professional courses, like M.Tech, MCA, etc. Students also qualify GRE for further studies abroad. Significant number of students goes for Post-graduation at TIFR, IISc, IMSc, and IITs after qualifying B.Sc (Hons.) from PU. Students are also placed through PU Central Placement cell.

ALUMNI RELATIONS: The Physics Department has an association of its alumni. Annual meeting of the Physics Department Alumni is a regular feature and held in the month of December. It gives a platform to its alumni to share their experiences and also act as motivator for the students of the department.

DEPARTMENT OF STATISTICS

ABOUT THE DEPARTMENT

The Department of Statistics was established in 1964 as a part of Mathematics Department, and since 1974 it is an independent Department. The Department offers M.Sc., M.Phil and Ph.D. Courses in Statistics. The courses are designed to develop analytic and inferential aptitude of the students through theory and rigorous practical assignments along with exposure to practical training during the course of their study.

The Department has been receiving grants under Special Assistance Programme of UGC since April, 2004. It was a COSIST Department under another UGC scheme, and also a FIST Department under a scheme of the Department of Science and Technology of the Government of India.

It is among one of the active departments in the country carrying out research in the fields of Multiple Comparison Procedures, Reliability and Survival Analysis, Statistical Inference and Applied Statistics (Actuarial Statistics, Bio-Statistics, Econometrics and Income Distributions).

The Department has well equipped Computer laboratory with access to soft wares like MINITAB, SPSS, SYSTAT, R, S-PLUS and STATGRAPHICS. The students are given training for usage of R and SPSS for solving their practical assignments.

Eminent Statisticians from India and other countries keep visiting the Department frequently for delivering lectures and research collaboration. The faculty members attend National and International conferences. Interaction with neighbouring industries in the field of process control and with institutes like PGIMER, GMCH, NIPER, IMTECH and NITTER etc. for providing research consultancy to doctors and researchers is another highlight of the Department of Statistics. The faculty members also collaborate with sister departments for research and data analysis.

The Department of Statistics has an independent Library which has on shelf more than 5000 books and access to more than 20 journals.

FACULTY:

Designation	**Name**	**Field of Research Specialization**
Professors	Suresh K. Sharma	Biostatistics, Statistical Modeling, Ranking and selection and related estimation problems, Statistical Inference, Applied Statistics, Predictive Modeling and Bioinformatics
	Narinder Kumar **(Chairperson)**	Statistical Inference, Multiple Comparison Procedures and Applied Statistics
Assistant Professors	Manoj Kumar	Linear Models, Econometrics

	Anju Goyal	Ranking and Selection Methodology, Multiple Comparison Procedures, Statistical Inference, Sampling Techniques
System Administrator	Harminder Singh Deosi	Statistical Programming, Pattern Recognition

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
M.Sc.	34+5 NRI+2 Foreign National	2 Years	50% marks in BA/B.Sc (General or Honours) with Math/Stat as major subject of Panjab University or any other university recognized by Panjab University as equivalent thereto OR 50% marks in BA/B.Sc. (General or Honours) in any subject under CBCS with 24 credits in Mathematics/Statistics as Generic Elective (GE) (as per UGC/PU General Guidelines).	Based on P.U.CET (PG) Academics-50% PU CET (PG)-50%
Ph.D.	08	3-6 years	See Ph.D. Prospectus 2025	

*5% Concession is admissible in eligibility marks to SC/ST/BC/PWD candidates
***15% weightage will be given to those candidates who have done B.Sc. (Honours) only in the subject of Statistics.

TITLES OF SYLLABI: (Detailed syllabi available at https://puchd.ac.in/syllabus.php)

M.Sc. (Statistics)

SEMESTER-I		SEMESTER-II	
Stat-101	Linear Algebra	Stat-201	Numerical Techniques Using C (Theory 2/2, Practical 2/2)
Stat-102	Distribution Theory (Theory ¾ , Practical ¼)	Stat-202	Estimation and Testing of Hypotheses (Theory ¾, Practical ¼)
Stat-103	Statistical Methods with Packages (Theory ¾ Practical ¼)	Stat-203	Sampling Theory and Official Statistics (Theory ¾, Practical ¼)
Stat-104	Real Analysis	Stat-204	Complex Analysis
Stat-105	Course selected from module	Stat-205	Course selected from module
SEMESTER-III		**SEMESTER-IV**	
Stat-301	Nonparametric Inference (Theory ¾ , Practical ¼)	Stat-401	Multivariate Analysis (Theory ¾ , Practical ¼)
Stat-302	Statistical Process and Quality Control (Theory ¾ , Practical ¼)	Stat-402	Design and Analysis of Experiments (Theory ¾ , Practical ¼)
Stat-303	Linear Inference (Theory ¾ , Practical ¼)	Stat-403	Course selected from module /*Course selected from the sister Dept. under CBCS system
Stat-304	Course selected from module/*Course selected from the sister Dept. under CBCS system	Stat-404	Course selected from module / *Course selected from the sister Dept. under CBCS system
		Stat-405	Project (It will start from Sem.-III and will end in Sem.-IV)

Module		Module	
M-1	Actuarial Statistics	M -7	Operations Research (Theory 3/4, Practical 1/4)
M -2	Categorical Data Analysis	M -8	Reliability
M -3	Econometrics (Theory 3/4, Practical 1/4)	M -9	Simultaneous Inference
M -4	Economic Statistics	M-10	Statistical Simulation & Computational Using R (Theory 1/2, Practical 1/2)
M-5	Advanced Inference (Theory 3/4, Practical 1/4)	M-11	Stochastic Processes
M-6	Measure and Probability Theory	M-12	Survival Analysis

*** Math, Physics and Computer Science are the sister department for M.Sc.(Statistics) students under the CBCS System**

THRUST AREAS: Multiple Comparison Procedures, Reliability and Survival Analysis, Statistical Inference and Applied Statistics (Actuarial Statistics, Bio-Statistics, Econometrics and Income Distributions).

PLACEMENT: The placement cell of the Department plays a pivotal role in bridging the gap between academia and industry. It actively engages with top companies to facilitate internships and job opportunities for students, ensuring they gain valuable real-world experience. By organizing workshops, resume-building sessions, and mock interviews, the placement cell equips students with essential skills to succeed in the competitive job market. The placement cell maintains a comprehensive database of job openings, providing students with easy access to a variety of employment opportunities. Our students have been selected through Campus Recruitment Programme by noted companies such as Mercer, Xenon Stack, GE-Money, Bridgei2i, Paisa bazaar, Chegg India, IQVIA, Tata Consultancy Services (TCS), Empor Marcon, Gce, Xceedance, etc.

ALUMNI RELATIONS: The Alumni Association of the department named as **Statistics Students Alumni Reunion (SSAR)** has two hundred members. The efforts are on for inclusion of more members. Some alumni are highly placed as IAS, IPS Officers, research officers and analysts. They keep on providing guidance to the department.

CENTRE FOR MEDICAL PHYSICS

ABOUT THE CENTRE:

The Centre for Medical Physics was created in 2007, as joint venture of Panjab University and Post Graduate Institute of Medical Education & Research (PGIMER), Chandigarh, to utilize technology dependent specialties coming out of the new scientific innovations for the immediate need of the society, i.e. good health. Medical Physics is an established clinical specialty with wide ranging applications in Radiotherapy Planning and treatment. It can be defined as embracing all applications of

radioactive sources in the treatment of cancerous and non cancerous diseases. The students of Medical Physics discipline gain knowledge about different equipment's used in Radiotherapy planning and treatment and their quality assurances. Medical Physicists play a leading role in the areas of radiation safety and development of instrumentation/technology for use in radiation therapy and diagnostic radiology. There is an ample scope for research in the area of medical physics. Atomic Energy Regulatory Board (AERB) is the regulatory body for the M.Sc. Medical Physics Course. The syllabus of Medical Physics course has been designed in such a way that it shall make the student a competent Medical Physicist, Researcher, Radiation Safety Officer and Teacher after qualifying this course. In addition a certification for the Radiation Safety Officer (Level-III) from the Atomic Energy Regulatory Board (AERB) to the students is mandatory for them to be qualified in running the radiation facilities independently and handling of the treatment of patients.

FACULTY

Designation	**Name**	**Field of Research/Specialization**
Assistant Professor	Vivek Kumar **(Chairperson)**	Experimental Nuclear Physics and Medical Physics

COURSES OFFERED (SEMESTER SYSTEM):

Course	Seats*	Duration	Eligibility *	Criteria
M.Sc.	10+ 2 NRI	3 years	B.Sc. (Regular course) first class with Physics subject (studied for three years) and Mathematics as one of the subject (studied for minimum two years) from a recognized university. The candidates who studied B.Sc. through correspondence and open university stream are not eligible.	Based on PU CET (PG) Academics: 40% PU CET (PG): 60% and other admissible weightages.
Ph.D.	Subject to availability of seats	3-6 years	See Ph.D. Prospectus-2025	
* 5% Concession in admissible in eligibility marks to SC/ST/BC/PwD Candidates There are no additional seats as mentioned in Handbook of Information-2025				

TITLES OF SYLLABI: Detailed syllabi available online at https://puchd.ac.in/syllabus.php.

M.Sc. (Medical Physics)

SEMESTER I	**SEMESTER II**
Cytology and Fundamental Anatomy of Human Body	Basic Physiology and Cancer Biology
Radiation Detection and Measurements	Analog and Digital Electronics
Radiation Physics	Applied Mathematics, Biostatistics and Computer Applications
Radiation Biology	Bio-Medical Applications of Radioisotopes
SEMESTER III	**SEMESTER IV**
Radiotherapy Equipments and Quality Assurances	Brachytherapy Treatment Planning and Radiobiological Models
Medical Imaging Equipments and Quality Assurances	Clinical Dosimetry and Standardization
Basics of Radiation Dosimetry	Principles of Radiation Protection and Radiation Safety
Teletherapy Treatment Planning	Recent Advances in Radiotherapy and Special Techniques
Third Year Internship with Dissertation	

THRUST AREAS: External Beam radiotherapy, Brachytherapy, Radiobiology, Radiation Protection.

PLACEMENTS: The Centre for Medical Physics has 100% placements in the medical institutions/universities, accelerator / reactor laboratories. Our students have got placements in the medical institutions like PGIMER (Chandigarh), Govt. Medical College (Chandigarh), Institute of Liver and Biliary Sciences (New Delhi), IGMC (Shimla) and many other hospitals in the country. Students are also pursuing Ph.D. in India and Abroad.

ALUMNI RELATIONS: The alumni are invited to participate to celebrate International Day of Medical Physics every year on 7th November on the occasion of birthday of Nobel Laureate Marie Curie. It gives a platform to its alumni to share their experiences and also act as motivator for the students of the Centre.

DEPARTMENT OF MICROBIAL BIOTECHNOLOGY

ABOUT THE DEPARTMENT

The department was founded as 'Centre for Microbial Biotechnology' at Panjab University in July 2008 under the aegis of "Centre for Emerging Areas in Science and Technology", with the aim of catering to the needs of the Biotechnology industry. Over the years, the centre has evolved and transformed into a full-fledged independent department of the University. Currently, it is running from South Campus, Near Dental College, Sector- 25, Panjab University, Chandigarh. The department runs Master's and Doctoral degree program.

The M.Sc. program of the department has been designed in consultation with the experts from both academia and industries keeping in mind the requirements and challenges of the microbial biotechnology research and its translation into entrepreneurship. The M.Sc. course comprises of four semesters. First three semesters are dedicated to strengthen theoretical and practical foundation while the fourth semester is dedicated to a research project/dissertation and seminars. The Ph.D. program is open to students who would like to do research in relevant fields.

FACULTY

Designation	Name	Field of Research/Specialization
Professor	Rohit Sharma **(Chairperson)**	Industrial Microbiology & Biotechnology
Assistant Professor	Rachna Singh	Medical Microbiology

COURSE OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission criteria
M. Sc.	25+2NRI+1 Foreign National	2 Years	Bachelor's degree in any field of biological sciences including Biotechnology	Based on P.U. CET-(P.G.) Academics: 50% PU CET(PG): 50%
Ph.D.	Subject to availability	3-6 Years	See Ph.D. Prospectus 2025	
* 5% Concession in admissible in eligibility marks to SC/ST/BC/PwD Candidates				

TITLES OF SYLLABI: Detailed course curriculum available at https://puchd.ac.in/includes/syllabus/2023/20230728161434-m.scmicrobialbiotechnology2023-24.pdf?202411223102

SEMESTER-I		SEMESTER-II	
Paper-1	MBT-101 Microbial Biodiversity and Physiology	Paper-1	MBT-201 Medical Microbiology
Paper-2	MBT-102 Immunology and Immunotechnology	Paper-2	MBT-202 Molecular Biology
Paper-3	MBT-103 Genetics and Recombinant DNA Technology	Paper-3	MBT-203 Industrial Microbiology-1 (Health, Food, Enzymes)
Paper-4	MBT-104 Microbial Biochemistry and Enzymology	Paper-4	MBT-204 Bioinformatics & Biostatistics
Paper-5	MBT-105 Bioprocess Engineering	Paper-5	MBT-205 Intellectual Property Rights (IPR), Bioethics & Entrepreneurship
SEMESTER-III		**SEMESTER-IV**	
Paper-1	MBT-301 Advances in Microbial Biotechnology (Genomics, Proteomics, Metabolomics)	Paper-1	MBT-401 Seminar & Tutorials
Paper-2	MBT-302 Industrial Microbiology-II (Environment, Biofuels, Chemicals, Biomass, Protocols)	Paper-2	MBT-402 Dissertation
Paper-3	MBT-303 Bioinstruments and their Applications		
Paper-4	MBT-304 Microbial Identification, Diagnostics & Nanobiotechnology		
Paper-5	MBT-305 Tutorials		

THRUST AREAS: Extremozymes, Antimicrobials, Biofilms, Vaccine Development. Medically – relevant microbial interactions.
PLACEMENTS: The placement brochure is available on Department website. Many students have qualified National level entrance tests for enrolment in Ph.D. and are pursuing Ph.D. programme. Many students have joined corporate jobs; many students have established their own start-up companies.
ALUMNI RELATIONS: Alumni of the Department are invited regularly for interactions and talks. It gives a platform to the students to interact with them and learn from their experience and helps in building the alumni bonds.

CENTRE FOR NANOSCIENCE AND NANOTECHNOLOGY

ABOUT THE CENTRE
The Centre for Nanoscience & Nanotechnology (CNSNT) was established in 2005. Since then, the centre has been offering highly interdisciplinary degrees: M. Tech. in Nanoscience Nanotechnology (two years) and Ph. D. within a multidisciplinary domain. In 2024, the centre introduced a two-year M.Sc. in Renewable Energy and Smart Materials to address the increasing demand in the renewable energy sector. Additionally, CNSNT provides interdisciplinary courses (IDC) for undergraduate students and generic elective (G.E.) courses for postgraduates each semester, aligning with the NEP-2020 framework.

CNSNT provides hands-on training in advanced characterization techniques, both in-house and at nearby institutes and central facilities, including the Sophisticated Analytical Instrumentation Facility (SAIF) at Panjab University. Students gain practical experience in analyzing samples using state-of-the-art instruments relevant to nanoscience, such as Transmission Electron Microscope (TEM), Scanning Electron Microscope (SEM), X-ray Diffraction (XRD), and Atomic Force Microscope (AFM). Additionally, they work with advanced tools like Fourier Transform Infrared Spectroscope (FT-IR), UV-Visible Spectroscope, Hall Effect Measurement, Laser Desorption/Ionization Mass Spectrometer, Chemical Vapor Deposition, RF-Sputtering, Cyclic Voltammetry, Surface-Enhanced Raman Spectrometer (SERS), and I-V measurement systems. Beyond characterization, students engage in the fabrication of devices such as solar cells, memory devices, and sensors, as well as processes like thin-film deposition and the growth of 2D and 3D nanomaterials. Faculty members from various Science and Engineering departments of Panjab University actively contribute to CNSNT's teaching and research endeavors. The centre also hosts special invited lectures almost every month, featuring experts from premier Indian institutes like the Institute of Nano Science and Technology (Mohali), CSIO (Chandigarh), IISER (Mohali), and international institutions. CNSNT is committed to providing cutting-edge theoretical knowledge and hands-on training in nanoscience, nanotechnology, and renewable energy. Its goal is to establish world-class research and training infrastructure at the industry-academia interface, fostering innovation and excellence in the field.

CNSNT has established research collaborations through Memorandums of Understanding (MOUs) with the Institute of Nano Science and Technology (INST), Mohali, and Saitama University, Japan. These partnerships facilitate joint research, infrastructure sharing, and enhanced student participation in cutting-edge projects. Additionally, CNSNT is an active participant in the BRICS research network and the ANRF-PAIR network of universities.

CNSNT strives to emerge as a leading academic center for research and innovation by fostering proactive collaborations with premier institutes worldwide. The centre is deeply engaged in advanced research in nanoscience and renewable energy, with a strong focus on technological advancements in areas such as nanoelectronics, sensors, drug delivery, optoelectronics, energy storage and harvesting - especially solar energy harvesting, environmental solutions, and healthcare. To bridge the gap between academia and industry, CNSNT promotes industry participation by developing state-of-the-art research infrastructure, supporting time-sensitive project execution, encouraging entrepreneurship, and nurturing skilled professionals in allied domains.

THE VISION

To impart high-quality education and conducting cutting-edge research in the emerging interdisciplinary areas of Nanoscience & Nanotechnology and Renewable Energy.

THE MISSION

- To excel in research and innovation for disseminating new knowledge and technological know-how.
- To create future industry-ready skilled manpower.
- Pedagogy development on cutting-edge areas of Nanoscience and Renewable Energy.
- Creation of an industry-friendly research environment and state-of-the-art infrastructure.

FACULTY

Designation	Name	Field of Research Specialization
Professor	Sunil Kumar Arora	Synthes and characterization of novelnano-materials, Nanomagnetism, Nano-electronics, Spin-electronics, Epitaxial growth using MBE and sputtering, Nanofabrication, Engineering nanoscale defects, 2D layered materials (graphen and transition metal dichalcogenides) synthesis and hetero-interfaces devices
Assistant Professors	Jadab Sharma **(Chairperson)**	Synthesis of new-age (nano) materials, assemblies and fabrication of devices based on such materials for their applications, especially in nano-plasmonics, photonics and solar energy harvesting
UGC-FRP	Bharat Bajaj *(On study leave)*	Fabrication of Nanomaterials, Electrospinning of carbon nanofiber, functionalized carbon nanofiber, absorption of environmental pollutants, waste water treatment and sensing applications.
	Akash Katoch	Interface Engineering of Nanomaterials (metal oxide nanowire, nanofibers, thin films, 2D metal chalcogenides), Chemiresistive gas sensor, Sensor device fabrication, Heavy metal ion detection and energy storage devices
Assistant professor (Temporary)	Richa Rastogi Thakur	Nano material based biosensors for healthcare applications

COURSES OFFERED (SEMESTER SYSTEM):

Course	Seats	Duration	Eligibility*	Admission criteria
M. Sc. in Renewable Energy and Smart Materials (RESM)	25 (3 NRI+ 6 Foreign Nationals)	2 Years	B.Sc. (03 years) examination from any recognized national and international (foreign) university or any other examination recognized by the competent authority as equivalent thereto with Physics or Chemistry or Applied Sciences (mathematics as subsidiary subject is mandatory for applied sciences) with minimum of 55 % marks in aggregate. B. Sc. (after completion of first 03 years) examination from any recognized national and international (foreign) university or any other examination recognized by the competent authority as equivalent thereto as per multiple entry exit criteria for students enrolled under 04- year bachelor degree program with Physics or Chemistry or Applied Sciences (mathematics as subsidiary subject is mandatory for applied sciences) with minimum of 55 % marks in aggregate.	Based on P.U. CET-(P.G.) Academics: 50% PU CET(PG): 50%
M.Tech (Nanoscience & Nanotechnology)	15+3 NRI + 1 Foreign National	2 years	Must have qualified GATE Bachelor's degree (4 years after 10+2) in Engineering / Technology i.e. B.E. / B.Tech (in any branch) OR degree in Physics / Chemistry / Biophysics / Biochemistry / Microbiology / Biotechnology / Nano Science / Electronics with minimum 50% marks in the aggregate	Merit based on GATE Score and if the seats are not completely filled, candidates without GATE will be allowed on the basis of Academics merit.

Ph.D.	As per availability	3-5 years	See PU Ph.D prospectus 2025	
*5% Concession is admissible in eligibility requirement to SC/ST/BC/PwD candidates				

TITLE OF SYLLABI : Detailed course curriculum is available at https://nsnt.puchd.ac.in

M.Sc. (Renewable Energy and Smart Materials)

SEMESTER-I		SEMESTER-II	
RESM-101	Renewable energy and climate linked policies.	RESM-201	Biomass conversion to biofuels: bio-ethanol & biodiesel production
RESM-102	Thermodynamics of energy conversions and systems.	RESM-202	Hydrogen: production, storage & applications
RESM-103	Introduction to smart materials & smart systems.	RESM-203	Materials for energy applications and fabrication of energy devices
RESM-104	Laboratory-I	RESM-204	Laboratory-II (Research project based experiments)
RESM-105 (Department Specific Elective Courses)	RESM-105 EP-1 (Physics): Introduction to quantum mechanics RESM-105 EC-2 (Chemistry): Transition metal chemistry RESM-105 ER-3 (General): Risk management: mitigation of CO_2 emission RESM-105 ER-4 (General): Fundamentals of numerical methods and computer programming	RESM-205 (Department Specific Elective Courses)	RESM-205 EP-1 (Physics): Classical & statistical mechanics RESM-205 EC-2 (Chemistry): Structure reactivity and reaction mechanism RESM-205 ER-3 (General): Conversion of waste into energy RESM-205 ER-4 (General): Wind and tidal energy technology
SEMESTER-III		**SEMESTER-IV**	
RESM-301	Photovoltaics and solar thermal devices: materials and fabrication	RESM-401	Internship/Project work and thesis submission
RESM-302	Batteries and fuel cells: principles, materials and technology	RESM-402	Seminar presentation & viva-voce examination
RESM-303	Third generation solar cells		
RESM-304	Characterization of Materials		
RESM-305	Laboratory-III (Research project based experiments)		
RESM-306 (Department Specific Elective Courses)	RESM-306 EP-1 (Physics): Physics of solid state matter RESM-306 EC-2 (Chemistry): Chemistry of inorganic materials RESM-306 ER-3 (General): Modelling of smart materials and energy systems: design and optimization RESM-306 ER-4 (General): Smart cities: concept, planning, and requirements		

M.Tech (Nanoscience and Nanotechnology)

SEMESTER-I		SEMESTER-II	
MNT6101	Foundation of nanoscience and nanotechnology	MNT6201	Nanomaterials based devices: MEMS and NEMS
MNT6102	Elective Courses E1: Introduction to bio nanotechnology E2: Materials and methods of nanocoatings E3: Societal impacts of nanotechnology	MNT6202	Elective Courses E1: Advancement in bio nanotechnology E2: Theoretical studies in nanoscience: scientific computation and simulation E3: Nanocomposites – fabrication, properties and applications
MNT6103	Chemistry of nanomaterials	MNT6203	Physics of nanomaterials
MNT6104	Synthesis of nanomaterials and fabrication techniques	MNT6204	Characterization techniques for nanomaterials
MNT6105	Scientific computation and simulation in nanoscience and nanotechnology	MNT6205	Carbon nanomaterials: synthesis, functionalization and applications
MNT6106	Laboratory-I	MNT6206	Laboratory II
G.E.	Open		
SEMESTER-III		**SEMESTER-IV**	
MNT 7101	Soft materials and supramolecular molecular devices	MNT 7201	Internship/project work and thesis submission
MNT 7102	Elective Courses: E1: Thin film technology for nanomaterials and devices	MNT 7202	Seminar presentation & viva-voce examination

	E:2 Nanomaterials and membrane science & technology E3: Nanoscale magnetic materials and devices		
MNT 7103	Industrial trend and applications of nanomaterials		
MNT 7104	Laboratory-III		
MNT 7105	Project/Internship proposal presentation		
G. E.	Open		

THRUST AREAS : Synthesis and fabrication nanomaterials, nanomaterial in sensors, healthcare, environment remedial applications, interface engineering of nanomaterials, solar energy harvesting (third generation solar cells), optoelectronics (nano-plasmonics and photonics), materials for energy applications (hydrogen generation, capacitor & battery).

CENTRE FOR NUCLEAR MEDICINE

ABOUT THE CENTRE

Nuclear medicine is a medical specialty concerned with the use of safe and small amounts of radioactive materials for diagnostic, therapeutic, and research purposes. More specifically, nuclear medicine is a part of molecular imaging because it produces images which reflect biological processes that take place at the cellular and subcellular levels. Though there are many diagnostic techniques currently available, nuclear medicine uniquely provides information about both the structure and function of virtually every major organ system within the body. It is this ability to characterize and quantify physiologic function which separates nuclear medicine from other imaging modalities, such as x-ray, MRI and ultrasound. A typical nuclear medicine study involves the administration of a radionuclide into the body in order to obtain images of the organs, to perform various body function studies and to treat diseases.

Nuclear medicine experts designated as Nuclear Medicine Physicists are highly skilled individuals and their responsibilities include performing in vivo, radiation safety and quality control procedures. Other responsibilities which include operating the cameras that create images including patient positioning and processing the data for research purposes. The discipline of nuclear medicine also produces dedicated scientists who develop radiopharmaceuticals/radioisotopes for the imaging of organs and therapies.

Vision and mission of the Centre

Nuclear medicine is an emerging area in medicine and is growing at a fast pace in India and there is an urgent need for trained human resource as medical physicists and radiation safety officers for running nuclear medicine departments and industries that use radioisotopes. Therefore, the centre shall provide trained manpower to cater the needs of various hospitals, medical colleges/Institutes and Industry in India and abroad. The mission of the M.Sc. Nuclear Medicine Program at Panjab University is to provide the students an opportunity to achieve expertise both in diagnostic imaging and the rapeutics with clinical hands on experience in Nuclear Medicine. The Centre imparts a quality education leading to the award of degree in Masters of Science in Nuclear Medicine and train the students for national/international eligibility test to be designated as certified Radiation safety officers and medical physicists.

Unique features of the course

Panjab University is the second institution after AIIMS to start M.Sc. Course in Nuclear Medicine. The students shall get ample opportunity for hands on clinical training in the 2nd year of the course in Nuclear Medicine Clinical setup.

FACULTY

Designation	Name	Field of Research Specialization
Assistant Professor	Dr. Vijayta D. Chadha **(Chairperson)**	Radiation biology and Radio pharmacy

COURSES OFFERED (SEMESTER SYSTEM):

Course	Seats	Duration	Eligibility*	Admission criteria
M.Sc. Nuclear Medicine	10+2 NRI	2 years	Minimum qualification for admission to M.Sc. 1st year in Nuclear Medicine shall be B.Sc. degree with at least 50% marks in Nuclear Medicine **or** Biophysics from a recognized university **OR** B.Sc. degree from a recognized university **with** Physics and Chemistry as core subjects (Non-Medical stream) **OR** Chemistry and Zoology / Biotechnology as core subjects (Medical stream). Candidates with B.Sc. degree in X-Ray/Medical Technology, B.Sc. through correspondence and open University stream are not eligible.	Based on PU-CET (PG) Academics: 50% PU-CET (PG) 50%
Ph.D	Subject to availability	3-6 years	See Ph.D Prospectus 2025	
*5% Concession is admissible in eligibility requirement to SC/ST/BC/PWD candidates There are no additional seats as mentioned in Handbook of Information – 2025				

TITLES OF SYLLABI: Detailed course curriculum is available at https://nuclearmedicine.puchd.ac.in

M.Sc.

SEMESTER-I		SEMESTER-II	
Paper-1	Human Anatomy and Cell physiology	Paper-1	Human Physiology, Immunology and Cancer Biology
Paper-2	Radiation Physics and Applied Mathematics	Paper-2	Electronics, Biomedical instrumentation and

			Techniques
Paper-3	Radiation Biology and Chemistry	Paper-3	Biostatistics and Computer applications in Nuclear Medicine
Paper-4	Radiation Detection and Measurements	Paper-4	Medical Applications of Radioisotopes
SEMESTER-III		**SEMESTER-IV**	
Paper-1	Nuclear Medicine Instrumentation	Paper-1	Medical Cyclotron, PET/CT & Allied Instrumentation
Paper-2	Radiological Protection & Dosimetry-I	Paper-2	Radiological Protection & Dosimetry-II
Paper-3	Principles and practice of Radio pharmacy	Paper-3	Nuclear Medicine Imaging & Radionuclide Therapy
Paper-4	Nuclear Medicine Imaging and Non-Imaging Procedures	Paper-4	Recent advances in Nuclear Medicine.

THRUST AREAS: To educate individuals to become high quality nuclear medicine technologists and Radiation safety officers. To provide a complete, up-to-date competency-based curriculum. To fulfill the need for nuclear medicine technologists in the local and regional communities.

PLACEMENTS: 100% placement of students as Medical physicists and Radiological safety Officers with a starting package of 5-7 lakhs per annum.

ALUMNI RELATIONS: Centre for Nuclear Medicine got the first Batch of M.Sc. Nuclear Medicine passed out in 2009. Till now, 15 Batches have passed out after completion of M.Sc. degree. The Alumni are working with nation renowned institutes/hospital viz PGIMER, Chandigarh; AIIMS, New Delhi; AIIMS, Raipur; AIIMS, Rishikesh; CMC, Ludhiana; Oswal, Ludhiana; Tata memorial hospital, Mumbai; Rajiv Gandhi Cancer speciality hospital, Delhi; Baba Farid University, Faridkot; Safdarjung hospital, Delhi; Max hospital, Chandigarh; Forties Hospital, Mohali; Kailash Cancer Hospital And Research Centre, Gujarat etc.

CENTRE FOR PUBLIC HEALTH

ABOUT THE CENTRE

Panjab University is running Master in Public Health since year 2007 under UIEST to cater with the emerging needs of the country to produce trained manpower for handling public health issues. Public Health is emerging as one of the most significant areas as health of the citizen is important resource and asset of a nation. Major advances in improvement of health over the next decade will be through the development and application of prevention programmes. Health service delivery systems are undergoing rapid changes. It is important to prepare a task force of experts in domain of public health. This course is being offered to prepare Public Health professional and to strengthen capacity of various Health Organization.

FACULTY

Designation	**Name**	**Field of Research Specialization**
Assistant Professor	Manoj Kumar **(Chairperson)**	Public Health
Guest Faculty	Er. Navreen Kaur	Computer Engineering

Course	**Seats**	**Duration**	**Eligibility***	**Admission criteria**
Master in Public Health	17+2 NRI +5 in service** + 1 Foreign National	2 years	MBBS / BDS / BAMS / BHMS / B.VSC / B.Sc. Nursing, Life sciences / Biological Sciences with at least 50% marks from recognized University / Institute.	Based on PU–CET (PG) Academics : 50% PU-CET (PG) : 50%
Ph.D	Subject to availability	3-6 years	See Ph.D Prospectus 2025	

*5% Concession is admissible in eligibility requirement to SC/ST/BC/PWD candidates

** Only regular employees in Government organization and having at least one year service experience to be admitted under "in-service" category. The candidate has to produce "No Objection Certificate" at the time of admission. In case of non-availability of in-service candidates the seats will be converted into General Category.

TITLES OF SYLLABI: Detailed syllabus available at https://puchd.ac.in/syllabus.php

Master in Public Health

SEMESTER-I		**SEMESTER-II**	
MPH 101	Basic concepts in Public Health	MPH 201	Biostatistics
MPH 102	Basic Epidemiology-I	MPH 202	Occupational Health and Safety Management
MPH 103	Maternal and Child Health	MPH 203	Basic Computing and Research methodology
MPH 104	Survey Methods	MPH 204	Disaster and conflict management in Public Health
MPH 105	**Open Electives** – Environment Health OR Environmental Field Epidemiology Project / Action Research	MPH 205	**Open Electives**- Field Epidemiology Project / Action Research for special groups OR Global Health
MPH 106	Basic Concepts in Social Sciences	MPH 206	Seminar / Mentor Allotment for dissertation
MPH-107	Seminar / Journal Club		
SEMESTER-III		**SEMESTER-IV**	
MPH 301	Basic Epidemiology-II	MPH 401	Public Health Law, Ethics and Human Rights
MPH 302	Health Informatics	MPH 402	Health Promotion
MPH 303	Public Health Program	MPH 403	Health Economics and Service Planning
MPH 304	Synopsis for Dissertation	MPH 404	Internship* / Final submission of Dissertation
MPH 305	Community outreach activity		

W* (Workshop)

Total Credits = 100	Semester 1 = 26	Total marks = 2500	Semester 1 = 650
	Semester 2 = 26		Semester 2 = 650
	Semester 3 = 24		Semester 3 = 600
	Semester 4 = 24		Semester 4 = 600

OPEN ELECTIVE

Environmental Health
Environmental Field Epidemiology Project / Action Research
Global Health

THRUST AREAS: Public Health, Global Health, Occupational Health, Health Service, Health Promotions Health Education, Epidemiology, Environmental Health and Nutrition.

PLACEMENTS: Off Campus Placement.

ALUMNI RELATIONS: 5th Global Alumni meet was held on 21st December, 2024 at Centre for Public Health. The event, spearheaded by Dr. Manoj Kumar, Chairperson of the Centre for Public Health, stood out for its thoughtful execution and meaningful interactions. Prominent alumni, including Dr. Sanjay Jagota CMO Hamirpur, Himachal Pradesh, Dr. Ajay Kumar Attri (Program officers, Una, Himachal Pradesh), Dr. Neenu Gandhi (MO, Ambala Cantt), and Dr. Parvinder Singh (District Health Officer and Block Medical Officer, Bilaspur, Himachal Pradesh), returned to their alma mater to inspire the current batches. Through heartfelt conversations, they shared memories and insights from their professional journeys, encouraging students to embrace curiosity take calculated risks, and seize even the smallest opportunities.

CENTRE FOR STEM CELL TISSUE ENGINEERING & BIOMEDICAL EXCELLENCE

ABOUT THE CENTRE

The centre offers two years (four semesters) M.Sc. degree course in Stem Cell & Tissue Engineering. This course was started in 2008 and is intended for graduate students interested in pursuing their careers in the field of stem cell biology. This course will cover the most current knowledge of the principles of stem cell biology, tissue engineering, developmental biology, molecular signaling, genomic, epigenomic & non-genomic regulatory pathways together with immunology, genetics, human anatomy & physiology.

The course curriculum has been designed to provide strong emphasis on experimental training to the students. During the first three semesters students will be imparted strong theoretical and practical trainings. In the fourth semester students will be trained to handle the research work related to the field. They will also be trained to write the projects, make presentations in the form of seminars and journal clubs along with the training in the Research methodologies. A continuous evaluation will be followed.

FACULTY

Designation	Name	Field of Research Specialization
Professor	Sanjeev Puri	Renal Tissue Engineering & Molecular Biology of Renal Pathophysiology
Assistant Professor	Seemha Rai **(Chairperson)**	Cancer Stem Cells
Assistant Professor	Anuj Gupta **(Ad-hoc)**	Biochemistry & Cell and Molecular Biology

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission criteria
M.Sc.	15+ 2 NRI +1 Foreign National	2 Years	Students securing 50% marks in B.Sc. General / Life Sciences / Basic Medical Science / Engineering (Biotech / Biomedical) / Pharmaceutical Biotechnology / Dentistry / Medical Laboratory Technology are eligible to apply for the admission to M.Sc. in Stem Cell & Tissue Engineering.	Based on PU–CET (PG) Academics : 50% PU-CET (PG): 50%
Ph.D.	Subject to availability of seats	3-6 Years	Students securing 50% marks in M.Sc. Stem Cell & Tissue Engineering / Biotechnology Biochemistry are eligible to apply for the admission to PhD in Stem Cell & Tissue Engineering.	See Ph.D. Prospectus 2025
* 5% Concession in admissible in eligibility marks to SC/ST/BC/PWD Candidates				

TITLE OF SYLLABI: Detailed syllabus available at https://puchd.ac.in/syllabus.php

M.Sc.

SEMESTER-I		SEMESTER-II	
Paper-1	Human Anatomy and Physiology	Paper-6	Histology
Paper-2	Cell Culture & Cell Technologies	Paper-7	Immunology & Immunogenetics
Paper-3	Genomics & Proteomics-I	Paper-8	Stem Cell Biology-I
Paper-4	Cell and Molecular Biology	Paper-9	Genomics & Proteomics-II
Paper-5	Cell and Molecular Techniques	Paper-10	Tissue Engineering-I Biomaterials
SEMESTER-III		**SEMESTER-IV**	
Paper-11	Developmental Biology	Paper-16	Stem Cell Research Methodology
Paper-12	Stem Cell Signal Transduction & Epigenetic Mechanisms	Paper-17	Biostatistics and Computational Approach
Paper-13	Stem Cell Biology-II	Paper-18	Journal Club / Seminar
Paper-14	Stem Cell Translational & Ethics	Paper-19	Thesis / Project reports; *Viva voce* Examination
Paper-15	Xenoantigens and Stem Cells		

THRUST AREAS: Renal Tissue Engineering & Molecular Biology of Renal Pathophysiology, cancer stem cell, stem cell differentiation and niche, toxicologic studies and kinetics.

PLACEMENTS: Students are placed in academia as well as industry. In academia, students are pursuing higher studies at prestigious institutes worldwide *viz.* Rosewell Cancer Institute, State University of New York, Buffalo, USA; Duke University School of Medicine; Univ. of Manchester, UK; Monash Univ. Australia; ICGEB, New Delhi etc. and at industry level students are currently placed at various companies *viz.* Parexel International; Cordlife India, GlaxoSmithKline; MDR Labs *etc*.

ALUMNI RELATIONS: Centre for Stem Cell and Tissue Engineering got the first Batch of M.Sc. (Stem Cell and Tissue Engineering) passed out in 2010. Till now, Fifteen batches have been passed out and one is currently pursuing their M.Sc degree and therefore the Centre has already made an Alumni Association of Stem Cell & Tissue Engineering and a Stem Cell Society. The Centre is keeping an updated information / record about the Alumni placements and is planning to organize Alumni meets / events regular.

CENTRE FOR SYSTEMS BIOLOGY & BIOINFORMATICS

ABOUT THE CENTRE

The Centre for Systems Biology & Bioinformatics was established at Panjab University, Chandigarh in 2007. The emerging field of computational and systems biology represents an integration of concepts and ideas from the biological sciences, engineering disciplines, and computer science. Systems modelling and design are well established in engineering disciplines but are relatively new to biology. Advances in computational and systems biology require multidisciplinary teams with skill in applying principles and tools from engineering and computer science to solve problems in biology and medicine. The curriculum of the 2 year M.Sc. course of Systems Biology and Bioinformatics has a strong emphasis on foundational material to encourage students to become creators of future tools and technologies, rather than merely practitioners of current approaches. Areas of active research in this field include computational biology and bioinformatics, gene and protein networks, molecular biophysics, instrumentation engineering, cell and tissue engineering, predictive toxicology and metabolic engineering, imaging and image informatics, nanobiology and Microsystems, biological design and synthetic biology, neurosystems biology and cancer biology. The Centre has also started Ph.D. Programme and at present five students are pursuing their Ph.Ds.

FACULTY

Designation	Name	Field of Research Specialization
Associate Professor	Veena Puri **(Chairperson)**	Microarray analysis and A-I based network biology, Interactions Biomarker Discovery
Assistant Professors	Tammanna R. Sahrawat	Systems Network Biology, Drug Polypharmacology, ML based Network Biology
	Ashok Kumar	Structural Bioinformatics, Genomics Network Biology, Molecular Modelling and Dynamics Approach, Natural language Processing and Big Data Analysis

COURSES OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
M.Sc.	13+2NRI+ 1 Foreign National	2 Years	Bachelor's of degree Science (General or Hons.) with Bioinformatics, Biotechnology, Biochemistry, Biology, Botany, Chemistry, Electronics, Genetics, Life Science, Mathematics, Mathematics & Computing, Microbiology, Physics, Statistics, Zoology, Agriculture, Computer Science, Engineering, Medicine, Pharmacy and Veterinary Science with at least 50% Marks	Based on PU- CET (PG) Academics : 50% PU-CET(PG) : 50%
*5% Concession in admissible in eligibility marks to SC/ST/BC/PWD Candidates				

TITLES OF SYLLABI: The detailed syllabus is available at https://puchd.ac.in/syllabus.php

SEMESTER- I		SEMESTER-II	
Paper Code	**Title**	**Paper Code**	**Title**
MSBB 101	Biophysical Chemistry of Biomacromolecules	MSBB 201	Spectroscopic Methods in Structural Biology
MSBB 102	Metabolomics and Metabolic Pathway Engineering	MSBB 202	Genomics and recombinant DNA technology
MSBB 103	Basic Concepts in Mathematics (For students with Biology Background)	MSBB 203	Computational Methods of Sequence Analysis and Biomacromolecular informatics
MSBB 104	Basic Concepts in Biology (For students with Non-Biology Background)	MSBB 204	Programming in C++ and PERL
MSBB 105	Biostatistics	Practical 210	Based on MSBB 201
MSBB 106	Data Management and Biological Databases	Practical 220	Based on MSBB 202
Practical 110	Based on MSBB 101	Practical 230	Based on MSBB 203
Practical 120	Based on MSBB 102	Practical 240	Based on MSBB 204
Practical 150	Based on MSBB 105	Seminar	(i) (a) Data bases and Bioinformatics tools on the Internet (b) Modeling tools visualization and genome matrix (c)Solving of structures using different softwares (ii) Journal Club

SEMESTER-III		SEMESTER-IV	
MSBB 301	Computation Cell Biology I	MSBB 401	Computation Cell Biology II
MSBB 302	Systems Biology	MSBB 402	Chemoinformatics
MSBB 303	Proteomics and Systems Biology	MSBB 403	Advance Bioinformatics and Nanotechnology
MSBB 304	Molecular Modeling and Computer aided Drug Design		
Practical 310	Based on MSBB 301		
Practical 320	Based on MSBB 302		Project Work and Oral Presentation
Practical 330	Based on MSBB 303		
Practical 340	Based on MSBB 304		
Seminar	On (i) (a) AMBER & Molecular dynamics (b) E-cell (c) Py Bio-S (d) System Biology benchworks (ii) Journal Club		

THRUST AREAS: Bioinformatics (ii) Cancer Biology and Genomics (iii) Systems Network Biology (iv) Microarray analysis (v) NLP and Data analytics (vi) Structural Biology (vii) Molecular modeling.

PLACEMENTS: The Centre has its own placement cell and we approach different companies for placements of our students. PG students get placements in Clinical Research Organizations and Pharmaceutical companies like Parexel, Panacea Biotech etc. as well as pursuing Ph.D. programme from the Centre as well as from the National Institutes like IMTECH, PGIMER, NIPER, IIT, IISER & IIIT followed by post doc. and Faculty positions in National and International Institutes.

ALUMNI RELATIONS: The Centre of Systems Biology & Bioinformatics was established at Panjab University, Chandigarh in 2007 has a strong alumni base. We have regular interactions amongst the present batches and alumni.

DEPARTMENT OF ZOOLOGY

ABOUT THE DEPARTMENT

The Department of Zoology was established at Lahore (now in Pakistan) in 1906 and was later shifted to Government College, Hoshiarpur (Punjab) after partition of the country and then to its present campus at Chandigarh in July, 1960. The Department provides excellent opportunities to students by imparting training in Zoology through UG Certificate/Diploma/Degree, B.Sc. (Honours), B.Sc. (Honours with Research), M.Sc. (Under the Framework of Honours School System) and Ph.D. Programmes. At present, the Department is running UG and PG Programmes according to Choice Based Credit System (CBCS). From the academic session 2023-24, National Education Policy 2020 has been implemented for UG classes. The Department is running three skill enhancement courses in Vermiculture & Vermicompost, Apiculture and Aquarium Fish Keeping to enhance the self-employment potential of students in Applied Zoology. The Department also arranges educational tours to National Parks/ Biodiversity Parks/Zoological Parks/Sanctuaries/Marine Destinations/Sewage Treatment Plants/Fish Farms/Wetlands etc. every year for students in order to acquaint them with importance of animal diversity and environment.

For strengthening its teaching and research, Department has received grants from various national agencies. The Department was awarded Centre of Advanced Studies (CAS-I) by the UGC from April 2007 to April 2012 under the thrust area of Biodiversity: Cell and Molecular Biology with a grant of Rs. 78.25 lacs. The UGC also awarded CAS-II to the Department in 2015 for five years with a financial assistance of Rs. 161.55 lacs and two research fellows. The Department was also recognized by the Department of Science and Technology in 2013 under its FIST programme and was sanctioned a grant of Rs. 1.10 crores for 5 years. With this grant, a Flow Cytometry Laboratory was established with the most sophisticated LSR Fortessa Cell Analyzer. At present, the Department is running research projects worth Rs.~1.2 crore, funded by different agencies like CCRH, DST (SERB), DST (UT Chandigarh), DBT and UGC. The Department has also received a grant of Rs. 20 Lacs under Rashtriya Uchchatar Shiksha Abhiyan (RUSA) for developing laboratories of skill enhancement courses in Apiculture and Fish Keeping.

Along with teaching, the department is keeping pace with the recent research trends in the field. Some of the major areas of research of the faculty members are Parasitology, Parasitic therapeutics, Cytogenetics, Human genetics, Stem cell therapy, Molecular biology, Immunology, Environmental Toxicology, Systematic Entomology, Applied Entomology, Molecular Genomics, Reproductive Physiology, Aquatic Biology, Wetland Ecology, Fish and Fisheries, Zebrafish Neurotoxicology and Fish Biomaterials. For assisting the students with their research work, Department has central sophisticated instrumentation laboratories, which are well equipped with scientific instruments such as thermal cyclers, different types of gel electrophoresis, different types of microscopes, gel documentation system, spectrophotometers, deep freezers and many minor equipments.

The Department also has a well-equipped library, which is stocked with highly informative text and reference books in addition to national and international journals. The Department houses two state of the art museums having more than 5500 specimens covering the whole Animal Kingdom. The museum has an extensive collection of skeletons, mounted animals and specimens preserved in formalin, models and fossils. The museum is well curated with stock registers wherein the museum collections are listed and classified under the scheduled and non-scheduled categories as per the Wildlife Protection Act, 1972.

Besides running academic curriculum based teaching, the Department has been organizing, national conferences, seminars, symposia, workshops and lectures of eminent academicians for students of this as well as of other institutes. Department also has a society 'Panjab University Zoological Society' having faculty and students as its members. This society organizes extra-curricular activities from time to time for overall development of the students.

FACULTY

Designation	Name	Field of Research Specialization
Professors	Sukhbir Kaur	Parasitology, Immunology
	Harpreet Kaur	Parasitology
	Y.K. Rawal	Fish taxonomy and age determination
Assistant Professors	Archana Chauhan	Molecular Biology, Genomics, Ecology
	Ravinder Kumar **(Chairperson)**	Molecular Skin Biology, Stem Cell

	Ravneet Kaur	Zebrafish Neurotoxicology & Fish Biomaterials, Wetland Ecology
	Mani Chopra	Cytogenetics, Cell- Biology, Molecular toxicology
	Indu Sharma	Reproductive Physiology, Molecular Biology
	Vijay Kumar	Human Genetics, Molecular Biology
DST INSPIRE	Ranjana Jaiswara	Entomology

COURSES OFFERD (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
B.Sc. (Hons) Zoology as per NEP 2020 under the framework of Honours School System	25+4 NRI + 1 Foreign National	4 years	Passed 10+2 examination with at least 50% marks with Physics, Chemistry, Biology and English	Based on CET (UG) CET (UG) – 75% Academics – 25%
M. Sc. (Zoology) under the framework of Honours School System	14+2 NRI + 1 Foreign National	2 years	B Sc. (Pass or Hons.) with 50% marks (45% marks in case of SC/ST) in the examination of P.U. or any other examination recognized by P.U. as equivalent thereto with Zoology as one of the elective subject	Based on CET (PG) CET (PG) – 60% Academics – 40%
Ph. D.	Subject to availability of seats	3-6 years	See Ph.D Prospectus 2025	

*5% Concession in admissible in eligibility marks to SC/ST/BC/PWD Candidates

Note: Science Departments having Honours School Shall fill the vacant / left over seats of B.Sc. (HS) along with M.Sc. (HS). Each Department shall take prior approval of vacant seats (except additional seats) from Dean of University Instruction before the start of admission. The vacant seats be merged in the sanctioned seat and reservation be followed as per rules **(Syndicate Para 6, 25.03.2023)**

TITLES OF SYLLABI: Detailed course curriculum is available at https://puchd.ac.in/syllabus

B.Sc. (Honours) (Zoology) as per NEP 2020 under the framework of Honours School System

SEMESTER I		SEMESTER II	
ZOO DSC 1	Diversity of Non-Chordates	ZOO DSC 2	Diversity of Chordates
Minor	One course to be opted by students from options given by University	Minor	One course to be opted by students from options given by University
IDC	One course to be opted by students from options given by University	IDC	One course to be opted by students from options given by University
ENG AEC 1	English	ENG AEC 3	English
PUN-AEC-2 HIN-AEC-2 URD-AEC-2	One course to be opted by students from options given by University	PUN-AEC-4 HIN-AEC-4 URD-AEC-4	One course to be opted by students from options given by University
ZOO SEC 1	Vermiculture and Vermicompost	ZOO SEC 2	Apiculture
VAC	One course to be opted by students from options given by University	VAC	One course to be opted by students from options given by University
Students exiting the programme after securing 48 credits will be awarded UG Certificate in the relevant Discipline/ Subject, provided they secure 4 credits in work based vocational courses offered during summer term or internship/ Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.			

B.Sc (Honours)

Choice Based Credit System (CBCS) under the framework of Honours School

SEMESTER III		SEMESTER IV	
Zoo-DSC-3	Comparative account of Non-Chordates	Zoo-DSC-5	Cell Biology
Zoo-DSC-4	Principles of Ecology	Zoo-DSC-6	Comparative Anatomy of Vertebrates
Minor	One course to be opted by students from options given by University	Zoo-DSC-7	Evolutionary Biology
IDC	One course to be opted by students from options given by University	Minor	One course to be opted by students from options given by University
Zoo-SEC-3	Aquarium Fish keeping		
SEMESTER V		**SEMESTER VI**	
Zoo-DSC-8	Fundamentals of Biochemistry	Zoo-DSC-11	Endocrinology and Embryology
Zoo-DSC-9	Human Physiology	Zoo-DSC-12	Molecular Biology
Zoo-DSC-10	Principles of Genetics	Zoo-DSC-13	Fish and Fisheries
Minor	One course to be opted by students from options given by University	Minor	One course to be opted by students from options given by University
VAC	One course to be opted by students from options given by University	INT-1	Internship
Students who want to undertake 3-year UG programme will be awarded UG degree in the relevant discipline / subject upon securing 144 credits. Subject to minimum credit requirement in respective subject.			

AEC: Ability Enhancement Course; SEC: Skill Enhancement course; DSC: Discipline Specific course; IDC: Interdisciplinary course; VAC: Value Added Course

M.Sc. (Zoology) under the framework of Honours School System

SEMESTER-I		SEMESTER-II	
MZO-MC1	Advanced Cell Biology	MZO-MC5	Biology of Vertebrate Immune System
MZO-MC2	Aquaculture & Fisheries	MZO-MC6	Methods and applications of Molecular Biology
MZO-MC3	Insect Ecology and Physiology	MZO-MC7	Environmental and Quantitative Biology
MZO-MC4	Biology of Parasites	MZO-MC8	Methodology and Instrumentation
MZO-MC5	Animal Physiology	MZO-MC10	Development Biology
SEMESTER-III		**SEMESTER-IV**	
MZO-MC11	Animal Biochemistry	MZO-ME**	Elective -2**
MZO-ME*	Dissertation (Part-I)	MZO-MD1	Dissertation (Part II)
MZO-MD1	Elective-I*		

*** Elective 1 will be selected from the options given below:**

MZO-ME1	Concepts of Parasitology
MZO-ME2	Economic Entomology
MZO-ME3	Molecular Cytogenetics
MZO-ME4	Molecular Endocrinology and Reproductive Physiology
MZO-ME5	Fish, Fisheries and Aquatic Biology

**** Elective 2 will be selected from the options given below:**

MZO-ME6	Animal Cell Culture and its Applications
MZO-ME7	Biosystematics and Introduction to Bioinformatics
MZO-ME8	Concepts in Human Genetics and Related Disorders
MZO-ME9	Metabolic Disorders
MZO-ME10	Biomaterials and Nanobiology

THRUST AREAS: Cell & Molecular Biology, Entomology, Fish & Fisheries, Parasitology and Reproductive Physiology.

PLACEMENTS: Department has a faculty member as Coordinator of placement cell. Department in association with the Central Placement Cell, Panjab University holds various workshops related to placement of students. Students have various opportunities in teaching (School, College or University), Research (in national and international institutes), Ministry of Environment, Forest and Climate Change, Indian Forest Service or State Government Forest Services, Indian or State administrative services, Departments of environment, wildlife, Forests, Zoological survey, forensics etc.

ALUMNI RELATIONS: The department also has an Alumni Association. Alumni from this department occupy important positions in academic and administrative areas. The details about alumni can be found at https://zdaa.puchd.ac.in/.

UNIVERSITY INSTITUTE OF FASHION TECHNOLOGY AND VOCATIONAL DEVELOPMENT

ABOUT THE INSTITUTE

University Institute of Fashion Technology and Vocational Development (UIFT&VD) is an in-Campus Institute, established by the Panjab University, Chandigarh in 2007; with a commitment to carry forward the evolving goals envisaged by the National Education Policy; to impart vocational training skills and to provide professionals for the fast-growing fashion, apparel, and textile industry in the region in particular and the country in general.

The Curriculum and Credit Framework at UIFT&VD, for Undergraduate Program at present, incorporates a flexible choice-based credit system with extensive use of technology. The program has multiple entry and exit points, flexible degree options with single major and choices in minor, multi-inter-disciplinary choices, and a curriculum built with self-sustaining vocational training in Fashion and Lifestyle Technology and employability skills in additional academic subjects.

A student can choose to undertake an undergraduate degree of either 3 or 4-year duration, with or without honours with multiple exit and re-entry options within this 3- or 4-year duration, with appropriate certifications, as, a UG certificate after completing 1 year (2 semesters) in the discipline including vocational and professional areas, or a UG diploma after 2 years (4 semesters) of study, or a Bachelor's degree after a 3-year (6 semesters) program of study.

The 4-year (semesters) multidisciplinary Bachelor's program, is a preferred option since it allows the opportunity to experience the full range of holistic and multidisciplinary education in addition to a focus on the chosen major and minors as per the choices of the student.

A candidate can complete a rigorous design/research project in the major area (s) of study in the 4th year of a Bachelor's Degree (Honours with Research).

Students undertaking 3-year UG programme, after completion of 144 credits in the subject will be awarded with B.Sc. Degree in Fashion & Lifestyle Technology. These students can opt for the 2 year M.Sc. program as an Integrated Degree of B.Sc. & M.Sc. in Fashion & Lifestyle Technology. Students will be awarded B.Sc. Degree in Fashion & Lifestyle Technology (Honours) in the discipline upon securing minimum 192 credits completing 4 years of their undergraduate programme. B.Sc. Fashion & Lifestyle Technology (Honours with Research) is for the students who secure 75% marks as an aggregate in all 6 semesters.

In the current academic year (2023-24), for post graduation- students will be admitted to two years M.Sc. Fashion & Lifestyle Technology. This course will let the students explore the craft centres and states for a craft study and documentation. They will undergo extensive specialized research followed by seminars and presentations. An intensive study of Organization and Management Skills required to run a Fashion and Lifestyle Business further prepares the students to find their niche' in the work sphere.

Highly trained and experienced faculty is involved in giving thorough theoretical and practical knowledge inputs to the students. This, along with assistance rendered to lead the students in task based studies helps the young learners to hone their talent to face the challenging requirements of the Fashion Industry. To further enhance their learning experience, a variety of multidisciplinary activities and workshops are regularly conducted, offering students opportunities to engage in diverse perspectives and creative problem-solving, thereby enriching their professional development and preparing them for real-world scenario.

To move into the global mainstream of intense economic competition and to reckon with requirement of the Fashion Industry of India in totality, the Department liaises with fashion related organizations for guiding the students in handling latest technology. There is regular interaction with experts at Design Studios, Production Houses, Distribution Centres and Retail Establishments as well as the Industry to form a vital bridge between University Institute of Fashion Technology and the larger community. Through an MOU with Nottingham Trent University, U.K. and collaborative academic exchanges between University of the Fraser Valley, Canada, Toronto Metropolitan University, Canada, Belfast School of Art, Ulster University, UK and University of Technology, Sydney, Australia, series of exchanges have begun, giving rise to cross cultural teaching and learning process.

FACULTY

Designation	**Name**	**Field of Research Specialization**
Assistant Professors	Prabhdip Brar **(Chairperson)**	Apparel Design, Art History & Fine Arts
	Anu H. Gupta	Clothing & Textiles

COURSE OFFERED (SEMESTER SYSTEM)

Course	Seats	Duration	Eligibility*	Admission Criteria
B.Sc. Fashion & Lifestyle Technology as per NEP 2020	46+6 NRI+2 Foreign National	4 Years	Passed 10+2 Examination with atleast 50% marks in aggregate from CBSE or any other recognized Board.	Based on Aptitude Test** Aptitude Test: 60% Academics: 20% Preference Criteria: 10% Interview: 10%
M.Sc.	46+6 NRI+2 Foreign National	2 Years	Passed B.Sc. Fashion & Lifestyle Technology from UIFT, PU. **Lateral Entry:** Lateral Entry will be allowed in case any seats are left vacant. **Eligibility is as under :-** Qualified B.Sc/B.Voc/B.Tech/B.Des. in Fashion Design/Designing/Technology examination with at least 50% marks in aggregate from P.U., or an examination from any other university recognized as equivalent thereto.	Based on Aptitude Test*** Aptitude Test: 45% Academics: 40% Group Discussion: 05% Interview: 10%
Ph.D.	Subject to availability	3-6 years	See Ph.D Prospectus 2025	As per UGC/P.U. norms
* 5% Concession admissible in eligibility marks to SC/ST/BC/PWD candidates				

****For B.Sc**.: Aptitude test will comprise of **(a) General Ability Test**: There will be a written test for analytical reasoning, quantitative aptitude, communication skills in English, General Knowledge and current affairs **(b) Creative Ability Test:** There will be a practical test of creative skill, freehand drawing, sketching and development of a 3D model for any given theme (material list will be provided in advance so that the candidate can bring their own material for the test). Candidates who have studied Fashion Design / Fine arts subjects in 10+2 will be given 10% weightage in the total marks scored. Candidate must score at least 50% marks in aggregate (Academics exam + Aptitude test + Preference Criteria + Interview).

*****For M.Sc.**: Aptitude test will comprise of **written test** to evaluate general ability and subject knowledge and **practical test** to evaluate creative ability. **Creative ability test**: Material list will be provided in advance so that the candidates can bring their own material for the test. Group Discussion will be on the topics related to Fashion and Lifestyle Technology. Candidate must score at least 50% marks in aggregate (Academics + Aptitude test + Preference Criteria + Interview+ Group Discussion).

TITLES OF SYLLABI (Detailed syllabus available at http://puchd.ac.in/syllabus.php)

B.Sc. (Fashion & Lifestyle Technology) as per NEP 2020

	SEMESTER-I	SEMESTER-II
Major	Visualizing Fashion –I (Pr.)	Visualizing Fashion-II (Pr.)
		Sewing Techniques (Pr.)
	Introduction to Sewing Techniques (Pr.)	Pattern Development (Pr.)
Minor	Fabric Technology-I (Th.) (Compulsory Subject)	Fabric Technology-II (Pr.) (Compulsory Subject)
	Indian Textiles (Th.) (Compulsory Subject)	***Choose any one subject out of the following to qualify for a minor degree in*** **Textiles and Merchandising:** **Subject-** Fashion Marketing (Th.) **OR**

		Textiles and Costumes: **Subject-**History of Indian Costumes (Th.) **OR** **Textiles and Apparel Manufacturing Technology:** **Subject-** Introduction to Apparel Industry (Th.)
Interdisciplinary Course	Innovative Design Thinking-I (Pr.)	Innovative Design Thinking-II (Pr.)
	Fashion Studies-I	Trend Forecasting –I (Project based) (Pr.)
Ability Enhancement Course	English-I (Th.)	English-II (Th.)
Skill Enhancement Course (SEC)	Creative Techniques and Embroideries (Pr.)	Design Concept to Product Development (Pr.)
Common Value-Added Course	Techniques of Resist Dyeing & Printing (Pr.)	Basics of Draping (Pr.)

	SEMESTER-III	**SEMESTER-IV**
Major	Design Process-I	Design Process-II
	Garment Construction Technology-I	Garment Construction Technology
	Advance Pattern Development-I	Advanced Pattern Development – II
	Trend Forecasting-I (Theory Practical)	Visualizing Fashion-IV
Minor	FLT-211 : Fabric Technology-III (Theory)2	Traditional Indian Textiles & Embroideries
	FLT-212 : Fashion Studies-I (Th.) 2	Trend Forecasting-II
	FLT-213 : English for Business Communication and Journalism-I	**Minor** : Fabric Technology - IV English for Business Communication and Journalism-II
Interdisciplinary course	Visualizing Fashion-III	Choose any one subject out of the following to qualify for a minor degree in **Name of Minor Degree**: Textiles and Merchandising **Subject :** History of World Costumes **Subject**: Fashion Merchandising and Retail management. **Name of Minor Degree**: Textiles and Costumes. **Name of Minor Degree** : Textiles and Apparel Manufacturing Technology **Subject**: Spreading and Cutting of Apparels
Skill Enhancement course (SEC)	Digital Design-I	Lifestyle Management IV / Tutorials
Lifestyle Management II / Tutorial		

	SEMESTER-V	**SEMESTER-VI**
Major	Advanced Draping and Grading	Apparel Production Control
	Commercial Clothing	Apparel Quality Management
	Visualizing Fashion-V	Sustainable Fashion
	Introduction to Entrepreneurship/ IPR	Pattern making through CAD
	Digital Design (Adobe Illustrator)	Fashion Styling & Image Management
Minor	Global Sourcing (Project Based)	Basic of Weaving Technology
Choose any one subject out of the following to qualify for a minor degree in	**Name of Minor Degree** : Textiles and Merchandising **Subject**: Basic of Knitting Technology **Name of Minor Degree** : Textiles and Costumes **Subject**: Fashion Designers Past and Present **Name of Minor Degree**: Textiles & Apparel manufacturing Technology **Subject:** Garment Analysis	**Name of Minor Degree** : Textiles and Merchandising **Subject**: Visual Merchandising **Name of Minor Degree** : Textiles and Costumes **Subject**: Project Based Costume Development **Name of Minor Degree**: Textiles & Apparel manufacturing Technology **Subject:** Work Study for Apparel Manufacturing
Skill Enhancement Course	In Plant Training Project & Seminar	
VAC		Cultural Heritage of Punjab: Textiles & Crafts
Total Credit based	**Name of Minor Degree** : Textiles and	**Name of Minor Degree** : Textiles and

on selection minor Degree	Merchandising **Name of Minor Degree** : Textiles and costumes **Name of Minor Degree** : Textiles & Apparel manufacturing technology	Merchandising **Name of Minor Degree** : Textiles and costumes **Name of Minor Degree** : Textiles & Apparel manufacturing technology
Lifestyle Management V / Tutorial		Lifestyle Management VI / Tutorial

M.Sc. Fashion & Lifestyle Technology

	SEMESTER-I	**SEMESTER-II**
Paper-1	Fashion Retail Management- I (Th.)	Fashion Retail Management- II (Th.)
Paper-2	Research Methodology in Fashion & Lifestyle Technology-I(Th.)	Research Methodology in Fashion & Lifestyle Technology-II (Th.)
Paper-3	Statistical Techniques in Fashion & Lifestyle Technology-I (Th.)	Statistical Techniques in Fashion & Lifestyle Technology-II (Th.)
Paper-4	Textile Testing (Th.)	Textile Chemistry (Th.)
Paper-5	Textile Testing (Pr.)	Textile Chemistry (Pr.)
Paper-6	CAD Fashion Studio-I (Pr.)	CAD Fashion Studio-II (Pr.)
Paper-7	*Apparel Core (kids wear) (Pr.) • Design Development • Pattern Development • Product Development	*Apparel Core (Women's wear) (Pr.) • Design Development • Pattern Development • Product Development
Paper-8	Craft Survey & Documentation (Pr.)	Dissertation Seminar-II Dissertation Seminar – II Research: Development of Tool for Pilot Study; Selection of Sample, Research Design and Data Collection. Product: Development of Tool to Test Proof of Product Concept, Prototype Development, Alpha testing, Research Design and Data Collection.
Paper-9	Dissertation Seminar-I Presenting Proof of Concept; Review of Literature; Broad question of enquiry as reflected in the Title of proposed Research or Project.	Lifestyle Management VIII/Tutorial
	Lifestyle Management VII/Tutorial	
	SEMESTER-III	
Paper-1	Industrial Management (Th.)	Entrepreneurship Development (Th.)
Paper-2	Quality Management (Th.)	Patterning for Structured Clothing (Th.)
Paper-3	CAD Fashion Studio-III (Pr.)	Port Folio Development (Pr.)
Paper-4	**Apparel Core (Men's Wear) (Pr.) • Design Development • Pattern Development • Product Development	Technical Advances in Textile Material (Th.)
Paper-5	Dissertation Seminar – III Research: Final Data Collection, Scoring and Analysis of Data thru SPSS or any suitable Software. Product: Final Data Collection and Beta testing for acceptability of Product; Proposed steps of Product promotion and Product launch.	Research: Submission of Research Document, Presentation and Viva Product: Submission of Documented Product Development Process, Presentation and Exhibition of Product/Products with Viva.
Paper-6	Lifestyle Management IX/Tutorial	Lifestyle Management X/Tutorial

THRUST AREAS: Research, Product & Line Development, Fashion Event Management & Showcasing, Design Copyright, Patenting, Portfolio Illustration, Traditional Textile Surface Embroidery & Design, Craft Projects and Documentation, CAD, Textile Technology, Visual Merchandizing, Fashion Forecasting and Media Reporting.

PLACEMENTS: The Department continues to support students by arranging for on-campus and off-campus placements in reputed organizations. Many students opt for self-employment and spring up as successful entrepreneurs. The students who opt for placements are helped in securing good jobs in different organizations of their own choices.

ALUMNI RELATION: Alumni from this department have been suitably employed in academics, industry and many have been able to establish themselves as successful entrepreneurs. They are regularly supporting the department in terms of lectures and suggestions from their industrial experience. They interact with current batches of students to share their journey and with faculty to give newer inputs based on their experience with the fashion industry. They contribute towards industrial and job placements of students. A face book page supports the activities of the department where Alumni are also members.