

ADMISSION NOTIFICATION 2011-12

1. List of Programmes for Admission to Academic Session, 2011-12

i. Integrated Programmes

Sr.No.	Programme	School	Eligibility	No. of Seats*	Syllabus Sections
1.	M.Phil.-Ph.D. Integrated Programme in Biosciences	School of Basic and Applied Sciences	Master's degree in Botany/ Biochemistry /Biotechnology/Microbiology/ Molecular Biology/Zoology/or any other branch of life sciences with 55% marks from a recognized Indian or foreign university.	10	A and B
2.	M.Phil.-Ph.D. Integrated Programme in Environmental Science and Technology	School of Environment and Earth Sciences	Master's degree in Technology /Engineering/Environmental Science / Biochemistry/Biotechnology/Microbiology/ Molecular Biology/Botany/Zoology/or any other branch of Life Sciences or Chemical Sciences with 55% marks from a recognized Indian or foreign university.	10	A and B
3.	M.Phil.-Ph.D. Integrated Programme in South and Central Asian Studies	School of Global Relations	Master's Degree in South and Central degree Asian Studies, Indian History, Political Science, Economics, Sociology, Public Administration, Geography or allied/ relevant field with 55% marks from a recognized Indian or foreign university.	10	A and D
4.	M.Phil.-Ph.D. Integrated Programme in Comparative Literature	School of Languages, Literature and Culture	Master's Degree in Comparative Literature/ Linguistics/any Indian Language or allied/ relevant field with 55% marks from a recognized Indian or foreign university.	10	A and E
5.	M.Phil.-Ph.D. Integrated Programme in Development Economics	School of Social Sciences	Master's Degree in Economics or allied/ relevant field with 55% marks from a recognized Indian or foreign university.	10	A and G
6.	LL.M.-Ph.D. Integrated Programme in Environmental Law	School of Legal Studies and Governance	Bachelor's Degree in Law with 55% marks from a recognized Indian or foreign university.	10	A and F
7.	M.Pharm.-Ph.D. Integrated Programme in Pharmaceutical Sciences (Medicinal Chemistry)	School of Basic and Applied Sciences	Bachelor's degree in Pharmacy with 55% marks from a recognized Indian or foreign university and also having valid GPAT qualification.	05	A and C
Total Seats				65	

ii. Post Graduate Programmes

Sr.No.	Programme	School	Eligibility	No. of Seats*	Syllabus Sections
1.	M.Sc. in Biosciences	School of Basic and Applied Sciences	Bachelor's degree in Science with subjects in any branch of Life Sciences with 55% marks from a recognized Indian or foreign university.	20	M and H
2.	M.Sc. in Environmental Science and Technology	School of Environment and Earth Sciences	Bachelor's degree in Science/ Engineering or equivalent with 55% marks from a recognized Indian or foreign university.	20	M and H
3.	M.A. in South & Central Asian Studies	School of Global Relations	Bachelor's degree with 55% marks from a recognized Indian or foreign university.	15	M and I
4.	M.A. in Comparative Literature	School of Languages, Literature and Culture	Bachelor's degree with 55% marks from a recognized Indian or foreign university.	25	M and J
5.	M.A. in Development Economics	School of Social Sciences	Bachelor's degree with Economics as a subject of study or its equivalent in any discipline with 55% marks from a recognized Indian or foreign university.	25	M and K
6.	M.Sc. in Chemical Sciences	School of Basic and Applied Sciences	Bachelor's degree in Science with Chemistry as a subject with 55% marks in aggregate from a recognized Indian or foreign university.	10	M and L
Total Seats				115	

*** Notes**

- **The university reserves the right to change the number of seats in any programme.**
- **The reservation and eligibility for the candidates belonging to SC/ST/OBC/PWD (Physically Weak and Disabled) will be as per the Central Government rules.**
- **The candidates applying for admission to an Integrated Programme may note that admission to such a programme does not entitle them for direct admission to Ph.D. The admission to Ph.D. programme will be subject to the ordinances of the university and performance of the students in qualifying degree programme.**
- **The candidates appearing in the qualifying examination are also eligible to apply and take the entrance test. However, they will have to submit their result on or before the date of interview failing which their candidature will be cancelled. Self attested photocopy of the result of such candidates must be submitted to the Assistant Registrar, Central University of Punjab, Bathinda.**

2. Test Centres: Ahmedabad, Bangaluru, Bathinda, Bhubaneswar, Chandigarh, Chennai, Guwahati, Hyderabad, Jaipur, Jammu, Kolkata, Lucknow, Mumbai, Nagpur, Noida and Shimla.

The university reserves the right to change/cancel any centre for the admission test due to administrative reasons or when the number of candidates is not sufficient for a particular centre.

The candidates will have to submit the online application form and send a printout of the completed online application form along with required enclosures (see section 14 How to Apply) and requisite fee by registered post to:

**The Assistant Registrar
Central University of Punjab
City Campus, Mansa Road
Bathinda – 151 001**

3. Important Dates

Date of Entrance Test:	16th July, 2011 (Saturday)
Start of the online submission of application:	16th June, 2011 (Thursday)
Last date for submission of online application:	30th June, 2011 (Thursday)
Last date for receipt of application printout along with enclosures:	7th July, 2011 (Thursday)
Last date to submit detailed marks-sheet of the qualifying examination:	On or before the date of interview

4. Pattern and Syllabus of Entrance Test for M.Phil.-Ph.D./M.Pharm.-Ph.D./LL.M.-Ph.D. Integrated Programmes

(A) Instructions regarding pattern of entrance test

- The question paper for entrance test will consist of sections A, B, C, D, E, F and G. (Seven sections)
- Section A will be common to all** candidates and it will consist of 40 multiple choice questions (MCQs).
- Sections B, C, D, E, F, and G will pertain to the fields of specialization and each of these will consist of 60 MCQs.
- Each question will have only one correct answer. Each correct answer to a question will carry '1' (one) mark and an un-attempted question will carry '0' (zero) mark.
- There will be negative marking i.e., for each wrong answer $\frac{1}{4}$ (one by four) mark will be deducted from the score obtained.

(B) Details

- The duration of entrance test shall be 90 Minutes for all programmes.
- The questions in Section-A are based on general science, current events, general mental ability, reasoning and interactive English.
- The questions in Section-B are based on specific topics of Biosciences and Environmental Science & Technology.
- The questions in Section-C are based on specific topics of Pharmaceutical Sciences (Medicinal Chemistry).
- The questions in Section-D are based on specific topics of South and Central Asian Studies.
- The questions in Section-E are based on specific topics of Comparative Literature.
- The questions in Section-F are based on specific topics of Environmental Law.
- The questions in Section-G are based on specific topics of Development Economics.

- i. Candidates seeking admission for M.Phil.-Ph.D. Integrated Programme in Biosciences or Environmental Science and Technology have to attempt questions of sections A and B. Likewise the candidates for admission to other programmes will attempt questions from their respective section.

(C) Syllabus of Entrance Test for M.Phil.-Ph.D./M.Pharm.-Ph.D./LL.M.-Ph.D. Integrated Programmes

Section A

Aptitude Test

General aptitude

1. **General Science:** General appreciation and understanding of science including matters of everyday observation and experience.
2. **Environmental Awareness:** Pollution and its impacts, climate change, sustainable development.
3. **Current Events:** Knowledge of significant national and international events.
4. **General Mental Ability and Reasoning:** Reasoning and analytical abilities.
5. **Elementary Computer Science:** Basic computer awareness and its uses.
6. **Interactive English:** Grammar, vocabulary, sentence completion, usage, synonyms, antonyms, one word substitute, idioms/phrases, error detection and comprehension.
7. **Information and Communication Technology (ICT):** Terminology and abbreviations used in ICT, applications of ICT in academics and research.

Research aptitude

1. Meaning, nature, significance and types of research.
2. End to end process of research, research proposal, synopsis, hypothesis, data collection, literature survey, sampling, interviewing, questionnaire, data processing, interpretation, report writing, bibliography.
3. Thesis Dissertation writing.
4. Article, research paper, seminar, conference, symposium, workshop etc.
5. Role of governing bodies/research organizations like UGC, CSIR, ICAR, ICSSR, ICPR, ISRO, DRDO etc. in research and development.
6. Role and use of computers in research.

Section B

Biosciences, Environmental Science & Technology

1. **Instrumentation and Biostatistics:** Principles and applications of microscopy, spectroscopic techniques, radioisotopic techniques, electrophoresis and separation techniques, biostatistics and its applications in data analysis.

2. **Biotechnology:** Genome organization, principles of gene cloning, transgenics, blotting and hybridization techniques, antisense RNA, RFLP, RAPD, AFLP, SSRs and other molecular marker techniques, transposition, applications of biotechnology in medicine industry and crop improvement.
3. **Genetics:** Linkage, crossing over and gene mapping, mutations, sex determination and differentiation, central dogma, regulation of gene expression in prokaryotes and eukaryotes, cell cycle, apoptosis and necrosis.
4. **Immunology:** Immune system, complement systems and antigen-antibody reaction, innate and acquired immunity, components of immune response, lymphokines and interleukins, immunization methods & techniques, monoclonal antibodies and hybridomas.
5. **Microbiology:** Classification and Genetics of viruses and bacteria, fermentation, antibiotics and mechanism of action, nitrogen fixation, microbiology of water, air, soil and sewage, microbial animal and plant diseases, epidemiology and control of vector borne diseases (malaria, trypanosomiasis, filariasis, leishmaniasis etc.), tuberculosis and AIDS, waterborne diseases.
6. **Physiology and Biochemistry:** Enzymes and coenzymes, metabolism of biomolecules, animal hormones and mechanism of action, mammalian organ systems, nutrition, digestion and absorption, circulatory system, excretion and osmo-regulation, nerve conduction and neurotransmission, phytohormones, photosynthesis, photorespiration and photoperiodism.
7. **Ecology:** Organizational levels of biosphere, food chain and energy flow, population and community ecology, biogeochemical cycles, biodiversity and its conservation, renewable, non-renewable resources, bioenergy and its prospects in India, forest management and sustainable development.
8. **Atmospheric Chemistry:** Composition of atmosphere, formation of particulate matter, nuclear particle emissions, fission and fusion, properties of different types of radioisotopes, air pollution and control, greenhouse gases and their effects, elements of climate and climatic control, history of global climate change and Milankovitch's theory of climate change.
9. **Environmental Toxicology and Management:** Environmental toxicology, role of fertilizers, pesticides and heavy metals, indices of toxicology, carcinogens, environmental carcinogenicity testing, molecular toxicology and genetic basis of carcinogenesis, detoxification and biotransformation, waste water management and treatment methods.
- 10 **Thermodynamics:** Laws of thermodynamics, Carnot's cycle, entropy, Gibb's free energy, catalysis, pH, pK, Henderson-Hasselbalch equation, acids, bases and buffers.

Section C

Pharmaceutical Sciences

1. **Medicinal Chemistry:** Structure, nomenclature, classification, synthesis, SAR and metabolism of the following category of drugs, which are official in Indian Pharmacopoeia and British Pharmacopoeia. Hypnotics and Sedatives, Analgesics, NSAIDS, Neuroleptics, Antidepressants, Anxiolytics, Anticonvulsants, Antihistaminics, Local Anaesthetics, Cardio Vascular drugs – Antianginal agents Vasodilators, Adrenergic & Cholinergic drugs, Cardiotonic agents, Diuretics, Anti-hypertensive drugs, Hypoglycemic agents, Antilipedmic agents, Coagulants, Anticoagulants, Antiplatelet agents. Chemotherapeutic agents – Antibiotics, Antibacterials, Sulphadugs. Antiprotozoal drugs, Antiviral, Antitubercular, Antimalarial, Anticancer, Antiamoebic drugs. Introduction to drug design. Stereochemistry of drug molecules. Diagnostic agents. Preparation, storage and uses of official Radiopharmaceuticals, Vitamins and Hormones. Eicosanoids and their application.

2. **Pharmaceutics:** Development, manufacturing standards Q.C. limits, labeling, as per the pharmacopoeial requirements. Storage of different dosage forms and new drug delivery systems. Biopharmaceutics and Pharmacokinetics and their importance in formulation.
3. **Pharmacology:** General pharmacological principles including Toxicology. Drug interaction. Pharmacology of drugs acting on Central nervous system, Cardiovascular system, Autonomic nervous system, Gastro intestinal system and Respiratory system. Pharmacology of Autocoids, Hormones, Hormone antagonists, chemotherapeutic agents including anticancer drugs. Bioassays, Immuno Pharmacology. Drugs acting on the blood & blood forming organs. Drugs acting on the renal system.
4. **Natural Products :** Pharmacognosy & Phytochemistry– Chemistry, tests, isolation, characterization and estimation of phytopharmaceuticals belonging to the group of Alkaloids, Glycosides, Terpenoids, Steroids, Bioflavonoids, Purines, Guggul lipids. Pharmacognosy of crude drugs that contain the above constituents. Standardization of raw materials and herbal products. WHO guidelines. Quantitative microscopy including modern techniques used for evaluation. Biotechnological principles and techniques for plant development, Tissue culture.
5. **Clinical Pharmacy:** Therapeutic Drug Monitoring Dosage regimen in Pregnancy and Lactation, Pediatrics and Geriatrics. Renal and hepatic impairment. Drug – Drug interactions and Drug – food interactions, Adverse Drug reactions. Medication History, interview and Patient counseling.
6. **Pharmaceutical Analysis:** Principles, instrumentation and applications of the following: Absorption spectroscopy (UV, visible & IR). Fluorimetry, Flame photometry, Potentiometry. Conductometry and Polarography. Pharmacopoeial assays. Principles of NMR, ESR, Mass spectroscopy. X-ray diffraction analysis and different chromatographic methods.
7. **Biochemistry:** Biochemical role of hormones, Vitamins, Enzymes, Nucleic acids, Bioenergetics. General principles of immunology. Immunological. Metabolism of carbohydrate, lipids, proteins. Methods to determine, kidney & liver function. Lipid profiles.
8. **Pharmaceutical Jurisprudence:** Drugs and cosmetics Act and rules with respect to manufacture, sales and storage. Pharmacy Act. Pharmaceutical ethics.
9. **Microbiology:** Principles and methods of microbiological assays of the Pharmacopoeia. Methods of preparation of official sera and vaccines. Serological and diagnostics tests. Applications of microorganisms in Bio Conversions and in Pharmaceutical industry.

Section D

South and Central Asian Studies

1. **Political System of India:** Constitutional framework and governmental structure, relationship between centre and state governments, legislature, executive and judiciary, political theory: history and ideology, political parties and pressure groups, national security system.
2. **Indian History:** Ancient, Medieval and Modern Indian History, nature of Indian society, Economy, polity, Religion. Culture and Social movements, Administrative institutions, Modern Indian History, Colonialism, socio-cultural developments, Nationalism, Freedom movement, Post Independent India, Globalization and contemporary History.
3. **World History:** French revolution, Russian revolution, First world war, Vienna Convention, League of Nations, Rise of Germany, Japan and Italy, Second world war, the United Nations and its organs, Cold war, disintegration of Soviet Union and Post Soviet Central Asia.

4. **Economic Development:** Factors, determinants, approaches and models of growth and development, Indian economy, economic indicators, national income, agriculture, industry, taxes, money and banking, international trade, micro and macro economics and globalization.
5. **Physical setting:** Geographical factors, natural resources, geomorphology, climatology, oceanography, economic, political and population geography, geographical thought, regional planning and cartography.
6. **Foreign Policy:** Ideology, bases and role as regional and international players, economic, political and nuclear foreign policies.
7. **Alliances and Alignments in South Asian Countries:** Concept, features and Organizational relations SAARC, ASEAN etc.

Section E

Comparative Literature

1. **Literary Genres:** Fiction and non-fiction (traditional and modern classification); autobiography, biography, diary, drama, essay, novel, poetry, prose, short story etc; types and sub-types.
2. **Comparative Literature:** Definition, scope, aims and objectives; key terms, literary historiography, myth, motif etc; major works and theorists.
3. **Literary Trends and Literary Movements:** Aestheticism, modernism and post-modernism, mysticism, naturalism, progressivism, realism, revolutionary literature, romanticism.
4. **Literary Theories and Criticism:** Basic terms (Indian and western theories); great contributors and major works; rasa, riti, vakrokati, dhavni, alankara and auchitya school; existentialism, formalism, feminism, marxism, post-structuralism, psycho-analysis, structuralism.
5. **Knowledge of Famous Authors and Texts:** From Indian and foreign literature, world literary classics.
6. **Linguistics and Translation:** Linguistics: definition and scope; concepts/aspects of linguistic study; grammar; definitions of morphology, phonology, phonetics, syntax, semantics, lexicography.
Translation: Definition, purpose, scope, role, use and problems of translation.
7. **Awareness of Current Literary Events, Activities, Awards etc.**

Section F

Environmental Law

1. **Constitutional Law:** Environmental concerns in Constitution such as State, Fundamental Rights, Directive Principles, Fundamental Duties, Judicial Activism, VII schedule: provisions relating to Environment in three lists.
2. **The Water (Prevention and Control of Pollution) Act, 1974:** Definitions, composition of Board, qualification and disqualification of members, functions and powers of the boards, provisions relating to prevention and control of pollution, procedure of appeal, penalty and offences, bar of jurisdiction clause.
3. **The Air Water (Prevention and Control of Pollution) Act, 1981:** Definitions, composition of Board, qualification and disqualification of members, functions and powers of the boards, provisions relating to prevention and control of pollution, procedure of appeal, penalty and offences, bar of jurisdiction clause.
4. **The Environment (Protection) Act, 1986:** Object of the Act, Powers of the Central Government.

5. **National Green Tribunal Act, 2010:** Aims and objectives of the Act, Mechanism to provide compensation.
6. **Legal Theory:** Analytical School, Contribution of John Austin, Jeremy Bentham.
7. **Historical School:** Contribution of Fredrick Carl Von Savigny and Sir Henry Maine in the development of historical jurisprudence.
8. **Sociological School:** Social solidarity of Leon Duguit, social engineering by Roscoe Pound.
9. **Realist School of Jurisprudence:** Contribution of Justice Holmes, Prof Grey, Kari Llewleyn, Oliver Crona. Jerome Frank.
10. **Rights and Duties:** definitions of right, Kinds of Rights and Duties, Hohfield's theory of rights and duties.
11. **Liability:** doctrine of strict liability and absolute liability including case law.
12. **Provisions relating to control of Pollution in:**
 - Indian Penal Code, 1860
 - Code of Criminal Procedure, 1973
 - Code of Civil Procedure, 1908

Section G

Development Economics

1. **Micro Economics:** Demand analysis including pragmatic approaches; Theories of production, Cost and revenue; equilibrium in perfect competition, Monopoly, monopolistic competition, Oligopoly, Macro theories of Distribution, Pareto optimality and its conditions, Theory of Second Best, Arrow's impossibility theorem.
2. **Macro Economics:** The classical and Keynesian models of income determination, Equilibrium in product and money markets (fixed and flexible Prices), Theories of income-consumption relationship, High powered money and money multiplier, Demand for money, Theories of Schumpeter, Kaldor, Samuelson and Hicks Model on business cycles, Philips curve analysis, Samuelson and Solow: the natural rate of unemployment hypothesis.
3. **Mathematics and Statistics:** Rules of partial differential and interpretation of partial derivatives; Homogeneous functions and Euler's Theorem, Problem of maxima and minima in single and multivariable (up to 3) functions; Application of integration to consumer's surplus and producer's surplus, Partial and multiple correlation and regression, Properties of binomial, Poisson and normal distributions, Different laws of probability and its theories.
4. **Developmental Economics:** Growth models: Harrod-Domar, Solow, Meade, Joan Robinson. technological progress–Hicks, Harrod, Learning by doing, Production function approaches, Total factor productivity, Kaldor and Pasinetti, Unlimited supply of labour (Lewis, Ranis and Fei and Jorgenson models), Big push, Balanced growth, Unbalanced growth, Critical minimum efforts thesis, Low level Equilibrium trap, Investment criteria – Rationale and types, Choice of technique–Sen-Dobb thesis, Transfer of technology, Project evaluation–Cost-benefit analysis, Shadow Prices.

- 5. Public Finance and International Economics:** Taxation and tax reforms in India, Performance of public expenditure, Public debt and public budget in India, Union-State financial relations in India. Theories of international trade, Terms of trade, Theory of tariffs and non-tariff barriers; Determination of exchange rate (PPP, monetary, portfolio, and balance of payments), Collapse of Bretton Woods system and emergence of WTO, Rationale and economic progress of SAARC/SAPTA and ASEAN regions.
- 6. Indian Economic Development:** Priorities and basic strategy, Achievement and failures of Economic planning, Recent Five Year plans, Terms of trade between agriculture And industry, Rural credit and marketing, W.T.O. and Indian agriculture, Performance of industrial sector, New Economic policy: Liberalization, Privatization, Globalization and Changing profile of public sector, Issues in disinvestments, Fiscal and financial sector reforms, Foreign capital in India, Recommendations of the latest Finance Commission, Monetary and fiscal policies, W.T.O. and Indian economy: challenges and opportunities.

5. Pattern and Syllabus of Entrance Test for M.A./ M.Sc. Programmes

(A) Instructions regarding pattern of entrance test

- a. The question paper for the entrance test will consist of sections M, H, I, J, K and L. (six sections).
- b. **The questions in section M will be common to all candidates** and it will consist of 40 multiple choice questions (MCQs).
- c. Sections H, I, J, K and L will be pertaining to the fields of specialization and each of them will comprise of 60 MCQs.
- d. Each question will have only one correct answer. Each correct answer to a question will carry '1' (one) mark and an un-attempted question will carry '0' (zero) mark.
- e. There will be negative marking i.e., for each wrong answer $\frac{1}{4}$ (one by four) mark will be deducted from the score obtained.

(B) Details

- a. The duration of entrance test shall be 90 Minutes for all programmes.
- b. The questions in Section-M are based on general science, current events, general mental ability, reasoning and interactive English.
- c. The questions in Section-H are based on specific topics of Biosciences and Environmental Science and Technology.
- d. The questions in Section-I are based on specific topics of South and Central Asian Studies.
- e. The questions in Section-J are based on specific topics of Comparative Literature.
- f. The questions in Section-K are based on specific topics of Development Economics.
- g. The questions in Section-L are based on Chemical Sciences.
- h. Candidates seeking admission for M.Sc. in Biosciences/Environmental Science and Technology have to attempt questions of sections M and H. Likewise the candidates for admission to other programmes will attempt questions from their respective section.

(C) Syllabus of Entrance Test for M.A./M.Sc. Programmes**Section M****General Aptitude Test**

1. **General Science:** General appreciation and understanding of science including matters of everyday observation and experience.
2. **Environmental Awareness:** Pollution and its impacts, climate change, sustainable development.
3. **Current Events:** Knowledge of significant national and international events.
4. **General Mental Ability and Reasoning:** Reasoning and analytical abilities.
5. **Elementary Computer Science:** Basic computer awareness and its uses.
6. **Interactive English:** Grammar, vocabulary, sentence completion, usage, synonymous, antonymous, one word substitute, idioms/phrases, error detection and comprehension.
7. **Information and Communication Technology (ICT):** Terminology and abbreviations used in ICT, applications of ICT in academics and research.

Section H**Biosciences, Environmental Science and Technology**

1. **Techniques:** Principles and applications of microscopy, spectrophotometry, centrifugation, radioisotope techniques, electrophoresis and chromatographic separation techniques. Blotting and hybridization techniques.
2. **Origin of life:** Theories of evolution, genetic drift, speciation, cell organelles, cell division, modes of reproduction, principles of inheritance, epistasis, mutations, chromosomal aberrations, extra-chromosomal inheritance.
3. **Genetic Material:** DNA structure and replication, transcription and translation, chromosome structure, protein structure, mutability and repair of DNA, reverse genetics.
4. **Basic Biotechnology:** Recombinant DNA technology, principles of gene cloning, transposition, applications of biotechnology in medicine, industry and agriculture, plant tissue culture.
5. **Environment:** Organizational levels of biosphere, food chain and energy flow, population and community ecology, biogeochemical cycles, biodiversity and its conservation, renewable & non-renewable resources, bioenergy and its prospects in India, forest management and sustainable development.
6. **Plant systematics:** Bryophytes, Tracheophytes, Gymnosperms, Angiosperms. Membrane structure and Ion transport, ATPase - structure and function, Photosynthesis, Photoperiodism, Vernalization, RUBISCO.
7. **Animal systematics, physiology and diseases:** Cnidaria, Echinodermata, Chordata, Protostomia; Anatomy and physiology of humans; major classes of bacterial and viral pathogens, Apoptosis and cancer, inherited diseases, animal cell culture.

Section I

South and Central Asian Studies

1. **Geography:** Physical setting, Natural resources, Climatology, Oceanography, Economic, Political and Population geography.
2. **Social, Economic and Political History of India:** Ancient, Medieval and Modern Indian history, Indian society and economy, Religious life and culture, British colonialism, social Institutions, civilization perspectives, contemporary social and cultural issues, Nationalism, freedom movement, Post independent India and Globalization.
3. **World History:** French revolution, Russian revolution, First world war, Vienna Convention, League of Nations, Rise of Germany, Japan and Italy, Second world war, the United Nations and its organs/agencies, Cold war, Disintegration of Soviet Union and Post-Soviet Central Asia .
4. **Govt. and Politics in India:** Colonial legacies, Constitutional framework and Governmental structure, Relationship between Centre and State Governments, Legislature, Executive and Judiciary, judicial activism, Public Interest Litigation, Political parties, Regionalism, Caste, Communalism, Tribal communities, Human rights.
5. **Economic Development:** Approaches and Models of growth and development, Indian economy, Economic indicators, National income, Agriculture, Industry, Taxes, Money and banking, International trade.

Section J

Comparative Literature

1. **History of English and Indian Literatures:** General trends
2. **Literary Terms:** Allegory, ballad, blank verse, comedy, connotation and denotation, dissociation of sensibility, dramatic monologue, elegy, enlightenment, epic, fancy and imagination, free verse, imitation, intentional fallacy, meter, motif, ode, onomatopoeia, paradox, plot, point of view, satire, soliloquy, sonnet, tragedy, wit etc.
3. **Literary Genres:** Fiction and non-fiction (traditional and modern classification); autobiography, biography, diary, drama, essay, novel, poetry, prose, short story etc; types and sub-types.
4. **Comparative Literature:** Definition, scope, aims and objectives; key terms, literary historiography, myth, motif etc.
5. **Literary Trends and Literary Movements:** Aestheticism, modernism and post-modernism, mysticism, naturalism, progressivism, realism, revolutionary literature, romanticism.
6. **Elementary Knowledge of Famous Authors and Texts:** From Indian, Western and Classical literature.
7. **Awareness of Current Literary Trends, Events, Activities, Awards etc.**

Section K

Development Economics

1. **Micro Economics:** Theories of demand, Production and costs, Equilibrium in perfect competition, Monopoly and monopolistic competition, Determination of rent, Wages, Interest (Classical view only) and profit.
2. **Macro Economics:** Classical and Keynesian Models of income determination, Working of multiplier and accelerator, Marginal efficiency of capital and investment - Classical and Keynesian approaches to demand for money, Samuelson and Hicks Models of Trade Cycle.
3. **Mathematics and Statistics:** Differentiation, Integration and their economic applications, Correlation and Regression Analysis, Index Numbers and addition and multiplication Law of Probability.
4. **Public Finance and International Trade:** Concept of impact, Shifting and incidence of tax, Effects of taxation and public expenditure on production and distribution, Budgetary classification of public expenditure, Public debt. Theories of Absolute Advantage, Comparative advantage and Heckscher-Ohlin, Reciprocal demand; Concepts and components of balance of trade and balance of payments, Exchange rate and its determination.
5. **Economic Development:** Dualism, Lewis and Nurkse Model of Unlimited supply of labour; Classical, Marxian, Schumpeter, Keynesian and Harrod-Domar models; Theories of balanced growth and Big push, The unbalanced growth and critical Minimum Effort Thesis; Import replacing vs. export oriented industrialization, Choice of technique.
6. **Indian Economy:** Population and economic development, Factors determining agricultural productivity, Industrial development during planning period, Land reforms and Green Revolution, India's balance of payments problem, current five year plan; New economic reforms: Liberalization, privatization and globalization.

Section L

Chemical Sciences

1. **Basic Mathematical Concepts:** Differential equations, vectors and matrices.
2. **Atomic Structure:** Fundamental particles. Bohr's theory of hydrogen atom; Wave-particle duality; Uncertainty principles; Schrodinger's wave equation; Quantum numbers, shapes of orbitals; Hund's rule and Pauli's exclusion principle.
3. **Theory of Gases:** Kinetic theory of gases. Maxwell-Boltzmann distribution law; Equipartition of energy.
4. **Chemical Thermodynamics:** Reversible and irreversible processes; First law of thermodynamics and its application to ideal and non ideal gases; Criteria for spontaneity.
5. **Chemical and Phase Equilibria:** Law of mass action; K_p , K_c , K_x and K_n ; Effect of temperature on K ; Ionic equilibria in solutions; pH and buffer solutions; Hydrolysis; Solubility product; Phase

- equilibria–Phase rule and its application to one-component and two-component systems; Colligative properties.
6. **Electrochemistry:** Conductance and its applications; Transport number; Galvanic cells; EMF and Free energy; Concentration cells with and without transport; Polarography.
 7. **Chemical Kinetics:** Reactions of various order, Arrhenius equation, Collision theory; Theory of absolute reaction rate; Chain reactions - Normal and branched chain reactions; Enzyme kinetics; Photophysical and photochemical processes; Catalysis.
 8. **Basic Concepts in Organic Chemistry:** Isomerism and nomenclature, electronic (resonance and inductive) effects.
 9. **Aromaticity and Huckel's rule:** Mono- and bicyclic aromatic hydrocarbons.
 10. **Organic Reaction Mechanism and Synthetic Applications:** Methods of preparation and reactions of alkanes, alkenes, alkynes, arenes and their simple functional derivatives. Mechanism and synthetic applications of electrophilic aromatic substitution. Stereochemistry and mechanism of aliphatic nucleophilic substitution and elimination reactions. Mechanism of aldol condensation, Claisen condensation, esterification and ester hydrolysis, Cannizzaro reaction, benzoin condensation. Perkin reaction, Claisen rearrangement, Beckmann rearrangement and Wagner-Meerwein rearrangement. Synthesis of simple molecules using standard reactions of organic chemistry. Grignard reagents, cetoacetic and malonic ester chemistry.
 11. **Heterocyclic Chemistry:** Monocyclic compounds with one hetero atom.
 12. **Qualitative Organic Analysis:** Functional group interconversions, structural problems using chemical reactions, identification of functional groups by chemical tests.
 13. **Periodic Table:** Periodic classification of elements and periodicity in properties; general methods of isolation and purification of elements.
 14. **Chemical Bonding and Shapes of Compounds:** Types of bonding; VSEPR theory and shapes of molecules; hybridization; dipole moment; ionic solids; structure of NaCl, CsCl, diamond and graphite; lattice energy.
 15. **Main Group Elements (s and p blocks):** Chemistry with emphasis on group relationship and gradation in properties; structure of electron deficient compounds of main group elements and application of main group elements.
 16. **Transition Metals (d block):** Characteristics of 3d elements; oxide, hydroxide and salts of first row metals; coordination complexes; VB and Crystal Field theoretical approaches for structure, colour and magnetic properties of metal complexes.
 17. **Analytical Chemistry:** Principles of qualitative and quantitative analysis; acid-base, oxidation reduction and precipitation reactions; use of indicators; use of organic reagents in inorganic analysis; radioactivity; nuclear reactions; applications of isotopes.

6. Entrance Test Fee

	M.A./M.Sc. Programmes	Integrated Programmes
General Candidates	Rs. 350/- only	Rs. 400/- only
SC/ST/PWD Candidates	Rs. 175/- only	Rs. 200/- only

7. Mode of payment of entrance test fee

A Demand Draft drawn from any nationalized/scheduled bank in favour of "Central University of Punjab", payable at Bathinda should accompany the application form failing which the application will be rejected.

8. Details of Fee (Provisional)**i. Academic Fee:**

Sr.No.	Details	Integrated Programmes		Postgraduate Programmes	
		M.Phil.-Ph.D. (Sciences) and M.Pharm.-Ph.D.	M.Phil.-Ph.D. (Social Sciences) and LL.M.-Ph.D.	M.Sc.	M.A.
1	Tuition fee	Rs.1100/-sem	Rs.1100/-sem	Rs.800/-sem	Rs.800/-sem
2	Examination fee	Rs.600/-sem	Rs.350/-sem	Rs. 350/-sem	Rs. 200/-sem
3	Laboratory fee	Rs.1100/-sem	Nil	Rs. 800/-sem	NIL
4	Computer and internet fee	Rs.350/-sem	Rs.350/-Sem	Rs. 250/-sem	Rs.250/-sem
5	Sports fee	Rs.150/-sem	Rs.150/-sem	Rs. 150/-sem	Rs.150/-sem
6	Library and e-library fee	Rs.400/-sem	Rs.400/-sem	Rs. 200/-sem	Rs.200/-sem
7	Students welfare fund	Rs.100/-sem	Rs.100/-sem	Rs.100/-sem	Rs. 100/-sem
8	Identity card fee	Rs.50/-sem	Rs.50/-sem	Rs. 50/-sem	Rs. 50/-sem
9	Admission fee	Rs.600/-ann	Rs.600/-ann	Rs.500/-ann	Rs. 500/-ann
10	Literary and cultural fee	Rs.120/-ann	Rs.120/-ann	Rs. 120/-ann	Rs. 120/-ann
11	Students union fund	Rs.100/-ann	Rs.100/-ann	Rs.100/-ann	Rs.100/-ann
12	Medical fee	Rs.220/-ann	Rs.220/-ann	Rs. 220/-ann	Rs. 220/-ann
13	Security deposit (Refundable)	Rs.2000/-ann	Rs.2000/-ann	Rs.2000/-ann	Rs.2000/-ann
Total amount to be deposited at the time of admission including first semester fee		Rs. 6,890/-	Rs. 5,540/-	Rs. 5,640/-	Rs. 4,690/-
Second Semester fee		Rs. 3,850/-	Rs. 2,500/-	Rs. 2,700/-	Rs. 1,750/-
GRAND TOTAL (per annum)		Rs. 10,740/-	Rs. 8,040/-	Rs. 8,340/-	Rs. 6,440/-

ii. Hostel Fee:

Sr.No.	Item	Amount
1.	Hostel registration fee	Rs. 500/- (Non-refundable)
2.	Hostel fee* (for one semester)	Rs. 8,400/- only
3.	Hostel security	Rs. 2,000/- (Refundable)
4.	Mess security	Rs. 2,500/- (Refundable)
5.	Total hostel charges to be deposited at the time of admission	Rs. 13,400/- only
6.	Hostel fee (for second semester)	Rs. 8,400/- only
	GRAND TOTAL (per annum)	Rs. 21,800/- only

*Semester hostel fee includes room rent, water and charges towards use of air-conditioned reading room. Electricity and diet charges will be as per actuals.

9. Fellowships and contingency grants

Fellowships and contingency grants are available to all the enrolled students who are not in receipt of financial assistance from any other source as per the details given below:

- i. During M.Phil.- Rs. 3,000/- per month
- ii. During Ph.D. - Rs. 5,000/- per month
- iii. Contingency
 - a. Science subjects- Rs. 10,000/- per annum
 - b. Humanities- Rs. 8,000/- per annum

10. Schedule of Admission

Declaration of list of candidates to be called for interview	To be notified on the university website
Interview and verification of documents	
Final list of selected candidates	
Date of admission and payment of fee	
Date of orientation	
Date of commencement of course	

Note:

The candidates are required to deposit the prescribed fee on or before the date to be announced at the time of admission.

11. Documents required at the time of Admission

The candidates must submit the originals as well as one set of photocopies of the following documents at the time of admission to the university:

1. Reserve category certificate (SC/ST/OBC/PWD), if claimed.
2. Date of birth certificate.
3. Marks sheet of 12th standard or equivalent.
4. Marks sheet for Bachelor's course.

5. Marks sheet for Master's course (s) (for Integrated Programmes).
6. CSIR-UGC-NET (JRF/LS)/GATE or any other national level test (with existing validity) recognized by UGC (for Integrated Programmes).
7. Any other degree/diploma certificate.
8. Selected candidates will have to submit the Migration Certificate within one month of registration.
9. Character certificate issued by the Head of the Institute last attended.
10. Any other document supporting the claim for admission.

12. Selection Criteria for Admission

All the candidates who are interested to take admission in the university must appear in the entrance test.

13-A: Distribution and weightage of marks for M.Phil.-Ph.D./ M.Pharm.-Ph.D./ LL.M.-Ph.D. Candidates

Distribution and weightage of marks to be given to the candidates is given below. (Total marks 100):

Sr.No.	Details	Weightage for candidates who have qualified national level test or equivalent recognized by UGC	Weightage for candidates who have not qualified any national level test or equivalent recognized by UGC
1.	Entrance test	30%	50%
2.	Marks in post- graduation	30%	30%
3.	Interview and research proposal writing	20%	20%
4.	National eligibility test or equivalent	20%	0%

Explanation:

Sr. No. 1: Entrance Test

- (i) Weightage for national level test qualified candidates will be 30% of the score obtained in the entrance test i.e. if a candidate scores 60 marks out of 100 marks in the entrance test he/she will be awarded 18 marks (60x30/100).
- (ii) Weightage for candidates who have not qualified any national level test will be 50% of the score obtained in the entrance test i.e. if a candidate scores 60 marks out of 100 marks in the entrance test he/she will be awarded 30 marks (60x50/100).

Sr. No. 2: Marks in Post- graduation

A candidate applying for admission will be awarded 30% of the marks obtained in post graduation e.g. if a candidate has scored 60% marks in post graduation, then he/she will be awarded 18 marks i.e. (60x30)/100.

Sr. No. 3: Interview and research proposal writing

The candidates called for interview have to bring five copies of a research proposal **in English** of minimum 300 words in their field of specialization (**only for admission evaluation purpose**) and submit that at the time of interview. Candidates without the research proposal will not be allowed to appear in the interview. The weightage for interview and research proposal will be 20 marks.

Sr. No. 4: National test

Candidates who have qualified any national level test recognized by UGC will be given 20% weightage i.e. 20 marks

13-B: Distribution and weightage of marks for Post-Graduate Programme candidates

Distribution and weightage of marks to be given to the candidate is given below: (Total marks 100)

S.N.	Details	Weightage of Marks
1.	Entrance test	50%
2.	Marks in graduation	30%
3.	Interview	20%

Explanation:

Sr. No. 1

Entrance Test

Weightage for entrance test will be 50% of the score obtained in the entrance test i.e. if a candidate scores 60 marks out of 100 marks in the entrance test he/she will be awarded 30 marks $(60 \times 50 / 100)$.

Sr. No.2

Marks in Graduation

A candidate applying for admission will be awarded 30% of the marks obtained in graduation e.g. if a candidate has scored 60% marks in graduation, then he/she will be awarded 18 marks i.e. $(60 \times 30) / 100$.

Sr. No.3

Interview

Weightage for interview will be 20% of the total marks i.e. 20 marks.

14. How to Apply

Instructions for submitting Online Application

1. Please read eligibility criteria and other requirements before submitting the online application form.
2. To apply for admission to a programme, eligible candidates must complete the online application form and submit it.
3. The candidate will also take a printout of the completed online application form after submitting it and send the same with required enclosures (see below) by registered post to:

**The Assistant Registrar
Central University of Punjab
City Campus, Mansa Road
Bathinda – 151001**

4. Enclosures required along with the print out of online application:

- i. Crossed demand draft in favour of “Central University of Punjab” payable at Bathinda. Write your name, application number and address on the back side of the demand draft.
- ii. Paste recent passport size coloured photograph on the specified space at print-out application form.
- iii. The candidate shall put his signature at the space given below the photograph.
- iv. Duly signed undertakings/declaration in the prescribed format.
- v. Self-attested copies of following:
 - a. Certificate of SC/ST/OBC/PWD.
 - b. Date of birth certificate.
 - c. Marks sheet of 12th standard or equivalent.
 - d. Marks sheet of Bachelor’s programme.
 - e. Marks sheet of Master’s programme (for admission in Integrated Programmes wherever applicable).
 - f. Certificate of CSIR-UGC-NET (JRF/LS)/GATE or any other national level test (with existing validity) recognized by UGC (for Integrated Programmes).
 - g. Any other degree/diploma.

5. Important Instructions:

- i. The university reserves the right not to offer the programme in any particular field if the response to the course is not adequate. The decision of the university will be final in this regard.
- ii. If the number of candidates at a particular entrance test centre is insufficient, the university reserves the right to change the centre.
- iii. The university reserves the right to change the dates and time slots for any test centre.
- iv. Admitted candidates will have to submit the Migration Certificate within one month of registration. In case of failure to do so, their admission to the respective programmes may be cancelled.
- v. Incomplete application form or application received beyond the scheduled date shall be summarily rejected and university will not be responsible for any postal delay.
- vi. **Ensuring the eligibility for applying to a particular course will be the sole responsibility of the candidate.**