

Delhi Skill and Entrepreneurship University

(A State University Established Under Delhi Act 04, 2020)

INFORMATION BULLETIN 2026

For Admission to PhD Programs



DSEU

Crafting Excellence

www.dseu.ac.in

Delhi Skill and Entrepreneurship University

INFORMATION BROCHURE

FOR ADMISSION IN VARIOUS
Ph.D. PROGRAMS

2026-27

Admission Helpdesk

Email:

phd_admissions@dseu.ac.in

DSEU

दिल्ली कौशल एवं उद्यमिता विश्वविद्यालय

DELHI SKILL AND ENTREPRENEURSHIP UNIVERSITY

(A State University Established under Govt. of Delhi Act 04 of 2020)

Website: <https://dseu.ac.in>

DISCLAIMER

The Delhi Skill and Entrepreneurship University (DSEU) retains the right to alter, modify, update, or remove any section of this bulletin without prior notification. Any such alterations will be promptly reflected on the DSEU website (dseu.ac.in) and will be effective from the date of posting on the admission webpage. This does not constitute a legal document.

It is the responsibility of candidates to regularly monitor the DSEU website/admissionportal for updates pertaining to admissions-2026, as well as for policies concerning allocation and admission. Grievances arising from failure to consult this bulletin and associated websites will not be addressed.

This Bulletin of Information is a compilation of information gathered from various Faculties, Departments, Centres, and Campuses. Every effort has been made to accurately reproduce the official rules, regulations, and relevant details. However, it should not be interpreted as a guarantee, whether explicit or implicit, of the completeness and accuracy of the information provided herein.

DSEU disclaims any liability for losses or damages incurred by individuals resulting from actions taken based on the information contained in this Bulletin. Any errors found within the Bulletin may be due to inadvertent omissions, clerical errors, or other factors.

Failure to comply with admission requirements, including the non-submission of necessary documents and/or non-payment of fees within the specified timeframe, will result in the forfeiture of applicants' admission rights.

In the event that original admission documents are discovered to be fake, non-genuine, fabricated, or otherwise defective at any stage, the concerned candidate will be denied admission or, if already admitted, will have their admission revoked without prior notice. No refunds will be issued in such cases. If such discrepancies are discovered after completing the course, the candidate's degree will be invalidated, and appropriate legal action will be pursued against them.

DSEU reserves the right to modify its admission policies and procedures at any time without prior notification. In case of dispute the decision of Hon'ble VC will be considered final. The most recent and updated information will be accessible on the website.

For any queries please mail: phd_admissions@dseu.ac.in

Candidates are advised to visit the DSEU website frequently for updates and the latest information.

REGISTRATION FEE (Non-Refundable)

Rs. 2000/-

TENTATIVE ACTIVITY CALENDAR

S. No.	Activity / Event	Tentative Schedule
1.	Advertisement in University website	15th July 2026
2.	Opening of website for Online Registration	15th July 2026
3.	Last date for Online Registration and Registration Fee Deposit	16th August 2026
4.	Display of list of shortlisted candidates for written test on DSEU website	4th week of August 2026
	Interview for CSIR/NET/JRF/GATE/Any other fellowship Qualified and Internal Candidates of DSEU	1st week of September 2026
5.	Date of Entrance Test	2nd week of September 2026
6.	Declaration of Entrance Test Result on DSEU website	2nd week of September 2026
7.	Dates for Interview for Entrance qualified candidates	3rd week of September 2026
8.	Declaration of final result on DSEU website	3rd week of September 2026
9.	Dates for Document verification and Admission (Candidates are required to report along with original documents and Demand Draft for admission fee)	3rd week of September 2026
10.	Last Date of Admission & Submission of Joining Report to the concerned Department	4th week of September 2026

Note : Candidates are advised to read the brochure carefully and to visit the website www.dseu.ac.in regularly for updates and other details about the entire admission process.

Message from the Vice-Chancellor



To the Inquisitive Minds, the Innovators, and the Future Architects of Knowledge,

Greetings from Delhi Skill and Entrepreneurship University.

If you are reading this message, you are contemplating a journey that extends far beyond the pursuit of a doctoral degree. You are preparing to embark upon a quest for discovery—a journey that challenges convention, advances knowledge, and creates solutions for a rapidly transforming world.

It gives me immense pleasure to welcome you to Delhi Skill and Entrepreneurship University (DSEU), where research is driven not merely by academic curiosity, but by the aspiration to create meaningful impact for society, industry, and the nation.

Research with Purpose

At DSEU, we believe that the most transformative ideas emerge at the confluence of rigorous scholarship, technological innovation, practical skills, and entrepreneurial thinking. Our doctoral programmes are founded on a simple yet powerful philosophy: research must not only expand the frontiers of knowledge—it must also address real-world challenges and improve lives.

We seek scholars who are not content with analysing problems, but who possess the vision, creativity, and determination to solve them. We welcome researchers who are prepared to question established paradigms, explore interdisciplinary frontiers, and contribute original knowledge that creates lasting value.

A Distinctive Research Ecosystem

Our Ph.D. programmes in Computer Science, Information Technology, Mechanical Engineering, and other emerging disciplines are designed to prepare researchers for the challenges of the twenty-first century. At DSEU, you will become part of a research ecosystem that is distinguished by three defining characteristics:

Interdisciplinary Excellence

The grand challenges of our age—artificial intelligence, sustainable manufacturing, digital transformation, smart infrastructure, healthcare technologies, and entrepreneurship—cannot be addressed within the confines of a single discipline. Our research culture encourages collaboration across domains, enabling scholars to develop comprehensive, innovative, and future-ready solutions.

Industry-Integrated Research

As India's first university dedicated to skills and entrepreneurship, DSEU offers a unique opportunity to connect research with practice. Through collaborations with industry, government, startups, innovation hubs, and incubation centres, your research will have opportunities to influence products, technologies, policies, and enterprises.

Here, Scholarship is designed not only to be published, but to be translated into measurable societal and economic impact.

Beyond a Doctoral Degree

A Ph.D. from DSEU represents far more than an academic qualification. It is a commitment to intellectual excellence, innovation, and leadership. Whether your ambition is to advance scientific discovery, influence public policy, lead cutting-edge research laboratories, establish technology-driven enterprises, or shape the future of higher education, DSEU provides an environment where such aspirations can flourish.

Situated in the National Capital, DSEU benefits from an unparalleled ecosystem of academic institutions, research organisations, industries, government agencies, and one of India's most vibrant entrepreneurial landscapes. This unique environment offers exceptional opportunities for collaboration, innovation, and impactful research. Here, your work will not exist in isolation—it will become part of a larger movement shaping the future of India and contributing to global progress.

An Invitation to Shape Tomorrow

The pursuit of a doctorate is among the most rewarding intellectual journeys one can undertake. It demands curiosity that never rests, resilience in the face of uncertainty, integrity in the pursuit of truth, and the courage to imagine possibilities where none previously existed.

If you possess this spirit of inquiry, this passion for discovery, and this determination to create meaningful impact, I invite you to become a part of the DSEU research Community.

Join us in advancing knowledge that matters.

Join us in building technologies that transform industries.

Join us in nurturing innovations that empower communities.

Join us in creating a future where research, skills, entrepreneurship, and societal progress converge to redefine what is possible.

I look forward to welcoming you to Delhi Skill and Entrepreneurship University and to witnessing the discoveries, innovations, and leadership that your research will bring to our nation and the world.

With my best wishes for your academic and research journey,

Prof. (Dr.) Ashok Kumar Nagawat
Vice Chancellor
Delhi Skill and Entrepreneurship University

About Delhi Skill and Entrepreneurship University

History: The Delhi Skill and Entrepreneurship University Act, 2019, was passed by the Legislative Assembly of the National Capital Territory of Delhi on December 3, 2019, and received the assent of the Lt. Governor of Delhi on February 26, 2020 (Delhi Act 04 of 2020). It was subsequently notified in the Delhi Gazette on May 26, 2020, and subsequently the establishment was notified in the Delhi Gazette on August 14, 2020 with the establishment date as August 15, 2020. DSEU commenced its operations on October 8, 2020, when the Founder Vice-Chancellor assumed the office. Therefore, October 8, 2020, is celebrated as the Foundation Day of DSEU.

Concept: Delhi Skill and Entrepreneurship University (DSEU) is a landmark initiative by the Government of the National Capital Territory (NCT) of Delhi. The goal was to create an institution that would bridge the gap between education and employment by offering industry aligned skill development programs. The university was also envisioned as a hub for skill training, entrepreneurship, and innovation, catering to the needs of students, working professionals, and industries. The regular academic programs at DSEU aim to bridge the gap between academic knowledge and real-world business challenges.

DSEU launched its first batch of programs in August 2021, offering courses in areas like IT, healthcare, retail, tourism, and entrepreneurship in addition to diploma and graduation programs running at erstwhile institutes merged into DSEU. It has quickly emerged as a leading institution in the field of skill-based education. It has been ranked Second in the Outlook Ranking of Skill Universities in India (scoring 779.4 out of 1000) and first if only State Funded Universities are undertaken.

DSEU is committed to offering skill-based, high-quality education to students. As a new and emerging university, we may not yet compete the longstanding institutions and Universities. However, we are committed to providing courses with a practical focus and real-world relevance. We recognize that in today's rapidly advancing technological landscape, there is an increasing demand for skilled professionals.

Therefore, we believe that investing in quality education is crucial to keep India's workforce competitive in the global economy. By providing specialized education in diverse fields of skill education, we aim to equip our students with the knowledge and competencies in their chosen careers.

Vision, Mission, and Key Principles

- **Vision:** To become a global leader in skill development and entrepreneurship education, empowering individuals to achieve their full potential and contribute to the socio- economic development of the nation.
- **Mission:** To provide high-quality, industry-relevant skill training and entrepreneurship programs that enhance employability, foster innovation, and promote sustainable development.
- **Key Features of DSEU**
 - **Industry-Aligned Curriculum:** Programs are designed in collaboration with industry partners to ensure relevance and employability.
 - **Focus on Innovative Programs:** DSEU offers many innovative programs like Business Process Management, Retail Management, Supply Chain Management, Digital Media Design, Beauty Therapy, Artificial Intelligence, Network Engineering and Security, Digital Marketing and Data Analytics, Dialysis Technology, Life Sciences, Office Management (AI Driven), Nano Materials and Nano Technologies, Event Management, Semi-conductor Chip Design and Fabrication etc. which were not available in erstwhile institutions merged into DSEU.
 - **Focus on Entrepreneurship:** DSEU promotes entrepreneurship through training, incubation activities, and mentorship. Focus on Government Funded Programs: DSEU has been identified as the nodal agency for (1) the Women Works Program (WWP) of Department of WCD, GNCTD and (2) the Spoken English Program of Department of Higher Education, GNCTD.
 - **Inclusivity:** The university aims to make skill training accessible to all, including women, marginalized groups, and differently-abled individuals.
 - **Global Outlook:** DSEU emphasizes global best practices and collaborations to prepare students for international opportunities built through consistent engagement.

1. Research Departments offering PhD programs

Research Departments	Seat	ST	SC	EWS	OBC_ NCL	UR
Allied Medical Science	1	0	0	0	0	1
Pharmaceutical Sciences	4	0	0	0	1	3
Architecture and Civil Engineering	8	0	1	0	2	5
Business, Finance, Management and Entrepreneurship	34	2	5	3	9	15
Computer Engineering and Application	30	2	4	3	8	13
Electrical and Electronics Engineering	18	1	2	1	4	10
Mechanical Engineering	60	4	9	6	16	25
Physics	4	0	0	0	1	3
Chemistry	8	0	1	0	2	5
Mathematics	4	0	0	0	1	3
Environmental Science and Sustainability	3	0	0	0	0	3
English	4	0	0	0	1	3
Spanish	8	0	1	0	2	5

2. Eligibility Criteria for Admission

An applicant is eligible for Full Time research, provided she/he fulfils the minimum qualification criteria as per latest UGC regulations. The candidate can apply in any of the disciplines or more than one discipline provided, he or she fulfills the minimum eligibility criteria and qualifies the written examination and Interview.

3. Selection Process

- a. The applicants shall be admitted based on an entrance test followed by an Interview. Applicants can appear for DSEU-PET (DSEU Ph.D. Entrance Test). The applicants who have secured minimum qualifying marks of 50% in DSEU-PET shall be considered for the interview.
- b. **Applicants Exempted from DSEU-PET-**
 - i. Regular staff members of DSEU or staff on deemed deputation of DSEU.
 - ii. Applicants who have qualified UGC/CSIR-NET/JRF/ any other national fellowship examination or valid GATE score (with qualifying marks) in the relevant area of research.
 - iii. Foreign students who apply through the Ministry of Education or foreign students under a Cultural Exchange Scholarship Programme of Government of India.
- c. A relaxation of 5% of marks (from 50% to 45%) shall be allowed for the candidates belonging to SC/ST/OBC (non-creamy layer)/EWS/PwBD/Defence Personal (DP) in the entrance examination conducted by the University.
- d. The DSEU-PET shall consist of 50% questions on Research Aptitude/Methodology (MCQ's) which may include quantitative methods, experimental techniques etc., and 50% subject-specific questions(MCQ's).
- e. The weightage for the entrance test will be 70% and 30% for the interview including Presentation.
- f. Every candidate needs to submit a brief about her/his research area/interest and is required to give a presentation on the same before the interview committee of the concerned Department.
- g. List of candidates qualified for the interview, schedule and venue of the interview will be notified on the Website.

4. Result Declaration

Result will be declared on the University Website www.dseu.ac.in. No separate intimation will be sent to the candidates regarding declaration of results and commencement of interview/ admission.

5. Reservation/Relaxations

- a. In all the Ph.D. programs of the University, reservation of seats for applicants in all the categories, including SC/ST/OBC (non-creamy layer)/Person with Benchmark Disability (PwBD), Economically Weaker Section (EWS)/ Defence Personal (DP) will be applicable as per the policies of Govt. of National Capital Territory of Delhi
- b. Provided further that, if in spite of the above relaxation, the seats remain unfilled, they shall be filled by the applicants from the unreserved category.

6. Fee Details

Type of fee	Program fee
General Fee per annum	INR 10000
Examination Fee	INR 2000
Total Annual fees	INR 12000
<i>In addition to above fee structure, the following fee are also required to be paid at the time of admission:</i>	
Caution Money (One time refundable)	INR 3500
Thesis Evaluation Fee	INR 20,000

7. Tentative Seat

For information pertaining to the availability of seats for a particular supervisor, may refer to the DSEU website, Research Section

8. Refund of Fee

The amount of program fee/other charges deposited by the student may not be refunded if the candidate does not join the programme or leave the University and intimate the same after the last date of fee submission. Fee refund shall be done as per the UGC policy.

9. Course Work

- a. Each research scholar shall be required to take course work as per DSEU Ph.D. Regulations.
- b. The credits requirement for the Ph.D. course work shall be:
 - i. A minimum of 12 credits for scholars with an acquired master's degree in relevant discipline. However, a candidate seeking admission to computer applications program with MCA/MSc will have to undergo a course work of minimum 18 credits.
 - ii. A minimum of 24 credits for scholars with an entry after a 4-year bachelor's degree under NEP only.
- c. Refer to DSEU Ph.D. regulations for detailed course work guidelines.

10. Teaching Cum Research Fellowship

- a. The full-time research scholars may avail JRF/SRF/GATE fellowship, as per UGC/AICTE guidelines. The candidate may get a fellowship from any agency where there is no conflict of interest.
- b. A candidate can avail only one fellowship/ financial assistance at a given point of time.

11. Syllabus for DSEU-PhD Entrance Test (DSEU- PET)

The DSEU -PET will contain two sections of 30 MCQ's in each section. The scheme of the exam would be as follows. The detailed syllabus maybe found on Annexure -I

Section	Type	Number of Questions
A	Common Questions for all branches (Research Aptitude/Methodology)	30
B	Domain Specific (Based on the department chosen by the candidate)	30

12. Procedure for Online Registration

All candidates interested in seeking admission in Ph.D. programs of Delhi Skill & Entrepreneurship University (DSEU) are required to visit the website www.dseu.ac.in and fill an online registration form.

13. Application Process

- The candidate will be required to authenticate himself/herself using the credentials provided at the time of registration.
- While filing in the application form, the candidate is required to select the program(s)/ stream(s) he/she is interested in seeking admission. A candidate can apply in one or more Ph.D. programs. However, only one application needs to be filled for all the programs applied for; however, the fee needs to be paid for each department.

phd_admissions@dseu.ac.in

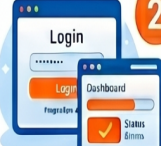


DSEU PhD Admission Portal Guide 2026-27



1 Create Account & Register

Open the Portal, select '**New applicant? Register here.**'. Fill in registration details (Name, Mobile, Email, Password)



2 Login & View Dashboard

Enter your registered Email & Password to access the Applicant Dashboard. View progress and profile status



3 Fill Profile Details

Enter **Personal Details** (Name, DOB, Nationality, Aadhaar) and **Contact Details** (Addresses & Communication)



4 Provide Academic Qualifications

Input details for Class 10, 12, **Bachelor's, Master's**, and optional **M.Phil.** Indicate **NET/GATE** qualification



5 Employment & Research Proposal

Add Employment status and details (if applicable). Enter **Department, Proposed Area**, and **SOP**



6 Documents, Payment & Submit

Upload all required **Documents** (max 5 MB). Transfer application fee and enter unique **Payment Reference** (UTR). Preview and Final Submit

Delhi Skill and Entrepreneurship University PhD Admission 2026-27

14. Important points for Candidate seeking reservation

- a. It is the sole responsibility of the candidate to prove his/her eligibility for claiming a reservation under any of the reserved categories. The candidates under SC/ST/OBC/EWS categories and PwBD/DP subcategories will be required to produce the certificate(s) of the respective reserved category/sub-category issued by the competent authority at the time of Interview.
- b. If the certificate for the reserved category candidate is not found to be in order, no benefit of the reservation will be given.
- c. Candidates belonging to OBC Category must upload the Latest Non-Creamy Layer Certificate which should be valid as on 01-08-2026 issued from the competent authority. In case the candidate has applied for the certificate and only has details of application, but no caste certificate. Such Candidates will strictly be considered as General Category Candidates.
- d. If the OBC-NCL certificate is not valid as on 01-08-2026, then it should be accompanied with a valid family income certificate valid as on 01-08-2026 issued from the competent authority.
- e. In case of EWS Candidates, Only FAMILY INCOME AND ASSET CERTIFICATE which is valid as on 01-08-2026 will be considered.
- f. All the candidates seeking admission under the Person with Benchmark Disabilities (PwBD) quota are required to bring a certificate from Vocational Rehabilitation Centre (VRC) for Handicapped, 9-11 Vikas Marg, Karkardooma, Delhi-92, and for Dyslexia a certificate from Institute of Human Behavior and Allied Sciences (IHBAS), Tahirpur Road, Dilshad Garden, Delhi-110095, only as to whether he/she is fit for undergoing the program applied for. No other certificate in this regard shall be entertained. Non-submission of certificate or admission on the basis of the wrong choice filling other than as mentioned in their PwBD certificate will lead to cancellation of admission”.

15. Seat Conversion Rules

Rule 1: After exhausting the complete list of registered candidates in PwBD and DP subcategories, remaining vacant seats in these subcategories will be transferred to respective main category (GEN/SC/ST/OBC/EWS).

Rule 2: The vacant SC seats will be converted to ST category and vice-a-versa. After exhausting the complete list of registered SC, ST, OBC and EWS candidates, the vacant seats will be treated as unreserved.

ANNEXURE - I

Syllabus for DSEU-PhD Entrance Exam

Paper I (Common For All)

Research Aptitude & Methodology

- General Research: Objectives, types (qualitative/quantitative), Research design, Literature review, Scientific writing, Experimental design, Ethics in research, Plagiarism, Intellectual property (IPR & patent).
- Mathematical Aptitude: Basic statistics (Data Collection, mean, median, mode, **standard deviation**, variance), graphical representation, numerical reasoning Hypothesis formulation, Sampling methods.
- Computer Applications: Basic computer skills for research.

Paper II

1. Departments of Allied Medical Science and Biotechnology and Bioinformatics

- Molecular Biology & Genetics: DNA/RNA structure & function, replication, transcription, translation, gene regulation, mutations, DNA repair, recombinant DNA tech, genomics, epigenetics, RNAi.
- Cell Biology: Prokaryotic/eukaryotic cell structure, organelles, cell cycle, cell signaling, cell-cell communication, membrane biology, cytoskeleton.
- Biochemistry: Biomolecules (proteins, lipids, carbs, nucleic acids), enzymes, bioenergetics, metabolic pathways, protein structure/folding.
- Microbiology & Immunology: Microbial diversity, growth, pathogens, immune system (cells, antibodies, MHC, T/B cells), vaccines, host-pathogen interactions.
- Physiology (Plant & Animal): Core functions, hormones, photosynthesis, nutrient transport, circulation, nervous system basics (as applicable).
- Bioinformatics & Biostatistics: Biological databases, sequence alignment, phylogenetic analysis, statistical tests (mean, median, mode, standard deviation), hypothesis testing, data representation.
- Biotechnology Techniques: Microscopy (light, electron), centrifugation, chromatography (HPLC, GC), electrophoresis, PCR, ELISA, Cell/Tissue Culture, Fermentation technology - Microbial growth kinetics and Bioreactors.

2. Department of Pharmaceutical Sciences

A. Pharmaceutical Chemistry

- Medicinal Chemistry (SAR, drug design, synthesis)
- Organic Chemistry (reaction mechanisms, stereochemistry)
- Inorganic Chemistry (coordination compounds, metals in medicine)
- Pharmaceutical Analysis
- Spectroscopy (UV, IR, NMR, MS)
- Chromatography (HPLC, GC, TLC)
- Impurity profiling
- ICH & regulatory guidelines

B. Pharmaceutics

- Physical Pharmacy
- Dosage form design
- Novel drug delivery systems
- Biopharmaceutics & Pharmacokinetics
- Industrial Pharmacy
- Stability studies
- Quality control & assurance
- GMP, validation

C. Pharmacology

- General pharmacology
- Autonomic nervous system
- Cardiovascular pharmacology
- CNS pharmacology
- Endocrine & reproductive pharmacology
- Chemotherapy
- Toxicology
- Drug interactions
- Preclinical screening methods

D. Pharmacognosy & Phytochemistry

- Medicinal plants
- Plant secondary metabolites
- Extraction & isolation techniques
- Herbal drug standardization
- Marine drugs
- Biotechnology in pharmacognosy
- Quality control of herbal medicines

E. Biochemistry & Biotechnology

- Enzymes & metabolism
- Proteins & nucleic acids
- Molecular biology
- Genetic engineering
- Recombinant DNA technology
- Bioinformatics basics

F. Microbiology & Immunology

- Sterilization techniques
- Antibiotics & resistance
- Microbial assays
- Vaccines
- Immunological principles

G. Biostatistics

- Descriptive statistics
- Probability
- Hypothesis testing
- ANOVA

- Regression
- Experimental data analysis

H. Regulatory Affairs

- Drug approval process (India/US/EU basics)
- FDA, EMA, CDSCO
- Clinical trials
- Pharmacovigilance

3. Civil Engineering

A. Civil Engineering (General)

Engineering Surveying, Basic Principles of Surveying, types and classification of survey, surveying equipment, levelling, Maps and Map making, Indian Map series. Engineering Mechanics, Basic terminology, Units and dimensions, Force, Torque, Friction, Laws of mechanics, Free body diagram, solid mechanics. Construction Materials, Types and characteristics of different types of construction materials to include Steel, Concrete, Wood, Stone, Brick/Masonry etc. requirements of good construction materials. Transportation and Highway Engineering – Types and classification of roads, IRC, road construction and materials, road construction equipment. Project Management, Basic terms in project management, CPM/PERT, critical path, float/slack, quality control, risk management, resource scheduling and management project management software.

Section B1 : Hydraulics and Water Resource Engineering :

Fluid Mechanics: Properties of fluids, fluid statics, Continuity, momentum and energy equations and their applications, Potential flow, Laminar and turbulent flow, Flow in pipes, pipe networks, concept of boundary layer and its growth, Concept of lift and drag. Open Channel Flow and Hydraulic Machines : Introduction of open channel flow, energy depth relationship, uniform flow, gradually varied flow, water surface profiles, and its computations, rapidly varied flow and its computations, spatially varied flow, unsteady flows, hydraulics of mobile bed channels, Fluid machinery, Turbines, Pumps and hydro-electric power systems.

Water Resources Engineering: Hydrologic cycle and its components, hydrograph analysis, flood estimation, and routing, surface runoff models, hydrological modeling, groundwater hydrology – steady state well hydraulics and aquifers, Application of Darcy's Law, Crop water requirements – Duty, delta, Diversion headworks, canal falls, Regulators modules, Design and construction of gravity dams, Theories of seepage and design of weirs, barrages and dams, spillways, energy dissipaters.

Section B2: Structural Engineering

Mechanics of Materials: Bending moment and shear force in statically determinate beams; Simple stress and strain relationship; Theories of failures; Simple bending theory, flexural and shear stresses, shear centre; Uniform torsion, buckling of column, combined and direct bending stresses. Structural Analysis; Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Displacement methods; Slope deflection and moment distribution methods;

Influence lines; Stiffness and flexibility methods of structural analysis. Concrete Structures: Working stress, Limit state and ultimate load design concepts; Design of beams, slabs, columns, footing, staircase; Pre-stressed concrete.

Steel Structures: Working stress and Limit state design concepts; Design of tension and compression members, beams and beam columns, column bases; Connections simple and eccentric, beam-column connections, plate girders and trusses; Plastic analysis of beams and frames. Pre-stressed Concrete: Pre-stressing systems and end anchorages, losses of pre-stress. Analysis and design of members for flexure, shear, bond and bearings, Cable layouts, Design of Pre-stressed Bridges. Structural Dynamics: Free and Forced vibration analysis of Single and Multi degree of freedom systems. Orthogonality relationships of principal modes, Earthquake forces. Nature and magnitude, pseudo-static method of approximate evaluation of earthquake forces, seismicity, Earthquake Motion and Response, Response Spectra, Philosophy of Capacity Design, Concepts of seismic design: Earthquake resistant design, construction & detailing for RCC and Masonry structures and relevant codes such as IS 1893:2002, IS 13920, IS:4326 etc.

Section- B3: Geotechnical Engineering

Soil Mechanics and Geotechnical Engineering – Nature of soil, soil formation and soil type, soil properties, basic definitions, phase relations, index properties, basic concepts of clay minerals and soil structure, soil classification and identification, hydraulic conductivity seepage, compaction, stress distribution, shear strength, Mohr's circle of stress, Mohr's-Coulomb failure theory, shear strength parameters, compressibility and consolidation, soil exploration, shallow foundations, settlements of footings and rafts, pile foundations.

Geotechnical Earthquake Engineering – Engineering seismology, seismic risks and hazards, social and economic consequences, nature and attenuation of earthquake magnitude, ground motion, site characteristics, dynamic behaviour of soils, liquefaction and cyclic mobility, seismic response of soil structure system, mitigation techniques. Rock Mechanics-Problems of rock mechanics, rock exploration, Griffith's theory, Coulomb's theory, in-situ tests on rock mass, mechanical, thermal and electrical properties of rock mass, pressure tunnels, linked and unlined tunnels, foundation on rocks, slope stability, rock bolt anchors and grouting, problems associated with tunnels, tunnelling in various subsoil conditions and rocks. Uncertainties, Risk and Reliability in Geotechnical Engineering-Risk, randomness, uncertainty, measures of reliability, modelling of uncertainty, probability, tests of goodness-of-fit (chi-square test, Kolmogorov-Smirnov test), reliability methods, deterministic and probabilistic approaches, Monte Carlo simulation and applications, risk assessment. Ground Improvement Techniques Mechanical modification per compression, sand drains, soil stabilization, chemical modifications and grouting, hydraulic modification, ground modification by soil reinforcement, difficult soils.

Section- B4:

Environmental Engineering

Water and Wastewater Treatment, Solid Waste Disposal and Management, Air Quality monitoring and modeling, Material composites, Green buildings, Green materials, Ground water quality modeling, Surface and sub surface water quality modeling and development, ground water contamination, Environmental Impact assessment, Environmental chemistry and

microbiology. ■ Surveying and Geoinformatics Photogrammetry, Optical and Microwave Remote Sensing, GIS, Geospatial Applications, Artificial Intelligence, Machine Learning and Expert Systems.

Construction Planning and management Construction management for sustainability, Applicability of Green Engineering Solution, Green Technology application in construction, Green Tech Knowledge of Construction, Workforce and Empowerment of knowledge in Construction Project, Theory of Constraints in Construction Projects, Contradiction analysis of Construction Innovation, Radical Reduction in Project Cycle Time, Trade-Off Between Project Cost and Schedule, Optimizing Construction Input on Front-End Planning, Repair, Rehabilitation and Renewal of Underground Infrastructure, Infrastructure Asset Management

4. Departments of Business, Finance and Managerial Skills and Entrepreneurship Skills

A. Management

- Concept, Process, Theories and Approaches, Management Roles and Skills
- Functions – Planning, Organizing, Staffing, Coordinating and Controlling.
- Communication – Types, Process and Barriers.
- Decision Making – Concept, Process, Techniques and Tools
- Organisation Structure and Design – Types, Authority, Responsibility,
- Centralisation, Decentralisation and Span of Control
- Managerial Economics – Concept & Importance
- Demand analysis – Utility Analysis, Indifference Curve, Elasticity & Forecasting
- Market Structures – Market Classification & Price Determination
- National Income – Concept, Types and Measurement
- Inflation – Concept, Types and Measurement
- Business Ethics & CSR
- Ethical Issues & Dilemma
- Corporate Governance
- Value Based Organisation

B. Organisational Behaviour – Significance & Theories

- Individual Behaviour – Personality, Perception, Values, Attitude, Learning and Motivation
- Group Behaviour – Team Building, Leadership, Group Dynamics
- Interpersonal Behaviour & Transactional Analysis
- Organizational Culture & Climate
- Work Force Diversity & Cross Culture Organisational Behaviour
- Emotions and Stress Management
- Organisational Justice and Whistle Blowing
- Human Resource Management – Concept, Perspectives, Influences and Recent Trends
- Human Resource Planning, Recruitment and Selection, Induction, Training and Development
- Job Analysis, Job Evaluation and Compensation Management

C. Strategic Role of Human Resource Management

- Competency Mapping & Balanced Scoreboard
- Career Planning and Development
- Performance Management and Appraisal
- Organization Development, Change & OD Interventions
- Talent Management & Skill Development
- Employee Engagement & Work Life Balance

- Industrial Relations: Disputes & Grievance Management, Labour Welfare and
- Social Security
- Trade Union & Collective Bargaining
- International Human Resource Management – HR Challenge of International
- Business
- Green HRM

D. Accounting Principles and Standards, Preparation of Financial Statements

- Financial Statement Analysis – Ratio Analysis, Funds Flow and Cash Flow Analysis, DuPont Analysis
- Preparation of Cost Sheet, Marginal Costing, Cost Volume Profit Analysis
- Standard Costing & Variance Analysis
- Financial Management, Concept & Functions
- Capital Structure – Theories, Cost of Capital, Sources and Finance
- Budgeting and Budgetary Control, Types and Process, Zero base Budgeting
- Leverages – Operating, Financial and Combined Leverages, EBIT–EPS
- Analysis, Financial Breakeven Point & Indifference Level.

E. Value & Returns – Time Preference for Money, Valuation of Bonds and Shares, Risk and Returns;

- Capital Budgeting – Nature of Investment, Evaluation, Comparison of Methods;
- Risk and Uncertainly Analysis
- Dividend – Theories and Determination
- Mergers and Acquisition – Corporate Restructuring, Value Creation, Merger Negotiations, Leveraged Buyouts, Takeover
- Portfolio Management – CAPM, APT
- Derivatives – Options, Option Payoffs, Option Pricing, Forward Contracts & Future Contracts
- Working Capital Management – Determinants, Cash, Inventory, Receivables and
- Payables Management, Factoring International Financial Management, Foreign exchange market

F. Strategic Management – Concept, Process, Decision & Types

- Strategic Analysis – External Analysis, PEST, Porter's Approach to industry analysis, Internal Analysis – Resource Based Approach, Value Chain Analysis
- Strategy Formulation – SWOT Analysis, Corporate Strategy – Growth, Stability, Retrenchment, Integration and Diversification, Business Portfolio Analysis - BCG, GE Business Model, Ansoff's Product Market Growth Matrix
- Strategy Implementation – Challenges of Change, Developing Programs
- McKinsey 7s Framework
- Marketing – Concept, Orientation, Trends and Tasks, Customer Value and Satisfaction
- Market Segmentation, Positioning and Targeting Product and Pricing Decision – Product Mix, Product Life Cycle, New Product development, Pricing – Types and Strategies
- Place and promotion decision – Marketing channels and value networks, VMS, IMC, Advertising and Sales promotion

G. Consumer and Industrial Buying Behaviour: Theories and Models of Consumer Behaviour

- Brand Management – Role of Brands, Brand Equity, Equity Models, Developing a Branding Strategy; Brand Name Decisions, Brand Extensions and Loyalty
- Logistics and Supply Chain Management, Drivers, Value creation, Supply Chain Design, Designing and Managing Sales Force, Personal Selling
- Service Marketing – Managing Service Quality and Brands, Marketing Strategies of Service Firms

- Customer Relationship Marketing – Relationship Building, Strategies, Values and Process
- Retail Marketing – Recent Trends in India, Types of Retail Outlets.
- Emerging Trends in Marketing – Concept of e-Marketing, Direct Marketing, Digital Marketing and Green Marketing
- International Marketing – Entry Mode Decisions, Planning Marketing Mix for International Markets

H. **Statistics for Management:**

- Concept, Measures Of Central Tendency and Dispersion, Probability Distribution – Binominal, Poison, Normal and Exponential Data Collection & Questionnaire Design
- Sampling – Concept, Process and Techniques
- Hypothesis Testing – Procedure; T, Z, F, Chi-square tests
- Correlation and Regression Analysis
- Operations Management – Role and Scope
- Facility Location and Layout – Site Selection and Analysis, Layout – Design and Process
- Enterprise Resource Planning – ERP Modules, ERP implementation
- Scheduling; Loading, Sequencing and Monitoring
- Quality Management and Statistical Quality Control, Quality Circles, Total Quality Management – KAIZEN, Benchmarking, Six Sigma; ISO 9000 Series Standards
- Operation Research – Transportation, Queuing Decision Theory, PERT / CPM

I. **International Business**

- Managing Business in Globalization Era; Theories of International Trade; Balance of payment
- Foreign Direct Investment – Benefits and Costs
- Multilateral regulation of Trade and Investment under WTO
- International Trade Procedures and Documentation; EXIM Policies
- Role of International Financial Institutions – IMF and World Bank
- Information Technology – Use of Computers in Management Applications; MIS, DSS
- Artificial Intelligence and Big Data
- Data Warehousing, Data Mining and Knowledge Management – Concepts
- Managing Technological Change

J. **Entrepreneurship Development**

- Concept, Types, Theories and Process,
- Developing Entrepreneurial Competencies
- Intrapreneurship – Concept and Process
- Women Entrepreneurship and Rural Entrepreneurship
- Innovations in Business – Types of Innovations, Creating and Identifying Opportunities, Screening of Business Ideas
- Business Plan and Feasibility Analysis – Concept and Process of Technical, Market and Financial Analysis
- Micro and Small Scale Industries in India; Role of Government in Promoting SSI
- Sickness in Small Industries – Reasons and Rehabilitation
- Institutional Finance to Small Industries – Financial Institutions, Commercial Banks, Cooperative Banks, Micro Finance.

5. **Computer Science Engineering & Applications**

- Digital Logic: Boolean algebra. Combinational and sequential circuits. Minimization. Number

representations and computer arithmetic (fixed and floating point).

- Computer Organization and Architecture: Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining, pipeline hazards. Memory hierarchy: cache, main memory, and secondary storage.
- Programming and Data Structures: Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.
- Algorithms: Searching, sorting, hashing. Asymptotic worst-case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide-and-conquer. Graph traversals, minimum spanning trees, shortest paths.
 - Discrete Structures: Sets, functions, relations, counting; generating functions, recurrence relations and their solutions; algorithmic complexity, growth of functions and asymptotic notations.
- Theory of Computation: Regular expressions and finite automata. Contextfree grammars and push-down automata. Regular and context-free languages. Compiler Design: Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation. Local optimisation, common subexpression elimination.
- Operating System: System calls, processes, threads, inter-process communication, concurrency, and synchronization. Deadlock. CPU and I/O scheduling. Memory management and virtual memory.
- Databases: ER-model, Relational model (Relational algebra, Tuple calculus), Integrity constraints, Normal Forms- 1 NF, 2 NF, 3 NF and BCNF, Query languages (SQL), Transactions and concurrency control.
- Software Engineering: Software Process, Modeling Languages, Requirement and feasibility analysis, Process Models, Planning and managing the project, Domain specific modeling, Software architecture and design patterns, Software reliability and testing techniques.
- Computer Networks: Concept of layering. LAN technologies (Ethernet). Flow and error control techniques, switching. IPv4/IPv6, routers, and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi.
- Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.
- Data Science : Machine Learning, Types of Machine Learning, Data Mining Concepts, Data Warehousing Concepts

6. Electrical and Electronics

(a) Analog Electronics & Digital Electronics

Analog Electronics : Direct and Indirect Band-gap Semiconductors, Diffusion Current, Drift Current, P-N Diode, Zener Diode, BJT, MOSFET, LED, Photodiode, Rectifiers, Op-amps as Summers, Integrators & Differentiators, Oscillators, E-MOSFET, D-MOSFET, CMOS Inverter, CMOS Sequential and Combinational Logic Circuits.

Digital Electronics : Boolean Algebra, Minimization of Functions using Boolean Identities and Karnaugh Map, Logic Gates, Multiplexers and Demultiplexers, Encoders and Decoders, Flip-Flops, Counters, Shift Registers, ADCs and DACs, Computer Organization : Machine Instructions and Addressing Modes, ALU.

(b) Communication System & Electromagnetics

Communication System: Amplitude Modulation & Demodulation, Angle Modulation & Demodulation, Spectra of AM & FM, Superheterodyne Receivers. Information Theory: Entropy, Mutual Information & Channel Capacity, Digital Communications: PCM, DPCM, Digital Modulation Schemes (ASK, PSK, FSK), MIMO/ Massive MIMO, Wireless Channel Modelling, OFDM, 5G & 6G Technologies, Adaptive Modulation and Coding

Electromagnetics: Maxwell's Equations, Boundary Conditions, Wave Equation, Poynting vector. Plane Waves & Properties, Phase & Group Velocity, Propagation through Various Media, Skin Depth. Transmission Line Equations, Characteristic Impedance, Impedance Matching, Smith Chart, Radiation Resistance, Antenna Gain, Antenna Directivity, Radiation Pattern, Rectangular Microstrip Antennas & their Designing, Types of Feed in Microstrip Antenna, Light Propagation in Optical fibers

(c) Signals, Signal Processing and Image Processing

Signals and Signal Processing: Signal Classification (Periodic & Aperiodic, Even & Odd, Energy & Power, Causal & Anti-Causal, Random & Deterministic), Unit Impulse, Unit Step and Unit Ramp Signals, Fourier series and Transform, Sampling Theorem, DTFT & DFT, z-transforms and ROC, LTI systems: Causality & Stability, Impulse Response, Group & Phase Delay, IIR & FIR Filters.

Image Processing: Image Enhancement: Gray Level Transformation, Histogram Processing, Spatial & Frequency Domain Filtering, Image Smoothing & Sharpening, Image Restoration, Image Segmentation, Thresholding, Image Compression and its Techniques.

7. Electrical Engineering

Electrical Circuits & Fields: KCL, KVL, Node & Mesh analysis, Network Theorems (Thevenin, Norton, Superposition), Transient response of DC/AC networks, Sinusoidal steady-state analysis, Resonance, Two-port networks, and Electromagnetic Field theory (Gauss's Law, Ampere's Law). Signals & Systems: Continuous and discrete-time signals, Linear Time-Invariant (LTI) systems, Impulse response, Convolution, Fourier Analysis (Series and Transform), and Laplace Transform properties.

Control Systems: Open/Closed-loop systems, Transient response analysis, Root Locus, Frequency Response Analysis (Bode plots), Compensation techniques, and State-Space Analysis. Power Systems & Electrical Machines: AC/DC transmission concepts, Power generation, Line parameters, Load flow methods (Gauss-Seidel, Newton-Raphson), Fault analysis, Stability (Equal Area Criterion), DC Machines, Transformers, and Induction Motors.

Power Electronics & Electronics: Diodes, BJTs, MOSFETs, IGBTs, Thyristors, Rectifiers (1-ph/3-ph), DC-DC converters (Buck, Boost), Inverters (Voltage/Current Source), and Operational Amplifiers.

8. Mechanical Engineering

Section 1: Applied Mechanics and Design

- Engineering Mechanics
- Mechanics of Materials
- Theory of Machines
- Vibrations
- Machine Design

Section 2: Fluid Mechanics and Thermal Sciences

- Fluid Mechanics
- Heat Transfer
- Thermodynamics
- Applications

Section 3: Materials, Manufacturing and Industrial Engineering

- Engineering Materials
- Casting, Forming and Joining Processes
- Machining and Machine Tool Operations
- Metrology and Inspection
- Computer Integrated Manufacturing
- Production Planning and Control
- Inventory Control
- Operations Research

9. Physics

PART 'A' CORE

- Mathematical Methods of Physics
- Classical Mechanics
- Electromagnetic Theory
- Quantum Mechanics
- Thermodynamic and Statistical Physics
- Electronics and Experimental Methods

PART 'B' ADVANCED

- Mathematical Methods of Physics
- Classical Mechanics
- Electromagnetic Theory
- Quantum Mechanics
- Thermodynamic and Statistical Physics
- Electronics and Experimental Methods
- Atomic & Molecular Physics
- Condensed Matter Physics
- Nuclear and Particle Physics

(a) Analog Electronics & Digital Electronics

- *Analog Electronics:* Semiconductors (Direct/Indirect, Drift/Diffusion), P-N & Zener Diodes, BJT, MOSFET (E/D-type), LED, Photodiodes, Rectifiers, and Op-amps (Summers, Integrators,

Differentiators). Includes Oscillators, CMOS Inverters, and Logic Circuits.

- Digital Electronics: Boolean Algebra, K-Maps, Logic Gates, MUX/DEMUX, Encoders/Decoders, Flip-Flops, Counters, and Shift Registers. Covers ADCs/DACs and Computer Organization (ALU, Machine Instructions, Addressing Modes).

(b) Communication System & Electromagnetics

- Amplitude Modulation & Demodulation, Angle Modulation & Demodulation, Spectra of AM & FM, Superheterodyne Receivers. Information Theory: Entropy, Mutual Information & Channel Capacity, Digital Communications: PCM, DPCM, Digital Modulation Schemes (ASK, PSK, FSK), MIMO/ Massive MIMO, Wireless Channel Modelling, OFDM, 5G & 6G Technologies, Adaptive Modulation and Coding.
- *Electromagnetics*: Maxwell's Equations, Boundary Conditions, Wave Equation, Poynting vector.

Plane Waves & Properties, Phase & Group Velocity, Propagation through Various Media, Skin Depth. Transmission Line Equations, Characteristic Impedance, Impedance Matching, Smith Chart, Radiation Resistance, Antenna Gain, Antenna Directivity, Radiation Pattern, Rectangular Microstrip Antennas & their Designing, Types of Feed in Microstrip Antenna, Light Propagation in Optical fibers.

(c) Signals, Signal Processing and Image Processing

- *Signals and Signal Processing*: Signal Classification (Periodic & Aperiodic, Even & Odd, Energy & Power, Causal & Anti-Causal, Random & Deterministic), Unit Impulse, Unit Step and Unit Ramp Signals, Fourier series and Transform, Sampling Theorem, DTFT & DFT, z-transforms and ROC, LTI systems: Causality & Stability, Impulse Response, Group & Phase Delay, IIR & FIR Filters.
- *Image Processing*: Image Enhancement: Gray Level Transformation, Histogram Processing, Spatial & Frequency Domain Filtering, Image Smoothing & Sharpening, Image Restoration, Image Segmentation, Thresholding, Image Compression and its Techniques.

10. Chemistry

Inorganic Chemistry

- Chemical periodicity
- Structure and bonding in homo- and heteronuclear molecules, including shapes of molecules (VSEPR Theory).
- Concepts of acids and bases, Hard-Soft acid base concept, Non-aqueous solvents.
- Main group elements and their compounds: Allotropy, synthesis, structure and bonding, industrial importance of the compounds.
- Transition elements and coordination compounds: structure, bonding theories, spectral and magnetic properties, reaction mechanisms.
- Inner transition elements: spectral and magnetic properties, redox chemistry, analytical applications.
- Organometallic compounds: synthesis, bonding and structure, and reactivity.
- Organometallics in homogeneous catalysis.
- Characterisation of inorganic compounds by IR, Raman, NMR, UV-vis.

Physical Chemistry

- Atomic structure and spectroscopy; term symbols; many-electron systems and antisymmetry principle.
- Chemical bonding in diatomics; elementary concepts of MO and VB theories; Huckel theory

for conjugated π -electron systems.

- Chemical thermodynamics: Laws, state and path functions and their applications; thermodynamic description of various types of processes; Maxwell's relations; spontaneity and equilibria; temperature and pressure dependence of thermodynamic quantities; Le Chatelier principle; elementary description of phase transitions; phase equilibria and phase rule; thermodynamics of ideal and non-ideal gases, and solutions.
- Electrochemistry: Nernst equation, electrochemical cells; Debye Huckel theory; electrolytic conductance – Kohlrausch's law and its applications; ionic equilibria; conductometric and potentiometric titrations.
- Chemical kinetics: Empirical rate laws and temperature dependence; complex reactions; steady state approximation; determination of reaction mechanisms; collision and transition state theories of rate constants; unimolecular reactions; enzyme kinetics; salt effects; homogeneous catalysis; photochemical reactions.
- Colloids and surfaces: Stability and properties of colloids; isotherms and surface area; heterogeneous catalysis.
- Solid state: Crystal structures; Bragg's law and applications; band structure of solids.
- Polymer chemistry: Molar masses; kinetics of polymerization.

Organic Chemistry

- IUPAC nomenclature of organic molecules.
- Principles of stereochemistry: Configurational and conformational isomerism in acyclic and cyclic compounds; stereogenicity, stereoselectivity, enantioselectivity, diastereoselectivity and asymmetric induction.
- Aromaticity: Benzenoid and non-benzenoid compounds – generation and reactions.
- Organic reactive intermediates: Generation, stability and reactivity of carbocations, carbanions, free radicals, carbenes, benzyne and nitrenes.
- Organic reaction mechanisms involving addition, elimination and substitution reactions with electrophilic, nucleophilic or radical species. Synthesis and reactivity of common heterocyclic compounds containing one or two heteroatoms (O, N, S).
- Chemistry of natural products: Carbohydrates, proteins and peptides, fatty acids, nucleic acids.

Interdisciplinary topics

- Chemistry in nanoscience and technology.
- Green chemistry.
- Medicinal chemistry.
- Environmental chemistry

12. Mathematics

- 1. Real Analysis:** Real number system, metric spaces, continuity, differentiation, Riemann Elementary set theory, countable and uncountable sets, supremum and infimum, sequences, series, continuity, uniform continuity, differentiability, Fundamental theorem of integral calculus, Functions of bounded variation, Cauchy's general principle of uniform convergence, uniform convergence and integration.
- 2. Topology:** Metric spaces, topological spaces, connectedness, compactness and separation axioms.
- 3. Complex Analysis:** Complex numbers and functions. CR equations, analytic functions, entire

functions, necessary and sufficient condition for analyticity, harmonic functions, harmonic conjugate, contour integration. Cauchy integral formula, Taylor's and Laurent's theorems, classification of singularities, Riemann's theorem, Calculus of residues, Cauchy's residue theorem, Integration by the method of residues.

4. **Linear Algebra:** Vector spaces over real and complex fields, linear dependence and independence, subspaces, bases, dimensions. Linear transformations, rank and nullity, matrix representation of linear transformations, linear functional. Algebra of matrices: row and column reduction, echelon form, congruence and similarity, rank, inverse, solutions of linear systems. Eigenvalues and eigenvectors, characteristic polynomial, Cayley-Hamilton theorem. Special matrices: symmetric, skew-symmetric, Hermitian, Skew-Hermitian, unitary, and their eigenvalues, quadratic forms.
5. **Abstract Algebra:** Set theory, Relations and Functions, Binary relation, equivalence relations and partitions, Groups, Cyclic group, subgroups, normal subgroups, quotient groups, rings, fields.
6. **Differential Equations:** Ordinary differential equations (ODEs), partial differential equations (PDEs), initial and boundary value problems. Laplace Transform: Definition, Existence of LT, LT of standard functions. First shifting theorem, properties, inverse LT, convolution theorem, solution of linear differential equations with constant coefficient using LT. Heaviside Unit step function, second shifting theorem, impulse function, periodic function and their LTs.
7. **Numerical Analysis:** Solutions of algebraic and transcendental equations, Numerical solution of algebraic equations using Gauss elimination and Gauss-Seidel methods, Interpolation (Newton and Lagrange methods), Numerical differentiation and integration, Numerical solutions of ODEs (Euler and Runge-Kutta methods).
8. **Statistics and Probability:** Measures of central tendency and dispersion: mean, median, mode, variance and standard deviation. Probability theory: sample space, events, conditional probability, Bayes' theorem. Random Variables: Probability mass function (PMF), Probability density function (PDF), expectation. Distribution: Uniform, Binomial, Poisson, Normal and Exponential.
9. **Operation Research:** Linear Programming: Mathematical formulation of LPP models, graphical and simplex methods, duality, Game Theory: Two-person zero-sum games, pure and mixed strategies, saddle point, Inventory theory: Control and Management.

13. Department of Sustainability Sciences

- **Part-I** Remote Sensing; GIS for LULC, Ecosystem dynamics and services, Atmospheric Pollution, trace gases; Aerosols, Noise, basics of Meteorology and Climatology, Science of Climate change and Regional Climate Modeling
- **Part-II** Sustainable Production and Consumption, Environmental, Social and Governance, Sustainable Development Goals, risk assessment, market-based instruments, environmental economics and governance. tools and techniques such life cycle assessment.
- **Part-III** Renewable-energy resource characteristics, biofuels and decentralized energy systems, solar and other renewable technologies, Fundamentals of energy and carbon markets.
- **Part IV** Remote sensing and GIS techniques for urban planning, Wildlife Protection Act (1972), Water Act (1974), Forest Conservation Act (1980), Air Act (1981), Environment

Protection Act (1986), Public Liability Insurance Act (1991), and Biological Diversity Act (2002).

14. English

Unit –I : Drama

Unit –II : Poetry

Unit –III : Fiction, short story

Unit –IV : Non-Fictional Prose

NOTE: The first four units must also be tested through comprehension passages to assess critical reading, critical thinking and writing skills. These four units will cover all literatures in English.

Unit –V : Language: Basic concepts, theories and pedagogy. English in Use.

Unit –VI : English in India: history, evolution and futures

Unit –VII : Cultural Studies

Unit –VIII : Literary Criticism

Unit –IX : Literary Theory post World War II

Unit –X : Research Methods and Materials in English

15. Spanish

Unit –I: Grammatical Aspects, Linguistics, Methodology, and Translation

- i) Modes, Tenses, Use of the past
- ii) Prepositions and other grammatical categories
- iii) Language as a System of Systems
- iv) Methods of Teaching Spanish as a Foreign Language
- v) Problems of Translation in Practice

Unit-II: Advanced Use of Spanish Language

- i) Use of Proverbs and Refrains
- ii) Modismos and Idiomatic Expressions
- iii) Synonyms/Antonyms
- iv) Metaphors and Similes
- v) Text Analysis

Unit-III: Spain: Pre-history and Medieval Literature and Culture

- i) Making of Iberia, Greek and Roman Colonizations and their Contributions
- ii) Visigoths and the Advent of Christianity
- iii) Political and Cultural Mosaic of Al Andalus
- iv) The reconquista and the Cultural Efflorescence of Christian Kingdoms
- v) The Formation of Spanish Language and Early Literary Manifestations (epic, lyric, popular, religious verse)

Unit-IV: Early Modern Spain

- i) Catholic Kings and the Spanish Empire, the Habsburgs and the Bourbons
- ii) Inquisition, Expulsion of Jews and Moriscos and the Making of a Homogenous Spain, Honour Code
- iii) Art, Literature and Culture during the Transition to the Renaissance
- iv) Renaissance and Baroque in Art, Literature and Culture
- v) Golden Age Literature

Unit-V: 18th and 19th Century Spain: Between Modernity and Tradition

- i) Enlightenment: el despotismo ilustrado and 18th Century Cultural Manifestations

- ii) Historic Panorama of 19th Century: Spanish War of Independence, Constitution of Cádiz, Carlist Wars, Restoration
- iii) 19th Century Art and Culture
- iv) Romanticism, Realism and Naturalism
- v) Generation of 1898 and Modernism

Unit-VI: 20th and 21st Century: Contemporary Spain

- i) The Second Republic, the Popular Front and the Spanish Civil War: Fascism, Anarchism and Socialism
- ii) Vanguard movements and the Generation of 1927
- iii) Post-war and Contemporary Spanish Literature, Art and Culture
- iv) Transition to Democracy, Constitution of 1978, Spain and the European Union, Spanish Economic Miracle and Crisis
- v) Cinema, Performing Arts and Sports

Unit-VII: Latin America: from Pre-Hispanic to Colonial Period

- i) Aztecs, Mayas, Incas and others: Religion, Cults, Monuments
- ii) Knowledge Systems of Indigenous Civilizations
- iii) Beginnings of European Invasions and Conquest
- iv) Colonization of America and Mestizaje, Viceroyalties and Economic Structure of Empire
- v) Literary and artistic expressions (Códices, crónicas, cartas and diarios, Epic and Baroque in the Americas)

Unit-VIII: Independence, Formation of Nation States, Caudillos and Caciques:

- i) Liberators and 19th Century Statesmen of Latin America
- ii) Romanticism and the Novel of the Nation
- iii) The Mexican Revolution and Foreign Interventions in Latin America (19th and 20th Century)
- iv) Modernism, Latin American Identity Construction through Essays
- v) Regionalist, Indigenous and Gaucho Literature

Unit-IX: 20th Century Latin America

- i) Revolutions, Dictatorships and the Return to Democracy
- ii) The New Latin American Novel, the Boom and After
- iii) Women's writing, Testimonio, la nueva canción and subaltern voices
- iv) Artistic and Literary Vanguards and Latin American Poetic Movements
- v) Cinema, Performing Arts and Sports

Unit-X: Contemporary Latin America

- i) Internationalisation, Regional Integration, Indigenous Assertion and New Social Movements,

De-colonial Thought

- ii) De-anchoring of Latin American Writing. Border and Exile Literatures
- iii) Experimental Texts (the Merger of Performance, Cinema and Literature)
- iv) Non-Fiction Writing, the nueva crónica, the Detective Novel and the New Historical Novel
- v) Cinema, Performing Arts and Sports

ANNEXURE - I

Government of NCT of Delhi
(Name & Address of the authority issuing the certificate)

**Income & Asset Certificate - Economically Weaker Sections
To Be Produced By Economically Weaker Sections**

Certificate No. _____

Date: _____

VALID FOR THE YEAR _____

1. This is to certify that Shri/Smt./Kumari _____ son/daughter/wife of _____ permanent resident of _____, Village/Street Post Office _____ District _____ in the State _____ Pin Code _____. Whose photograph is attested below belongs to Economically Weaker Sections since the gross annual income* of his/her "family"*** is below Rs. 8 lakhs (Rupees Eight Lakh only) for the financial year _____. His/Her family does not own or possess any of the following assets***:
 - I. 5 acres of agricultural land and above;
 - II. Residential flat of 1000 sq. ft. and above;
 - III. Residential plot of 100 sq. yards and above in notified municipalities;
 - IV. Residential plot of 200 sq. yards and above in areas other than the notified municipalities.
2. Shri/Smt./Kumari _____ belongs to the _____ caste which is not recognized as a Scheduled Caste, Scheduled Tribe and Other Backward Classes.

Signature with Seal of Office

Name

Designation

* Income covered from all sources, i.e. salary, agriculture, business, profession, etc.

** The term “Family” for this purpose includes the person who seeks the benefit of reservation, his/her parents and siblings below the age of 18 years as also his/her spouse and children below the age of 18 years.

*** The property held by a “Family” in different locations or different places/cities have been clubbed while applying the land or property holding test to determine EWS status.

ANNEXURE - II

Certificate For Defence Quota

**For Availing Admission Against Defence Quota Issued By The Secretary
Kendriya Sainik Board, Delhi Or Secretary, Zila/Rajya Sainik Board Or Officer-
In-Charge, Record Office Of Concerned Service For Serving Personnel**

This is to certify that Mister/Miss.

..... Son/Daughter of

.....

resident of the above-named

officer / JCO / OR pertains to the category marked below:- (Select

one from below)

(a) Killed in Action on during

.....
(b) Disabled in Action on during

(c) Died in peace time on with death attributable to
military service

(d) Disabled in peacetime with disability attributable to military service.

(e) Gallantry Award Winner (...)

(f) Ex-Serviceman.

(g) Serving Soldier

(Categoryabove)

Mister/Miss. son/daughter of the above-named officer/ JOO/ OR

is eligible for Admission inprogram in

..... Board against the Defence quota under priority His/ Her

Ex-Serviceman

Widow Identity Card No. is DLH-01/RSB

(Round stamp of Office)

SECRETARY
(Zila/Rajya Sainik Board)

ANNEXURE – III

**Certificate for Person with Benchmark Disability (PwBD)
For Availing Admission against Person with Disabilities Quota**

(To be issued by Medical Board from Government Hospital)

Name of the candidate: Mr./Ms.*

Father's Name: _____

Permanent Address : _____

Percentage loss of earning capacity (in words): _____

Whether the candidate is otherwise able to carry on the studies and perform the duties of an engineer/architect satisfactorily: _____

Name of the disease causing handicap: _____

Whether handicap is temporary or permanent: _____

Whether handicap is progressive or non-progressive: _____

The candidate is FIT / UNFIT to pursue Diploma/ Undergraduate/Postgraduate/Ph.D.
(program name) _____

(*Strike out whichever is not applicable)

Doctor_____
Doctor_____
Chief Medical Officer

Date:

Seal of Office

NOTE:

The medical board must have three members.

1. Candidates having temporary or progressive handicap will not be considered against these seats.

Form-I

Disability Certificate

(In cases of amputation or complete permanent paralysis of limbs and in cases of blindness)

(NAME AND ADDRESS OF THE MEDICAL AUTHORITY ISSUING THE CERTIFICATE)

Certificate No:

Date:

This is to certify that I have carefully examined Shri/Smt. _____
 _____ son/wife/daughter of Shri/Smt. _____
 _____ Date _____ of Birth
 (DD/MM/YY) _____ Age _____ years, Male/Female . Registration No. _____

Permanent resident of:

House No.- _____ Ward/Village/ Street _____

Post Office _____ District _____

_____ State _____

Whose photograph is affixed above, and I am satisfied that:

1. He/ She is a case of:

- a. Locomotor Disability
- b. Blindness

(Please tick as applicable)

2. The diagnosis in his/her case is _____

3. He/She has _____ % (in figure) _____
 percent (in words) permanent physical impairment/blindness in relation to
 his/her _____ (part of body) as per guidelines (to be specified).

4. The applicant has submitted the following document as proof of residence:-

Nature of Document	Date of Issue	Details of authority issuing certificate

(Signature and Seal of
 Authorised Signatory of notified Medical Authority)

Form-II

Disability Certificate

(In cases of multiple disabilities)

(NAME AND ADDRESS OF THE MEDICAL AUTHORITY ISSUING THE CERTIFICATE)

Certificate No:

Date:

This is to certify that I have carefully examined Shri/Smt.

_____ son/wife/daughter of

Shri/Smt. _____ Date of Birth

(DD/MM/YY) _____ Age __years, Male/Female . Registration No.

Permanent resident of:

House No.- _____ Ward/Village/ Street _____

Post Office _____ District _____

_____ State _____

whose photograph is affixed above, and are satisfied that:

1. He/She is a Case of **Multiple Disability**. His/Her extent of permanent physical impairment/disability has been evaluated as per guidelines (to be specified) for the disabilities ticked below, and shown against the relevant disability in the table below:

S. No.	Disability	Affected Part of Body	Diagnosis	Permanent physical
				impairment/ mental disability (in %)
1	Locomotor disability	@		
2	Low vision	#		
3	Blindness	Both Eyes		
4	Hearing impairment	£		
5	Mental retardation	X		
6	Mental-illness	X		

@- e.g. Left/ Right/ Both arms/ legs

- e.g. Single eye/ Both eyes

£ - e.g. Left/ Right/ Both eyes

contd.

2. In the light of the above, his/her overall permanent physical impairment as per guidelines (to be specified), is as follows:
 - a. In figures: _____percent
 - b. In words: _____percent
3. The above condition is progressive/non-progressive/likely to improve/not likely to improve.
4. Reassessment of disability is:
 - a. Not necessary
 - b. Is recommended/after _____ years _____ months, and, therefore, this certificate shall be valid till (DD/MM/YY) _____.

5. The applicant has submitted the following document as proof of residence:

Nature of Document	Date of Issue	Details of authority issuing certificate

Signature and seal of the Medical Authority:

Name and Seal of Member	Name of Seal of Member	Name and Seal of Chairperson

6. In words: _____percent
7. The above condition is progressive/non-progressive/likely to improve/not likely to improve.
8. Reassessment of disability is:
 - a. Not necessary
 - b. Is recommended/after _____ years _____ months, and, therefore, this certificate shall be valid till (DD/MM/YY) _____.

9. The applicant has submitted the following document as proof of residence:

Nature of Document	Date of Issue	Details of authority issuing certificate

Signature and seal of the Medical Authority:

Name and Seal of Member Name of Seal of Member Name and Seal of Chairperson

ANNEXURE - V**Form of Medical Certificate**

(To be signed by a registered medical practitioner holding a Medical Degree)

(TO BE SUBMITTED AT THE TIME OF ADMISSION BY ALL CANDIDATES)

I certify that I have carefully examined Mr./Ms. _____

Son/Daughter of Shri/Smt. _____ whose signature is given below.

Based on the examination, I certify that he/she is in good mental and physical health and is free from any physical defects which may interfere with his/her studies including the active outdoor duties required of a professional.

From the candidate records we know the candidate has undergone treatment/is undergoing treatment for:

1. Name of ailment (s) (physical/mental) _____
2. Treatment _____ (completed or continuing)
3. Treating Doctor _____

In case of emergency or need, please get in touch with _____

Marks of Identification _____

Signature of the Candidate _____

Place:

Date:

*Please, note that this information will be kept confidential and will not in anyway be used for making selection decisions

Name & signature of the Medical Officer with
seal and registration number

** Strike whichever is not applicable.*

ANNEXURE - VI

No Objection Certificate**For pursuing Ph.D. Program at Delhi Skill and Entrepreneurship University**

(This should be typed on the letter head of the employee's organization)

Name of the Candidate:

Address with Mobile No. and email ID:

.....

.....

Department / Institution / Organisation where working (full address)

.....

.....

.....

Post Held:

.....

.....

CERTIFICATE

Certified that is a regular employee since The department has NO Objection in her/his undergoing research programme in the Delhi Skill and Entrepreneurship University, Delhi. In case of her/his selection for the research programme she/ he would be granted leave to attend the classes of course work of the PhD program.

Signature & Seal of the Head of the Organization/Institute

ANNEXURE - VII**Check-List****Documents Required at time of Interview for Ph.D. Programme 2026-2027**

An application will be processed for admission only if the candidate is present personally with all the mandatory original and one photocopy of each document listed below:

S.No.	List of Documents	Status (Yes/No/NA)
1	10 th certificate and Marksheet	
3	UG Certificate and Marksheet	
4	PG Certificate and Marksheet, if applicable	
5	Valid Gate Score Card, if applicable	
6	NET/JRF Certificate, if applicable	
7	Caste Certificate (SC/ST/OBC(NC) category), if applicable	
8	EWS Certificate, if applicable	
9	Defence Personal Certificate, if applicable	
10	Proof of DSEU Faculty/Staff, if applicable	
11	NOC from Employer, if applicable	
12	3 Latest Photographs	
13	Medical fitness certificate	
14	Research Proposal (in 1000 words)	
15	Aadhar Card/PAN Card/Passport or any other ID Proof issued by Govt of India	
16	A set of self-attested copies of all the above documents	

(Signature of document verification officer)

Please Note:

After verification of all the previous original marks cards and certificates, if they are found to be in order, then the University may confirm your admission.

However, even after confirmation of the admission, if at a later date, any of the documents submitted are found to be false, fake, fabricated or fudged, the University will cancel the admission and forfeit the fee collected.

(
Signature of document Candidate

ANNEXURE - VIII**TENTATIVE SCHEDULE FOR ONLINE WEB-BASED APPLICATION FOR Ph.D.
ADMISSION – 2026**

Tentative schedule for online web-based application for Ph.D. admission 2026-27 will be announced on DSEU website.

The applicants are advised to check the website regularly for schedule and other updates.

This Information Bulletin is only for information and guidance of candidates seeking admission. The contents are likely to change without notice. This does not constitute to be a legal document.

In case of any change in policy related to Admissions to Ph. D Programmes – 2026, no separate communication will be made to the candidates and the same will be notified on the admission related websites mentioned in the Information Bulletin.



दिल्ली कौशल एवं उद्यमिता विश्वविद्यालय

DELHI SKILL AND ENTREPRENEURSHIP UNIVERSITY

(A State University Established under Govt. of NCT of Delhi Act 04 of 2020)

Website: <https://dseu.ac.in>