NICMAR
University of Construction Studies
HYDERABAD

A PhD for
Aspiring Construction Leaders.

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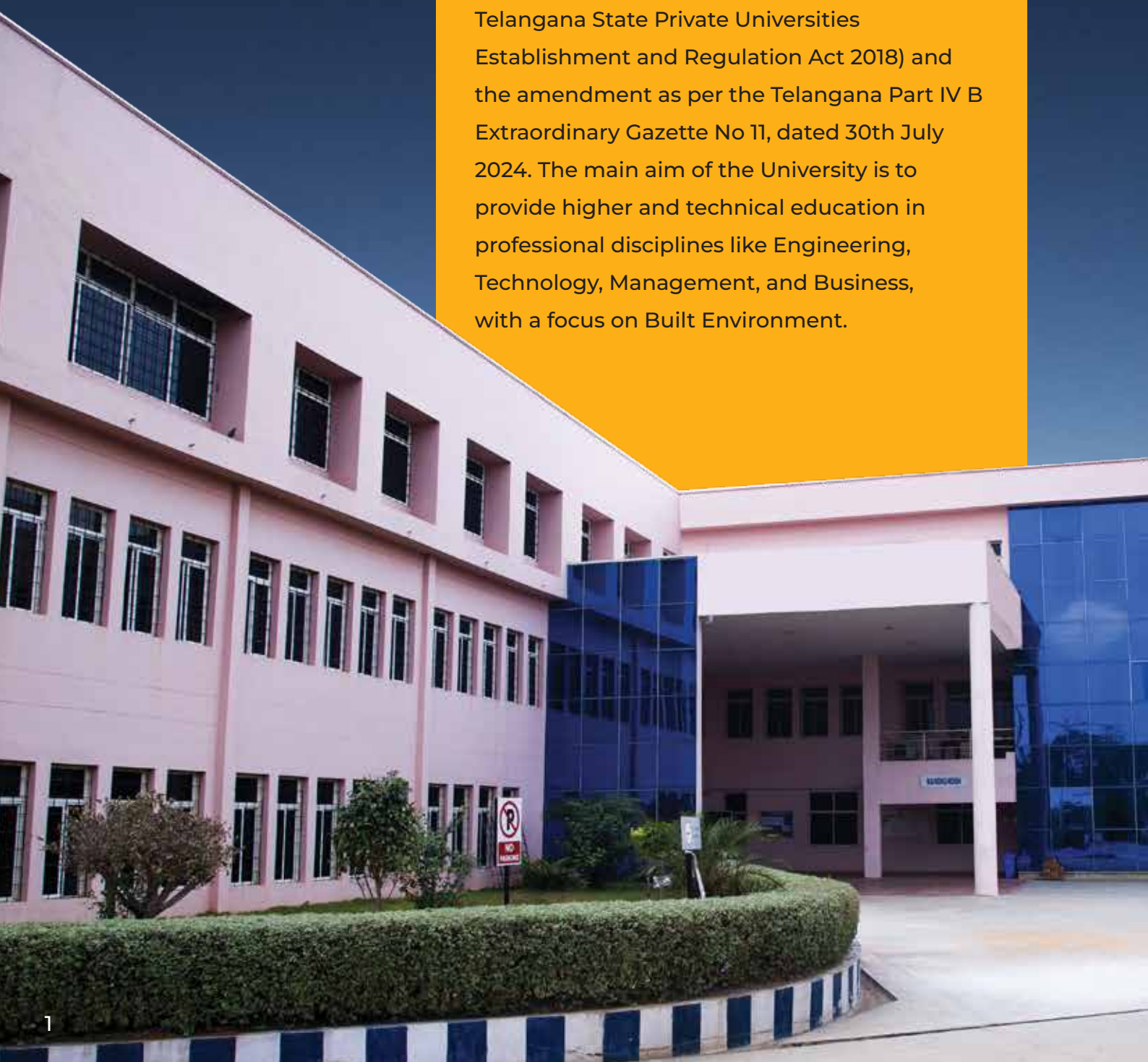
About NICMAR University of Construction Studies (NUCS), Hyderabad

National Institute of Construction Management and Research, Hyderabad is a leading institution in India for built environment, construction management and related fields. Established in 1984, it's known for its strong industry connections, focus on practical training, and commitment to research.

NICMAR University for Construction Studies (NUCS) has been established as a Private University by Government of Telangana (The Telangana State Private Universities Establishment and Regulation Act 2018) and the amendment as per the Telangana Part IV B Extraordinary Gazette No 11, dated 30th July 2024. The main aim of the University is to provide higher and technical education in professional disciplines like Engineering, Technology, Management, and Business, with a focus on Built Environment.



About
PhD Programme

Embark on a Transformative Research Journey at NUCS Hyderabad

NUCS PhD programmes are meticulously crafted to provide a rigorous, supportive, and transformative research experience. At NUCS, PhD scholars not only acquire new knowledge but also contribute to its creation.

PhD programme of NUCS fosters research excellence through continuous training and mentorship. Scholars engage with contemporary topics in an intellectually stimulating environment, guided by highly qualified faculty.

NUCS offers PhD programmes under two schemes: Full-Time & Part-Time. To attract talented research scholars, NUCS, Hyderabad offers attractive stipend and other support for the scholars joining in full time programme.

At NUCS, scholars can choose from a vast range of academic areas within the specialized schools. Programmes are designed to ignite scholars' research passion, enabling them to make original contributions to the Built Environment field. Through focused and time-bound research, scholars at NUCS develop a research career that aligns with their ambitions and interests.

How to Apply?

Applications for **PhD admissions** are invited twice a year in the August/ September for January Batch and in April/May for August Batch.

NUCS, Hyderabad offers research programme leading to award of Doctor of Philosophy (PhD) in these domains:

- Sustainable and Green Construction
- Construction Management & Technology
- Infrastructure & Transportation
- Environmental & Water Resources
- Social & Economic Dimensions of Construction

The University has following schools:

- School of Construction and Technology
- School of Project Management
- School of Energy and Clean Technology

PhD Programme Study Modes

The doctoral programme at the University is offered through two modes:

Full Time - This mode requires scholars to commit to their research and studies on a full-time basis, typically involving daily attendance and engagement with the university's academic activities and resources.

Part Time - This mode is designed for scholars who are employed or have other commitments, allowing them to pursue their doctoral studies alongside their professional responsibilities.

Both these modes are governed as per the PhD regulations notified by University Grant Commission (UGC) from time to time

Eligibility Criteria

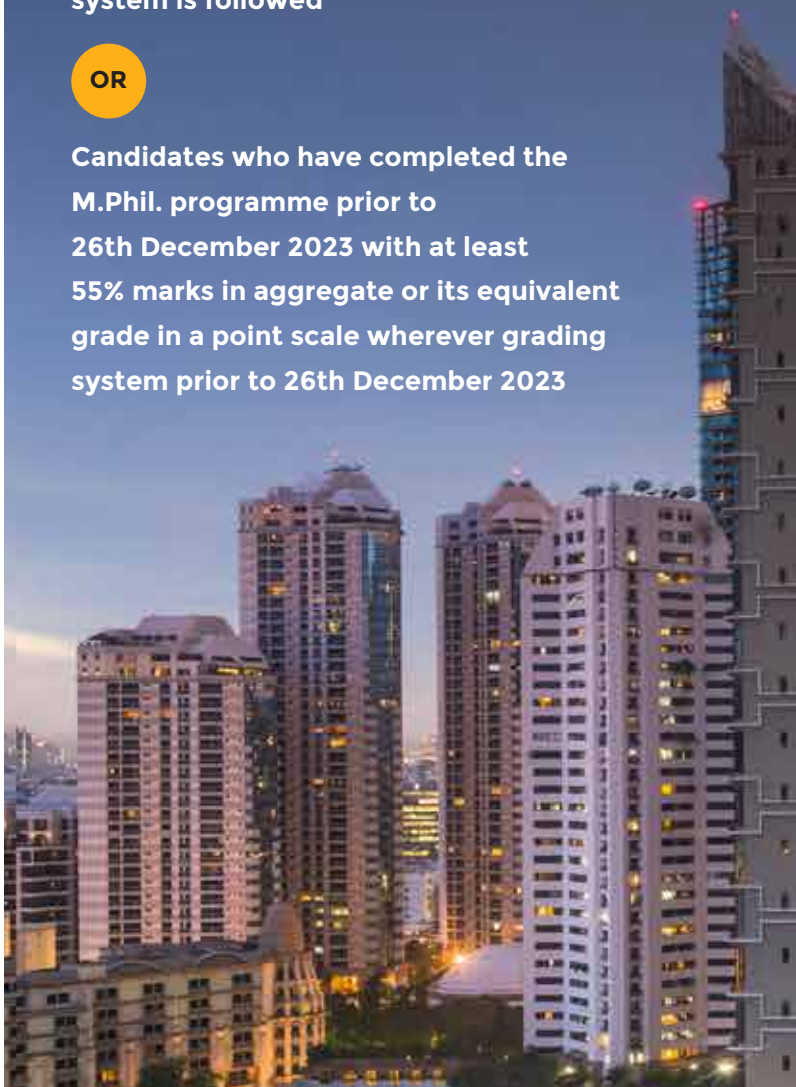
1-year/2-semester master's degree programme after a 4-year/8-semester bachelor's degree programme or a 2-year/4-semester master's degree programme after a 3-year bachelor's degree programme or qualifications declared equivalent to the master's degree by the corresponding statutory regulatory body, with at least 55% marks in aggregate

OR

Provided that a candidate seeking admission after a 4-year/8-semester bachelor's degree programme should have a minimum of 75% marks in aggregate or its equivalent grade on a point scale wherever the grading system is followed

OR

Candidates who have completed the M.Phil. programme prior to 26th December 2023 with at least 55% marks in aggregate or its equivalent grade in a point scale wherever grading system prior to 26th December 2023



Seats Available

The University announces vacancies after getting inputs from the respective School Dean. The vacancies are based on the available seats the supervisors would like to admit depending upon their academic designations, resource availability and other academic commitments.

Reservation is offered as per Government of Telangana norms.

Duration of the **Programme**

The full-time PhD programme shall be for a minimum duration of three years and a maximum of six years from the date of admission to the final submission of the thesis. However, a part-time PhD shall be for a minimum duration of three & half years and a maximum of six years from the date of admission to the final submission of the thesis.

Admission Process

NUCSPAT PhD Admission Test (NUCSPAT)

Eligible applicants are required to appear for NUCS PhD Admission Test (NUCSPAT). NUCSPAT has no negative markings and the question paper consists of two parts with a total of 120 marks:

Part I (General Aptitude):

This part carries 60 marks and consists entirely of multiple-choice questions (MCQs).

Part II (Specialization Specific):

This part carries 60 marks and consists entirely of multiple-choice questions (MCQs) from chosen specialization

Exemption from NUCS PhD Admission Test

Those holding NET, SET, GATE, or other eligible fellowships are exempted from the entrance exam. Applicants who wish to receive the NUCS Doctoral Fellowship (NDF) must appear in the NUCSPAT.

Personal Interview

Personal Interviews are conducted by a panel of experts on assigned dates and time slots. Marks are awarded based on criteria such as research problem articulation, subject understanding, & the potential contribution of the proposed research. It is expected from each appearing candidate that they present a short research proposal highlighting the research area of interest, its importance, and its uniqueness in the field.

The weightage of the entrance test & interview shall be 70% and 30% respectively. Only those students securing at least 50% marks in the written examination and 50% in the interview separately shall be eligible for admission. For NUCS Doctoral Scholarship (NDF) (application only to full time scholars), appropriate cut-off will be decided by the competent authority.

Merely securing the minimum marks criteria does not guarantee admission. Certian other criteria such as the research aptitude of the candidate, availability of a supervisor in the relevant field, etc. will also be considered for the final admission offer.

Fellowship

NUCS Doctoral Fellowship (NDF) is offered to attract quality research scholars to the PhD programme. This fellowship is offered to the scholars who wish to register themselves for full- time PhD programme. Under this scheme, scholars will be paid a monthly fellowship for 3 years. Along with monthly fellowship, NDF provides a contingency grant in each fellowship year. This contingency grant is to meet expenses such as conference paper presentations, stationery purchases, relevant books, software, equipment, etc. and is reimbursed on actual subject to the contingency limit. The award of the NDF fellowship will be as per university norms and may change from time to time. It will be mandatory for each full-time scholar to undertake 4-6 hours of work per week as assigned by the university.

Fees

PhD July/August 2025	
Fee Structure 2024-25	
Category A	**Semester Tuition Fees**
Full-time PhD Programme with NUCS Doctoral Fellowship	₹25,000/-
Full-time PhD Programme with UGC/CSIR/PMRF/NET/JRF Fellowship etc.	₹25,000/-
Full-time PhD Programme sponsored by Government Organisations and PSU	₹50,000/-
Category B (Foreign Students)	
Full-time PhD Programme	$2,000/-
Category C	
Part-time PhD Programme	₹50,000/-

At the time of Admission

Security deposit : ₹10,000/- for Indian nationals and 500USD for Foreign nationals

NUCSPAT Syllabus

The NUCS PhD admission Test will consist of two papers: Paper-I and Paper II.

Paper-I contains the syllabus of Research Aptitude consisting of 60 multiple-choice questions of one mark each. There is no negative marking. It consists of questions on reading comprehension, logical & mathematical reasoning, analytical reasoning, and Data Interpretation. Paper-I is for 60 minutes.

Paper II is based on the area of specialization. The syllabus for each area of specialization is given below. Candidates are advised to select the most relevant school based on their qualifying degree and research area of interest. Paper-II syllabus can be one of the references for this. consisting of 60 multiple-choice questions of one mark each. There are no negative marks.

School of **Construction and Technology (SoCT)**

Sustainable Water & Infrastructure Systems

Construction Materials & Sustainability

AI and Lean Construction Optimization

Intelligent Transportation and Mobility Systems

Emerging Concepts in Construction Innovation

Paper II Exam -The multiple-choice questions will cover the whole syllabus, while the descriptive questions will focus on the chosen specialization.

Structural Engineering

Strength of Materials: Simple Stress and Strains, elastic constants, shear forces and bending moment diagrams for beams, principal stresses and Mohr's stress circle, bending and shear stresses, deflections, torsion, thin and thick cylinders and fixed beams

Structural Analysis: Analysis of statically determinate trusses, arches, beams, cables and frames, displacements in statically determinate structures and analysis of statically indeterminate structures by force / energy methods, analysis by displacement methods (slope deflection and moment distribution methods), influence lines for determinate and indeterminate structures.

Concrete Structures: Concrete Technology- properties of concrete, Quality tests on cement and aggregates, Fresh and Hardened properties of concrete, basics of mix design – Special Concretes – Concrete design basic working stress and limit state design concepts, Basic elements of prestressed concrete, IS Code provisions.

Steel Structures: Analysis and design of tension and compression members, beams and beam-columns, Connections- simple and eccentric, beam-column connections, plate girders, IS Code provisions.

Building Materials: Classification and Testing of bricks, Classification of stones, Tests on cements and IS specification

Geotechnical Engineering

Soil Mechanics: Physical properties of soils, Classification and Identification, Permeability, Capillarity, Seepage, Compaction, Consolidation, Shear strength, Earth pressure, Slope stability and advances in soil mechanics.

Foundation Engineering: Sub-surface investigations- scope, drilling bore holes, sampling, penetration test plate load test. Earth pressure theories, effect of water table, layered soils. Stability of slopes. Foundation types-foundation design requirements. Shallow foundations- bearing capacity effect of shape, water table and other factors, Deep foundations - pile types, dynamic and static formulae, load capacity of piles in sands and clays.

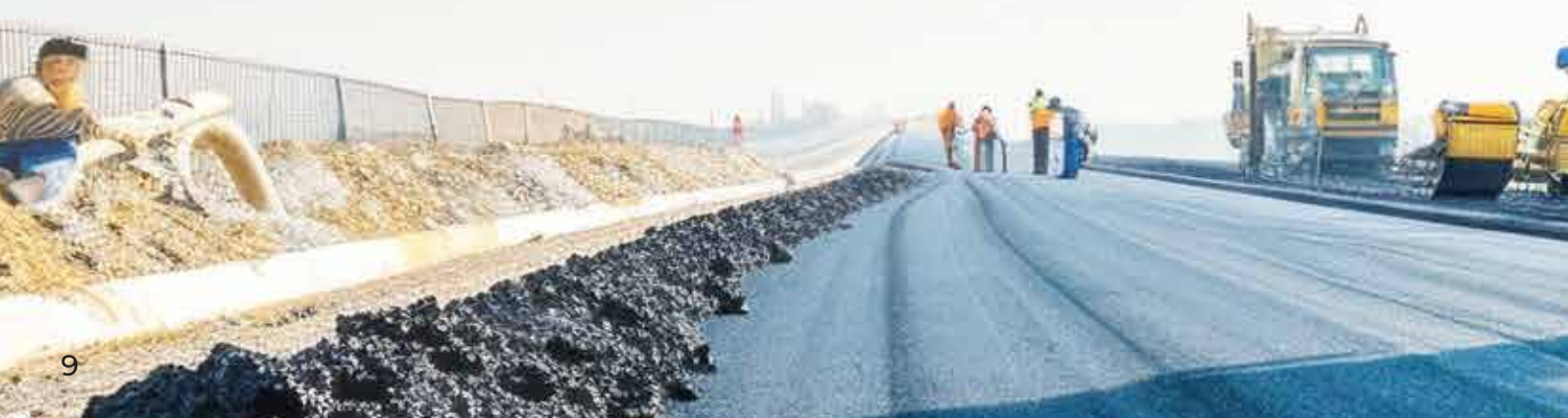
Hydraulics And Water Resources Engineering

Fluid Mechanics: Basic concepts, Fluid Statics, Kinematics and Dynamics, Energy Principles, Flow Measurement, Compressible flow, Flow Through pipes, Open channel flow, Hydraulic machines-Turbines and pumps.

Hydrology: Rainfall, Runoff, Floods, Groundwater, hydrographs, flood control and mitigation.

Irrigation: Diversion Head Works, Canals, Corp water requirement, Water management, weirs, cross drainage works, canal falls.

Dam Engineering: Storage works, Dams, Surplus works, Energy dissipation, Earthen dams. e) Water Power: Development, Power House Components and dimensions.



Surveying

Elements of Surveying: Plane table, Compass, Leveling and theodolite survey; Building materials and technology; Elements of estimation & costing.

Transportation Engineering

Highway Engineering: Alignment, Geometric design, Traffic Engineering, Pavement material characterization, pavement design: flexible pavements, rigid pavements and advanced design approaches like mechanistic methods of pavement design, pavement maintenance, pavement evaluation and highway drainage. Traffic and Transportation planning and management

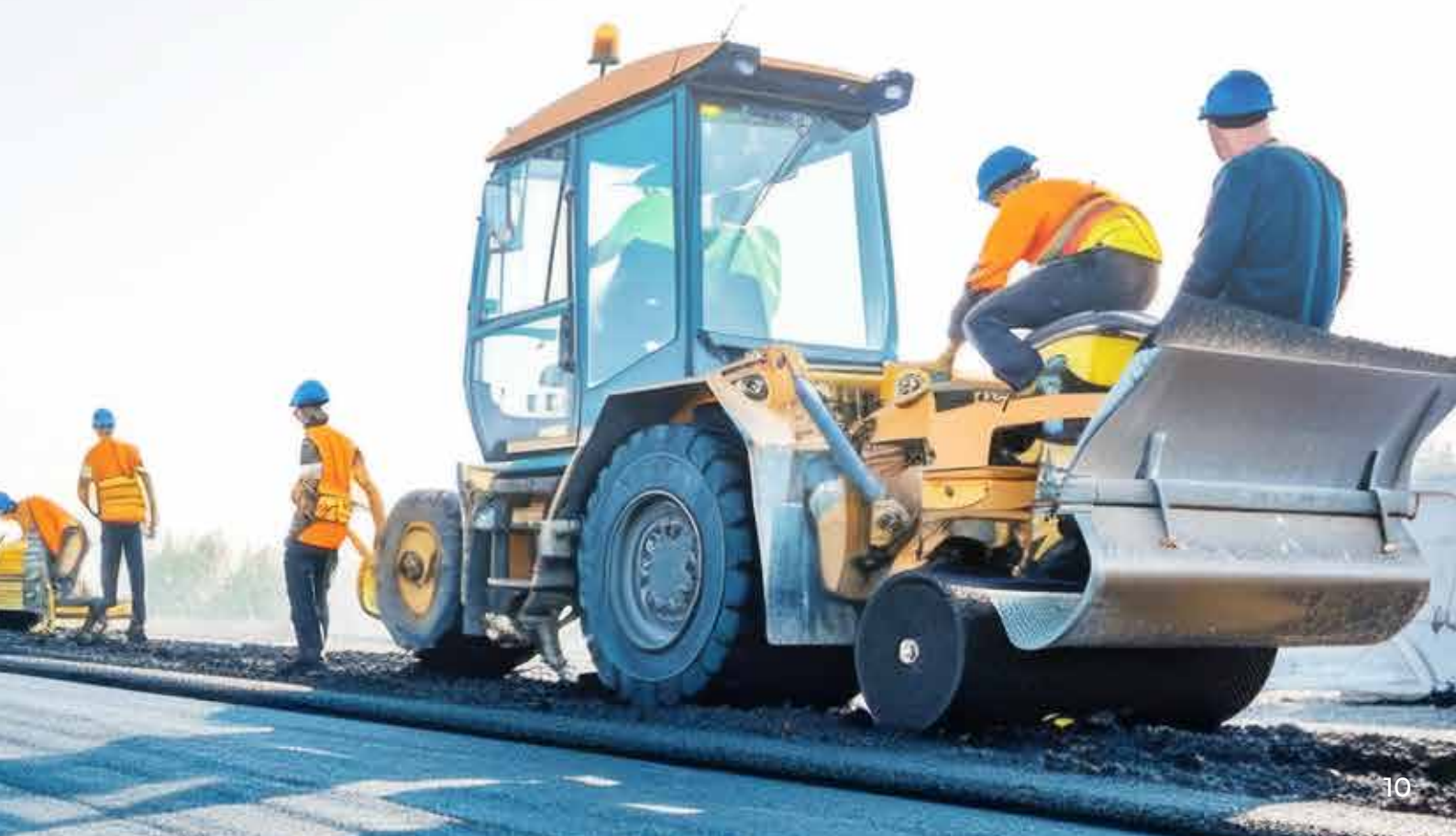
Railway Engineering: History, alignment, geometrics, rails, sleepers, ballast sub-grade preparation, curves, crossings etc.

Airport Engineering: Airport planning, runway orientation and design, design of taxi ways and other geometric components.

Construction Management

Project Management: Project Planning and Scheduling (CPM, PERT), Risk Management in Construction, Contract Management and Dispute Resolution, Construction Safety and Regulations

Human Resources in Construction: Organizational Behavior in Construction Firms, Labor Productivity and Motivation Strategies



School of
Project Management

Infrastructure and Project Finance	**Technology, Innovation, and Digitalization in Construction**	**Sustainability, Resilience, and Smart Development**
Business Strategies and Development	**Project and Risk Management in CRIP 5.0**	**Energy Sector and Power Systems**

Paper II Exam -The multiple-choice questions and descriptive questions will cover the whole syllabus.

Statistics and quantitative methods: Central limit theorem, mean mode, median, sampling and population survey, correlation, regression, hypothesis testing, random sampling, ANOVA, design of experiment, deterministic models- linear programming, transportation models, Multi-criterion decision making using AHP, probabilistic models- queuing theory, decision theory and simulation models

Project planning and control: Project management processes, systems approach to project management project life cycle, preparing work breakdown structure (WBS), Matrix organization structure for projects, Roles and responsibilities of project manager, professional practice and ethics, Students syndrome in project management, project planning and scheduling using Critical path method (CPM), concept of total float and free float, Project planning and scheduling using Program Evaluation and Review Technique (PERT), project scheduling using line of balance method, Critical Chain Project Management; feeding buffer, project buffer.

Core knowledge areas of project management: Project time management: project schedule monitoring and control; project cost management: cost estimation methods, project budgeting, cost control using Earned value management, depreciation, activity-based costing, project scope management: work break down structure, project quality management: Project quality control, quality assurance and audits.

Facilitating knowledge areas of project management: Project procurement management: process of tendering, bidding and contracting in projects, Project integration management: preparing project charter, team building in projects, conflict and dispute resolution, Project risk management : Assessing political, economic, social, technological and environmental risks in projects, Human resources management in projects: Managing men, machine, money and materials in projects; Project stakeholder management: internal and external stakeholders, financial appraisal of project with NPV& IRR, stakeholder engagement strategies.

School of

Energy and Clean Technology

Adsorption Studies, Waste Management, and Energy & Environmental Management

Semantic Artificial Intelligence Models

Construction Safety

Delivery of Energy and Recycling Reforms

Paper II Exam -The multiple-choice questions will cover the whole syllabus, while the descriptive questions will focus on the chosen specialization.

Energy Management

Fossil Fuels: Coal, oil, and natural gas: Characterization and conventional routes for energy production. Cleaner routes for energy production from fossil fuels.

Renewable Energy Sources: Solar, wind, hydro, geothermal, and biomass energy. Energy production from biomass and waste. Definitions and significance of energy management, Energy strategies and planning. Characterizing energy usage.

Energy Conversion Technologies: Boilers: Types, classification, performance evaluation, and efficiency. Industrial furnaces: Types, classifications, performance evaluation, and efficiency. Fans and blowers: Types, fan laws, and selection criteria.

Cooling Towers: Flow control and energy-saving options. Compressed air systems: Compressor types, efficiency, and energy efficiency opportunities.

Environmental Management

Ecology: Ecosystem structure and function, biodiversity, population dynamics, and ecological processes.

Atmospheric Science: Climate change, air pollution, and atmospheric processes.

Natural Resource Management: Water, soil, and forest resources, including their sustainable use and conservation.

Pollution: Air, water, and soil pollution, sources, impacts, and control strategies.

Waste Management: Solid, hazardous, and industrial waste management, recycling, and disposal methods.

Environmental Impact Assessment (EIA): Methods for assessing the environmental effects of projects and development.

Environmental Legislation and Policy: Relevant laws, regulations, and policies related to environmental protection.

Safety Management

Introduction to Industrial Safety: Basics of safety, its importance, and the evolution of safety practices and regulations.

Occupational Health and Safety (OHS) Standards and Laws: Understanding relevant national and international standards and legal frameworks. Safety Culture and

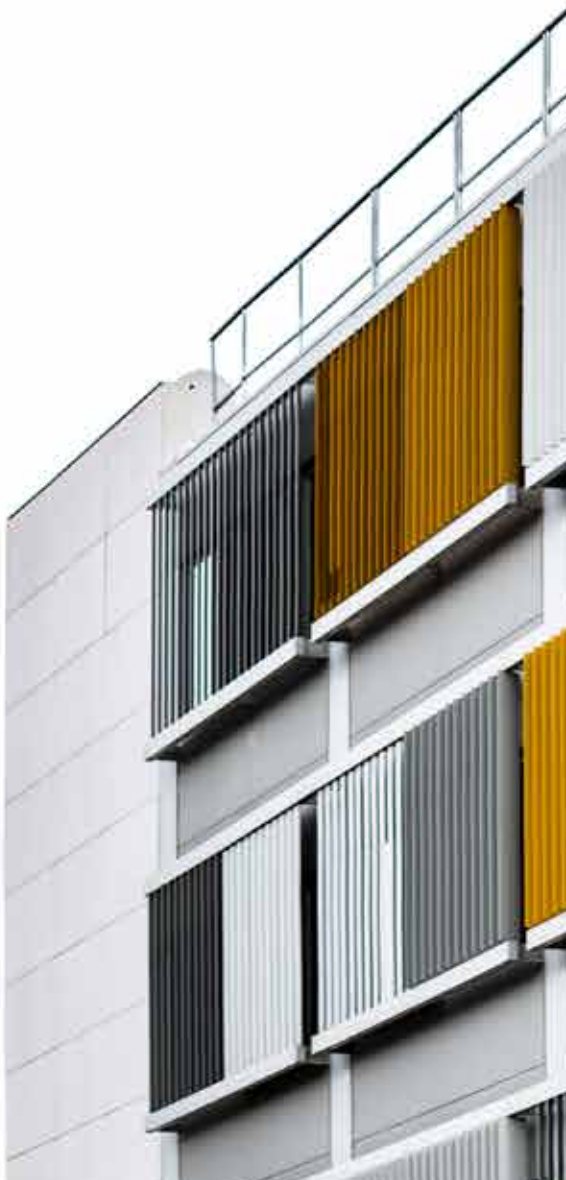
Management Systems: Developing and implementing safety policies, procedures, and programs.

Safety Communication and Training: Effective communication strategies for safety messages, training programs, and employee participation.

Hazard Control Measures: Implementing the hierarchy of controls (elimination, substitution, engineering controls, administrative controls, and PPE, Fire Safety and Emergency Management.

Fire Prevention and Protection: Understanding fire causes, prevention measures, and fire protection systems.

Fire Extinguishing Techniques and Equipment: Knowledge of different fire classes and appropriate extinguishing methods and equipment.



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