

**Table 2A: Departments and Allied Disciplines for Ph.D. Programmes.**

<b>Departments</b>	<b>Allied Disciplines</b>
Department of Petroleum Engineering and Geosciences	<ul style="list-style-type: none"><li>• Chemical Engineering</li><li>• Mechanical Engineering</li><li>• Electrical Engineering</li><li>• Computer Science</li><li>• Chemistry</li><li>• Physics</li><li>• Mathematics</li></ul>
Department of Chemical Engineering & Engineering Sciences	<ul style="list-style-type: none"><li>• Computer Science and Engineering</li><li>• Electronics</li><li>• Electrical Engineering</li><li>• Civil Engineering</li><li>• Geo-informatics Engineering</li><li>• Material Science and Engineering</li><li>• Petroleum Engineering</li><li>• Chemistry</li><li>• Physics</li><li>• Mathematics</li><li>• Statistics</li><li>• Geography</li><li>• Chemical Technology</li></ul>
Department of Basic Sciences & Humanities	<ul style="list-style-type: none"><li>• Material Science</li><li>• Environmental Science</li><li>• Biology</li><li>• Chemical Engineering</li><li>• Petroleum Engineering</li><li>• Mechanical Engineering</li><li>• Renewable Energy</li><li>• Polymer Science</li><li>• Nanoscience</li><li>• Chemical Technology</li><li>• Computer Programming</li><li>• Statistics</li></ul>
Department of Management Studies	Any branch of Engineering, Science and Social Science

<b>RGIPT Bengaluru PG Centre</b>	<ul style="list-style-type: none"> <li>• Chemical Engineering</li> <li>• Mechanical Engineering</li> <li>• Electrical &amp; Electronics Engineering</li> <li>• Materials Science and Engineering</li> </ul>
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A candidate possessing degree(s) that do not exactly conform to the degree(s) listed above is also eligible to apply. Such application on recommendation from DPGC and approval from the Chairman Senate will be considered further for the shortlisting process.

### **Table 2B : Discipline-wise Research Areas for Ph.D. Programmes**

The discipline-wise the Research Areas in the Ph.D. programmes for the session 2020-21 are listed below.

<b>Disciplines</b>	<b>Research Areas</b>
Chemical Engineering	Fuel Cell, biomass conversion, gas encapsulation and storage, nanocatalysis, photocatalysis, membranes, crystallization, microfluidics, polymers and nanomaterials, H <sub>2</sub> energy, catalysis, nanomaterials.
Petroleum Engineering	Enhanced oil recovery, nanodrilling fluids, gas hydrates, prospecting, source rock evaluation, mud formulation
Civil Engineering	Geo-informatics Engineering (LiDAR Remote Sensing, Laser Scanning, Geographic Information System-GIS, Digital Image Processing, Machine Learning with spatial data, Artificial Intelligence, GPS, IoT, Drone and sensor Based Imaging, Geospatial Data Modeling, DEM, Developing various applications using Sensors, Geospatial data and engineering techniques, integrating the tools of Computer Science, Electronics, Geomatics, Statistics, Geography etc. as in the case of developing urban mapping, noise mapping, landuse-landcover mapping, forest mapping, reservoir modelling, and in developing fire & alarming system etc.); Structural Engineering, Hydraulics and Water Resources Engineering; Environmental Engineering; Geotechnical Engineering; Transportation Engineering; Engineering Geosciences.
Electrical Engineering	Electrical machines & Drives; Power-Electronics; Control Systems; Power Systems
Electronics Engineering	Microwave Engineering; Digital Techniques and Instrumentation; Microelectronics, Communication System Engineering

Humanities Sciences	English (Literature, Professional Communication, Cultural Studies, Film Studies, Narrative Studies), Philosophy (Indian and Western Logic, Peace and Ahimsa Studies, Gandhian Philosophy, Value Education, Humanistic Philosophy), Computational Linguistics (MT, CALL, Computational Semantics, Grammar Formalism, Sanskrit Computation Linguistics), Psychology (Intelligence, Indigenous Research, Macro Organizational Behaviour), Sociology (Environmental Sociology, Sustainable Urbanization, Smart Cities), History & Political Science.
Management studies	Operations Management, SCM, Production System, Service Process Simulation and Service Level, Revenue Management and Analytics, Supply Chain Analytics, Contracts Modelling, Capacity Sensitive Product Mix Planning, Brand Management, Consumer Behaviour, Green Marketing, Services Marketing, Neuromarketing, Indigenous Management Systems, Human Resource Management, Strategic Issues in Oil & Gas Sector, Data Envelopment Analysis, Corporate Finance & Equity Valuation, Behavioral Finance, Initial Public Offerings, Marketing Management, Marketing Research, Consumer Behavior, B2B Marketing, Sales & Distribution Management, Public Policy & Governance, Corporate Ethics, Governance and CSR, Entrepreneurship with reference to Rural/ Social Entrepreneurship, Strategic Management in Development Sector, Organizational Behaviour with reference to Government and Non- Government Sector. Marketing Management/Strategy, Product and Brand Management, Managing Retail
	Business, Conflict Management, Leadership, Energy related issues in Oil & Gas Sector.
Chemistry	Synthetic organic/inorganic Chemistry, Environmental Chemistry, Surface Chemistry, Computational Chemistry, polymer chemistry, Materials chemistry, Nano catalysis, metal organic frameworks, materials, hydrogels, petrochemicals, nanomedicine, Biomaterials, Water Splitting, Sustainable materials, Covalent organic frameworks, physical chemistry.
Mathematical Sciences	Harmonic Analysis, Differential Geometry, Numerical Wavelet methods for partial differential equations, Numerical Analysis of (PDEs, Mathematical Image Processing, Stochastic Modelling (Queuing Theory) Integral Equations, Numerical Analysis, Optimization, Fluid Dynamics, Biomechanics, NonLiner Waves, Graph Theory and Network Science, Rings and Modules, Mathematical Modeling and Porous Media, Soft Computing, Fuzzy Sets, Algebraic Numerical Techniques, Mathematical Modeling on heat Transfer Problem, Reliability Theory, Statistical Information Theory, Stochastic Ordering and Ageing, Order Statistics and Record Values, Numerical Analysis of Partial Differential Equations, Hyperbolic Conservation Laws, Computational Fluid Dynamics, Data Assimilation Techniques, Mesh Free Methods, Computational Finance

Physics	Solar & Space Plasma Physics, Condensed Matter Physics (Theory), Quantum Information, Condensed Matter Physics (Experiment) & Materials Science (Experiment), Biophysics, Photonics (Theory and Experiment), Remote Sensing, High Energy Physics, Nuclear Physics, Econophysics, Cosmology.
Renewable Energy	Solar Thermal Systems, Phase change materials, Energy storage systems (with and without storage system), Solar cell, Solar energy applications, Green buildings, sustainable development.
Materials Science & Technology	Polymers, oxides, Nanoparticles for energy sector, Photo voltaics, photocatalysis, modelling & Simulation of material structures and processes
Geoscience	Isotope Geochemistry, organic petrography, Hydrology and Watershed processes, Remote sensing and geographic information systems, Paleo environments and the sedimentary record, Biogeochemistry of soil systems, Geophysics and structural geology.

**Table 2C : Discipline-wise Research Areas for Ph.D. Programmes (Bengaluru PG Centre)**

<b>Disciplines</b>	<b>Research Areas</b>
Chemical Engineering	Optofluidics for bionics and energy applications, Microfluidic devices for energy applications, Flexible Electronics and Micro Electro Mechanical Systems, Electro & biochemical sensors and their applications in detecting bio-molecules and environmental pollutants, Surface coatings for energy materials and its applications, Role of surface and subsurface structures in
	adhesives and their applications, Adhesives for biomedical and industrial applications, Optofluidic Sensors for detecting Pressure, temperature and crack failure in thin films & coatings, Optofluidic integrated plasmonic biosensors for food pathogen detection, Novel composite electrode materials for supercapacitors and battery applications, Materials for Energy storage and conversion devices, Electrodes for Next generation sodium batteries, Electrolytes for solid state Metal-ion batteries, Electrode composites for high energy density supercapacitors, Fabrication of IT-SOFC Large area cells by cost effective process, organic/ inorganic electrodes for potassium batteries, Advanced Separation Technology, Biological Wastewater Treatment, Pyrolysis of Waste Plastics, Biofuels (Bio-Ethanol, Bio-Methanol and BioDiesel).

Electrical and Electronics Engineering	Smart grid and Micro-grid, Electric vehicle, Renewable energy Systems, Renewable Integration, Solar photovoltaics, Building Integrated Photovoltaic/Thermal systems, Energy Efficiency, Net Zero Energy Buildings, Solar thermal systems, Energy, Exergy and Economic analysis of Renewable Energy Systems, Grid modernisation, Power Quality, Energy and Load forecasting, Life cycle assessment, Energy Auditing, Battery Management, Sensors and transducer design for occupational health hazards, Smart energy systems, Instrumentation and control for energy systems, Data analytics, Electronic materials, solar cell, dye sensitized and perovskite solar cells
Mechanical Engineering	Biofuels, Internal Combustion engines, Gasification and system integration of Renewables, Thermal Energy Storage, Solar Thermal Systems, Phase Change Materials, Thermal management of Batteries, Thermal Energy Systems
Materials Science & Engineering	Nanomaterials for energy sector, Nanomaterials for gas sensors, materials/nano science (experimental), photocatalysts and electrocatalysts for OER and HER, Magnetoresistive materials, condensed matter physics (experimental).

**Table 2D: Total Number Institute Assistantship available in the departments in Odd Semester 2020-21**

**Table 2C: Total Number Institute Assistantship available in the departments in Odd Semester 2020-2021**

Discipline	Total Number of Available Assistantship
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Petroleum Engineering and Geosciences	06
Chemical Engineering & Engineering Sciences	08
Basic Sciences	10
Management Studies	08
Humanities & Social Science	02
Bengaluru PG Centre <ul style="list-style-type: none"> <li>• Chemical Engineering</li> <li>• Mechanical Engineering</li> <li>• Electrical &amp; Electronics Engineering</li> <li>• Material Science &amp; Engineering</li> </ul>	10

**NOTE:**

- Reservation rules as per the Government of India policy will apply.
- The number of available Institute Assistantship should not be considered as available seats.
- Applicants who are either of sponsored category or who are already awarded fellowship by external agencies can submit their applications for admission in department even if there are no Institute Assistantship available.