

# Pandit Deendayal Petroleum University

NAAC accredited with 'A' grade

An only University in Gujarat Granted with Graded  
Autonomy by UGC

## Ph.D. Admission Rules 2019

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# 1. Eligibility

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A student seeking an admission to Ph.D. Programme of the University is required to have minimum educational qualification as mentioned hereunder. Each of the Master Degrees referred therein is to be on the basis of minimum two year programme.

## **For research in an area of Engg./Technology**

M. Tech. /M. E. or its equivalent as recognized by UGC /AICTE in appropriate area.

## **For research in an interdisciplinary areas like Petroleum Engg., Solar Engg., Nuclear Engg., and Environmental study**

M. Tech./M.E./M.Sc./M.Sc.(Tech.) or its equivalent as recognized by UGC/AICTE in appropriate area.

## **For research in an area of Sciences**

M. Sc. degree or its equivalent as recognized by UGC in appropriate area.

## **For research in an area of Management**

M.B.A./M. Tech./M.E./A.C.A./A.I.C.W.A./A.C.S. level or its equivalent as recognized by UGC/AICTE in appropriate area.

## **For research in an area related to Liberal Studies**

Master's degree or its equivalent as recognized by UGC in appropriate area.

*Master's or a professional degree equivalent to it by the corresponding statutory regulatory body with 55% marks in aggregate or its equivalent grade 'B' in UGC 7 point scale, (or an equivalent grade in a different point scale) or an equivalent degree from a foreign educational institution accredited by an approved Assessment & Accreditation Agency. Relaxation of 5% of marks, from 55% to 50%, or an equivalent relaxation of grade, may be allowed for those belonging to SC/ST/OBC(non-creamy layer)/differently-abled candidates & other categories of candidates as per the decisions of the Commission from time to time*

# 2. Research Areas

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## **School of Technology:**

**Solar Energy:** Compound semiconductor thin films materials and silicon for high-efficiency homo and heterojunction Photovoltaic Solar Cell. High Energy density Li ion battery and Super capacitors, DSSC, Solid state DSSC based on perovskite, Organic Solar Cells, Fuel Cell and efficient water splitting for hydrogen generation using solar radiation. Computational material science for solar cell including optimization of optical and electrical properties, Industrial waste water purification using a novel organic molecule under concentrated sunlight, PV plant performance, Energy policy and regulation and Data validation of megawatt scale Solar PV power plant.

## **Mechanical Engineering**

### Thermal Engg.:

Renewable Energy: Biodiesel, Wind energy, Solar hybrid technology, Solar thermal applications, marine renewable energy.

### Thermal and Fluid Engg.:

Water desalinization, Thermal comfort, Advance refrigeration system, tri-generation, CFD applications to IC engines and alternative fuels, Industrial effluent treatments.

### Thermal System Design:

Thermal system design and optimization, Exergy analysis of thermal system, waste heat recovery, Thermal system design for enhancing heat transfer rates for extremely high heat flux applications.

### Design Engg.:

Finite Element Analysis, Additive Manufacturing/Rapid Prototyping, Bio printing, Drug manufacturing using Rapid Prototyping, Innovative and creative materials for rapid prototyping processes, Application of Additive/Rapid Manufacturing in energy storage devices, Fused Filament Extrusion techniques, Composite materials, computational mechanics of materials: stress analysis and optimization, Mathematical modelling of advanced materials, optimization, continuum damage mechanics, Stress Analysis, Vibration based fault diagnosis and condition monitoring, Signal and Image Processing for state identification of components, Machine learning and Artificial intelligence application in design of components, Optimization techniques.

### Manufacturing and Industrial Engg.:

Friction Stir welding of similar and dissimilar metals, Friction stir processing, super plasticity, wear behaviour of surface composites, friction surfacing, hybrid welding, Metal cored and flux cored arc welding, A-TIG welding, Laser welding & ultrasonic welding ; EDM wire cut, EDM; surfacing and electrochemical machining; Surface Metrology & Digital Image Processing, Texture analysis; Tool condition monitoring; Artificial Intelligence in manufacturing; Numerical modelling of manufacturing processes; Formability of tailor welded blanks; Material processing, Machining of hard materials. Additive manufacturing of metals, Non conventional machining process

Industrial Management: Project Management; Operation & Supply Chain Management; Materials & Procurement Management; Quality & Reliability Management.

Entrepreneurship: Micro Small & Medium Enterprise; Entrepreneurship; Innovation.

### **Elect. Engg.:**

Electrical Power Systems, Power System Protection, High Voltage Engineering, EHV AC and HVDC system, Power Quality, Power system stability and control, Distributed generation, Integration of Renewable Energy sources with grid Smart grids, Cyber security Issues of power system, Electrical machines Power electronics, Instrumentation and control systems.

**Civil Engg.:** Geotechnical Engg, Earthquake Engineering, Soil-Structure interaction, Reinforced Earth, Environmental Geotechnics, Cost Effective Green Technology in construction, Structural Engineering, Concrete Technology, Transportation Engineering and Planning, Pavement analysis and design, Urban Transportation, Traffic Engineering and modelling, Project Management, Advanced Construction Technology, Water Resources and Hydrology, Remote sensing and GIS Applications, Environmental Engineering and Waste treatment and utilization for construction, Computational Solid Mechanics, Project Risk Management.

**Chemical Engg.:**

Advanced Carbon Capture and Sequestration; Advanced waste water treatment; Ionic liquids for clean fuels; Bio-fuels and biodiesel, Preparation and characterization of functional material, Membranes and its application, membrane gas separation; Nanotechnology:- Novel nano-particle synthesis and applications, Catalysis and reaction engineering for hydrocarbon oxidations, Utilization of biomass – for fine chemicals, Modelling & simulation:- Computational fluid dynamics.

**Sciences:** Environmental Chemistry; Heterogeneous catalysis; Materials Chemistry; Solid State Physics; Solid state DSSC based on perovskite; Global warming and Climate change; Cloud physics and rain formation processes; Computational condensed matter and material science; Geochemistry; Climate change and disaster management.

**Interdisciplinary Areas:** Such as Environmental Science & Engg.

(The selected candidates who wish to pursue interdisciplinary research will be registered in a department of School of Technology relevant to the area of their qualifying PG degree.)

**Mathematics:**

Stochastic Optimization, Solid Mechanics and FGM, Performance measure of distribution warehouses and Software Reliability, Magnetohydrodynamics Computational Biology, Data assimilation in numerical models of ocean, Numerical Reservoir Simulation, Applied Geophysics & Geostatistics, Fuzzy Sets, IFS, Fixed Point Iteration Methods, Financial Mathematics, Sea Age Dynamics, Sea-ice dynamics, Polar studies, Ocean models.

**Computer Engineering:** Cloud Computing, Pattern Recognition, Information Security and Privacy, Machine Learning, Parallel and Distributed Computing, Remote Sensing, Wireless Sensor Networks.

**Information & Communication Technology:** Computer Vision, Communication, Digital Signal Processing, Image Processing, Internet of Things, VLSI systems, RF Devices, Microstrip antenna and Machine Learning in Antenna.

**School of Petroleum Technology:**

1. **Drilling, Cementing, and Stimulation Research Center**, Ph. D. programme (Full-time Petroleum Engineering) Opportunity to conduct cutting-edge research at the state-of-the-art Drilling, Cementing, and Stimulation Research Center under the guidance of Prof. Subhash Shah (Emeritus Professor, University of Oklahoma).

*Fellowship of Rs. 35,000/- p. m. will be offered to GATE qualified Masters in Petroleum Engineering candidates.*

2. Geothermal Energy, Exploration, Production, Shale gas, EOR, Petroleum Engg., Reservoir Engg., Reservoir Modeling, Petroleum Refinery, City Gas Distribution, Computational Fluid Dynamics, Geophysics, Paleontology, Ichnology, Paleoclimatology and geochemistry.

**School of Petroleum Management:**

Marketing, Operations Management, HRM and Organizational Behavior, Information Systems Management, Strategic Management, Financial Management & Energy Management.

**School of Liberal Studies:** English Language & Literature, Public Policy & Public Administration, Psychology, Political Science and International Relations, Mass Communication/Media Studies, Commerce, Economics, Business administration (Marketing & Finance).

### 3. Selection Procedure

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**It will be a two stage processes:**

- i) Written Aptitude Test shall consist of 50% weightage on research methodology and 50% weightage on subject specific questions. As a part of this, the question paper on Research Methodology will be of 50 marks, each question will carry one mark. Subject wise Entrance Test will be conducted, which consists of 100 questions, each carrying 1 mark.

Entrance test shall be qualifying with qualifying marks as 50%, and only such candidates will be eligible to appear at the PI- personal interview/viva-voce.

- ii) Candidates shortlisted on the basis of the Entrance Test as mentioned above will be required to appear for PI wherein the candidates have to discuss their research interest/area through a presentation before a duly constituted Committee. The PI shall consider the following aspects, viz.:
  - a) Research objectives, Literature Survey, Methodology, Expected results, List of papers referred, & also industry tie up if any.
  - b) Research Methodology aspects for preparing Doctoral Proposal.
  - c) The candidate possesses the competence for the proposed research.
  - d) Whether the research work can be suitably undertaken at the University.
  - e) Contribution to new/additional knowledge out of the proposed research.
  - f) Competence for the proposed research.

Admission merit list for the eligible candidates who qualified in the written test and appeared in PI will be based on 30% of Personal Interview (PI) score, and 70% of Entrance Test score.

While appearing at the selection procedure, the candidate is required to produce original copies of his testimonials in support of the candidature. The candidate shall have to ensure all fulfillments to the eligibility requirements while applying for admission.

Fees for a single Application: Rs. 500/- (Non Refundable)

**Last Date for submission of the application in the prescribed form available on the website: 15<sup>th</sup> June 2019.**

## 4. Semester Fees

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### **Non Refundable Fees:**

For Part Time students: Rs.50,000/- per semester (except Hostel, Mess, Transportation and alike).

For Full Time students: Rs. 25,000/- per semester as Tuition fees (except Hostel, Mess, Transportation and alike).

*Other incidental fees shall be chargeable from time to time.*

***No request for the fee refund shall be entertained.***

### **Refundable Fees:**

Library Deposit Rs.5,000/-

Caution Money Deposit Rs.10,000/-

The second semester fees shall be collected in installment of Rs.5,000/- per month during the first semester from the fellowship given to the full time students if any by the University; and so forth for the fees of third semester onwards. The remaining sum collected from the fellowships will be refunded to the student after successful completion of the Ph.D. programme as defined in the academic rules.

It is to be noted that all the processes in pursuance to Ph.D. program will be conducted mostly on working days & further during normal office hours only; and all the candidates admitted in Ph.D. program shall have to make convenient to attend such processes accordingly, irrespective of their category whether Full time or Part time.

## 5. Financial Assistance for Full Time candidates

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- I. The University offers financial assistance from its own resources as per its availability in the name of fellowship, who would qualify as per the norms specified below on merit basis as follows:

Up to first two years: Rs.25,000/- per month as research fellowship

In the third year: Rs.30,000/- per month as research fellowship

Continuance of the fellowship shall subject to punctuality, discipline, good academic/research progress review & recommendation of the doctoral committee & compliance to other norms as prescribed by the University from time to time.

By the end of every semester the Doctoral Committee will also review & recommend on continuance of the fellowship to the respective students.

After third year, the fellowship may continue subject to the semester wise review scrutiny by the Doctoral Committee, but not beyond the fourth year.

It shall be mandatory to perform the duties as Teaching Assistant for all the full time candidates availing the fellowship.

M.E. / M.Tech. GATE qualified candidates admitted to pursue Ph. D. on full time basis in the research areas of Engg. & Technology may be granted the fellowships as mentioned above on merit basis.

M. Sc. (Tech.) in GeoScience (3 year full time) qualified candidates having GATE/NET/SLET/CSIR score admitted to pursue Ph. D. on full time basis in the research areas of Engg. & Technology may be granted the fellowships as mentioned on merit basis.

The candidates admitted to pursue Ph. D. on full time basis in the research areas of Management may be granted the fellowships as mentioned above on merit basis provided they have valid CAT score with a minimum of 60 percentile at the time of the admission tests.

The candidates admitted to pursue Ph. D. on full time basis in the research areas of Sciences and areas under School of Liberal Studies may be granted the fellowships as mentioned above on merit basis provided they have a valid UGC NET/CSIR-UGC NET/SLET score at the time of the admission tests.

No other Financial Assistance/Aid will be given to all such students.

The continuance of the Research fellowship shall be subjected to the *six monthly* academic review, discipline and punctuality of the candidate.

The above policy-procedure is subject to modification whenever found necessary by the University.

- II.** A financial assistance in the form of a Teaching Assistance ship on merit basis is also available for the students who would not be receiving above referred financial assistance:  
**Rs.10,000/- per month**

It may be continued up to 3 years on satisfactory performance based on overall review from semester to semester. During these 03 years such students may be given financial incentive of Rs. 2,000/- per publication in approved peer reviewed journals.

Contingency allowance of maximum Rs. 10,000/- per year as per the norms.

No other Financial Assistance/Aid will be given to all such students.

The continuance of the financial assistance shall be subjected to the *six monthly* academic review & recommendation of the doctoral committee, discipline and punctuality of the candidate.

Other Conditions:

- i) The Research Fellow will have to assist the University/School/Department in its academic work, including tutorials, assignments, laboratory demonstration, supervision of fieldwork, library activities, group seminars, workshops, symposia from time to time. The total time to be spent on such activities will be around ten hours a week.

- ii) The grant of the fellowship is subject to the condition that the student does not receive any financial assistance in shape of scholarship/any emoluments, salary, stipend etc. from any other source during his/her course of study in the Institute.
- iii) Foreign students and sponsored candidates are not eligible for the fellowship.
- iv) It will be obligatory on the part of every full time Ph. D. student to undertake 8 to 10 hours (per week) of work related to academic & co-academic and research activities as assigned to him/her from time to time. This include tutorials, laboratory classes, development and maintenance of laboratories, assistance in research and activities undertaken by faculty members, maintenance and operation of computer and other central facilities, assistance in library, examinations etc.
- v) The fellowship will be granted to the student on a monthly basis subject to the satisfactory academic performance and adherence to the University/Institute norms/rules and regulations as applicable time to time, certified by the Supervisor, HoD, Dean, School Director and obligatory work as assigned.
- vi) The student shall be required to give an undertaking to the effect that he / she would not leave the programme midway. In case any student leaves the course in midway he/she will be required to refund the total amount of the financial assistance drawn so far, at the time of leaving the programme.

Cancellation of Financial Assistance:

The financial assistance is liable to cancellation, in case of Misconduct/indiscipline/unsatisfactory progress of research work/failure in any examination related to Ph.D.; or he/she is found ineligible later.

## 6. Categories of Ph.D. students

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The University admits students for Ph. D. programme under the following categories:

**REGULAR (FULL-TIME):** This category refers to the candidates who work full time for their Ph.D. and may receive fellowship/assistantship from the University as per its policy or fellowship from CSIR/UGC or any other recognized funding agency or may be self-financed.

**SPONSORED STUDENTS (FULL-TIME):** A candidate in the category is sponsored by a recognized R&D organization, national institute, academic institution, govt. organization or industry for doing research in PDPU on a full time basis. He is required to have at least two years of working experience in the respective field. He will not receive any financial support from the University. Sponsorship letter (Form-I) should be attached with the application.

**PROJECT STAFF (PART-TIME):** This category refers to the candidates who are working on sponsored projects in any School of the University and admitted to the Ph.D. programme. The duration of the project at the time of admission should be at least 2 years.



**LOCALLY & PROFESSIONALLY EMPLOYED PERSONNEL (PART-TIME):** This category refers to the candidates who are locally and professionally employed personnel. These candidates should be able to meet supervisor(s) regularly in the University for the guidance on their research work. The applicant must be a regular employee of a recognized R&D organization, national institute, academic institution, government organization or industry at the time of admission and be engaged in professional work in the discipline in which admission is sought. No financial assistance will be provided by the University to such students. “No Objection” Certificate from the Head of the Institute/Organization in which he is employed (Form-II) must be enclosed at the time of application.

**SPONSORED STUDENTS (EXTERNAL REGISTRATION)(PART TIME):** This category refers to candidates employed in R&D organizations related to Science, Technology, & Engineering having adequate research facilities. The research work leading to the Ph.D. degree may be carried out largely in the parent organization of the candidate under a Local Supervisor from the organization but with the overall guidance and advice provided by a faculty member of the University (School Supervisor) under whom he is registered. The appointment of the Local Supervisor is to be reported to the Director General of the University through the Director of the concerned School of the University for final approval. Sponsorship certificate from the Head of the organization where the candidate is employed. (Form III) is required to be enclosed at the time of application. No financial assistance from the University will be provided to such students.

## 7. Important Dates

Last date for receipt of the application form at P	15 <sup>th</sup> June 2019
List of candidates for selection procedure on the website	21 <sup>st</sup> June 2019
<b><u>Selection Procedure</u></b> <ul style="list-style-type: none"> <li>• Reporting time 9.00 am.</li> <li>• Written Aptitude Test in, Block-C (SPT-1 building) from 10.00 a.m. to 12.00 p.m.</li> <li>• Discipline wise proficiency-evaluation at 1.30 p.m. onward.</li> </ul>	2 <sup>nd</sup> July 2019
Announcement of the list of candidates offered the admission	11 <sup>th</sup> July 2019
Last Date for paying fees	19 <sup>th</sup> July 2019
Induction programme for admitted candidates	25 <sup>th</sup> July 2019

## 8. Contact Details

Area Specific Academic Inquiry		
Particular	Name of Person	Contact No.
Petroleum Engineering	Prof. Uttam Bhui Prof. Sivasankar	079-23275068 079-23275041
Solar Energy	Dr. Indrajeet Mukhopadhyay	079-23275303
Electrical Engg.	Dr. J. G. Jamnani	079-23275424
Mechanical Engg.	Dr. S. S. Kachhwaha	079-23275442
Civil Engg.	Dr. Tejas Thaker	079-23275426
Chemical Engg.	Dr. Swapnil Dharaskar	079-23275477
Environmental Engg.	Dr. Anurag Kandya	079-23275490
Sciences	Dr. Rajib Bandyopadhyay	079-23275440
Mathematics	Dr. Manoj Sahni	079-23275470
Computer Engg. Information & Communication Technology	Dr. Sameer Patel	079-23275273
Management	Dr. Kaushal Kishore	079-23275126
Liberal Studies	Dr. Neeta Sinha	079-23275234
<b>General Inquiry</b>	079-23275044/15	
<b>Email ID: phd@pdp.ac.in</b>		

## 9. Communications

All communications by the University for the Admission Process will be made through the website [www.pdpu.ac.in](http://www.pdpu.ac.in). Candidates are advised to go through the University's website on regular basis for admission updates. The University will not be responsible for non-receipt of any communication, if any made additionally through email/sms. No individual communication will be entertained.

The aspiring candidates, their parents and well-wishers are advised to check the website of University from time to time for all the latest information updates on the admission process.

These rules are subject to change due to several reasons. The change(s) in any of these rules including modalities of admission process shall be announce and made available on the official website of the University i.e. [www.pdpu.ac.in](http://www.pdpu.ac.in) candidate are advised and are responsible for checking and verifying the latest information on the modalities and specifies of the admission including, but limited to rules, processes criterion, schedule, fee etc..

## 10. Interpretation

In implementation of the provisions of these rules, if any difficulty or question arises as to the interpretation of any provision, the decision of the Director General, PDP shall be final.

The candidates will be bound by the rules and regulations of the University as applicable during their course of study at the University. Disputes, if any, shall be subject to Ahmedabad jurisdiction only.

**Form I– Full Time SPONSORSHIPLETTER**

(This is required to be on the letterhead of the sponsoring organization)

Reference No:

Date:

To  
The Director General  
Pandit Deendayal Petroleum University  
Raisan, Gandhinagar- 382007.

**Sub: Sponsoring an Employee for Ph.D. Programme**

Dear Sir,

We hereby sponsor the candidate

Mr./Ms.....

who is an employee in our organization on the position of \_\_\_\_\_,

for joining Ph.D. Programme in the research area of \_\_\_\_\_

at your University as a full-time student.

We shall relieve him/her from his/her duties in the organization during the first three years of the Ph.D. Programme.

**Signature and Seal of the Sponsoring Authority**

**Form II – No Objection Certificate for Part-Time Students**

(This is required to be on the letter head of the organization)

Date:

To  
The Director General  
Pandit Deendayal Petroleum University  
Raisan, Gandhinagar-382007

**Sub: No Objection Certificate**

Dear Sir,

We do not have any objection if Mr./Mrs./Ms.....an  
Employee in our organization on the position of \_\_\_\_\_, is  
admitted to the Ph.D. Programme in the research area of \_\_\_\_\_ at  
your University as a part-time student.

We shall grant him/her leave of absence to attend the programme related activities at the  
University as and when required.

**Signature and Seal of the Employer**