

NAAC
Accreditation
'A' Grade
(CGPA 3.39/4.0)



Mechanical

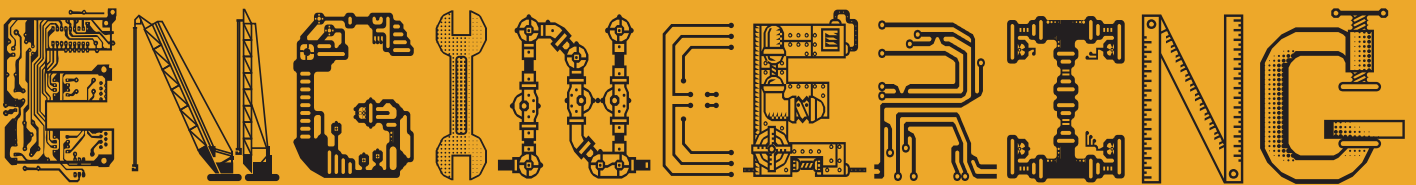
Electrical

Civil

Chemical

Computer Science
& Engineering

Information &
Communication
Technology



MASTERMIND



PDP
PU

PANDIT DEENDAYAL PETROLEUM UNIVERSITY





Academic Council

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Director General, Pandit Deendayal Petroleum University

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Director - School of Technology
PDPU

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Director - School of Petroleum
Technology, PDPU

Dr. Nigam Dave
Director - School of Liberal Studies,
PDPU

Dr. C. Gopalkrishnan
Director - School of Petroleum Management,
PDPU

Dr. Pramod Paliwal
Dean - School of Petroleum Management
PDPU

Dr. D. M. Parikh
Dean - Faculty of Engineering & Technology,
PDPU

Dr. T. P. Singh
Professor in Mathematics

Dr. Surendra Singh Kachhwaha
Professor in Mechanical Engineering
School of Technology - PDPU

Dr. Indrajit Mukhopadhyay
Professor in Department of Solar Energy
School of Technology - PDPU

Dr. Ashvin Dave
Professor in Department of Business
Administration & Commerce
School of Liberal Studies, PDPU

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Chairman & MD,
Reliance Industries Ltd. &
President,
Pandit Deendayal Petroleum University

MEMBERS

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Former Chief Secretary,
Government of Gujarat
Chairman - Standing Committee,
Pandit Deendayal Petroleum University

Dr. R. A. Mashelkar
FRS Bhatnagar Fellow &
President, Global Research Alliance,
National Chemical Laboratory

Dr. S. Sundar Manoharan
Director General,
Pandit Deendayal Petroleum University

Shri Sudhir Mehta
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The Secretary to Government
In-charge of Technical Education,
Government of Gujarat

Smt. Sunaina Tomar, IAS (Ex officio)
The Secretary to Government Energy and
Petrochemicals Department
Government of Gujarat

Mrs. Pallavi Shroff
Shardul Amarchand Mangaldas & Co.
New Delhi

Shri Jalaj Dani
Chairman – IIM - Trichy and
Co-promoter of Asian Paints

Shri Parimal Nathwani
Reliance Industries Ltd.

Nominee of
Gujarat Energy Research & Management
Institute - GERMI

Dr. Nigam Dave
Dean: Faculty of Liberal Studies, PDPU

Dr. Sunil Khanna
Director: School of Technology, PDPU

VISION

To be an internationally renowned and recognized Institute imparting technical education, research & training for societal impact and sustainable development.

MISSION

Undertake unique obligation for Education in Energy and Engineering with special responsibilities in domain specific aspects of Energy & Infrastructure.

Seek to nurture students of extraordinary motivation and ability and prepare them for life-long learning and leadership in an increasingly knowledge driven world.

Envisage to establish Departments for excellent education, cutting edge research and training by offering programmes, to address futuristic needs.

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About the University

Pandit Deendayal Petroleum University addresses the need for trained and specialized human resource and expand the opportunities for students and professionals to develop intellectual knowledge base with leadership skills to compete in the global arena. This objective is being addressed through a number of specialized and well-planned undergraduate and post-graduate energy education programs and intensive research initiatives.

Since its very inception, Pandit Deendayal Petroleum University has been striving to develop itself into an internationally renowned & respected Institution imparting excellent education & training based upon the foundation of futuristic research & innovations. With the path-breaking innovations in both its curriculum and research, the university is rapidly gaining a legendary reputation in the industry across the world.

In addition to offering formal Undergraduate, Post-graduate & Doctoral Programs, the university actively encourages its faculty members and other academic staff to undertake research projects in order to strengthen the research profile of the university. Research and development is carried in various engineering & technology sectors like Petroleum, Geothermal Energy, Solar PV, Battery & Energy Storage, Biofuels & Bioenergy, Automation Sector, Chemistry and Welding Technologies.

Currently PDPU has seven (7) Centre of excellences which are on

SOLAR RESEARCH & DEVELOPMENT CENTRE

CENTRE OF EXCELLENCE FOR GEOTHERMAL ENERGY

SIEMENS CENTRE OF EXCELLENCE

CENTRE FOR BIOFUEL & BIOENERGY STUDIES

DRILLING, CEMENTING AND STIMULATION CENTRE

INTERNATIONAL AUTOMOBILE CENTRE OF EXCELLENCE (IACE)

INNOVATION & INCUBATION CENTRE

The University's mission is nurtured and supported by:

- **Exceptional faculty, who draw students into the pursuit of knowledge, introducing them to the pleasures and responsibilities of the life of the mind in a challenging world.**
- **Graduate, professional, and research programs that foster advanced theoretical development, promote professional preparation, enhance the quality of the faculty, and extend the University's international reach;**
- **Substantial library resources and information technology that support research and classroom learning;**
- **A residential campus that fosters a sense of community and integrates curricular and extracurricular life;**
- **Abundant opportunities for students to undertake community service, internships, and study abroad; to participate in substantive research, often as early as the first year; and to study and reflect in ways that foster intellectual, spiritual, and moral growth.**

PDPU's lush green & clean campus is located on Knowledge Corridor in the periphery of Ahmedabad & Gandhinagar. The state's remarkable cultural, technological, and economic resources nourish the University's mission and enrich its life, just as the University, in turn, enriches the city.

UGC Recognition

PDPU is recognized by the UGC - University Grants Commission under Section - 2(f) of the UGC Act, 1956 and included in the list of approved universities in India listed by UGC Approved Universities.

AICTE

School of Technology is recognized by the AICTE - All India Council for Technical Education.

NAAC

PDPU has been accredited with 'A' grade & CGPA of 3.39 out of 4.00 by the NAAC - National Assessment and Accreditation Council.

AIU

PDPU has been granted membership by the Association of Indian Universities.

SIRO

Government of India, Ministry of Science and Technology, Department of Scientific and Industrial Research has accorded recognition to Pandit Deendayal Petroleum University (PDPU), Gandhinagar as Scientific and Industrial Research Organization (SIRO). On receiving this recognition, PDPU is entitled to all administrative support from the Ministry of Science and Technology (DSIR), as may be required on all issues to promote or encourage scientific research activities.

PDPU Act

Pandit Deendayal Petroleum University (PDPU), Established by the PDPU Act 2007; Acts of the Gujarat Legislature and Ordinances promulgated and Regulations made by the Governor, in the State of Gujarat, India on 4th April 2007.

Student Diversity

PDPU since its inception has been a home to a diverse student population. This also reflects in our admission process. Admission is given on a basis of 50% Gujarat Seats and 50% all India Seats. Further PDPU has taken a unique initiative to promote professional and technical education for girls. Under this initiative a minimum of 10% of All India Seats are maintained for girls. Admission is offered on the basis of the JEE (Main) score.

President's Message



Dr. Mukesh Ambani
President

Pandit Deendayal Petroleum University

With Pandit Deendayal Petroleum University, we envisioned the creation of a world-class university. To be one of the front-runners in imparting education in the fields of energy & infrastructure, humanities, engineering, management, and liberal arts. I am exuberant to announce that Pandit Deendayal Petroleum University (PDPU) is now one of the leading international universities in India. In a short span, PDPU has reached a crucial juncture when a major transformation is taking place in the world economy. PDPU now is old enough to create young professionals who impart significant contributions to the economic and the social landscape of India.

Today the corporate world seeks a generation of young people who are not only academically sound, but are also able to think innovatively. I feel proud to see the holistic education system of PDPU successfully bringing the best out of the students. I'd like to reiterate my whole-hearted support for PDPU and wish them all the very best for their future endeavors and accomplishments.

All the Best!

Director General's Message



Dr. Prof. S. S. Manoharan
Director General

Pandit Deendayal Petroleum University

Greetings from Pandit Deendayal Petroleum University (PDPU), Gandhinagar, Gujarat.

I am happy to present to you the students of 2021 batch who will be completing their education at PDPU's School of Technology for potential employment in your organization. The students have undergone a rigorous and professional engineering education programme under the guidance of highly trained faculty at PDPU and now are industry ready to make their careers in business and industry. These students were admitted to PDPU on the basis of the meticulous screening process, such as JEE (Main), and ACPC.

PDPU, developed on a 100-acre green landscaped sprawling campus, is located in the planned city of Gandhinagar, the capital of the state of Gujarat. The campus has all the modern facilities like beautiful academic and residential buildings, modern classrooms, Internet and Wi-Fi, state-of-the-art laboratories, Computational facilities, a well-stocked library, excellent cafeteria, wellness centre etc. I am confident that the students will make a good impression with their sound conceptual knowledge, technical skills and work and professional ethics. The students are well equipped with the necessary skills to perform effectively in any Industry 4.0 environment. I am sure you may like to take advantage of the talent nurtured by PDPU and induct them into your esteemed organization.

I, on behalf of PDPU, welcome you to participate in our Campus Recruitment Programme. It would be my privilege to host you at the PDPU campus.

Director's Message



Prof. Sunil Khanna
Director - School of Technology
Pandit Deendayal Petroleum University

Technology is and will be the main driver for growth in this decade. The School of Technology (SOT), the youngest among the various Schools of PDPU was set up with the vision of being the leading centre of innovation and learning in the emerging areas of Knowledge society. The school focusing on emerging areas of technology and management as the engine for growth through innovation, is dedicated to building great careers and ensuring exceptional job opportunities to its students. The school emphasis is on building a community of learners using the three C's of innovation - Critical thinking, Curiosity and Communication. In this fast-changing world, challenges are opportunities only if we become more resilient, more curious and view those challenge through an entirely different lens altogether.

SOT has seen phenomenal growth in the last ten years with the School today offering Eight undergraduate & Fourteen M.Tech & Three M.Sc. programmes and more than 120 Ph.D. scholars working in various disciplines for research degrees.

The school is now embarking on a path of fostering career-building by creating opportunities that demand learning, thinking and innovation from each one of us and therefore contribute to the process of building INDIA. We recognise that embarking on this path means taking risks and making mistakes as it contributes to the learning, innovation and growth of each one of us. To that end, we are committed to delivering the best, being seen as the best and being the best.

The school houses several Centre of Excellence like Automotive Centre of Excellence supported by Siemens and Centre for Biofuel and Bioenergy Studies supported by Government of Gujarat through Gujarat Energy Development Authority and the International Automobile Centre of Excellence (IACE) supported by Government of Gujarat and Maruti Suzuki Limited.

We take this opportunity to invite you to be a partner in our journey to build this school and make it a leading technology school in the world.

School of Technology intends to focus on technological education, research and service that anticipates, and meets the need of tomorrow's world. It is expected that engineering graduates from the school will care about issues that technology can make a difference, whether these issues are related to health, security, economic well-being or sustainability of the world and prevailing value systems.

SOT
SCHOOL OF
TECHNOLOGY

SCHOOL OF TECHNOLOGY





MECHANICAL Engineering

Mechanical Engineering Education is a very strategic segment where the engineers for 21st Century are being produced. In recent past, mechanical Engineering Department of PDU has established itself as one of the premier brands in technical education in India and is expanding very fast with the start of B. Tech., M. Tech. and Ph.D programs.

The present selection process ensures that bright students are selected without any compromise and subsequently they are put in a liberal, free academic environment and challenged intellectually to learn the most demanding concepts of mechanical engineering. In order to nurture a sense of intellectual confidence, Mechanical Engineering Department promotes a new brand of engineering culture. The sense of “can do it” confidence is instilled in the present mechanical engineering curriculum.

The focus on “learning by doing” has been developed to motivate students for innovation and entrepreneurship. These, we firmly believe, are the important skills for tomorrow’s engineers and leaders in academia, industry and society.

49
Ph.D
Scholars

43
M.Tech.
Students

533
B.Tech.
Students

FACULTY PROFILE

Dr. Vishvesh J. Badheka
Professor
Areas of Interest: Advance welding technology

Dr. Surendra Singh Kachhwaha
Professor
Areas of Interest: Evaporative cooling; Sprays; Ice slurry generation technology; Cascaded refrigeration system; Biodiesel production techniques;

Dr. D M Parikh
Adjunct Professor
Areas of Interest: Production & Operations Management, Finance & Costing, Supply Chain Management.

Dr. Anurag Mudgal
Associate Professor
Areas of Interest: Water Treatment, Renewable Energy driven system design and development

Dr. Ramesh K. Guduru
Associate Professor
Areas of Interest: Electrochemical Energy Storage: Li-ion batteries, multivalent chemistries and supercapacitors; CO2 capture, Water Treatment, Corrosion and Preventative Coatings

Dr. M B Kiran
Associate Professor
Areas of Interest: Project Management, Surface Metrology, Image processing techniques, Dimensional Accuracy and Surface Finish in Additive Manufacturing

Dr. Rajesh Patel
Associate Professor
Areas of Interest: Thermal System Design, Water Desalination and Fluid Catalytic Cracking (FCC) process modelling

Dr. Vivek K. Patel
Associate Professor
Areas of Interest: Thermal system design-optimization, advanced optimization algorithms

Dr. Harshal B. Oza
Associate Professor
Areas of Interest: Nonlinear and Robust Control, Sliding Mode Control, Non-Smooth Mechanics, Industrial Robotics

Dr. Jatinkumar R. Patel
Assistant Professor
Areas of Interest: Solar Thermal System, Water purification using sustainable energy, Solar Drying

Dr. Abhishek Kumar
Assistant Professor
Areas of Interest: Electroplating, Electrochemical machining, Surface Engineering, Coating, Friction Stir Processing.

Dr. Pavan Kumar Gurralla
Assistant Professor
Areas of Interest: Additive Manufacturing/3D Printing

Dr. Vinay Vakharia
Assistant Professor
Areas of Interest: Condition Monitoring, Signal and Image Processing, Artificial Intelligence and Machine learning techniques

Dr. Nirav P. Patel
Assistant Professor
Areas of Interest: Computational mechanics of advanced materials and Optimization

Dr. Kush P. Mehta
Assistant Professor
Areas of Interest: Dissimilar welding, Friction stir welding, Advanced welding processes

Dr. Jaykumar J. Vora
Assistant Professor
Areas of Interest: Advanced welding process : Flux assisted TIG process, A-Laser, Solid state process, Sustainable welding processes

Dr. Vivek V. Patel
Assistant Professor
Areas of Interest: Friction stir welding and processing, Super plasticity, Grain refinement, Corrosion, ultrasonic welding.

Dr. Garlapati Nagababu
Assistant Professor
Areas of Interest: Renewable energy focused on wind, wave and solar, Small scale wind turbine, Micro sitting and wind farm development, Climate change, GIS modelling

Dr. Jaydeep Patel
Assistant Professor
Areas of Interest: Wind energy system design and analysis, Wind farm layout optimization, Wind farm cost analysis, Optimization of renewable energy systems, Computational optimization

Dr. Pankaj Sahlot
Assistant Professor
Areas of Interest: Advanced Manufacturing Processes, Simulation and Materials characterization

Dr. Vivek Kumar
Assistant Professor
Areas of Interest: Tribology, Fluid Film Bearings, Smart Lubricants, Surface texturing

Dr. Vipin Das
Assistant Professor
Areas of Interest: Conventional and non-conventional machining, Micro machining, Sustainable machining.

Dr. Simranjeet Singh
Assistant Professor
Areas of Interest: Nonlinear dynamics, Plates and structures, Functionally Graded Materials

Dr. Rajat Saxena
Assistant Professor
Areas of Interest: Thermal Energy Storage Applications, Solar heating and cooling, Building energy conservation, Waste heat recovery systems.

Dr. Ojas Satbhai
Assistant Professor
Areas of Interest: CFD, multi-scale solidification modeling, melting heat transfer, micro-structure modeling, onset of Convection, turbulence, thermal energy storage system, PCM based technologies.

Dr. Ravi Kant
Assistant Professor
Areas of Interest: Computational fluid dynamics (CFD), Advance fluid mechanics, Aerial Robotics, Control theory, Fluid flow control, Flow Instability,

Dr. Krunal Mahendra Mehta
Assistant Professor
Areas of Interest: Tribology, Surface Composites

Dr. Rakesh Vasant Chaudhari
Assistant Professor
Areas of Interest: Non-conventional machining, Electrical discharge machining, Shape memory alloys, Design of Experiments

Mr. Parth Prajapati
Assistant Professor
Areas of Interest: Thermal systems optimization, power cycles, heat transfer enhancement

Mr. Srinivas Bhasuru Abhinaya
Assistant Professor
Areas of Interest: Offshore wind energy, Climate change, H2vzvweet transfer

Mr. Rahul Vitthal Deharkar
Assistant Professor
Areas of Interest: Ground water Desalination, Multi-effect distillation

Mr. Ankur Chaurasia
Assistant Professor
Areas of Interest: Advanced abrasive finishing processes, composite processing, surface engineering, microwave processing techniques.

Mr. Kishan Fuse
Assistant Professor
Areas of Interest: Engineering and Planning, Customer Logistics and Planning, Metal forming, Non conventional Machining.

Mr. Vishal Wankhede
Assistant Professor
Areas of Interest: Industry 4.0, Additive Manufacturing, Optimization, Performance assessment, Sustainable manufacturing

Mr. Anirudh Kulkarni
Assistant Professor
Areas of Interest: Computational Fluid Dynamics (CFD), Lattice Boltzman Method (LBM) in multiphase flows, Low Reynolds number aerodynamics and flow control, Fluid mechanics of locomotion

RESEARCH & DEVELOPMENT

PROJECT TITLE	SPONSORING AGENCY	PI/CO-PI
Development of Biofuel Research Centre for advanced studies	Gujarat Energy Development Agency, Govt. of Gujarat	Dr. S. S. Kacchawaha
Solar powered high recovery desalination system to provide clean water	Department of Science and Technology	Dr. Anurag Mudgal, Dr. Jatin Patel
Low Cost- Renewable Energy Driven (LC-RED) Water Treatment Solutions Centre	Department of Science and Technology	Dr. Anurag Mudgal, Dr. Vivek Patel, Dr. Jatin Patel
Development of dissimilar friction welding joint of higher pipe size for Al-SS and Cu-SS materials	Board Of Research In Nuclear Sciences (BRNS)	Dr. Kush Mehta, Dr. Vishvesh Badheka
Development of full penetration CuOF to CuOF welding by GTAW for plate to pipe connection	Board Of Research In Nuclear Sciences (BRNS)	Dr. Vishvesh Badheka, Dr. Kush Mehta
Assessment of wind and wave energy along Indian coastal region using space-based microwave radars (SAMUDRA TDP R&D) (2017-2020), Sponsored by Space Application Centre, ISRO, Department of Space, GOI, Ahmedabad (Rs. 22.42 Lakh, under Progress).	Space Application Centre, ISRO	Dr. Surendra Singh Kachhwaha, Dr. Garlpati Nagababu

STUDENT ACTIVITIES Clubs/Forums & Chapters

ISHRAE

Indian Society Heating Refrigeration and Air-conditioning Engineers (ISHRAE)'s primary objective is the advancement of the art and sciences of heating, ventilation, air Conditioning, refrigeration engineering & other related building Services. ISHRAE – PDPU Student chapter was installed on 18th April, 2014. Various activities like expert lecture, industrial visits, workshop, competitions etc. have been conducted under this chapter.

ASME

American society of mechanical engineering (ASME) is a student driven activity in mechanical engineering domain. Industry personal interactions, prominent academia professional discussions, seminars, technical presentations, skill development activities, invited lectures from start-ups have been conducted under this chapter.

IIW (Indian institute of welding)

IIW-PDPU (Indian institute of welding) student chapter established on 19th Jan 2018 has conducted various activities like industrial visits, expert lectures, hands on training, seminar and workshops. The chapter emphasis on various topics such as experiences in metal Joining, emerging trends in welding technology, flow 3D, advance welding technology, internet of welding and advance welding equipment etc.

STUDENT RESEARCH

The Office of Research and Sponsored Programs (ORSP) provides the support for the free and responsible conduct of investigative, scholarly and creative activities at the University.

University has funded 88.34 Lakhs for about 72 Students' UG and PG Research Projects since 2013.

Total 45 Paper Published / Presented by Students since 2013

ORSP

- Development of multifunctional smart wheelchair
- Design, Development, and Investigations of Dehumidifier for Air to Water Generator
- Design and characterization of metallized additive manufactured polymer based composites parts.
- Development of sequential process intensification reactors for biodiesel production using catalyst free insitutrasteresterification
- Ballistic impact response of fiber reinforced composite



LAB FACILITIES

CAD – COMPUTER AIDED DESIGN

Total Cost: Rs. 80 Lakhs

Major Equipment

3D printer AEQN 400
CREO, MATLAB, SIEMENS NX,
SOLIDWORKS, ADAMS, ANSYS, COMSOL
Metaphysics

THERMAL ENGINEERING

Total Cost: Rs. 7.6 Lakhs

Major Equipment

Nozzle pressure distribution experiment
Diesel engine Test Ring
Bomb Calorimeter

DYNAMICS & KINEMATICS OF MACHINES

Total Cost: Rs. 30 Lakhs

Major Equipment

Signal conditioning instrument
FFT analyzer and Impact Hammer
Machinery fault simulator
Motorized governor, Gyroscope apparatus
Statics & dynamic balancing,
Universal vibration apparatus

DESIGN OF MECHANICAL SYSTEM

Total Cost: Rs. 30 Lakhs

Major Equipment

3D Digital Image Correlation System
Vacuum Bagging Systems for Composite
Manufacturing
Vacuum Oven

MECHANICAL MEASUREMENT AND METALLURGY

Total Cost: Rs. 30.2 Lakhs

Major Equipment

Hot Tensile Testing Machine
Profile Projector
Surface Measuring Instrument

ADVANCED IMAGE PROCESSING

Total Cost: Rs. 12 Lakhs

Major Equipment

CAMCORDER
STAND

MANUFACTURING PROCESS I & II

Total Cost: Rs. 80.2 lakhs

Major Equipment

Universal Milling Machine
All Geared Lath Machine, Shaping Machine
MMA/TIG/MIG Welding Machine

FLUID MECHANICS & MACHINERY

Total Cost: Rs. 43.4 lakhs

Major Equipment

Francis Turbine Test Rig
Centrifugal Pump Module
Venturimeter, Orificemeter, & Rotameter

PRODUCTION TECHNOLOGY

Total Cost: Rs. 30.2 Lakhs

Major Equipment

Spark Erosion (EDM) Machine
Electro Chemical Daburring Machine
Wire-cut EDM Machine
Mitutoyo surface roughness tester

REFRIGERATION AND AIR CONDITIONING

Total Cost: Rs. 13.5 Lakhs

Major Equipment

Computerized Air-Conditioning Cycle Test
Ring With Data Acquisition System
Vapour compression refrigeration cycle
Test Ring

INTERNAL COMBUSTION ENGINE

Total Cost: Rs. 13 Lakhs

Major Equipment

Single Cylinder 4-stroke VCR Diesel Engine
Test Rig With Computer
Equipment for Morse Test on Multi-
Cylinder Petrol Engine With CNG Kit

FOUNDRY

Total Cost: Rs. 0.92 Lakhs

Major Equipment

Charcoal Furnace

WELDING RESEARCH

Total Cost: Rs. 68.3 lakhs

Major Equipment

Customizes friction stir welding Machine
Full Digital GMAW Welding Machine
Weld oscillation automation carriage
Ultrasonic Metal & Plastic Welding Machine

POWER PLANT ENGINEERING

Total Cost: Rs. 35 lakhs

Major Equipment

Rankine Cyclor Steam Turbine Power
System

STRENGTH OF MATERIAL

Total Cost: Rs. 11 Lakhs

Major Equipment

Universal Tensile and Compression Testing
Machine
Torsion Testing Machine
Rockwell cum Brinell Hardness Testing
Machine

NON – CONVENTIONAL ENERGY SOURCES

Total Cost: Rs. 60 Lakhs

Major Equipment

Solar Thermal R.O. Module
Solar Thermal Parabolic Trough Collector
Training System
Automatic Weather Station

HEAT & MASS TRANSFER

Total Cost: Rs. 13.3 Lakhs

Major Equipment

Forced Convection Heat Transfer Test Rig
Parallel Flow & Counter Flow Heat
Exchanger Apparatus

ENGINEERING METALLURGY

Total Cost: Rs. 25.6 Lakhs

Major Equipment

Vickers Hardness Testing Machine
Rotary Tribotester

COURSE STRUCTURE

Semester I

- Mathematics - I
- Engineering Graphics
- Basic Electronics
- Physics (Theory)
- Element Of Civil Engg. & Mechanics
- Environmental Studies
- Physics Lab.
- Computer Programming
- Engineering Graphics (Practical)
- NCC-I
- NSS-I
- Sports-I

Semester II

- Mathematics - I
- Engineering Graphics
- Basic Electronics
- Physics (Theory)
- Element Of Civil Engg. & Mechanics
- Environmental Studies
- Physics Lab.
- Computer Programming
- Engineering Graphics (Practical)
- NCC-I
- NSS-I
- Sports-I

Semester III

- Maths - III
- Thermodynamics and Fluid Flow
- Strength of Material
- Mechanical Measurements & Metrology
- Electrical Technology and Control Systems
- Thermodynamics and Fluid flow Lab.
- Strength of Material Lab
- Electrical Technology and Control Lab
- Civic and Social Services Internship (CSSI)

Semester IV

- Numerical Methods
- Manufacturing Process-I
- Fluid Mechanics and Fluid Machinery
- Engineering Metallurgy
- Design and Kinematics of Machines
- MMM and Metallurgy Lab
- Fluid Mechanics Lab
- Fluid Machinery Lab

Semester V

- Manufacturing Process -II
- Non-Conventional Energy Sources
- Dynamics of Machine

- Heat and Mass Transfer
- Dept. Elective - I
- Manufacturing Process - I Lab
- Dynamics of Machines Lab
- Heat Transfer and Non-conventional Energy Lab
- Industrial Orientation

Semester VI

- Refrigeration and Air-Conditioning
- Advance Manufacturing Process
- Machine Design – I
- Computer Aided Design
- Dept. Elective-II
- Manufacturing Process-II Lab
- Refrigeration and Air Conditioning Lab
- Computer Aided Design Lab

Semester VII

- Machine Design - II
- Thermal Engineering
- Discipline based/ Generic (Optimization Techniques)
- Dept. Elective-III
- Dept. Elective -IV
- Machine Design Lab
- Refrigeration and Air Conditioning Lab.
- Thermal Engineering Lab
- Seminar

Semester VIII

Option 1:

- Computer Aided Manufacturing
- Core Course-II
- Department Elective-V
- Major Project

Option 2:

- Computer Aided Manufacturing

- Core Course-II or Elective-V
- Comprehensive Project

Core Courses:- 1) Computational Fluid Dynamics and 2) Project Management

Department Elective – I:

- Production Operation Management
- Rapid Product Development
- Turbo Machinery

Department Elective-II:

- Robotics,
- Elements of Mechatronics System Design
- Quality Engineering
- Non-Destructive Testing

Department Elective – III & IV:

- Experimental Stress Analysis
- Metal Joining Processes,
- Computation Fluid Dynamics and Heat Transfer
- Planning of Facilities and Materials Handling Systems
- Vibration Engineering Design
- Design for Manufacturing
- Industrial Fuel Combustion and Pollution
- Automotive Design
- Lubrication
- Micro- & Nano-Manufacturing,
- Cryogenics

Department Elective – V:

- Machine Learning Applications in Design and Manufacturing,
- Heat Exchangers design
- Automobile Engineering
- Procurement and Material management
- Flexible Manufacturing Systems
- Solar Photovoltaic Fundamental: Technologies & Application





ELECTRICAL Engineering

The Department of Electrical Engineering was established at the inception of the School of Technology in the year 2010. It offers B.Tech. in Electrical Engineering, M.Tech. in power systems and Ph.D. in Electrical Engineering. The department has well qualified, experienced and dynamic faculty members with wide exposure to teaching and industry. It has state-of-the-art laboratories with all modern equipment and software packages, which gives exposure to the students to practical aspects of Engineering.

The course structures of B.Tech. and M.Tech. Program are carefully designed to impart the knowledge about present state of technology, futuristic developments, industrial practices and research findings. The B.Tech. curriculum focuses on all major areas of Electrical Engineering, such as are Power Systems, Electrical Machines, Instrumentation and Control, Power Electronics and Drives, Signal Electronics, Signal Processing and Controllers, Renewable Energy. The M.Tech. (Power Systems) curriculum focuses on Advances in Power Systems, Distributed Generation, Renewable Energy, Smart Grids, Power Electronics and Control.

12
Ph.D
Scholars

25
M.Tech.
Students

506
B.Tech.
Students

FACULTY PROFILE

Dr. Praghesh Bhatt

Associate Professor
Areas of Interest: Power System Analysis, Power System Stability and Control, Grid Integration of Wind Power Generation, Smart Grid, Distributed Generation, Power System Protection, Power Quality, Optimal Power Flow

Prof. Vivek J. Pandya

Professor
Areas of Interest: Power System Protection, Power System Stability Studies, Power System Security Studies, Issues of Grid Integration for Renewable Generations, Cyber Security of Power System Grids / Networks, Data Analytics, Energy Efficiency.

Dr. Jitendra G. Jamnani

Associate Professor
Areas of Interest: Electrical Machines and Design, Advanced Electrical Machines, Power System Protection and Switchgear, Power System Operation and Control, Power Quality, High Voltage Engineering, EHV AC and HVDC Transmission, Substation Engineering, Energy Management and Audit, Energy Efficiency in Electrical Utilities

Dr. Amit V. Sant

Assistant Professor
Areas of Interest: Power Electronic Converters, Power Quality Enhancement, Electric Drives, Electric Vehicles, Renewable Energy Technology

Dr. Anilkumar T. Markana

Assistant Professor
Areas of Interest: Control systems, process control, multi-objective optimization based Model Predictive Control (MPC).

Dr. Bhinal B. Mehta

Assistant Professor
Areas of Interest: Electrical Machines, Electrical Power System, Modeling and Simulation of Electrical Machines, Power System Dynamics & Stability, Grid Integration of Renewable Energy Sources (Wind turbine generating systems), Micro grid, Electrical Machine Design

Dr. Siddharth S. Joshi

Assistant Professor
Areas of Interest: Renewable energy system, Modeling and simulation of grid tied energy sources, Standalone energy systems with maximum power point extraction, and Electrical Machines.

Dr. V. S. K. V. HARISH

Assistant Professor
Areas of Interest: Building Energy Systems, Rural Electrification, Microgrids, optimal planning and energy management

Ms. Meera Karamta

Assistant Professor
Areas of Interest: Power system analysis, Power system operation and control, High voltage engineering, Project management, Computer applications to power system, Power system modeling, Power system simulation, FACTS.

Mrs. Leena Santosh

Assistant Professor
Areas of Interest: Power system optimization, Electricity market dynamics, Forecasting

Mr. T Venkata Pavan Kumar

Assistant Professor
Areas of Interest: power system protection, micro grid protection

Mr. Vipin S. Shukla

Assistant Professor
Areas of Interest: Signal and Image Processing, Power Plant Dynamics and Control

Mr. Nirav D. Karelia

Assistant Professor
Areas of Interest: Power Electronics Converters & Drives, Power Quality and active filters, FACT controllers and Custom Power Devices, UPQC, Distributed Generation, Renewable energy sources, Smart grid, Energy efficiency, Energy audit and management.

Mrs. Vima Mali

Assistant Professor
Areas of Interest: Solar Systems, Grid Connected Inverter, Electric Vehicles

Ms. Vaidehi Deshpande

Assistant Professor
Areas of Interest: Power Quality, Power Electronics & Drives, Renewable energy generation

Mr. Alok Jain

Assistant Professor
Areas of Interest: Power Systems, Distributed Generation, Smart-grids

RESEARCH & DEVELOPMENT

Name of Ph.D. Scholar	Topic	Research Guide
Nirav Karelia	Multi-Converter UPQC System for Inverter Based Renewable Energy System	Dr. Vivek Pandya
Kapil P.	Investigations on Z-Source Inverter for Battery Charging	Dr. Amit Sant
Dhaval Vyas	Cognitive reasoning for compliant robotic manipulator	Dr. Anil Markana
Venkata Pavan Kumar T.	Microgrid Protection: Problems and Solutions	Dr. Vivek Pandya
Vipin Shukla	Automatic Control of Plasma Device Using Artificial Neural Networks Technique	Dr. Vivek Pandya
Swapnil Jani	MODELING, ANALYSIS & OPTIMIZED NOVEL DESIGN OF ELECTRIC MOTOR FOR ELECTRIC VEHICLE	Dr J G Jamnani
Kaustubh Vyas	Performance Analysis and Design Optimization of EHV / UHV AC Transmission Lines Considering Effects of Electric & Magnetic Fields and Corona	Dr J G Jamnani
Piyush Meyani	Investigations on Z-Source Converter for Photovoltaic Applications	Dr Amit Sant
Jignesh Bhatt	Analysis, Optimization and Framework for Reliability Enhancement of Smart Grid Communication Technology using Instrumentation Telemetry Concepts	Dr VSKV Harish
Ashok Chavda	Application of Sweep Frequency Response Analysis for Health Monitoring of Power Transformers	Dr Vivek Pandya

STUDENT RESEARCH

The Office of Research and Sponsored Programs (ORSP) provides the financial support to students for conducting research and investigations in emerging areas.

University has funded 88.34 Lakhs for about 72 Students' UG and PG Research Projects since 2013.

UG Projects

- Smart meter monitoring and management
- Design and development of solar PV based DC micro-grid
- Hardware realization of closed loop control for BLDC motor

STUDENT ACTIVITIES Clubs/Forums & Chapters

Electrical Students Professional Association (ESPA)

Mission objectives of ESPA is to (i) facilitate communication and cohesiveness among student's faculty other student organizations and the University, (ii) foster Technological Innovation and excellence for the benefit of humanity, (iii) information about technical work in professional world and update its members about the new Technological advancements, and (iv) provide exposure to latest techniques in the power sector to the all the members. IN order to achieve these objectives ESPA organizes several workshops, guest lectures, training sessions, quiz and paper presentations.

Team Kaizen

Shell Eco-marathon is a unique global programme, for science, technology, and engineering students to design and build ultra-energy-efficient cars, and then take them out on the track in competition. Team Kaizen from PDPU has been consistently participating in the Shell Eco-Marathon competition from the year 2015. The team has come a long way in building their prototype vehicles and improvising upon it year after year. The developed electric vehicle, Nakshatra, by Team Kaizen achieved an efficiency of 198.4 km/kWh, breaking all its previously set records and secured 2nd rank in the Battery-Electric.

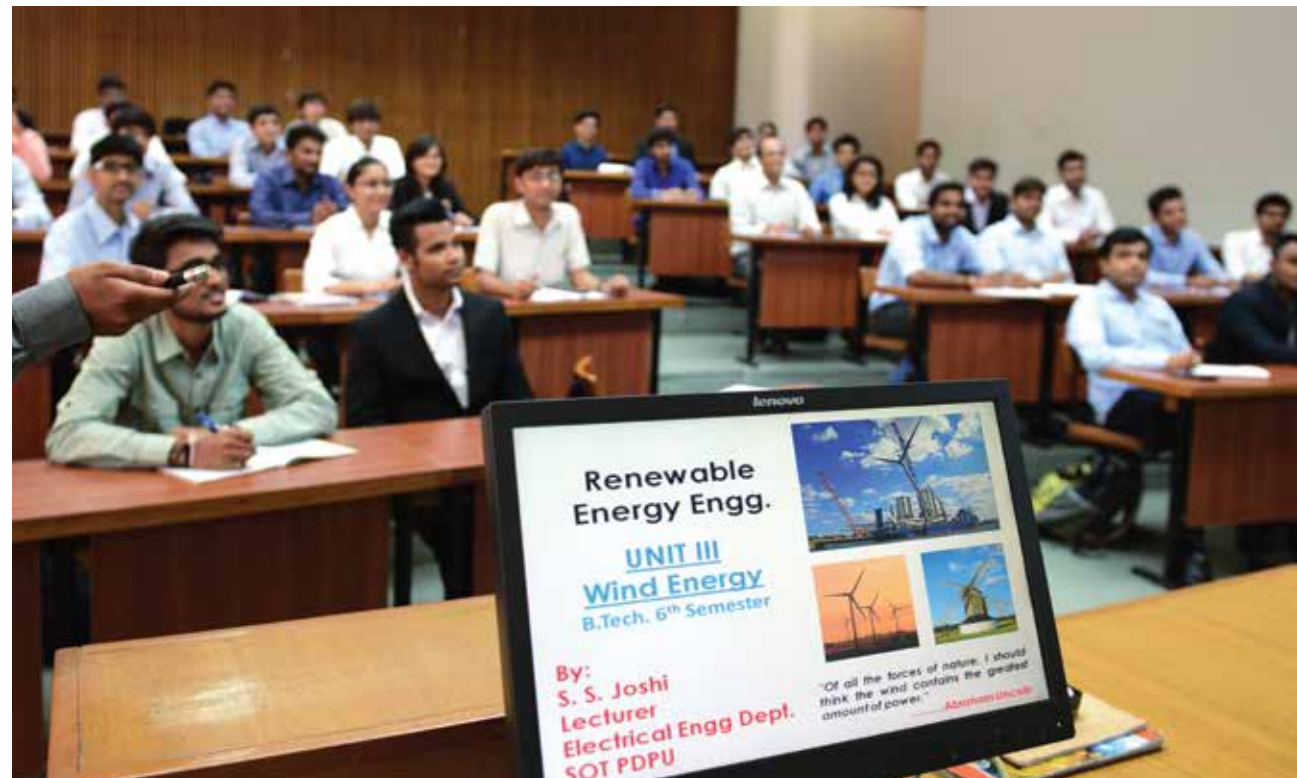
Team Sovereign

Baja SAE is an international intercollegiate competition powered by Society of Automotive Engineers (SAE) where engineering students are encouraged to design, build and race off-road vehicles that can withstand rugged terrains. Team Sovereign-e BAHA participated in this international intercollegiate competition which was organized at NATRIP facility, Pithampur, near Indore by SAE INDIA. The team developed All-Terrain Vehicle (ATV) -PHOENIX, which is powered by a 48 V DC battery and a 4.5 kW BLDC motor with a controller.

IEEE Student Chapter

Department of Electrical Engineering at PDPU has started IEEE Industry Applications Society Student branch from 2012 and it offers professional networking opportunities that build critical skills of students beyond classroom learning. The goal of the chapter is to ensure the growth of skill and knowledge in mainly the energy related technical professions and to foster individual commitment to continuing education among members. The chapter helps the students to develop technological excellence through technical meetings, outreach programs, conferences, guest lectures and project competitions. IEEE SB IAS Students Chapter secured 3rd rank as the "MOST HAPPENING CHAPTER" in Asia Pacific region.

IEEE SB IAS Students Chapter Secured 3rd rank as "MOST HAPPENING CHAPTER" in Asia Pacific region.



LAB FACILITIES

POWER SYSTEM PROTECTION

Total Cost: Rs. 1.20 Crore

Major Equipments

EXPERIMENTAL SET UP WITH DIGITAL RELAYS TO PERFORM

- GENERATOR PROTECTION
 - INDUCTION MOTOR PROTECTION
 - PARALLEL FEEDER PROTECTION
 - THREE PHASE TRANSFORMER PROTECTION
 - UNDER VOLTAGE AND OVER VOLTAGE PROTECTION
 - DISTANCE RELAY PROTECTION OF TRANSMISSION LINE
- SCADA SYSTEM HAVING IEC 61850 OPEN PROTOCOL CONNECTED TO ALL EXPERIMENTAL SET UP WITH DIGITAL RELAYS
- FULLY AUTOMATIC 3-PHASE RELAY TESTING KIT.

ELECTROMECHANICAL ENERGY CONVERSION

Total Cost: Rs. 52 Lakhs

Major Equipments

THREE PHASE SYNCHRONOUS MOTOR LAB
THREE PHASE SYNCHRONOUS GEN LAB
WARD-LEONARD METHOD OF SPEED CONTROL TRAINER FOR DC MOTOR

ELECTRONICS DEVICES & CIRCUITS

Total Cost: Rs. 3.5 Lakhs

Major Equipments

30MHZ TWO CHANNEL FOUR TRACE MICROCONTROLLER BASED OSCILLOSCOPE
ANALOG ELECTRONICS DEVELOPMENT SYSTEM
MULTI OUTPUT VARIABLE DC REGULATED POWER SUPPLY

SWITCHGEAR AND POWER SYSTEM

Total Cost: Rs. 11 Lakhs

Major Equipments

VACUUM CIRCUIT BREAKER PANEL
AIR CIRCUIT BREAKER PANEL
ELECTRICAL POWER TRANSMISSION LINE SIMULATOR

MICROPROCESSOR & MICROCONTROLLER

Total Cost: Rs. 42 Lakhs

Major Equipments

UVISION KEIL SOFTWARE
MICROC FOR PIC
PIC DEVELOPMENT KIT WITH PERIPHERAL BOARDS

RENEWABLE ENERGY

Total Cost: Rs. 6 Lakhs

Major Equipment

EXPERIMENT SET OF WIND GENERATOR < 1 KW (WETS)
SOLAR RESEARCH KIT

COMMUNICATION

Total Cost: Rs. 4 Lakhs

Major Equipments

A.M. TRANSMITTER & RECEIVER TRAINER
DIGITAL STORAGE OSCILLOSCOPE-100MHZ
FIBER OPTIC TRAINER ADVANCED MODULATION PC COMPARABLE

MODELLING AND SIMULATION

Total Cost: Rs. 55 Lakhs

Major Equipments

MI-POWER
NI LABVIEW ONE ACADEMIC SITE LICENSE
NI MULTISIM
PSCAD/EMTDC
ETAP
MATLAB/SIMULINK
PSIM

PROCESS DYNAMICS & CONTROL LAB

Total Cost: Rs. 1.4 Crore

Major Equipments

INVERTED PENDULUM
PROCESS TRAINERS
COUPLED TANK SYSTEM
COMPACTRIO (NI)

ANALOG AND DIGITAL ELECTRONICS LABORATORY

Total Cost: Rs. 2.50 Lakhs

Major Equipments

MULTI OUTPUT VARIABLE DC REGULATED POWER SUPPLY
20-30MHZ TWO CHANNEL FOUR TRACE MICROCONTROLLER BASED OSCILLOSCOPE
1 MHZ FUNCTION GENERATOR
DIGITAL ELECTRONICS DEVELOPMENT KIT
DIGITAL LOGIC GATES AND BOOLEAN LAW VERIFYING KIT

POWER ELECTRONICS & DRIVES

Total Cost: Rs. 52 Lakhs

Major Equipments

AC POWER SOURCE / POWER ANALYZER
AC ELECTRONIC LOADS 300V,12A -1200VA
BRUSH LESS DC MOTOR DRIVES
SEPARATELY EXCITED DC MOTOR DRIVES
DSPACE 1103 KIT

DIGITAL SIGNAL PROCESSING LABORATORY

Total Cost: Rs. 5 Lakhs

Major Equipments

HIGH VOLTAGE MOTOR CONTROL AND PFC DEVELOPER'S KIT
DSP DEVELOPMENT KIT LIKE TMS320C6748
DSP DEVELOPMENT KIT(LCDK) AND JTAG EMULATOR LIKE TMDSEMU100VU-14T
AC INDUCTION MOTOR
STEPPER MOTOR
PMDC MOTOR

HIGH VOLTAGE

Total Cost: Rs. 35 Lakhs

Major Equipments

AC / DC / IMPULSE TEST SET. (100 KV AC, 140 KV DC)
PARTIAL DISCHARGE METER WITH HOUSING
0 TO 100 KV OIL TEST KIT. SEMI AUTOMATIC
0 TO 30 KV HV INSULATION TESTER
2.5 KV HAND HELD INSULATION TESTER. (HAND CRANKED OPERATED)

COURSE STRUCTURE

Semester I

- Mathematics - I
- Element Of Civil Engg. & Mechanics
- Elements Of Electrical Engg.
- Physics (Theory)
- Physics (Practical)
- Environmental Studies
- Workshop Practice
- Engineering Graphics (Theory)
- Engineering Graphics (Practical)
- NCC/NSS/Sports

Semester II

- Mathematics - II
- Chemistry (Theory)
- Chemistry (Practical)
- Element Of Mechanical Engg.
- Basic Electronics
- Professional Ethics And Human Values
- Computer Programming (Theory)
- Communication Skills (Theory)
- Communication Skills (Practical)
- NCC/NSS/Sports

Semester III

- Mathematics-III
- Network Theory
- Electronics Devices and Circuits
- Electrical Machines-I
- Electrical Measurement and Measuring Instruments
- Electrical Machines-I Laboratory

- Network Analysis Laboratory
- Electrical Measurements and Measuring Instruments Laboratory
- Civic And Social Services Internship (CSSI)

Semester IV

- Numerical and Statistical Methods
- Analog and Digital Electronics
- Control Theory
- Power System-I
- Electrical Machines-II
- Electrical Machines-II Laboratory
- Analog and Digital Electronics Laboratory
- Control Theory Laboratory

Semester V

- Electromagnetics
- Microprocessors and Microcontrollers
- Power Electronics
- Power System II
- Instrumentation & Control
- Microprocessors & Microcontrollers Laboratory
- Power Electronics Laboratory
- Instrumentation & Control Laboratory
- Industrial Orientation

Semester VI

- Switchgear and Protection
- High Voltage Engineering
- Renewable Energy Engineering
- Power System Design & Practice

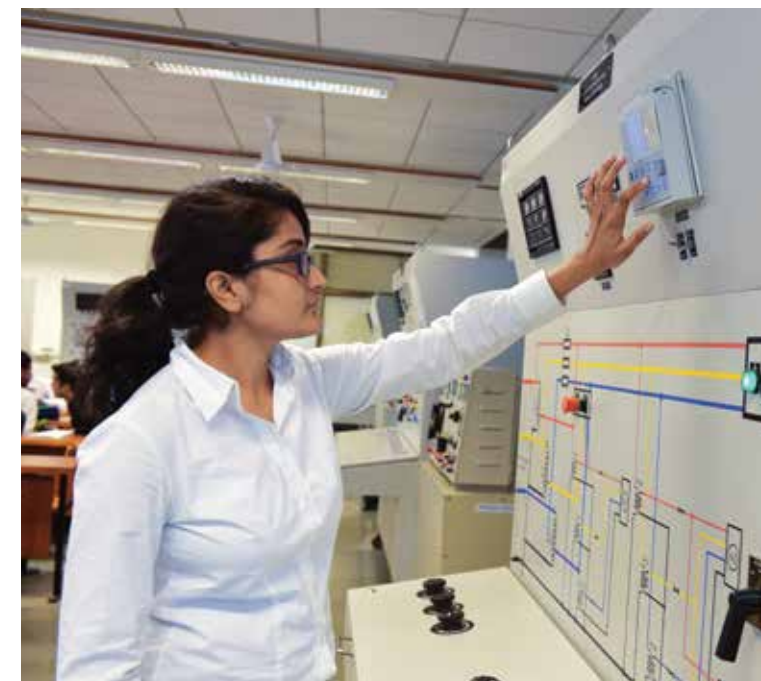
- Department Elective-I
- Switchgear & Protection Laboratory
- High Voltage Engineering Laboratory
- Renewable Energy Engineering Laboratory
- Advances in Power Systems
- Electric Drives

Semester VII

- Electrical Machine Design-I
- Power System Operation & Control
- Testing & Commissioning of Electrical Machines & Equipment
- Digital Signal Processing and its Applications
- Electrical Power Utilization & Traction
- Laboratory-I
- (Digital Signal Processing Laboratory)
- Laboratory-II
- (Testing & Commissioning of Electrical Machines Laboratory)
- Laboratory - III
- (Power System Modelling & Simulation)
- Industrial Training

Semester VIII

- Electrical Machine Design - II
- Smart Grids & Electrical Vehicles
- Department Elective II
- Major Project/ Comprehensive Project
- Energy Management & Audit
- Power Quality
- Optimization Techniques in Electrical Engineering





CIVIL Engineering

Civilization is through Civil Engineering' and with this focus School of Technology at Pandit Deendayal Petroleum University (PDPU), Gandhinagar has this mother branch in the teaching-learning system ever since the inception (2010). The Department is also offering M.Tech in Civil (Infrastructure Engineering and management), M.Tech in Civil (Transportation Engineering) and M.Tech in Environmental Engineering and Ph.D in all major branches of Civil Engineering. Looking to the exponentially growing needs of the world (and India too) in terms of Better Cities, Better Environment, and Sustainable Urbanization, there is a lot which Civil Engineers will have to do and all this is included in the overall teaching-learning curriculum of Civil Engineering at PDPU. Above this, the department is actively involved in basic and applied research and faculties are working in almost all areas of Civil Engineering like Geotechnical Engineering, Structural Engineering, Environmental Engineering, Water Resource Engineering, Transportation Engineering, Material Science, Project Management and Building Planning and have research projects funded by institutions like ISRO, CSIR, DAE, DST and many more. With this background and coupled with the high credentials of Excellent Faculty, World Class infrastructure, Industry Funded state of art laboratories, Industry led software packages, conducive and energetic environment, it would be very right to state that opting Civil Engineering @ PDPU offers comprehensive growth path for the students to get the best of the knowledge and unfold its power of imagination, creativity and make an excellent career for himself along with being an asset to the society.

18
Ph.D
Scholars

108
M.Tech.
Students

550
B.Tech.
Students

FACULTY PROFILE

Dr. Tejaskumar Thaker
Associate Professor

Areas of Interest: Seismic Hazards and Microzonation, Liquefaction Assessment, Ground Improvement, Waste Utilization, Geophysical Methods and Soil Explorations.

Dr. Debasish Sarkar
Associate Professor

Areas of Interest: Project Management, Project Risk Management, BIM, Underground Corridor Construction for Metro Rail Operations, SQC of Ready Mixed Concrete, Green Building Materials & Technology.

Dr. H. R. Dhananjaya
Associate Professor

Areas of Interest: Solid Mechanics, FEM, IFM, FGM, Laminated composites.

Dr. Manas Kumar Bhoi
Assistant Professor

Areas of Interest: Study of Interference effect of footings under different loading condition, Nonlinear Numerical analysis of Geotechnical problems using Finite element method.

Dr. Anurag Kandya
Assistant Professor

Areas of Interest: Urban Micro Climate, Heat Islands, Building Energy Modelling, Remote Sensing & GIS, Air Quality Modelling & Monitoring.

Dr. Rajesh S. Gujar
Assistant Professor

Areas of Interest: Infrastructure Planning & Management.

Dr. Dhruvesh Patel
Assistant Professor

Areas of Interest: Hydrology and Water Resources Engineering, RS and GIS and Advance Mapping, Flood Risk Assessment and Modeling, Hydrodynamic Modeling.

Dr. Dayashankar Kaul
Assistant Professor

Areas of Interest: Air Pollution: Measurement and Modeling; Atmospheric Physics and Chemistry; Climate Change; Indoor Air Pollution; Source apportionment; Carbon Isotope; Design and Development of low cost sensors; Solid waste disposal and related soil and air pollution.

Dr. Niragi Dave
Assistant Professor

Areas of Interest: Concrete Technology, Utilization of waste materials in Concrete structures.

Mr. Naimish Bhatt
Assistant Professor

Areas of Interest: Application of GIS and Remote Sensing in Civil Engineering, Flood Routing & Mitigation Techniques.

Dr. Akshay Jain
Assistant Professor

Areas of Interest: GIS Applications in Water Resource Engineering, Flood Modeling.

Mr. Ronak Motiani
Assistant Professor

Areas of Interest: Finite Element Modeling and Analysis of Structures, Seismic Simulation of Structures.

Mr. Shobhit Chaturvedi
Assistant Professor

Areas of Interest: Construction Management

Mr. Vasudeo Chaudhari
Assistant Professor

Areas of Interest: Nonlinear-Dynamic Analysis, Numerical Modeling, Seismic Analysis of Offshore Structures and Petroleum Pipelines.

Mr. Manivel M.
Assistant Professor

Areas of Interest: Traffic studies for Transportation Demand Management, Road safety studies, Intelligent Transportation System Planning, Electric vehicles for Indian cities study, Road accident study. Accident factors analysis.

Dr. Pradeep Kankeri
Assistant Professor

Areas of Interest: Structural Engineering, numerical simulation and experimental evaluation of FRP strengthened concrete structures, Dynamic response of joints between precast elements, Self-healing concrete

Dr. Uma Chaduvula
Assistant Professor

Areas of Interest: Ground improvement, Waste utilization

Dr. Swapnil Mishra
Assistant Professor

Areas of Interest: Rock Engineering, Underground Structures under Dynamic Loading, Soil Mechanics and Finite Element Methods

EXTERNALLY FUNDED RESEARCH PROJECTS



Moving towards Organic Manure using Gamma irradiated sewage sludge **(35 lakhs) (2018-21)**



Flood Damage Assessment of Dhanera City of Banaskantha District using Geo-Spatial Techniques and Hydrodynamic Flood Inundation Modelling **(38 lakhs) (2019-22)**



Interfacing Groundwater uptake rate on salinity ingress and subsequent agricultural productivity **(16 lakhs) (2019-22)**



Urban Air Quality Assessment using Remote Sensing & GIS **(42 lakhs) (2019-22)**



Treatment of Ammoniacal Nitrogen from Industrial Wastewater in a Combined electrochemical and Biological Process **(21 lakhs) (2018-21)**

1.52 Cr. Externally Funded Project

STUDENT RESEARCH

The Office of Research and Sponsored Programs (ORSP) provides the support for the free and responsible conduct of investigative, scholarly and creative activities at the University.

SPONSORED PROJECTS:

5 (ongoing, 2020-21)

Rs. 1,52,00,000 (funding amount)

SRP - projects : 06 (2019-20)

Rs. 7,80,418 (funding amount)

SRP - projects: 08 (2018-19)

Rs. 13,26,000 (funding amount)

SRP - projects: 15 (2017-18)

Rs. 20,08,400 (funding amount)

Involvement of the students in funded research projects of National Repute

Involvement of the students in ongoing Consultancy Projects, where department has 1.32 Cr+ projects from Industries, Govt. of Gujarat and other Organizations. Besides this students are undergoing ORSP Projects, Comprehensive Project of 6 month, Industrial Training of 6 weeks, Field Visits by the Students and Civil Engineering Research Projects

STUDENT ACTIVITIES Clubs/Forums & Chapters

Civil Engineering Forum

Inaugurated on 28th January, 2012, The Civil Engineering Forum of Civil Engineering Department, PDPU aims to provide an arena to the students to boost their technical acquaintance & prove themselves as a better professional in the community. It aims to give the students the extra edge apart from academics so as to develop a research temperament. This is an integral part of the Department of Civil Engineering. It provides a platform to students to gain knowledge, explore and to execute their ideas in Civil Engineering. It serves as an umbrella forum for all the student organizations under the department.

Indian Society for Non Destructive Testing (ISNT) Student Chapter

ISNT Student Chapters, PDPU inaugurated in 2019 for Civil Engineering Students to provide unique opportunities for networking, mentoring and bonding over common interests in field of non destructive sciences. They provide support both within the student community and to local communities outside the institution and organized numbers of events such as seminars, workshops, expert lectures etc.

Indian Geotechnical Society (IGS) Student Chapter

The IGS students chapter inaugurated in the PDPU on 18th October, 2019 with opening seminar on " Geotechnical Innovation and Entrepreneurship: Woman Achievers in Geotechnical Engineering" with the support of IGS Ahmadabad Chapter. The scope of Geotechnical Engineering expanded significantly in the last 30 years whereas the coverage of geotechnical engineering in the curriculum is limited. The syllabus is restricted and as a result, many students are not exposed to the wide coverage of current trends and exciting professional/teaching/research opportunities in geotechnical engineering. The student chapter host many activities such as seminars/workshops/lectures conducted by student chapters under the guidance of faculty coordinators and the members of local chapters will significantly help the student community to give exposure to careers and opportunities in this area and also develop leadership skills among students which will help them in their career.

Institution of Civil Engineers - Students Chapter, PDPU

Series of events to be planned spanning the entire year which includes Workshops, Symposiums, Technical Festival. A total seed support of Rs 5 lakh to be made available every year.



LAB FACILITIES

L&T funded around INR 200 Lakhs for setting up the Civil Engineering Labs (Surveying, Environmental Engineering, Geotechnical & Structural Engineering)

CONCRETE TECHNOLOGY

Total Cost: Rs. 70 Lakhs

Major Equipments

LOADING FRAME (200 TONS)
UNIVERSAL TESTING MACHINE (100 TONS)
COMPRESSIVE STRENGTH TESTING MACHINE (200 TONS)
FLEXURAL TESTING MACHINE
LOS-ANGELEOUH TESTING MACHINE
ULTRASONIC PULSE VELOCITY MACHINE

GEO TECHNICAL ENGINEERING

Total Cost: Rs. 47 Lakhs

Major Equipments

TRIAxIAL SHEAR WITH GDS CONTROLLERS, VANE SHEAR, DIRECT SHEAR EQUIPMENT
FIELD AND LABORATORY PLATE LOAD TEST FACILITY
ELECTRICAL RESISTIVITY APPARATUS
CONSOLIDATION, SWELLING AND CBR TESTING FACILITIES
COMPACTION AND INDEX PROPERTIES MEASUREMENT DEVICES

ENVIRONMENTAL ENGINEERING

Total Cost: Rs. 1.02 Crore

Major Equipments

ATOMIC ABSORPTION SPECTROPHOTOMETER (PERKINELMER)
TOTAL ORGANIC CARBON ANALYZER (SHIMADZU)
UV-VISIBLE SPECTRO PHOTOMETER (HACH)
FINE PARTICULATE SAMPLER (ENVIROTECH)
FLAME PHOTOMETER (ESICO)
PM MONITOR (SPECTRO)

SURVEYING

Total Cost: Rs. 49 Lakhs

Major Equipments

SOKKIA 50RX REFLECTORLESS TOTAL STATION
TRIMBLE GEOXH GPS WITH JUNO SERIES
DIFFERENTIAL GPS
ARCGIS SOFTWARE

FLUID MECHANICS

Total Cost: Rs. 40 Lakhs

Major Equipment

HYDROLIC TILTING FLUME (10M LONG) FOR HYDRODYNAMIC STUDIES
DISCHARGE THROUGH VENTURIMETER, ORFICEMETER, & ROTAMETER
REYNOLDS APPRATUS
FLOW THROUGH MOUTH PIECE & ORIFICE
BERNOLLIS THEOREM
FRICTION PRESSURE DROP THROUGH PIPES

TRANSPORTATION ENGINEERING

Total Cost: Rs. 13.50 Lakhs

Major Equipments

DUCTILITY TESTING MACHINE
RING AND BALL APPARATUS
PENETRATION TEST APPARATUS
BITUMEN EXTRACTION MACHINE
FLASH AND FIRE POINT TESTING MACHINE

HEAVY STRUCTURAL ENGINEERING LAB

Total Cost: Rs. 100 Lakhs

Major Equipments

LOADING FRAME AND ACTUATOR

HIGH COMPUTATION LABORATORY

Total Cost: Rs. 2 Crores

Major Equipments

LICENCE OF MORE THAN 25 DIFFERENT SOFTWARE ARE PURCHASED

COURSE STRUCTURE

Semester I

- Mathematics – I
- Elements of civil engineering & mechanics
- Basic electronics
- Physics
- Environmental studies
- Computer programming
- Engineering graphics (theory)
- NCC /NSS / Sports

Semester II

- Mathematics – II
- Chemistry (theory)
- Elements of mechanical engineering
- Elements of electrical engineering
- Professional ethics and human values
- Workshop practice
- Communication skills (practical)
- NCC /NSS / Sports

Semester III

- Strength of Material
- Building Material and Construction
- Fluid Mechanics
- Concrete Technology
- Engineering Geology
- Maths – III

Semester IV

- Structural Analysis – I
- Hydraulic Engineering
- Basic Surveying
- Building Planning and Drawing
- Numerical Techniques
- Open Elective: Entrepreneurship & Business plan

Semester V

- Structural Analysis – II
- Geotechnical Engineering – I
- Environmental Engineering – I
- Hydrology and Water Resources Engineering
- Advance Surveying and Geomatics
- Open Elective: Management Concept and Practice

Semester VI

- Design of RCC structure
- Environmental Engineering – II
- Geotechnical Engineering – II
- Irrigation Engineering and Hydraulic Structure
- Estimating and cost analysis
- Open Elective: Geospatial Technology

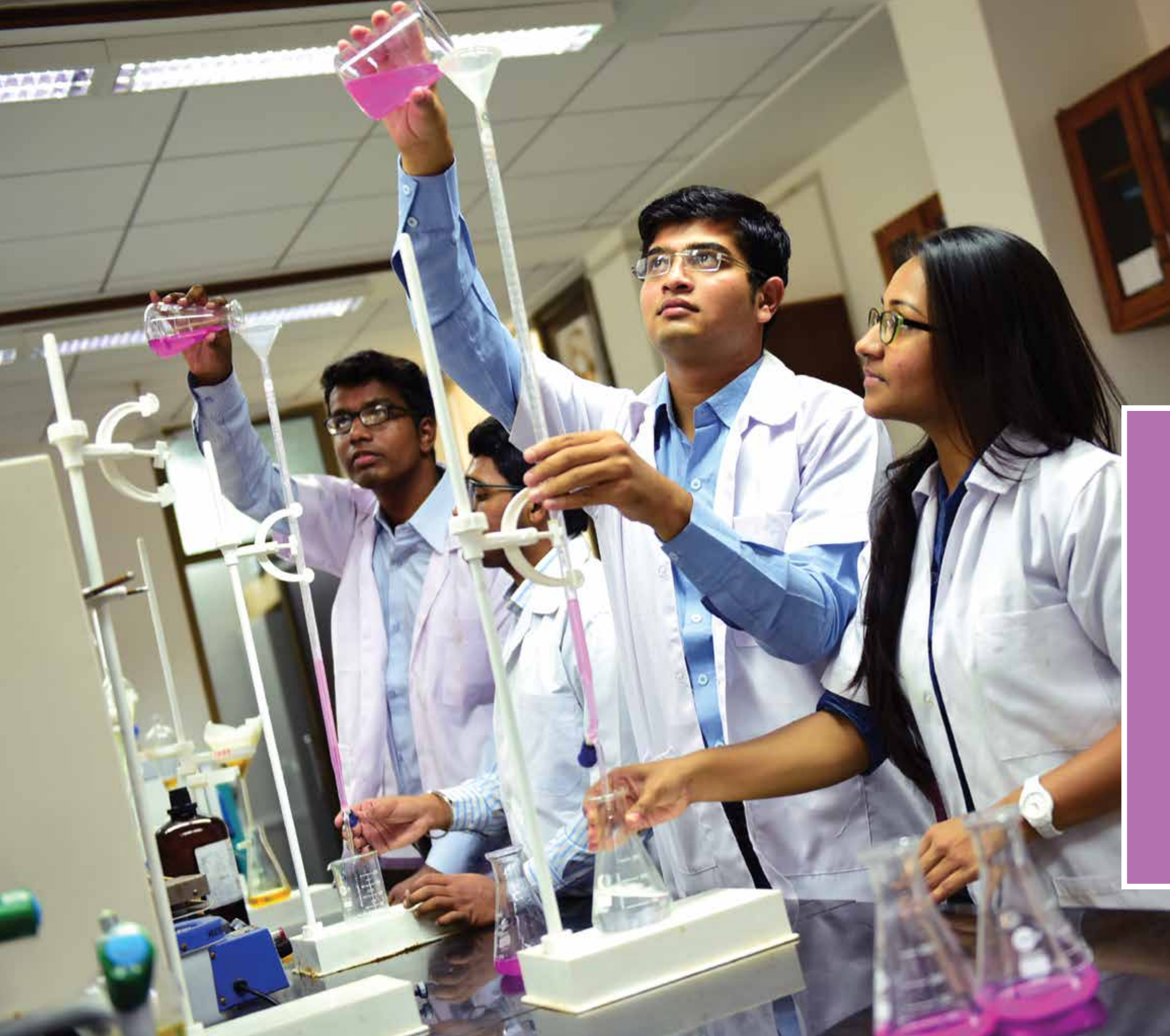
Semester VII

- Construction Technology and Equipment
- Highway Engineering
- Design of Steel Structure
- Earthquake Engineering
- Seminar

Semester VIII

- Railway, Airport, Docks and Harbour Engineering
- Construction Project Management
- Only for Project Students Dept. Elective - I
- Major Project/ Comprehensive Project





CHEMICAL Engineering

The Department of Chemical Engineering at PDPU adopts a philosophy of 'discovery learning to generate knowledge through experience and innovative ideas'. The department focuses on comprehensive course curriculum with intense practical exposure to the students which enable them to take up challenging professional careers in various fields such as product and process design in Chemical Industries and allied sectors such as oil and natural gas, petroleum and petrochemicals, fine and heavy chemicals, coal chemicals, fertilizer, agro-chemicals, plastics, polymers, environmental pollution control, and energy conservation sector.

8
Ph.D
Scholars

30
M.Tech.
Students

290
B.Tech.
Students

FACULTY PROFILE

Dr. Swapnil A. Dharaskar

Assistant Professor

Areas of Interest: Ionic Liquids, Desulfurization Process, Nanotechnology, CO₂ Capture, Waste Water Treatment etc.

Dr. Pravin Kodgire

Associate Professor

Areas of Interest: Polymer Blends and Composites, Biofuel, Energy and Environment

Dr. Sukanta Dash

Assistant Professor

Areas of Interest: Carbon Capture and Sequestration, Gas Processing, Process Modeling and Simulation

Dr. Manish Kumar Sinha

Assistant Professor

Areas of Interest: Synthesis and Characterization of Stimuli Responsive Materials.

Dr. Ashish Unnarkat

Assistant Professor

Areas of Interest: Catalyst Synthesis, Catalytic Oxidation of Hydrocarbons, Synthesis of Bitumen Allied Products, Application of Lignin, CO₂ Utilization.

Dr. Surendra Sasi Jampa

Assistant Professor

Areas of Interest: Membrane Gas Separations, Synthesis of Metal Organic Frameworks, Catalyst Synthesis

Dr. Suriapparao DV

Assistant Professor

Areas of Interest: Value addition to solid wastes (municipal solid waste, Renewable Energy Sector, Reservoir Simulation.

Dr. Anirban Dey

Assistant Professor

Areas of Interest: Carbon dioxide absorption using blended amines, Nanotechnology

Dr. Manan Shah

Assistant Professor

Areas of Interest: Geothermal Exploration and Exploitation

Dr. Abhishek Yadav

Assistant Professor

Areas of Interest: Colloid and interface science

Dr. Abhishek Gupta

Assistant Professor

Areas of Interest: Molecular Simulations Studies of Polyelectrolyte's

Dr. Rajasekhar Reddy Busigari

Assistant Professor

Areas of Interest: Thermo chemical Conversion of Non-Renewable and Renewable Materials via Catalytic Pyrolysis, Microwave-Assisted Processing of Materials etc.

Dr. Rajat Saxena

Assistant Professor

Areas of Interest:- Thermal Modeling, Phase Change Materials, Material thermal Characterization

Dr. Bharti Saini

Assistant Professor

Areas of Interest: Water & Wastewater Treatment, Environmental Engineering.

Dr. Lubhani Mishra

Assistant Professor

Areas of Interest: Theoretical and Computational Fluid Dynamics

Dr. MD Aurangzeb

Assistant Professor

Areas of Interest: Process Intensification and Process Control

Dr. Ravi Tejasvi

Assistant Professor

Areas of Interest: Transport Phenomena and Chemical Reaction Engineering, Process Control etc.

Dr. Shubhankar Roy

Assistant Professor

Areas of Interest: Computational analytical and experimental Fluid Dynamics

Dr. Sweta Balchandani

Assistant Professor

Areas of Interest: Carbon dioxide absorption using functionalized and blended ionic liquids, Process Modeling and Simulation, Process Control & Optimization & their applications in Environmental Engineering.

RESEARCH & DEVELOPMENT

Department research focus is on recent scientific development and contributes to the main stream of chemical engineering research. Research is going on in the area of:

- Membranes for CO₂ Separation (Dr. S. Dharaskar, Dr. M. Sinha, Dr. S. Shashikumar)
- Advanced Separation Processes (Dr. M. Sinha, Dr. B. Saini, Dr. M. Shah)
- CO₂ Capture with Cost effective advanced Processes (Dr. S. Dash, Dr. A. Dey, Mrs. S. Balchandani)
- Catalysis (Dr. A. Unnarkat, Dr. Surendra Sasikumar)
- Molecular Simulation of ionic liquids (Dr. S. Dharaskar, Dr. A. Gupta)
- Molecular Simulation of polymers (Dr. A. Gupta)
- Nanotechnology (Dr. S. Dharaskar)
- Nano-particles from waste material (Dr. A. Unnarkat, Dr. D. Suriapparao)
- NO_x removal from flue gas (Dr. M. Sinha, Dr. A. Yadav)
- Bio-diesel (Dr. P. Kodgire)

Following is the list of sanctioned projects:

- Dr. Swapnil Dharaskar (PI) and Dr. Manish Sinha (CO-PI) research proposal Sanctioned entitled on "Structure, Interaction and Process for Energy Efficient CO₂ Separations Using Novel Ionic Liquids Supported Membranes" by Department of Science and Technology, India with funding of (Rs. 28.5 Lakhs) under MISSION-INNOVATION Carbon Capture Scheme. (Ongoing)
- Dr. Sukanta Dash (PI) and Dr. Anirban Dey (Co-PI) research proposal Sanctioned entitled on "Integrated Design and Demonstration of Intensified CO₂ Capture with Cost effective advanced Process" by Department of Biotechnology, India with funding of (Rs. 62.7 Lakhs) under MISSION-INNOVATION Carbon Capture Scheme. (Ongoing).
- Dr. Swapnil Dharaskar (PI) completed research project on "Molecular Simulation study of Novel Ionic Liquids" under Indo-Finnish Bilateral Scheme by Department of Science and Technology, India and Academy of Finland with Funding of (Rs. 5 Lakh). (Completed)

STUDENT RESEARCH

The Office of Research and Sponsored Programs (ORSP) provides the support for the free and responsible conduct of investigative, scholarly and creative activities at the University.

18 ORSP projects in total and funding of Rs. 219 lakhs in total

ORSP project

- Study and fabrication of polymeric membranes for flue gas treatment and biogas up-gradation applications.
- Preparation of functionalized Graphene oxide (GO) doped polysulphone (PSF) composite membrane and its application as membrane and as well as adsorbent.
- Conversion of waste plastics into fuels and chemicals
- Production of ultra-low sulfur fuel using novel ionic liquid with ultrasound assisted oxidative / Extractive process.
- Experimental and theoretical studies on efficient carbon dioxide capture using novel aqueous single and blended polyamines.
- Up-gradation of organic/plastic solid waste into fuels and chemicals using plasma assisted pyrolysis platform.



STUDENT ACTIVITIES

Clubs/Forums & Chapters

IIChe & AIChE Student Chapter

Indian Institute of Chemical Engineers (IIChe) and American Institute of Chemical Engineers (AIChE) PDPU student chapter was established in the year 2013 and 2020 respectively, with the sole aim of empowering the knowledge of upcoming Chemical Engineers and to acquaint them about various developments in the Chemical Process industry.

In PDPU, IIChe and AIChE student chapter actively arranges expert lectures, seminars, workshops, quizzes, group discussions, plant visit etc. at regular intervals, so that the students excel, when they come out of their academic confines. This recognition will enhance global recognition for the university and provide a platform for job search as well as career management. The members enjoy benefits that include technical information, conferences and training, professional connections, career resources and discounted insurance products/personal services. We strive to take this opportunity as a learning experience and do events for the same.



LAB FACILITIES

CHEMICAL REACTION ENGINEERING

Total Cost: Rs. 20 Lakhs

Major Equipments

CONTINUOUSLY STIRRED TANK REACTOR
ISOTHERMAL CONTINUOUSLY STIRRED TANK REACTOR
COMBINED FLOW REACTOR
ISOTHERMAL SEMI-BATCH REACTOR

SOLID FLUID OPERATION

Total Cost: Rs. 4 Lakhs

Major Equipments

BALL MILL
RIBBON BLENDER
JAW CRUSHER
SIEVE SHAKER

RESEARCH LAB

Total Cost: Rs. 72 Lakhs

Major Equipments

GAS CHROMATOGRAPHY-MASS SPECTROMETRY
PARTICLE SIZE ANALYZER
HIGH PRESSURE AUTOCLAVE
VLE SET UP
ON LINE CO₂ ANALYZER
ROTARY EVAPORATOR
TEMPERATURE CONTROLLED CIRCULATION BATH

FLUID FLOW OPERATION

Total Cost: Rs. 10 Lakhs

Major Equipments

FRictional PRESSURE DROP IN CIRCULAR PIPE
FRictional PRESSURE DROP IN PACKED COLUMN
FRictional PRESSURE DROP ANNULAR / RECTANGULAR
VISCOSITY BY STOKES'S LAW

CHEMICAL PROCESS TECHNOLOGY

Total Cost: Rs. 6.50 Lakhs

Major Equipments

PH METER
KARL FISCHER TITRATOR
PRECISION WEIGHING BALANCE
CONDUCTIVITY / TDS ANALYZER

COMPUTER AIDED DESIGN

Total Cost: Rs. 79 Lakhs

Major Softwares

ASPEN
MATLAB R2016A 9 MATHWORKS 0

MASS TRANSFER

Total Cost: Rs. 20 Lakhs

Major Equipments

REFRACTOMETER
CIRCULATING WATER BATH
BUBBLE CAP DISTILLATION
SOLID-LIQUID EXTRACTION
BATCH CRYSTALLIZATION
ABSORPTION IN TUBULAR WETTED WALL COLUMN

HEAT TRANSFER OPERATION

Total Cost: Rs. 10 Lakhs

Major Equipments

HEAT TRANSFER IN LAMINAR FLOW
HEAT TRANSFER IN TURBULENT FLOW
HEAT TRANSFER IN AGITATED VESSEL
FIN TUBE HEAT EXCHANGER
SHELL AND TUBE HEAT EXCHANGER

PDC LAB

Total Cost: Rs. 7.8 Lakhs

Major Equipments

CONTROL VALVE CHARACTERISTICS
MULTI-PROCESS TRAINER
FIRST AND SECOND ORDER SYSTEM
CASCADE CONTROL TRAINER
INTERACTING AND NON-INTERACTING TANKS

ACADEMIC AND INDUSTRIAL COLLABORATION

- Institute of Chemical Technology, Mumbai
- Indian Institute of Technology Guwahati
- National Chemical Laboratory, Pune
- LUT, Finland
- Sunway University, Malaysia
- Reliance Industries Ltd, Baroda
- Zeppelin Systems Pvt. Limited, Baroda

COURSE STRUCTURE

Semester I

- Mathematics - I
- Chemistry (Theory)
- Chemistry (Practical)
- Element of Mechanical Engg.
- Basic Electronics
- Professional Ethics and Human Values
- Computer Programming (Theory)
- Communication Skills (Theory)
- Communication Skills (Practical)
- NCC/NSS/Sports

Semester II

- Mathematics - II
- Element of Civil Engg. & Mechanics
- Element of Electrical Engg.
- Physics (Theory)
- Physics (Practical)
- Environmental Studies
- Workshop Practice
- Engineering Graphics (Theory)
- Engineering Graphics (Practical)
- NCC/NSS/Sports

Semester III

- Mathematics III
- Fluid Mechanics

- Chemical Process Calculations
- Engineering Chemistry
- Mechanical Unit Operations
- Mechanical Unit Operations Lab
- Fluid Mechanics Lab
- Civic Services and Social Internship

Semester IV

- Environmental Engineering
- Chemical Engineering Thermodynamics
- Elements of Heat Transfer
- Chemical Process Technology -1
- Numerical and Statistical Methods
- Environmental Engineering Lab
- Heat Transfer Lab

Semester V

- Mass Transfer I
- Chemical Reaction Engineering I
- Chemical Process Technology II
- Process Equipment Design (PED)
- Fuel and Energy Technology
- Mass Transfer & Chemical reaction Engineering Lab -1
- Chemical Process Technology Lab
- PED Lab (Computer based)

Semester VI

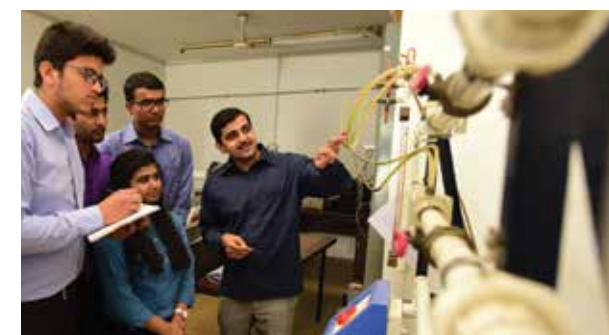
- Mass Transfer II
- Chemical Reaction Engineering II
- Process Modeling and Optimization
- Plant design & Process Economics
- Instrumentation & Process Control
- Mass Transfer & Chemical reaction Engineering Lab - 2
- Process Modeling and Optimization -lab
- Instrumentation & Process Control Lab

Semester VII

- Transport Phenomena
- Petroleum Refining and Petrochemicals
- Computer Aided Process Design
- Department Elective-I
- Computer Aided Process Design - Lab (ASPEN)
- Seminar

Semester VIII

- Process Plant Safety Health and Hygiene
- Project Management
- Department Elective II
- Major Project





COMPUTER SCIENCE and Engineering

Computer Science and Engineering department is comprised with a choice based credit system, with Industry 4.0 based syllabus with state-of-art laboratories. Our syllabus is designed with wide range of elective subjects and we follow project based learning approach. CSE department is associated with professional bodies like Computer Society of India, ACM and IEEE. Department is engaging students with lot of activities required for technological innovations. The department has established a strong industry association and our highly qualified faculty members collaborate with industry/research/funding organizations in order to facilitate research projects and consulting practices. We encourage our students to work on live projects and publish their research work in reputed conferences and journals.

9
Ph.D
Scholars

433
B.Tech.
Students

FACULTY PROFILE

Dr. Samir B. Patel

Assistant Professor

Areas of Interest: Parallel Computing, Security in Computing, Multimedia Data Processing, Image Processing, Data Mining, etc.

Dr. Nishant P. Doshi

Assistant Professor

Areas of Interest: Algorithms, Cryptography, Remote user authentication, Information Protection in general

Dr. Shakti Mishra

Assistant Professor

Areas of Interest: Distributed Computing, Machine Learning, Linked Open Data, Fault Tolerant Systems

Dr. Santosh Kumar Bharti

Assistant Professor

Areas of Interest: Natural Language Processing, Social Computing, Sentiment Analysis, etc.

Dr. Reema R. Patel

Assistant Professor

Areas of Interest: Probabilistic Model Checking, Formal Verification, Information Security

Dr. Pankesh Patel

Assistant Professor

Area of Interest: Industrial Internet of Things/ Industry 4.0 Smart factory/ manufacturing, Semantic Web Domain specific language

Dr. Rudresh Dwivedi

Assistant Professor

Area of Interest: Biometrics, Pattern Recognition, Security and privacy

Dr. Payal Ketan Chaudhari

Assistant Professor

Area of Interest: Information Security, Web Technology, Java Programming

Dr. Rutvij H. Jhaveri

Assistant Professor

Area of Interest: Computer Vision, Image Processing, Machine Learning, Signal Processing etc.

Dr. Nayantara Katoky

Assistant Professor

Area of Interest: Machine learning Artificial Intelligent

Dr. Pallabi Saikia

Assistant Professor

Area of Interest: Machine learning Artificial Intelligent

Dr. Saptarshi Das

Assistant Professor

Area of Interest: Computer Security Attribute-based Access Control

COURSE STRUCTURE

Semester I

- Mathematics - I
- Computer Programming I
- Engineering Chemistry
- Elements of Mechanical Engineering
- Basic Electronics
- Communication Skills
- Professional Ethics and Human Values
- NSS/Sports/NCC

Semester II

- Mathematics - II
- Engineering Physics
- Element of Civil Engineering & Solid Mechanics
- Elements of Electrical Engineering
- Engineering Graphics
- Environmental Studies
- Computer Programming II
- Workshop Practice
- NSS/Sports/NCC
- Communication Skills -1
- Civic services and Social Internship (Summer Break)

Semester III

- Discrete Mathematical Structures
- Data Structures
- Digital Electronics & Computer Organization

- Microprocessor Programming & interfacing
- Object Oriented Programming With JAVA
- Open Elective 1

Semester IV

- Theory of Computation
- Operating System
- Database Manage
- Systemment Design & Analysis of Algorithms
- Design Pattern/ Thinking
- Open Elective-II
- Industry 4.0 Communication Skills-II
- Industry Orientation (Summer Break)

Semester V

- Computer Network
- System Software & Compiler Design
- Web Technology
- Information Security
- Software Engineering
- Core Elective-I
- Open Elective-III

Semester VI

- Artificial Intelligence
- Mobile Application Development
- Core Elective-II

- Core Elective-III
- Open Elective-IV
- Communication Skills-III
- Technical Seminar
- Industrial Training/IEP (6 weeks-summer break)

Semester VII

- Machine Learning
- Green Computing
- Core Elective-IV
- Core Elective-V
- Core Elective-VI
- Mini Project

Semester VIII

- Comprehensive Project (CP)

Core Elective

- Data Mining
- Computer Graphics
- Distributed Systems
- Software Project Management Advanced Java
- Big Data Analytics
- Cyber Security
- Digital Image Processing
- Parallel Computing
- Semantic Web
- Cryptography and Network Security Real Time Systems
- Cloud Computing
- Natural Language Processing Blockchain Technology

- Computer Vision
- Agile Methodology & DevOps High Performance Computing Wireless Sensor Networks
- Digital Forensics
- Pattern Recognition
- Formal Methods & Verification Social Network Analysis
- Service Oriented Architecture Biometrics
- Information Retrieval
- Mobile Computing

Open Elective

Our students can take open elective which floated by other department across PDPU.

LAB FACILITIES

DATA STRUCTURE AND ALGORITHM LAB

This lab is used in laboratory sessions of the CE/ICT courses such as Data & file structures, Object Oriented Concepts & Programming, Database Management Systems etc.

WEB TECHNOLOGY LAB

This lab is used in laboratory sessions of the CE/ICT courses such as Operating Systems, Data & file structures, Information Security lab.

WIRELESS COMMUNICATION AND CODING LAB

This lab is used by CE/ICT courses such as Communication Systems, RF Engineering and for some software-hardware related courses.

Major Equipments: Microwave Test Benches, Antenna Trainer, Radar Trainer, Communication Systems Trainer Boards, Software like MATLAB etc.

COMPUTER NETWORK AND SENSOR LAB

Major Equipments

- Cisco Switches
- Crimping Tools
- Lan Testers
- Intel LAN Cards
- USB NIC Cards

VLSI AND EMBEDDED COMPUTING

This lab is used by CE/ICT courses such as Signals & Systems, Embedded Systems, Digital Signal Processing etc.

Major Equipments : Trainer kits for Microcontrollers, Boards for Embedded System Design, Boards for Speech, Audio, Image & Video Processing, Digital Multimeters, Desktop computers, Design & Simulation Software etc.

ICT PROJECT LAB 1

This lab is used by CE/ICT courses such as Analog & Digital Electronics, Digital Logic Design, Communication Systems etc.

Major Equipments : Oscilloscopes, Function Generators, Digital Multimeters, Soldering Stations, Analog & Digital Electronics Circuits Trainer Boards, Communication Systems Trainer Boards, Bread boards, Desktop computers, Simulation Software etc.

Upcoming Laboratory

- AI/ML LAB
- IOT Cyber Physical System LAB
- Cyber Security LAB
- Data Science LAB
- High Performance Computing LAB

RESEARCH & DEVELOPMENT

The Office of Research and Sponsored Programs (ORSP) provides the support for the free and responsible conduct of investigative, scholarly and creative activities at the University.

University has funded ₹ 88.34 Lakhs for about 72 Students' UG and PG Research Projects since 2013.

Name of Student	Topic of Research	Guide
Pruthvish Rajput	Advanced Urban Public Transportation System	Manish Chaturvedi, Vivek K. Patel
Harsh Mehta	Intent Analysis from Transliterated Text	Nishant Doshi
Hemani Parekh	Remote Sensing using Machine Learning	Samir Patel

STUDENT ACTIVITIES

ACM (Association for Computing Machinery)

ACM PDPU Student Chapter provides unique opportunities for networking, mentoring and bonding over common interests in the domain of Computer Science. They provide support both within the student community and to local communities outside the institution.

The ACM student members are eligible for the following set of member benefits:

- Complimentary Subscription to Communications
- Receipt of ACM's Popular E-Newsletters
- A full-year electronic subscription to XRDS, ACM's Student Magazine
- ACM Student Quick Takes (SQT) a quarterly email newsletter with each issue highlighting ACM activities, programs, and offerings of interest.

CSI (Computer Society of India)

PDPU CSI-Student Branch got inaugurated on 02/09/2017 under the umbrella of CSI-Ahmedabad Chapter. CSI Ahmedabad Chapter has received "Best Chapter Award" under region III consecutively since the last seven years; The chapter has constantly tries to improve its performance by organizing various technical and social activities.

The mission of the CSI is to facilitate research, knowledge sharing, learning and career enhancement for all categories of IT professionals, while simultaneously inspiring and nurturing new entrants into the industry and helping them to integrate into the IT community. The CSI is also working closely with other industry associations, government bodies and academia to ensure that the benefits of IT advancement ultimately percolate down to every single citizen of India.



INFORMATION & COMMUNICATION TECHNOLOGY

New age engineers must be like a T shaped with the breadth to cut across disciplines and depth in knowledge and domain-specific skills. The Information and Communication Technology program tailors to produce New Age Engineers. The program derives depth from three main pillars: Electronics, Communication-Signal Processing, and Computer Science and Engineering. The breadth comes from Engineering Sciences and Humanities supporting the main pillars. The curriculum at PDPU provides an appropriate blend from these components of ICT for problem-solving. It provides a different perspective to solve the problem holistically by enabling and leveraging ICT technologies and tools. The interdisciplinary exists at the technology level and also between technology and humanities. The ICT curriculum produces new-age engineers with competencies so that students can move with ease into a range of occupations. It requires students to learn mandatory core courses. It is also vital for students to pursue their passions through a range of core technical electives and open electives. Such a program structure facilitates depth and breadth.

01
Ph.D
Scholars

396
B.Tech.
Students

FACULTY PROFILE

Dr. Mazad S. Zaveri

Associate Professor

Area of Interest: Digital CMOS VLSI Design

Dr. Ganga Prasad Pandey

Assistant Professor

Areas of Interest: Machine learning in Antenna, Energy Harvesting, ME-dipole, Active, Reconfigurable, Frequency Agile Micro Strip Antennas and Microwave / Millimeter wave integrated Circuits and Devices

Dr. Hardik Patel

Assistant Professor

Areas of Interest: Microwave Imaging, Machine learning and AI in imaging, Computational electromagnetic, RF & Microwave Engineering, Wireless Communication and Networking

Dr. Jigarkumar H. Shah

Assistant Professor

Areas of Interest: Microprocessor Systems and Applications, Analog and Digital Electronics, Signals and Systems, Signal Processing, Real Time and Embedded System Design

Dr. Mohendra Roy

Assistant Professor

Area of interest: Artificial Intelligence, Machine Learning, Bio-electronic devices

Dr. Paawan Sharma

Assistant Professor

Areas of Interest: Image Analysis, Machine vision, Machine learning, Communication Systems, Embedded System on SBCs

Dr. Raju Ranjan

Assistant Professor

Areas of Interest: Image Processing, Computer vision

COURSE STRUCTURE

Semester I

- Mathematics - I
- Chemistry
- Elements of Mechanical Engineering
- Elements of Electrical Engineering
- Professional Ethics & Human Values
- Communication Skills
- Workshop Practice
- NSS/Sports/NCC

Semester II

- Mathematics - II
- Physics
- Elements of Civil Engineering & Mechanics
- Basic Electronics
- Engineering Graphics
- Environmental Studies
- Computer Programming
- NSS/Sports/NCC

Semester III

- Mathematics - III
- Discrete Mathematics
- Data & File Structures
- Signals & Systems
- Analog & Digital Electronics

Semester IV

- Communication Systems
- Design & Analysis of Algorithms
- Object Oriented Modelling & Design
- Computer Organization and Programming
- Computer Networks

Semester V

- RF Engineering
- Data Base Management Systems
- Operating System
- Software Engineering
- Principles of Economics

Semester VI

- Artificial Intelligence
- Embedded Systems
- Digital Signal Processing
- Wireless Communication & Coding
- **Electives:**
 - Advanced Computer Architecture
 - VLSI Design
 - Wireless Sensor Networks
 - Natural Language Processing
 - Data Warehousing and Data Mining

- Satellite Communication
- Optical Communication
- Modern Antenna Design

Semester VII

- Digital VLSI Circuits and HDL
- Information Security
- Machine Learning
- Mini Project
- Electives:
 - Cloud Computing
 - Advanced Operating System
 - Image Processing
 - Data Compression
 - Biometrics
 - Fundamentals of Remote Sensing
 - Computer Vision
 - Big Data Analytics
 - Software Testing Methodologies
 - Vehicular Networks

- Statistical Signal Processing
- Cognitive & Software Defined Radio
- Theory of Automata and Computation
- Internet of Things
- ICT for Energy Sector
- Human Computer Interaction
- Statistical Pattern Recognition
- Information Retrieval System
- Blockchain Technology
- Green Computing
- Advanced Communication Systems

Semester VIII

- Comprehensive Project



LAB FACILITIES

ICT PROJECT LAB

This lab is used by CE/ICT courses such as Analog & Digital Electronics, Digital Logic Design, Communication Systems etc.

Major Equipments : Oscilloscopes, Function Generators, Digital Multimeters, Soldering Stations, Analog & Digital Electronics Circuits Trainer Boards, Communication Systems Trainer Boards, Bread boards, Desktop computers, Simulation Software etc.

VLSI AND EMBEDDED COMPUTING LAB

This lab is used by CE/ICT courses such as Signals & Systems, Embedded Systems, Digital Signal Processing etc.

Major Equipments : Trainer kits for Microcontrollers, Boards for Embedded System Design, Boards for Speech, Audio, Image & Video Processing, Digital Multimeters, Desktop computers, Design & Simulation Software etc.

COMPUTER NETWORKING LAB & IOT BASED TINKERING LAB

Major Equipments

- Cisco Switches
- Crimping Tools
- Lan Testers
- Intel LAN Cards
- USB NIC Cards

WIRELESS COMMUNICATION AND COMPUTING LAB

This lab is used by CE/ICT courses such as Communication Systems, RF Engineering and for some software-hardware related courses.

Major Equipments: Microwave Test Benches, Antenna Trainer, Radar Trainer, Communication Systems Trainer Boards, Software like MATLAB etc.

WEB TECHNOLOGY LAB

This lab is used in laboratory sessions of the CE/ICT courses such as Operating Systems, Data & file structures, Information Security lab.

DATA STRUCTURE AND ALGORITHM LAB

This lab is used in laboratory sessions of the CE/ICT courses such as Data & file structures, Object Oriented Concepts & Programming, Database Management Systems etc.

E-YANTRA LAB

The department hosts e-Yantra Lab currently in the VLSI and Embedded Computing Lab. This lab was set up in May 2018 under e-Yantra Lab Setup Initiative (eLSI) of MHRD, Govt. of India and IIT, Bombay. It is basically a robotics lab equipped with Firebird V and Spark V robots along with accessories. The students across the University are trained here with the basic concepts of working of robots. Students are encouraged and facilitated to participate in various courses and robotic competitions announced by e-Yantra team.

RESEARCH & DEVELOPMENT

The Office of Research and Sponsored Programs (ORSP) provides the support for the free and responsible conduct of investigative, scholarly and creative activities at the University.

University has funded ` generous support for about UG and PG Research Projects since 2013.

Name of Student	Topic of Research	Guide
Mr. Ashish Patel	Pervasive Sensing & Intelligent Learning	Dr. Jigarkumar Shah
Mr. Kanhaiya Sharma	Antenna Design	Dr. Ganga Prasad Pandey
Ms. Parita Oza	Machine Learning in Medical Imaging	Dr. Paawan Sharma
Ms. Snehal Rajput	Brain Tumor Segmentation	Dr. Mohendra Roy
Ms. Chaitali Mehta	Investigation on Mathematical Modelling of Electric Vehicle Batteries	Dr. Paawan Sharma

STUDENT ACTIVITIES

CSI (Computer Society of India)

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The mission of the CSI is to facilitate research, knowledge sharing, learning and career enhancement for all categories of IT professionals, while simultaneously inspiring and nurturing new entrants into the industry and helping them to integrate into the IT community. The CSI is also working closely with other industry associations, government bodies and academia to ensure that the benefits of IT advancement ultimately percolate down to every single citizen of India.

IEEE MTT-S (IEEE Microwave Theory and Techniques Society)

The IEEE Microwave Theory and Techniques Society (MTT-S) student branch is established to promotes the advancement of microwave theory and its applications, including RF, microwave, millimeter-wave, and terahertz technologies. This is an all-volunteer society, driven to excellence by its leadership and with the active participation of all its world-wide members. The activities at PDPU sponsored by the MTT-S include a broad spectrum of conferences, workshops, tutorials, technical committees, chapter meetings, publications and professional education programs. The society provide a great opportunity for networking with experienced innovators, experts, and practitioners. Its volunteer programs provide for the development of critical, non-technical skills that enable you to be more effective professionally.

Civic and Social Service Internship



As per the directive of the Ministry of Human Resource Development, Government of India, a Technical Programme should comprise of at least 20% courses on Humanities and Management. For better execution of policies during one's professional career, a technocrat is required to come to terms with the realities of life. In India, rural population comprises of nearly 70% of the country's total population. In a developing nation like India, cities are getting saturated rapidly in many ways and the onus on administrative machinery is to focus on rural areas for development. In this regard, it has become mandatory to know and understand rural life and its demography. It is with this reference, School of Technology, under the aegis of Pandit Deendayal Petroleum University, has introduced Civic and Social Service Internship (CSSI) as a course in B.Tech programme after completion of first year.

Objectives:

- To strengthen understanding on concepts of rural development with specific reference to the Indian context.
- To provide exposure to grassroot realities, in the rural setting with a focus on participation in interventions by NGOs.
- To strengthen insights and develop skills on participatory methodologies and tools used in rural development.
- To understand and appreciate broader contexts of other stakeholders, like government agencies, donors and local self governance institutions, while participating in existing field projects.
- To facilitate cross-cultural learning on development issues as well as other areas of inter-personal growth and learning.

Industrial Orientation



Industrial Orientation facilitates understanding about application of basic science and engineering acquired during first two years of curriculum and developing their understanding about the industry operation that will further facilitate their academic learning and research for the subjects to be taught during 3rd and 4th year of B.Tech Programme.

It is in this reference, 2nd year B.Tech students are scheduled to visit various industries across the country with a view to get familiar with Industry Operations.

Objectives:

- To expose students to various operations of the industry and enhance their understanding about application of science and engineering principles studied in first two years of B.Tech programme.
- To develop student's understanding about the industry operations and facilitate their academic and research learning for the 3rd and 4th year B.Tech programme.
- To develop students understanding of the industry value chain.

Industrial Training



Engineering studies have two systems contributing side by side to the enhancement of comprehension and study skills. The first is the theoretical systems; conducted primarily in the form of lectures, tutorials and labs, which are accompanied by frequent consultation of various knowledge sources. The second is the practical system, in the form of Industrial and Research Training, during which the students apply theories learnt. The third year B.Tech students have undergone various industrial trainings in their respective field with a view to make them familiar with industry operations. The ultimate goal of the training is to accelerate integration into professional careers once the graduate is hired for doing a certain task. This can be achieved through many activities or objectives:

Objectives:

- To integrate all learning in real life environment.
- To expose students to all industrial engineering tasks like design, production, maintenance, services, equipment operations, technology and operational techniques.
- To enhance student's scientific and practical capabilities. It makes the student perceive the practical signification of the academic topics handled at the faculty, and direct his/her thinking to the practical aspects.
- To give the student, the feeling of a professional career he/she is heading for, before graduation. Industrial and Research Training can represent a valuable asset for the graduate and for the employer. For the latter, post-hiring training can be shortened.

International Exposure Program



The International Exposure program enables students to not only develop technically but also enriches their linguistic and cultural knowledge. In terms of linguistic and cultural awareness, students emerge with a greater level of sensitivity and patience.

This in turn leads them to move from a fundamental understanding of the theoretical concepts to a more sophisticated interpretation and application based approach. Secondly, most students adapt to the practical challenges they encounter by finding mechanisms to help them cope with their new surroundings. Many students have shown concern about adjusting in the countries they planned to visit. Students also have some misconceptions about the nature of the people and the overall cultural aspects of the region. The exposure program helps the students to soak in the real essence of the cultural aspects in person and enables them to grow technically as well as spiritually.



CAREER DEVELOPMENT CELL

The Career Development Cell (CDC)

handles all the internship and placements for graduates and post-graduate students at Pandit Deendayal Petroleum University (PDPU).

The Career Development Cell is well equipped to support all placement procedures including Pre-Placement Talk, interviews and group discussions.

Facilities available at Career Development Cell:

- Auditorium and lecture theaters for Pre-Placement Talk
- Well equipped rooms for interviews and group discussions
- Computer labs for conducting online test
- Requisite infrastructure for pooled recruitment drives

The placement policies and other related activities are handled by team of experienced Professionals, Professor-in-Charge along with Students' - Placement Committee. The process of coordination with recruiters is handled by the Career Development Cell. The companies are encouraged to communicate with Manager - CDC for initial discussions and subsequent communication for placement procedures.

PLACEMENTS @ PDPU - AT A GLANCE

The placement initiatives of PDPU for all of its batches attracted a good number of companies from Energy & Infrastructure, Oil & Gas and other sectors. Most of our students managed to bag substantial job profiles at prestigious organizations along the entire energy value chain. PDPU has received accolades and good industry vibes, both in terms of alumni performance and the curriculum structure. Since its inception, following companies have participated in Placements Season:





INFRASTRUCTURE

Wellness Centre

A nutritious diet and a good workout helps students to combat academic stress. School of Petroleum Technology has set up a state-of-the-art wellness centre equipped with cardio & weight training equipment and facilitates student workouts under the expert supervision of a certified trainer.

The wellness centre can look after the needs of more than 50 students per session and is functional throughout the day.

As a part of its wellness initiative, the university also provides an expansive playground for outdoor games, such as football, cricket and practice courts for basketball, volleyball and badminton.

Cafeteria & Food Court

School of Technology has ensured that the students enjoy a healthy diet charted out by a dietician, which is wholesome and nutritious. The food court also provides refreshments throughout the day. The cafeteria is attractively laid out and offers students and eco-friendly environment to relax while deliberating on their academic and personal lives and collectively address the attendant challenges.



Hostel Facility

Our in-campus residential facilities offer furnished hostel rooms on a twin occupancy basis. This is an optional facility offered to B.Tech students. Separate hostels are provided for female students. There are seven fully functional hostel blocks which are Wi-Fi enabled and are well-designed to meet the needs of the students. These include emergency medical facilities, a doctor on call, 24x7 access to computer labs and a well-equipped and comfortable lounge to facilitate group activities.

Library

Library and Information Centre is the heart of the school and aims to provide an ideal ambience for both creation & dissemination of knowledge, information, insights & intellect in all its academic programs. The centre has utilized Information Technology extensively to ensure that resources are accessible from anywhere at any time. The Library holds a collection of printed as well as electronic resources which include books, journals, databases, CDs/DVDs, e-journals, reports, case studies, conference proceedings, training manuals, etc

Other Facilities

- Medical Facility + 24 hours Ambulance
- Bank + 24 hours ATM
- Stationery and General Store
- Medical Store
- Travel Booking Office





PDP

PANDIT DEENDAYAL PETROLEUM UNIVERSITY

Off. Koba - Gandhinagar Highway, Raisan,
Gandhinagar - 382 007. Gujarat, India.

Career Development Cell

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