

NAAC ACCREDITATION **'A' GRADE** (CGPA 3.39/4.0)



PANDIT DEENDAYAL PETROLEUM UNIVERSITY





Academic Council

CHAIRMAN

Director General, Pandit Deendayal Petroleum University

Prof. S. A. Bari

Vice Chancellor,

Prof. Indira J. Parikh

Prof. Virender Prakash Sharma

Professor & Head, Petroleum Engineering Department. Indian School of Mines (ISM) - Dhanbad

Dr. Jayant Kelkar

Reliance Industries, Mumbai

Dr. C. Gopalkrishnan Management, PDPU

Dr. R. K. Vij

Director - School of Petroleum Technology, PDPU

Dr. Pramod Paliwal

Management, PDPU

Dr. D. M. Parikh

Dean - Faculty of Engineering &

Dr. Nigam Dave

Director - School of Liberal Studies,

Dr. Surendra Singh Kachhwaha Professor in Mechanical Engineering

Dr. T. P. Singh

Dr. Indrajit Mukhopadhyay

Dr. Ashvin Dave

Professor in Department of Business Administration & Commerce School of Liberal Study, PDPU

VISION

To be an internationally renowned and respected Institution imparting excellent education and training based upon the foundation of futuristic research and innovations.

MISSION

Undertake unique obligation for Education in Energy Engineering and Management 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 institutes of excellence in education, competitive edge in research and real time relevance with futuristic thrusts in offering of programmes and undertaking of activities and projects.

Table of Contents

| About the University 02 |
|--|
| Mechanical Engineering09 |
| Industrial Engineering |
| Electrical Engineering21 |
| Civil Engineering27 |
| Chemical Engineering |
| Computer Science |
| Information & Comm. Technology 43 |
| Civic and Social Service Internship 46 |
| Industrial Orientation46 |
| Industrial Training |
| International Exposure Program 47 |
| Career Development Cell |
| Placements @ PDPU 49 |

Board of Governors

CHAIRMAN

Dr. Mukesh Ambani

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

MEMBERS

Shri D. Rajagopalan, IAS (Retd.)

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

Dr. C. Gopalkrishnan

Director General, Pandit Deendayal Petroleum University

Dr. R. A. Mashelkar

FRS Bhatnagar Fellow & President, Global Research Alliance, National Chemical Laboratory

Smt. Anju Sharma, IAS

Principal Secretary (Higher & Technical Education) Education Department, Government of Gujarat

Shri Sudhir Mehta

Chairman, Torrent Group

Shri Pankaj Joshi, IAS

Principal Secretary Energy & Petrochemicals Department Government of Gujarat, Gandhinagar

Shri Vikram Singh Mehta

Executive Chairman, Brookings India

Shri Parimal Nathwani

Group President - Corporate Affairs, Reliance Industries Ltd., Ahmedabad

Prof. N. R. Dave

Former Vice Chancellor, North Gujarat University, Patan

Mrs. Pallavi Shroff

Shardul Amarchand Mangaldas & Co., New Delhi

Nominee of

Gujarat Energy Research & Management Institute - GERMI

Director

School of Petroleum Management Pandit Deendayal Petroleum University

Dean

Faculty of Engg. & Technology, Pandit Deendayal Petroleum University



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.

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 five (6) Centre of excellences which are on

SOLAR RESEARCH & DEVELOPMENT CENTRE

CENTRE OF EXCELLENCE IN GEOTHERMAL ENERGY

SIEMENS CENTRE OF EXCELLENCE FOR AUTOMOTIVE SECTOR

CENTRE OF BIOFUEL & BIOENERGY STUDIES

DRILLING CEMENTING AND STIMULATION RESEARCH CENTRE

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.

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

Whith 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!



Dr. C. Gopalkrishnan Director General Pandit Deendayal Petroleum University

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

I am happy to present to you students of 2020 batch who will be completing their education at PDPU's School of Technology for potential employment in your organization. The students have undergone rigorous and professional engineering education programme under the guidance of highly trained faculty at PDPU and are industry ready to make their careers in business and industry. These students were admitted to PDPU on the basis of 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 class rooms, internet and Wi-Fi, state-of-the-art laboratories, computational facilities, 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 necessary skills to perform effectively in any environment. I am sure you may like to take advantage of talent nurtured by PDPU, and induct them into your organization.

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





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 schools 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 eight years with the School today offering seven undergraduate & ten post graduate 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.







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 PDPU 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.

Ph.D Scholars M.Tech.
Students

FACULTY PROFILE

Dr. Vishvesh J Badheka

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: Waste Heat Recovery Systems

Dr. Anurag Mudgal

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

Dr. Rajesh Patel Assistant Professor

Areas of Interest: Thermal System Design, Water Desalination and Fluid Catalytic Cracking (FCC) process

Dr. Jatinkumar R. Patel

Assistant Professor

Areas of Interest: Solar Thermal System, Water purification using sustainable energy, Solar Drying.

Dr. Vivek K. Patel

Assistant Professor Areas of Interest: Thermal system design-optimization, advanced optimization algorithms

Dr. Pavan Kumar Gurrala

Assistant Professor Areas of Interest: Additive Manufacturing/3D Printing

Dr. Vinav 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

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-TIG, FZ-TIG, FB-TIG), A-Laser, Solid state process (FSW, FSP, FSSW, FSS, Sustainable welding processes

Dr. Vivek V. Patel Assistant Professor

Areas of Interest: Friction stir welding and processing, Superplasticity, Grain refinement, Corrosion, ultrasonic

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. Ajay Kumar Assistant Professor

Areas of Interest: Manufacturing

Dr. Pawan Sharma Assistant Professor

Areas of Interest: Additive Manufacturing, Digital Manufacturing, Advance materials

Dr. Parnika Shrivastava Assistant Professor

Areas of Interest: Advanced Forming Operations, Single Point Incremental Forming, Microstructure and crystallographic texture, Reverse Engineering, Formability

Dr. Biranchi Sahoo Assistant Professor

Areas of Interest: Casting, Welding, Deformation Behaviour, forming, Tribology, Machining

Dr. Vivek Kumar Assistant Professor

Areas of Interest: Tribology, Fluid Film Bearings, Smart Lubricants, Surface texturing

Mr. Rakesh Vasant Chaudhari

Assistant Professor Areas of Interest: Non-conventional

machining. Flectrical 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, Heat transfer

Mr. Rahul Vitthal Deharkar Assistant Professor

Areas of Interest: Ground water Desalination, Multi-effect distillation

Mr. Krunal Mahendra Mehta

Assistant Professor Areas of Interest: Tribology, Surface Composites

Mr. Ankur Chaurasia

Assistant Professor

Areas of Interest: Advanced abrasive finishing processes, composite processing, surface engineering, microwave processing techniques.

Mr. Simranjeet Singh

Assistant Professor Areas of Interest: Nonlinear dynamics, Plates and structures, Functionally Graded Materials

Mr. Vipin Das Assistant Professor

Areas of Interest: Conventional and non-conventional machining, Micro machining, Sustainable machining.

Mr. Ojas Satbhai Assistant Professor

Areas of Interest: CFD, Multi-scale solidification, modeling, melting heat transfer, direct numerical simulation, turbulence, heat transfer and thermodynamic performance of thermal energy storage system

Faculty with Ph.D from IIT/NIT



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 spacebased 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 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 insitutransesterification
- Ballistic impact response of fiber reinforced composite

STUDENT ACTIVITIES

Clubs/Forums & Chapters

SAEINDIA PDPU

Collegiate Club

Society of Automotive Engineers (SAE), registered with SAE India under the name: SAE INDIA PDPU Collegiate Club is the local society of SAE International. The SAE INDIA PDPU Collegiate Club was formed in the year 2013 with an aim to keep all its members updated with the fundamental and contemporary technologies of the automobile industry. These chapter primarily include competition such as m-BAJA, e-BAJA and SUPRA. The chapter even tries to provide exposure to modern day automobile Engineering equipment to its members, as well as connect to the relevant industries.

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.

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.

ISNT (Indian Society for Non-Destructive Testing)

The Indian Society for Non-destructive Testing (ISNT) is the society for NDT professionals and practitioners. The Main Objective of the Society is to promote the awareness of NDT Science and Technology through education, research and exchange of technical information within the country and internationally to its members and other professionals using NDT.

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.

LAB FACILITIES

CAD – COMPUTER AIDED DESIGN

Total Cost: Rs. 80 Lakhs

Major Equipment

3D PRINTER AEQN 400
MOTION DRIVER & STEPPER MOTOR
PACKAGE
CREO, MATLAB, SIEMENS NX
SOLIDWORKS, ADAMS, ANSYS
COMSOL METAPHYSICS

STRENGTH OF MATERIAL

Total Cost: Rs. 11 Lakhs

Maior Equipment

UNIVERSAL TESTING MACHINE FATIGUE TESTING MACHINE

HEAT & MASS TRANSFER

Total Cost: Rs. 13.3 Lakhs

Major Equipment

HEAT TRANSFER IN NATURAL CONVECTION APPARATUS THERMAL CONDUCTIVITY OF METAL ROD APPARATUS

MECHANICAL MEASUREMENT AND METALLURGY

Total Cost: Rs. 30.2 Lakhs

Major Equipment

HOT TENSILE TESTING MACHINE
PROFILE PROJECTOR
SURFACE MEASURING INSTRUMENT

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

DYNAMICS & KINEMATICS OF MACHINES

Total Cost: Rs. 30 Lakhs

Major Equipment

SIGNAL CONDITIONING INSTRUMENT
FFT ANALYSER AND IMPACT HAMMER
UNIAXIAL AND TRIAXIAL ACCELEROMETER
MACHINERY FAULT SIMULATOR

DESIGN OF MECHANICAL SYSTEM

Total Cost: Rs. 18 Lakhs

Major Equipment

VACUUM BAGGING SYSTEMS FOR COMPOSITE MANUFACTURING CARBON AND GLASS FIBRES WITH EPOXY 2D DIGITAL IMAGE CORRELATION SYSTEM CALDWELL BALLISTIC PRECISION CHRONOGRAPH BY CALDWELL

THERMAL ENGINEERING

Total Cost: Rs. 7.6 Lakhs

Maior Equipment

NOZZLE PRESSURE DISTRIBUTION EXPERIMENT

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

PRODUCTION TECHNOLOGY

Total Cost: Rs. 30.2 Lakhs

Major Equipment

SPARK EROSION (EDM) MACHINE ELECTRO CHEMICAL DABURRING MACHINE WIRE-CUT EDM MACHINE

MANUFACTURING PROCESS I & II

Total Cost: Rs. 80.2 Lakhs

Major Equipment

UNIVERSAL MILLING MACHINE
ALL GEARED LATH MACHINE
SURFACE GRINDING MACHINE
GAS CUTTING AND GAS WELDING
MMA/TIG/MIG WELDING MACHINE
THERMAL DYNAMICS CUT MASTER 25
MANUAL PLASMA SYSTEM
MICRO INJECTION MOLDING MACHINE

FOUNDRY

Total Cost: Rs. 0.92 Lakhs

Major Equipment

CHARCOAL FURNACE

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 AUTOMOTIVE ENGINE ACCESSORIES AND SPARF PARTS

THERMODYNAMICS

Total Cost: Rs. 6.1 Lakhs

Maior Equipment

DIESEL ENGINE TEST RING BOMB CALORIMETER

POWER PLANT ENGINEERING

Total Cost: Rs. 35 Lakhs

Major Equipment

RANKINE CYCLER STEAM TURBINE POWER SYSTEM SEPARATING AND THROTTLING CALORIMETER WITH MINI BOILER

FLUID MECHANICS & MACHINERY

Total Cost: Rs. 43.4 Lakhs

Major Equipment

AXIAL FAN MODULE
WIND TUNNEL TEST SECTION
DISCHARGE THROUGHVENTURIMETER,
ORFICEMETER & ROTAMETER

WELDING RESEARCH

Total Cost: Rs. 68.3 Lakhs

Major Equipment

CUSTOMIZES FRICTION STIR WELDING MACHINE FULL DIGITAL GMAW WELDING MACHINE SPM GMAW/GTAW (CNC)

SPM GMAW/GTAW (CNC)
WELD OSCILLATION AUTOMATION CARRIAGE
ITG-DC HOT WIRE GTAW

ULTRASONIC METAL & PLASTIC WELDING MACHINE

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 (Practical)
- Communication Skills (Theory)
- Communication Skills (Practical)
- NCC/NSS/Sports

Semester III

- Maths III
- Strength of Material
- Electrical Technology and Control Systems
- Mechanical Measurements & Metrology
- Thermodynamics and Fluid Flow
- Laboratory-I (Thermodynamics, Fluid Flow and Strength of Material Lab)
- Laboratory-II (Electrical Technology and Control Lab)

Semester IV

- Numerical Methods
- Manufacturing Process 1
- Fluid Mechanics and Fluid Machinery
- Engineering Metallurgy
- Design and Kinematics of Machines
- Laboratory-I (MMM and Metallurgy Lab)
- Laboratory-II (Fluid Mechanics and Fluid Machinery Lab)

Semester V

- · Production Operation Management
- Manufacturing Process II
- Heat and Mass TransferDynamics of Machine
- Dept. Elective I
- (Non-Conventional Energy Sources)
- Laboratory-I (Manufacturing process and Production Technology Lab)
- Laboratory-II (Kinematics and Dynamics of Machine Lab)
- Industrial Orientation

Semester VI

- · Machine Design I
- Refrigeration and Air- Conditioning
- Computer Aided Design (CAD)
- Robotics
- Dept. Elective II (Advance Manufacturing Process)
- Laboratory-VII
- (Heat-Mass Transfer and NCES Lab)
- Laboratory-VIII
- (CAD Lab)

Semester VII

- Machine Design II
- IC Engine
- Dept. Elective-III
- Dept. Elective -IV
- Discipline based/ Generic (Optimization Techniques)
- Laboratory-I (RAC and I C Engine Lab)
- Laboratory-II (Machine Design 1 & 2 Lab)
- Seminar

Semester VIII

- CAM
- Thermal Engineering
- · Project Management
- Dept. Elective V
- Generic, Open Elective (Other Discipline)
- Major Project

Department Elective - III & IV:

Experimental Stress Analysis
Science and Technology of Welding
Computation Fluid Dynamics and Heat Transfer

Rapid Product Development, Planning of Facilities and Materials Handling Systems

Vibration Engineering Design Design for Manufacturing

Fuels 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

Solar Photovoltaic Fundamental: Technologies

& Application
Procurement and Material management
Flexible Manufacturing Systems

Advances in Measurement Techniques





INDUSTRIAL Engineering

Industrial Engineering is the multidisciplinary branch of engineering that concerns with the development; improvement; implementation & evaluation of integrated systems of people; equipment; energy; material; process and knowledge.

Industrial Engineering is based on the principles & methods of engineering analysis and synthesis. It deploys tools and techniques to eliminate/reduce waste of time/effort; material; energy; money & other resources. Depending on the viewpoint OR main motive of the user it is also known as Operation Management; System Engineer; Manufacturing Engineering; lean Engineer etc. In healthcare Industrial Engineers are commonly known as Health Systems Engineers OR Hospital Management Engineers.

Ph.D Scholars

FACULTY PROFILE

Dr. D. M. Parikh *Adjunct Professor*

-

Areas of Interest:

Production & Operations Management, Finance & Costing, Supply Chain Management. Special interest for promoting & facilitating entrepreneurship education in institutes and university.

Dr. M. B. Kiran

Associate Professor

Areas of Interest:

Project Management, Surface Metrology, Image processing techniques, Dimensional Accuracy and Surface Finish in Additive Manufacturing, Digital signal processing, Pattern recognition, Nanosurface metrology.

Dr. Abhishek Kumar

Assistant Professor

Areas of Interest:

Electroplating, Electrochemical machining, Surface Engineering, Coating, Friction Stir Processing.

Mr. Kishan Fuse

Assistant Professor

Areas of Interest:

Engineering and Planning, Customer Logistics and Planning, Metal forming, Non conventional machining.

Mr. Vishal Ashok Wankhede

Assistant Professor

Areas of Interest:

Lean Production, Multi-Criteria Decision Making, Performance Measurement of Manufacturing Organizations, Metrology, Operation research. Faculty with Ph.D from IIT/NIT



RESEARCH & DEVELOPMENT

Department of Industrial engineering conducts research in the field of Quality Management in manufacturing and service systems, Measurement of Efficiency, Data Envelopment Analysis (DEA), Surface Metrology, Image Processing Techniques, Digital Signal Processing, Friction Stir Processing, Electrochemical Processing, Robotic Trajectories Optimization, Enterprise Resource Planning (ERP), Multi Criteria Decision Analysis.

Students are encouraged and guided to take up the seminar and major project related to live problem and industry related issues.

- 1. Development of a pocket programming open source open hardware palmtop.
- 2. Evaluation of flatness of machined surfaces using vision systems.
- 3. Multi response optimization of glass fiber reinforced polymer composites using grey relational analysis.

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 7 Paper Published / Presented by Students since 2013

UG Projects

- Texture Identification Using Vision System
- Automated Employee Scheduling Software
- Evaluation of flatness using vision system

STUDENT ACTIVITIES

Clubs/Forums & Chapters

Tark (तर्क)

Tark (तर्क) is a student club of the department of Industrial Engineering. The club organizes activities like expert lectures, seminars and workshops related to Industrial Engineering.

MECHINERZO

Students of Industrial Engineering participate in a technical club called MECHINERZO (Mechanical and Industrial Engineers' Zone). This club carries out various technical activities related to Mechanical and Industrial Engineering.

National Engineering Conclave

The National Engineering Conclave, 2015 was organized by students of Industrial Engineering in collaboration with the students of Mechanical and Electrical Engineering. The conclave witnessed lectures and panel discussions by eminent personalities of various Industries and also the HR round table.

Six-Sigma Green Belt Certification Program by KPMG India

Students of Industrial Engineering attended a four day workshop on Six Sigma Green belt program organized by KPMG India along with Henry Harvin Education. Twelve students from IE participated in this workshop and are now certified Green Belt in Six Sigma.

American Society for Quality (ASQ) -Student Chapter

With the growing importance of Quality Management in industry in today's world, the department has taken an initiative to start a student chapter of the American Society for Quality (ASQ) at PDPU. The student chapter invites speakers from industry and organizes workshops and seminars related to Quality Management. A certification scheme has also been implemented by ASQ for PDPU students wherein students completing a series of workshops will be awarded a certificate by the American Society for Quality.

Siemens Centre of Excellence Courses

All the students are proficient in the NX 9 CAD software (Basic) and Computer Numerical Controlled Machine Programming and are trained at the Centre of Excellence established by PDPU and Siemens in collaboration

LAB **FACILITIES**

COMPUTER AIDED DESIGN

Total Cost: Rs. 79 Lakhs

Major Softwares

ADAMS 2014 CREO (PTC CREO V2.0) MATLAB R2016A 9 MATHWORKS 0 SIEMENS NX 8.5 SOLIDWORKS 2012-2013 X64 EDITION EDITIONSP02

DYNAMICS OF MACHINES

Total Cost: Rs. 18 Lakhs

Major Equipments

DIGITAL STROBOSCOPE TACHOMETER GYROSCOPE APPARATUS STATIC & DYNAMIC BALANCING UNIVERSAL VIBRATION APPARATUS

MANUFACTURING PROCESS - I

Total Cost: Rs. 35 Lakhs

Major Equipments

UNIVERSAL MILLING MACHINE MEDIUM DUTY ALL GEARED LATH MACHINE SHAPING MACHINE SURFACE GRINDING MACHINE

IC ENGINE

Total Cost: Rs. 11 Lakhs

Major Equipments

SINGLE CYLINDER FOUR STROKE DIESEL ENGINE TEST RIG WITH COMPUTER FOUR CYLINDER FOUR STROKE PETROL ENGINE TEST RIG WITH CNG KIT

WIRE CUT EDM LABORATORY

Total Cost: Rs. 17 Lakhs

Major Equipments

WIRE CUT EDM MACHINE

MANUFACTURING PROCESSES - II

Total Cost: Rs. 29 Lakhs

Major Equipments

WELDING CURTAIN MMA/TIG/MIG WELDING MACHINE SPOT CUM PROJECTION WELDING MACHINE

COMPUTER AIDED MANUFACTURING

Total Cost: Rs. 26 Lakhs

Major Equipments

XL TURN CNC SLANT BED LATHE MACHINE (2 - Axis)

XL MILL CNC BENCH MILLING MACHINE (3 - AXIS)

MECHANICAL MEASUREMENTS & METROLOGY

Total Cost: Rs. 5 Lakhs

Major Equipment

HOT TENSILE TESTING MACHINE

FLUID MECHANICS & FLUID MACHINE

Total Cost: Rs. 40 Lakhs

Major Equipments

BERNOLLIS THEOREM

DISCHARGE THROUGH VENTURIMETER, ORFICEMETER, & ROTAMETER **REYNOLDS APPRATUS** FLOW THROUGH MOUTH PIECE & ORIFICE

ERGONOMICS AND PRODUCT DEVELOPMENT

Total Cost: Rs. 4.50 Lakhs

Major Equipments

MULTI FUNCTION METER COMBO PROBE LUX PROBE ANTHROPOMETRY KIT TREADMILL **UPRIGHT BIKE**

KINEMATICS OF MACHINES

Total Cost: Rs. 0.34 Lakhs

Major Equipments

SCOTCH YOKE MECHANISM OLDHAM COUPLING WATT'S MECHANISM

STRENGTH OF MATERIAL

Total Cost: Rs. 11 Lakhs

Major Equipments

UNIVERSAL TESTING MACHINE TORSION TESTING MACHINE FATIGUE TESTING MACHINE

ENGINEERING GRAPHICS

Total Cost: Rs. 5 Lakhs

Major Equipments

WOODEN DRAWING BOARD (B1 - SIZE) WOODEN DRAWING BOARD

WORK DESIGN AND MEASUREMENT

Total Cost: Rs. 0.2 Lakhs

Major Equipments

CAMCORDER STAND SOFT BOARD

STATISTICAL OUALITY CONTROL

Total Cost: Rs. 0.012 Lakhs

Major Equipments

MICROMETER SCREW GAUGE

ADVANCED IMAGE PROCESSING

Total Cost: Rs. 12 Lakhs

Major Equipments

CAMCORDER STAND

COURSE **STRUCTURE**

Semester I

- · Mathematics I
- Engineering Materials
- Elements of Civil Engineering
- Elements of Electrical Engineering
- Workshop Practice
- Physics
- Communication Skills

Semester II

- Mathematics II
- Engineering Graphics
- Applied Mechanics
- Chemistry
- Elements of Mechanical Engineering
- · Environment Studies
- · Computer Programming

Semester III

- Mathematics III
- Thermodynamics (T&P)
- Electrical Technology
- Mechanical Measurement and Metrology (T&P)
- Strength of Materials
- CSSI

Semester IV

- Numerical Techniques
- Manufacturing Processes 1 (T&P)
- Design of Machine Elements
- · Kinematics of Machines
- · Engineering Metallurgy
- Fluid Machinery (T&P)

Semester V

- Manufacturing Processes 2 (T&P)
- Applied Statistics
- · Industrial Environment and Safety
- · Ergonomics, Human Factors and Product Design
- Operations Research 1
- Economics
- · Industrial Orientation

Semester VI

- · Procurement and Materials Management
- Principles of Finance and Costing
- Measurement and Design of Work
- Production and Operations Management • Production Technology
- Departmental Elective 1
- → Operations Research 2
- → Information Systems
- → Humanities Elective

Semester VII

- · Quality Management and Statistical Quality Control
- CAD/CAM (T&P)
- Planning of Facilities and Material Handling Systems
- · Lean Systems
- Departmental Elective 2
- → Design of Experiments
- → Flexible Manufacturing Systems
- → Database Management
- Industrial Engineering Seminar
- · Industrial Training

Semester VIII

- · Project Management
- Supply Chain Management
- Simulation of Manufacturing and Service Systems
- Organizational Behavior & Human Resource Management
- · Major Project
- Departmental Elective 3
- → Reliability Engineering
- → Data Mining and Analytics
- \rightarrow Business Processes and ERP
- → Design for Manufacturing → Neural Networks
- → Fuzzy Systems and Applications
- → Rapid Product Development









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-ofthe-art laboratories with all modern equipment and software packages, which gives exposure to the students to practical aspects of Engineering.

The course structure of B.Tech. and M.Tech. Program is carefully designed to impart the best education to the students. The curriculum is reviewed every year by the expert from industries, academia and R&D organizations and it is updated in consultation with them. The major areas of Electrical Engineering are Electrical machines, Power Systems, Protection and Switchgear, High Voltage Engineering, Control Systems & Instrumentations, Analog & Digital Electronics, Power Electronics & Drives, Microprocessors and Microcontrollers.

Ph.D **Scholars**

12 25 M.Tech. **Students**

FACULTY PROFILE

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

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. Praghnesh BhattAssociate 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

Dr. Amit V. Sant

Areas of Interest: Dr. Amit's research interests include (i) Power Electronics Converters, (ii) Power Quality Enhancement, (iii) Electric Drives, (iv) Electric Vehicles, (v) 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

Mrs. Leena Santosh Assistant Professor

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

Mr. Ravi Botta Assistant Professor

Areas of Interest: Power electronics converters for Solar PV based DC micro grid.

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.

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. 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. Avirup Maulik Assistant Professor

Areas of Interest: His current research interests are in the field of the power distribution system, microgrid optimal performance, DCMG performance enhancement, and soft computing.

Mr. Alok Jain

Assistant Professor

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

Mr. Naveen Yalla Assistant Professor

Areas of Interest: Power Quality, Power Electronics, Renewable Energy Integration

Faculty with Ph.D from IIT/NIT



RESEARCH & DEVELOPMENT

| Name of Ph.D. Scholar | Topic | Research Guide |
|------------------------|--|-------------------|
| Meera Karamta | Dynamic State Estimation of Power System with FACTS devices | Dr. J. G. Jamnani |
| Leena Santosh | Stochastic unit commitment problem of a power system inclusive of renewable energy sources | Dr. Poonam Mishra |
| 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 |
| Botta Ravi | Control and Optimal Operation of High Penetrated PV Based dc Mircogrid | Dr. Amit Sant |
| 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 |
| | | |

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.

UG Projects

- Hardware Implementation of MPPT Based Boost Converter for Solar-PV Application
- Power Flow Control In a Single Phase Distribution System with Solid State Transformer
- Development and Hardware Implementation of Automatic Energy Saver for House-hold and Commercial Application

STUDENT ACTIVITIES

Clubs/Forums & Chapters

Electrical Students Professional Association (ESPA)

The forum's objectives are to:

- → Facilitate communication and cohesiveness among students, faculty, other student organizations, and the university.
- \Rightarrow To consider issues and to review, recommend, or formulate policies (as appropriate) in areas primarily or exclusively involving the Student Body.
- $\,\,\rightarrow\,\,$ To foster technological innovation and excellence for the benefit of humanity.
- → To give an information about Technical work in Professional world.
- \Rightarrow To keep the members consistently updated about the new upcoming technologies and inventions.
- $\,\,\rightarrow\,\,$ To give an exposure to latest techniques in the power sector to all the members.
- \Rightarrow To endow with technical meetings, publishing, promoting educational activities, and developing standards.

FOLLOWING ACTIVITIES HAVE BEEN CONDUCTED UNDER ESPA IN RECENT PAST

| How Stuff Works 1.0 - Basics of Home Wiring System | By student speakers from Pre final year student |
|--|---|
| Latex Workshop | By Mr. Anil Markana |
| How Stuff Works Session - 1 | Topic - Capacitors conducted by Mr. Elijah Toppo) |
| Open Discussion & Information Session - 1 | Quiz - By Student coordinators |
| Software Skill Development Session - 1 | Conducted by Prof. Pinkal Patel |
| Open Discussion & Information Session - 2 | Topic - Smart Grid Conducted by Mr. Ashish Doorwar |
| | |

IEEE Student Chapter

Institute of Electrical and Electronics Engineers (IEEE), an association dedicated to advancing innovation and technological excellence for the benefit of humanity, is the world's largest technical professional society. It is designed to serve professionals involved in all aspects of the electrical, electronic and computing fields and related areas of science and technology that underline modern civilization.

The goal of the IEEE student chapter programs 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.

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

22

LAB FACILITIES

POWER SYSTEM PROTECTION

Total Cost: Rs. 1.20 Crore

Major Equipments

SET UP FOR SCADA SYSTEM FOR THE ABOVE PROTECTION SYSTEMS SETUPS HAVING IEC 61850 OPEN PROTOCOL.

FULLY AUTOMATIC 3-PHASE RELAY TESTING KIT.

SET UP FOR CHECKING CHARACTERISTIC AND OPERATION OF GENERATOR UNIT PROTECTION (NUMERICAL RELAY TYPE)

SET UP FOR CHECKING CHARACTERISTIC AND OPERATION OF PARALLEL FEEDER PROTECTION. (NUMERICAL RELAY TYPE)

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

VACCUM CIRCUIT BREAKER PANEL

AIR CIRCUIT BREAKER PANEL
ELECTRICAL POWER
TRANSMISSION LINE SIMULATOR

MICROPROCESSOR & MICROCONTROLLER

Total Cost: Rs. 42 Lakhs

Major Equipments

SIGNAL ANALYZER/SPECTRUM ANALYZER
MIXED SIGNAL OSCILLOSCOPE

DIGITASL STORAGE OSCILLOSCOPE, 70MHZ, 2 CH WITH 20MHZ FG

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 MODULTION PC COMPARABLE

MODELLING AND SIMULATION

Total Cost: Rs. 55 Lakhs

Major Equipments

MI-POWER

NI LABVIEW ONE ACADEMIC SITE LICENSE
NI MULTISIM

PROCESS DYNAMICS & CONTROL

Total Cost: Rs. 1.4 Crore

Major Equipments

COUPLED TANKS APPARATUS FUNCTION GENERATOR (3 MHZ) DIGITAL CRO

ANALOG AND DIGITAL

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

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

DIGITAL SIGNAL PROCESSING

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

HIGH VOLTAGE

Total Cost: Rs. 35 Lakhs

Major Equipments

AC / DC / IMPULSE TEST SET. ($100~\mbox{KV}$ AC, $140~\mbox{KV}$ 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)
- Environmetal 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

- Maths-III
- Network Theory
- Electronics Devices and Circuits
- Electrical Machines-I

- Electrical Measurement and Measuring Instruments
- Electrical Machines-I Laboratory
- Networks & Electrical Measurements Laboratory

Semester IV

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

Semester V

- Electromagnetics
- Microprocessors and Microcontrollers
- Power Electronics
- Power System II
- Instrumentation & Control
- Laboratory-I (Control Instrumentation and Simulation)
- Laboratory-II (Power Electronics and Controllers)

Semester VI

- Switchgear and Protection
- High Voltage Engineering

- Renewable Energy EngineeringPower System Design & Practice
- Department Elective-I
- Laboratory-I
- (Switchgear & Protection)
- Laboratory-II
- (High Voltage &Renewable Energy)

Semester VII

- Electrical Machine Design-I
- Power System Operation & Control
- Testing & Commissioning of Electrical Machines & Equipments
- Digital Signal Processing and its Applications
- Electrical Power Utilization & Traction
- Laboratory-I (Digital Signal Processing Laboratory)
- Laboratory-II (Testing & Commissioning of Electrical Machines Laboratory)

Semester VIII

- Electrical Machine Design II
- Smart Grids & Electrical Vehicles
- Department Elective II
- Major Project/Comprehensive Project









CIVILEngineering

Civil Engineering is considered to be the most versatile branch among all the engineering branches. The Department of Civil Engineering since its formation is committed to research and development in civil engineering. The vision of the department is to give an exposure to budding civil technocrats to various challenges in the profession.

The department offers courses at undergraduate level, graduate level and Ph.D doctorate level. The main areas of research include Project Management, Construction Management, Geotechnical Engineering, Structural Engineering, Hydrology, GIS and GPS Systems, Environmental Engineering, Concrete Technology and Transportation Engineering. The department also handles consultancy works & projects in the above mentioned areas.

Ph.D Scholars 43
M.Tech.
Students

FACULTY PROFILE

Dr. Tejaskumar Thaker Assistant Professo

Areas of Interest: Earthquake hazard and mitigation, Ground Improvement and waste management.

Dr. Debasis 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 Interferenceeffect 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. Anantha Singh Assistant Professor

Areas of Interest: Treatment of Water & Wastewater by Physicochemical &

Dr. Rajesh S. Gujar Assistant Professor

Areas of Interest: Infrastructure Planning & Management.

Dr. Dhruvesh Patel Assistant Professor

Areas of Interest: Hydrology & Water Resources Engineering.

Dr. Dayashankar Kaul

Assistant Professor

Areas of Interest: Environmental

Ms. Bivina GR Assistant Professor

Areas of Interest: Transportation

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 inCivil Engineering,FloodRouting & Mitigation Techniques.

Mr. 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

Ms. Vidhi Vvas

Assistant Professor

Areas of Interest: Pavement analysis and design, fuzzy optimization, soft computing techniques nonlinear destructive testing.

Mr. Vasudeo Chaudhari Assistant Professor

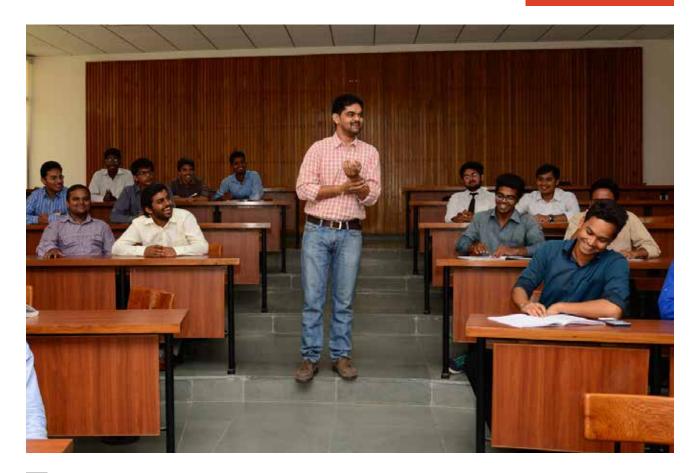
Areas of Interest: Structural Engineering

Mr. Manivel M.

Assistant Professor

Areas of Interest: Transportation Planning







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) and Rs. 1,60,25,612 (funding amount)

SRP - projects: 18 (Before 2017) and Rs.7,06,553 (funding amount)

SRP - projects: 17 (2017-18) and Rs. 8,29,728 (funding amount)

UG Projects

- Bearing Capacity and Settlement Analysis of Shallow Foundation in Reinforced Soil
- Ground Response Analysis for Ahmedabad Region
- Design of Four Legged Loading Frame of 200 Tonne Capacity for PDPU

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.

Institution of Civil Engineers (ICE-UK) Student Chapter

Department of Civil Engineering has come up as a torch bearer in introducing Institution of Civil Engineers-UK student chapter in India. ICE was founded in 1818 by a small group of idealistic young men. We were granted a royal charter in 1828 where we declared that our aim was to "foster and promote the art and science of civil engineering". The active chapter organizes a series of activities for the civil and non-civil engineering students of PDPU including conferences, workshops, seminars and expert talks.

Indian Green Building Council (IGBC) Chapter

Indian Green Building Council (IGBC) is the apex body in India with a vision to enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025. It houses 1,491 members, 2,111 registered buildings, 362 rated buildings and 1,049 accredited professionals. The IGBC chapter aims to reach out the IGBC Vision at the Regional Levels with agendas to faster penetration & reach, reach out to wider section of stakeholders and involve local agencies & Institutions in the Green building movement.

LAB FACILITIES

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

SURVEYING

Total Cost: Rs. 49 Lakhs

Major Equipments

SOKKIA 50RX REFLECTORLESS TOTAL STATION

TRIMBLE GEOXH GPS WITH JUNO SERIES

DIFFERENTIAL GPS

ARCGIS SOFTWARE

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

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

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)

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

• M

Semester II

Mathematics – II

Semester I

Mathematics – I

• Basic electronics

Environmental studies

Computer programming

• Engineering graphics (theory)

Physics

Chemistry (theory)

NCC /NSS / Sports

COURSE

STRUCTURE

• Elements of civil engineering & mechanics

- · 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 equipments and methods
- Transportation Engineering I
- Design of Steel Structure
- Estimating and cost analysis
- Seminar

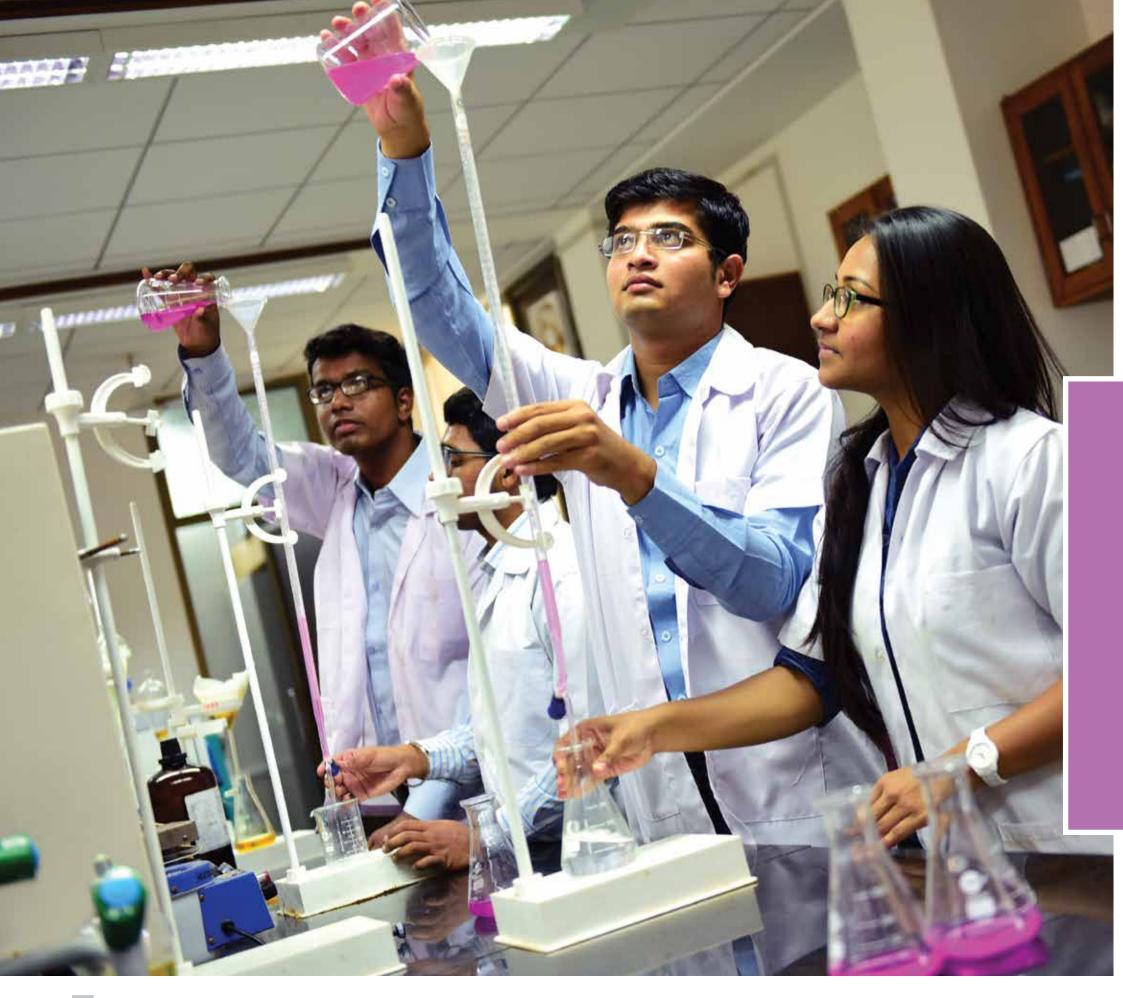
Semester VIII

- Department Elective II
- Transportation Engineering II
- Department Elective III
- Project Management
- CP project









CHEMICAL Engineering

The Department of Chemical Engineering (DCE) at PDPU adopts a philosophy of 'discovery learning to generate knowledge through experience and innovative ideas'. DCE practical exposure to the students which will 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 and agrochemicals, plastics, polymers and others, apart from dealing with problems of energy

Ph.D Scholars

M.Tech. Students

FACULTY PROFILE

Dr. Swapnil A. Dharaskar Assistant Professor

Areas of Interest: Ionic Liquids, Desulfurization Process, Nanotechnology, Water treatment, Separation technology, Reactive Extraction, Membrane Technology, CO₂ sequestration etc.

Dr. Pravin Kodgire Associate Professor

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

Dr. Sukanta K. Dash

Assistant Professor

Areas of Interest: Clean Energy and Environment, Carbon Capture and Sequestration, Gas Processing, Chemical Thermodynamics and Reactor Design, Process Modelling and Simulation, Solar Adsorption Cooling.

Dr. Manish Kumar Sinha

Assistant Professor

Areas of Interest: Synthesis and Characterization of Stimuli Responsive

Dr. Ashish Unnarkat Assistant Professor

Areas of Interest: Catalyst Synthesis, Synthesis of Mesoporous Silica, Synthesis Mesoporous Oxides, Catalytic Oxidation of Hydrocarbons, Reaction Engineering Studies, Kinetic Modelling, Synthesis of Bitumen Allied Products, Synthesis of Nano Materials, Oxygen Carrying Materials for CLC Metal Organic Frameworks, Application of Lignin, CO, Utilization.

Ms. Bharti Saini Assistant Professor

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

Mr. Anirban Dey Assistant Professor

Areas of Interest: Carbon dioxide absorption using blended amines, Nanotechnology aided methodologies for wastewater treatment.

Ms. Sweta Balchandani Assistant Professor

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

Dr. Surendra Sasi JampaAssistant Professor

Areas of Interest: Membrane Gas Separations, Synthesis of Metal Organic Frameworks, Catalyst Synthesis, Reaction Engineering Studies, Kinetic Modelling, Adsorption, Waste Water Treatment.

Dr. Suriapparao DV Assistant Professor

Areas of Interest: Value addition to solid wastes (municipal solid waste, plastic waste, e-waste, crop residues), Combustion, Pyrolysis, Heat loss prevention systems development

Dr. Abhishek Yadav Assistant Professor

Areas of Interest: Colloid and interface science

Dr. Abhishek GuptaAssistant Professor

Areas of Interest: Molecular Simulations Studies of Polyelectrolytes

Dr. Lubhani Mishra

Assistant Professor

Areas of Interest: Theoretical and Computational Fluid Dynamics

Dr. Suverna Trivedi Assistant Professor

Areas of Interest: Catalysis Synthesis and Characterization

Dr. Manan Shah Assistant Professor

Areas of Interest: Geothermal Exploration and Exploitation,

Renewable Energy Sector, Reservoir Simulation, Geochemistry and Hydrochemistry and Water quality

Mr. Rajasekhar Reddy Busigari

Assistant Professor

Areas of Interest: Thermochemical Conversion of Non-Renewable and Renewable Materials via Catalytic Pyrolysis, Microwave-Assisted Processing of Materials, Designing of Nano-structured Materials for Specific Applications, Characterization of Solid, Liquid and Gaseous Fuels, Valorization of Low-Rank Indonesian Coals, CO₂ to Chemicals and Fuels, Process Intensification of Coke Making, Deconstruction of Lignin, Cellulose and Hemicellulose, Coal and Biomass to Chemicals and Drop in Fuels.

12 Faculty with Ph.D from IIT/NIT



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:

- Carbon Capture and Sequestration Dr. S. Dash
- Carbon Clean Solutions Limited, United Kingdom
- M/s. Arush Gas Technology Services LLP, Ahmedabad
- Feasibility and Engineering Design for Zero Carbon Emission CO2 Capture from Coal Fired Power Plants and its Utilization into Green Chemicals, IIT, Mumbai.
- · Area: Nanomaterials/DES for Petrochemicals Dr. S. Dharaskar
- · Apar Industry Limited, Mumbai
- SPERI, Anand, Gujarat
- Area: Product Development from Bitumen Dr. A. Unnarkat
- · TikiTar Industries, Baroda
- Area: Environment Audit Air Water Analysis Dr. M. Sinha
- Gujarat Pollution Control Board, Gujarat Govt.

STUDENT ACTIVITIES

Clubs/Forums & Chapters

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-flow sulfur fuel using novel iconic liquid with ultrasound assisted oxidative /Extractive process.
- Experimental and theoretical studies on efficient carbon dioxide capture using nivel aqueous single and blended polyamines.

IIChE Student Chapter

Indian Institute of Chemical Engineers, IIChE PDPU student chapter was established in the year 2013, with the sole aim of empowering the knowledge of upcoming Chemical Engineers and to acquaint them about various developments in the Chemical Process industry.

The PDPU, IIChE 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.









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

HEAT TRANSFER

HEAT TRANSFER IN LAMINAR FLOW

HEAT TRANSFER IN TURBULENT FLOW

HEAT TRANSFER IN AGITATED VESSEL

SHELL AND TUBE HEAT EXCHANGER

MASS TRANSFER

Major Equipments

CIRCULATING WATER BATH

BUBBLE CAP DISTILLATION

SOLID-LIQUID EXTRACTION

BATCH CRYSTALLIZATION

ABSORPTION IN TUBULAR WETTED

REFRACTOMETER

WALL COLUMN

Total Cost: Rs. 20 Lakhs

FIN TUBE HEAT EXCHANGER

Total Cost: Rs. 10 Lakhs

OPERATION

Major Equipments

Major Equipments

FRICTIONAL PRESSURE DROP IN CIRCULAR PIPE

FRICTIONAL PRESSURE DROP IN PACKED COLUMN

FRICTIONAL PRESSURE DROP ANNULAR / RECTANGULAR

VISCOSITY BY STOKE'S LAW

CHEMICAL PROCESS TECHNOLOGY

Total Cost: Rs. 6.50 Lakhs

Major Equipments

PH METER KARL FISCHER TITRATOR

PRECISION WEIGHING BALANCE CONDUCTIVITY / TDS ANALYZER

Total Cost: Rs. 79 Lakhs

Major Softwares

ASPEN

MATLAB R2016A 9 MATHWORKS 0

COMPUTER AIDED DESIGN

ACADEMIC AND INDUSTRIAL COLLABORATION

- → National Chemical Laboratory, Pune
- → Institute of Chemical Technology, Pune
- → Gujarat Chemical Association

COURSE STRUCTURE

Semester I

- Mathematics I
- · Elements of Mechanical Engineering
- Chemistry
- · W. S. Practice
- Computer Programming
- · Communication Skills
- Engineering Graphics
- Environmental Studies
- National Sports Organization

Semester II

- · Mathematics II
- Physics
- Elements of Civil Engineering
- Elements of Electrical Engineering
- Engineering Materials
- Workshop Practice

Semester III

- Mathematics III
- Engineering Chemistry
- Fluid Mechanics
- Chemical Process Calculations
- Mechanical Unit Operations Civic Services And Social Internship

Semester IV

- Numerical and Statistical Methods
- · Environmental Engineering
- Chemical Engineering Thermodynamics II
- Elements of Heat Transfer
- Chemical Process Technology I (Organic)

Semester V

- Chemical Reaction Engineering
- Mass transfer I
- Chemical Processes Technology II (Inorganic)
- Fuel And Energy Technology
- Process Equipment Design

Semester VI

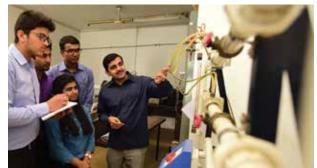
- Chemical Reaction Engineering II
- Mass transfer II
- Plant Design And Process Equipments
- Process Modelling And Optimization • Instrumentation And Process Control

- Semester VII
- Computer Aided Process Design
- Membrane Separation Processes
- Department Elective
- Seminar
- Department Elective I

Semester VIII

- Environmental Engineering and Pollution Control
- Department Elective
- B. Tech. Project
- · Department Elective II
- Department Elective III









COMPUTER SCIENCE

Engineering

Computer Science and Engineering department is intended to cover the entire spectrum of computer, networking and latest technologies of software and hardware architecture. The students are exposed to courses on computer algorithm, computer systems and artificial intelligence. The Program is being presented in such a way that graduate attributes would encompass professional skills, life skills and community engagement. A student have choice to study from the basket of courses core as well as electives, disciplined centered such as Computer Algorithm, Computer

Programming, Computer Graphics, Computer Architecture, Computer Systems, Communication Engineering, Signal Processing, Big Data Analytics, Artificial Intelligence, Neural Network, etc., and Generic Courses from the field of humanities, science, management, electrical, mechanical, civil, chemical, petroleum, etc. Computer Science and Engineering program enable students to gain practical training at Industrial houses and collaborative organizations of PDPU.

Ph.D Scholars

FACULTY PROFILE

Prof. T. P. Singh

Professor

Areas of Interest: Numerical methods, Numerical reservoir modeling and simulation.

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. 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. Manish S. Chaturvedi Assistant Professor

Areas of Interest: Design of Intelligent Transportation Systems, Scalable Protocol Design and

application of ICT for solving problems of societal importance.

Dr. Nishant P. Doshi Assistant Professor

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

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.

Dr. Reema R. Patel

Assistant Professor

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

Dr. Samir B. Patel

Assistant Professor

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

Dr. Santosh Kumar Bharti Assistant Professor

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

Dr. Mehul S. Raval

Area of Interest: Computer Vision,

Image Processing, Machine Learning, Signal Processing etc.

Dr. Mazad S. Zaveri Associate Professor

Area of Interest: Digital CMOS VLSI Design: Arithmetic-Logic Circuits and related sub-systems -Design and investigation of performance, power, and Power-Delay-Product

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



COURSE STRUCTURE

Semester I

- Mathematics I
- Computer Programming
- Chemistry
- Elements of Mechanical Engineering
- Basic Electronics
- · Communication Skills
- Social Science & Humanities
- NSS/Sports/NCC

Semester II

- · Mathematics II
- Physics
- Elements of Civil Engineering
- · Elements of Electrical Engineering
- Engineering Graphics
- Environmental Studies
- · Workshop Practice
- NSS/Sports/NCC

Semester III

- · Mathematics III
- Data Structures
- Database Management Systems
- Digital Logic Design
- Discrete Mathematics

Semester IV

- Numerical and Statistical Methods
- Design & Analysis of Algorithms
- · Object Oriented Modelling & Design
- Computer Organization and Programming
- Computer Networks

Semester V

- · Operating System
- Theory of Computation
- Web Technology
- · Information Security
- · Software Engineering
- · Principles of Economics

Semester VI

- · Artificial Intelligence
- · Distributed Systems
- System Software & Compiler Design
- Wireless Technology & Mobile Computing
- Elective I and II
- → Advanced Computer Architecture
- → Embedded System
- → Computer Graphics
- → Natural Language Processing
- → Data Warehousing and Data Mining → Principles of Programming language
- → Data Communication & Coding

- → Wireless Sensor Networks
- → Cryptography and Network Security

Semester VII

- · Optimization Techniques
- Machine Learning
- Internet of Things
- · Elective III and IV
- → Cloud Computing
- → Advanced Operating System
- → Image Processing
- → Data Compression
- → Biometrics
- → Fundamentals of Remote Sensing
- → Computer Vision
- → Big Data Analytics
- → Software Testing Methodologies
- → Vehicular Networks
- → Cyber Security
- → ICT for Energy Sector
- → Human Computer Interaction
- → Statistical Pattern Recognition
- → Information Retrieval System
- → Blockchain Technology → Green Computing

Semester VIII

· Comprehensive Project (CP)

LAB FACILITIES

ICT LAB 1

This lab is used by CE/ICT courses such as Analog & Digital Electronics, Digial 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.

ICT LAB 2

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.

PROGRAMMING LAB 2

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

COMPUTER NETWORKING LAB & IOT BASED TINKERING LAB

Major Equipments

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

COMPUTER **PROGRAMMING LAB 1**

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.

Wireless Communication and Computing

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

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

RESEARCH & DEVELOPMENT

The Office of Research and Sponsored Programs (ORSP) provides the support for the free and responsible conduct of investigative, scholary 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, R Jothi |
| Chaitali Mehta | Electric Vehicles | Manish Chaturvedi, |

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

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.



INFORMATION & COMMUNICATION TECHNOLOGY

Information & Communication Technology (ICT) encompasses communication and information devices and their applications- radio, television, cellular phones, computer networks, hardware & software, satellite systems and many other areas. The students are exposed to courses on communication engineering, signal processing, computer algorithms, information technolgy and artificial intelligence. The Program also enables a graduate to focus on application of ICT in variety of fields like business, trade, education, health care, governance, agriculture, transportation etc. The Program is being presented in such a way that graduate attributes would encompass professional skills, life skills and community engagement. The course structure is based on Choice Based Credit System (CBCS). A student will have choice to study from the basket of courses related to Information Science, Information Technology, Electronics and Communications, Computer Science and Engineering, ICT Applications in various fields etc. and Generic courses from the field of humanities, science, management, electrical, mechanical, civil, chemical, petroleum, etc. ICT program enables students to gain practical training at Industrial houses and collaborative organizations of PDPU.

Ph.D Scholars

FACULTY PROFILE

Prof. T. P. Singh

Professor

Areas of Interest: Numerical methods, Numerical reservoir modeling and simulation.

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. 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. Manish S. Chaturvedi

Assistant Professor

Areas of Interest: Design of Intelligent Transportation Systems, Scalable Protocol Design and

application of ICT for solving problems of societal importance.

Dr. Nishant P. Doshi Assistant Professor

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

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.

Dr. Reema R. Patel

Assistant Professor

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

Dr. Samir B. Patel

Assistant Professor

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

Dr. Santosh Kumar Bharti Assistant Professor

Areas of Interest: Natural Language Processing, Social Computing,

Sentiment Analysis, etc. **Dr. Mehul S. Raval**

Proefessor

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

Dr. Mazad S. Zaveri

Area of Interest: Digital CMOS VLSI Design

Dr. Pankesh Patel Assistant Professor

Area of Interest: Internet of Things

Dr. Rudresh Dwivedi

Assistant Professor

Area of Interest: Biometrics, computer vision

Dr. Payal Chaudhari Assistant Professor

Area of Interest: Java Technology, Information Security and Cryptography

Dr. Mohendra Roy

Assistant Professor

Area of interest: Artificial Intelligence, Machine Learning, Bioelectronic devices



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 ProgrammingNSS/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
- Timelpies of Leonom

Semester VI

- Artificial Intelligence
- Embedded Systems
- Digital Signal Processing
- Wireless Communication & Coding
- Elective I and II
- ightarrow Advanced Computer Architecture
- → VLSI Design
- → Wireless Sensor Networks
- → Natural Language Processing
- → Data Warehousing and Data Mining
- → Satellite Communication→ Optical Communication
- > Modern Antonna Design
- → Modern Antenna Design

Semester VII

- Digital VLSI Circuits and HDL
 - Information Security
 - Machine Learning
 - Mini Project
 - Elective III and IV
 - Cloud Computing
 - Advanced Operating System
 - Image Processing
 - Data Compression
 - Biometrics
 - Fundamentals of Remote Sensing
 - Computer Vision
 - Big Data AnalyticsSoftware 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 InteractionStatistical Pattern Recognition

• Advanced Communication Systems

- Information Retrieval System
- Blockchain Technology
- Green Computing

Semester VIII

Comprehensive Project

LAB FACILITIES

ICT LAB 1

This lab is used by CE/ICT courses such as Analog & Digital Electronics, Digial 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.

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.

COMPUTER NETWORKING LAB & IOT BASED TINKERING LAB

Major Equipments

- → Cisco Switches
- → Crimping Tools
- → Lan Testers
 → Intel LAN Cards

→ USB NIC Cards

ICT LAB 2

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 PROGRAMMING LAB 1

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.

COMPUTER PROGRAMMING LAB 2

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

RESEARCH & DEVELOPMENT

The Office of Research and Sponsored Programs (ORSP) provides the support for the free and responsible conduct of investigative, scholary 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 |
|---------------------|--|--|
| Ms. Hemani Parikh | Remote Sensing using Machine Learning | Dr. Samir Patel |
| Mr. Chintan Patel | Authentication Protocol in IoT | Dr. Nishant Doshi |
| Mr. Ashish Patel | Pervasive Sensing & Intelligent Learning | Dr. Jigar Shah |
| Mr. Kanhaiya Sharma | Antenna Design | Dr. Ganga Prasad Pandey |
| Pruthvish Rajput | Advanced Urban Public Transportation System | Dr. Manish Chaturvedi, Vivek K. 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

- → Complimentary Subscription to Communications
- → Receipt of ACM's Popular E-Newsletters
- $\,\rightarrow\,$ 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.

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.





Industrial Training

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.

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.



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

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.

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.



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:



































































































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.



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







PDPU

PANDIT DEENDAYAL PETROLEUM UNIVERSITY

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

Career Development Cell

Mr. Vineet Bagaria

Manager, Career Development Cell Phone (O): +91 79 2327 5395 Mobile: +91 98253 26191 E-mail: vineet.bagaria@pdpu.ac.in

www.pdpu.ac.in