

**Department of Petroleum Engineering
INDIAN SCHOOL OF MINES
DHANBAD-826 004**

Academic Programme

UNDER GRADUATE PROGRAMME :

B. Tech (Petroleum Engineering)

No of Approved Seats: 93

Mode of Entrance: IIT-JEE

B.Tech in Petroleum Engg. and M.Tech in Petroleum Management

No of Approved Seats: 17

Mode of Entrance: IIT-JEE

POST GRADUATE PROGRAMME :

M. Tech (Petroleum Engineering)

No of Approved Seats: 18

Mode of Entrance: Students having bachelor degree in Petroleum Engineering, Chemical Engineering and Mechanical Engineering are admitted on the basis of GATE score and interview.

Ph.D Programme:

Mode of Entrance: GATE score and Interview, ISM Fellowship Examination

Faculty Profile

<p>Professor T. Kumar B.Tech & M.Tech (Pet. Engg., ISM Dhanbad) Ph.D. (Pet. Engg., Heriot-Watt University) dt@ismdhanbad.ac.in</p>	<p>Petroleum Reservoir Engg, Production Engg, Petroleum Economics and Formation damage.</p>
<p>Professor Sukumar Laik B.Tech, M.Tech & Ph.D.(Pet. Engg., ISM, Dhanbad) AMIE-Section-B (Mech. Engg.) sukumar_ism@hotmail.com</p>	<p>Production Engg., & Pipe Line Engg., Offshore Drilling & Production Practices, EOR, Gas Hydrate.</p>
<p>Professor V. P. Sharma M.Sc & Ph.D (Punjab University, Chandigarh) M.Tech Pet. Engg., ISM, Dhanbad) vps_ismpe@hotmail.com</p>	<p>Drilling Fluids & Cements, Environment in Petroleum Operations.</p>
<p>Dr. A. K. Pathak (Head) M.Sc.(Physical Chemistry), Ph.D.(University of Allahabad) M.Tech. (Petroleum Engg.), akhilendra_pathak@hotmail.com</p>	<p>Oil & Gas well Drilling Technology, Chemical Engineering Thermodynamics and Offshore Structures & Design.</p>
<p>Dr. Ajay Mandal B.Tech (Chem. Engg., Calcutta University) M.E. (Chem. Engg., Jadavpur University) Ph.D. (Chem. Engg., IIT, Kharagpur) mandal_ajay@hotmail.com</p>	<p>Natural Gas Engg., Well Testing, Thermodynamics of Res. Fluids, EOR Techniques.</p>
<p>Dr. Keka Ojha B.E. (Chem. Engg., Jadavpur University) M.Tech. & Ph.D. (Chem. Engg., IIT, Kharagpur) Post Doc (USA) keka_ojha@yahoo.com</p>	<p>Reservoir Engineering and Management, Reservoir Modeling & Simulation, Unit Operations, Petroleum Engg. & Petrochemicals.</p>
<p>Dr. Vikash Mahto B.Tech (Chem. Tech.,H.B.T.I. Kanpur) M.Tech (Chem. Engg., R.E.C. Warangal) Ph.D. (Pet. Engg., I.S.M. Dhanbad) vmahto@yahoo.com</p>	<p>Petroleum Engg., Operational Design, Production Engg.</p>
<p>Dr. Chandan Guria Ph.D. (Chemical Engineering) IIT, Kanpur M.E. (Chemical Engineering) IISc, Bangalore B.Tech. (Chemical Engineering) Calcutta University B.Sc. (Honours in Chemistry) Calcutta University cguria.che@gmail.com</p>	<p>Process optimization, Chemical/Polymer reaction engineering, Specialty polymers</p>
<p>Dr. Gopinath Halder Ph.D. (Chemical Engineering)- Jadavpur University M. Tech. (Chemical Engineering)- Jadavpur University</p>	<p>Reservoir Fluid Thermodynamics, Process Heat Transfer, Petroleum Refining and Petrochemicals, Production Engg, Non-</p>

B.Ch.E. (Chemical Engineering)- R. E. College-Durgapur gopinath_haldar@yahoo.co.in	conventional Refrigeration Operation
Dr. Mrinal Kanti Mandal Ph.D. (Chemical Engineering) IIT, Kanpur M.Tech. (Chemical Engineering) IIT, Kanpur B.E. (Chemical Engineering) Jadavpur University mrinalmandal@gmail.com	Membrane Separation Processes (Pervaporation, gas separation, Effluent Treatment), Petroleum Refinery, Mass Transfer Operation

Departmental Laboratories and Facilities

Department has state of art laboratories, the one of its kind in the country. The Laboratories are equipped with instruments viz., Long Core Apparatus, PVT Apparatus, Gas Chromatograph, Triaxial Core Holder, Capillary Pressure Apparatus, Cement Consistometer, Displacement Pump, Core Cutting Drill Press, Brookfield Viscometer, Rheometer, Tensiometer E P & Lubricity Tester, HP HT Filter Press, UV-Visible Spectrophotometer, Plate Distillation Column, Ruska Porosimeter, Ruska Air Permeameter, Ruska Liquid Permeameter, Hessler Core Holder, High Pressure Syringe Pump etc.

Reservoir Engineering Laboratory

This laboratory is equipped with a number of instrument/equipment to measure permeability, porosity, formation resistivity, and relative permeability, etc. “Hands on” experiences with simple and sophisticated equipment are provided.

Drilling Fluid and Cementing Laboratory

This teaching lab provides students hands-on experience in dealing with changing behaviors of drilling fluids. The analysis includes:

- Standard methods for testing drilling fluids
- Colloidal properties of clays
- Filtration properties, effects of treating agents
- Effects of contaminants and chemical treatments
- Solids analysis, HTHP testing, lubricity
- Viscous characteristics and control of properties
- Low water loss, salt water drilling fluids, and alkalinity determination

Product Testing Laboratory

State-of-the-Art product testing laboratory is having all the modern equipments to measure Specific Gravity/Density, Kinematic Viscosity, Viscosity Index, Ash Content (by Wt), Carbon Residue, Sulphur Content, Flash Point, Water Content, Pour Point, Oxidation Test, Foaming Characteristic, Acidity, Reid Vapour Pressure, Evaporation Loss, Asphaltene Content, Trace Metal (V,Ni,Cu etc in ppm), Gross Calorific Value (in K. cal/Kg) etc.

Enhanced Oil Recovery Laboratory

The laboratory is equipped with:

- Reservoir condition waterflood and chemical flood apparatus
- PVT Apparatus
- Gas chromatograph
- Long Core Apparatus
- High temperature/high pressure analysis
- Ruska positive displacement pump

Gas Hydrates Laboratory

Sophisticated equipment in this lab is devoted to understanding the growth and dissolution of gas hydrate crystals.

Process Engineering Laboratory

Modern equipment enables students to evaluate heat transfer coefficient, mass transfer coefficient, on-off control, boundary layer thickness, viscosity measurement and frictional loss, flame propagation, filmwise and dropwise condensation, etc.

Instrumental Analysis & Measurement Laboratory

In this laboratory the properties of different pure and synthesized fluids are measured by a number of sophisticated instruments like, Rheometer, viscometer, tensiometer, optical microscope etc.

Computer and Simulation Lab

The Dept. is also having two computational laboratories with sufficient numbers of computers. The Laboratories are rich with more than 20 petroleum engineering software as follows:

IHS Softwares (20 Network License)

- **PERFORM** -_NODAL analysis, well/flowline optimization
- **SubPUMP** - Industry's leading unbiased, vendor-neutral electric submersible pump design and analysis
- **Pipesoft-2**: Surface network simulator with three solution methods and powerful output visualization
- **OilWat[®]/GasWat[®]** : Comprehensive material balance analysis (conventional and generalized)
- **GasLIFT**: Easy-to-use design for gas lift
- **VolOil/VolGas** : Volumetrics, Monte Carlo and estimated recoveries
- **PVTLIB** : Black oil/compositional properties, over 140 correlations
- **RAPTOR** : Fast well test analysis

EPS Software (single Network license) donated by Weatherford Oil Tool Middle East Ltd.

- **Wellflo** : well modeling software. Wellflow is an easy-to-use Windows based simulator that calculates pressures, temperatures, flowrates, liquid holdup and velocities in a

wellbore. The software is specially designed to help as a diagnostic tool for uncontrolled well situations or to be used in contingency planning for new well.

- **MatBal:** reservoir analysis and production forecasting
- **PanSys:** well test analysis

PETROLEUM EXPERT SOFTWARE: (10 network license)

- **PROSPER:** Well Modelling and Design-Version 10
- **MBAL:** Reservoir Analytical Simulation Version 9
- **PVTP :** Fluid Characterisation Version 8
- **GAP :** Multiphase Network Optimisation Version 7
- **REVEAL :** Specialised Reservoir Simulator & Near Wellbore Reservoir Simulator

RESOLVE: Integrated Production Controller Version 3

KAPPA ENGINEERING SOFTWARES (network license):

Ecrin v4.0 includes the following softwares:

- **Diamant:** data management
- **Saphir (NL):** Pressure Transient Analysis
- **Topaze (NL):** Production Analysis
- **Rubis:** Reservoir simulator
- **Emeraude:** Production logging module

Student's Activity

SPE Student's Chapter

The SPE ISMU Chapter was first founded in 1985 and is the oldest such chapter of SPE in India. The Chapter since then, has been providing a platform for Petroleum Engineering students at Indian School of Mines to expose their skills to the global Petroleum Community. With many student members of the Chapter having represented ISMU in numerous National and International Conferences in the past, name of the Chapter has spread far and wide.

Presently comprising of around 300 Members, the Chapter Team aims at fulfilling the mission of SPE which is: "Collecting, disseminating and exchanging technical knowledge for the benefits of all members". The Chapter envisages at improving continually to be the best by employing the basic strategy for success that is "Leveraging volunteer efforts & working together in unison".

With an aim to inculcate dynamism and creativity among the future technocrats, The Chapter organises various events, namely Industrial Presentations, Petro Quiz, Guest Lectures, Software Workshops, Paper Meets & Video Shows, so that student members can represent the ISM Petroleum Engineering Department in a versatile fashion and broader perspective.

Petrotech Chapter

The Petrotech Chapter, ISM Dhanbad is an official society which was inaugurated in the international conference on "Present Status and Future Trends in petroleum Industry" held at ISM in December 2007. The society aims at providing its members as a bridge between academia-industry interface. The society provide the students with global exposure by organizing various activities like guest lectures, quizzes, workshops, etc. It also provides the opportunity to its members to attend various conferences.

PETROLEUM ENGINEERING SOCIETY

It is our very own membership society which caters to the need of the students by projecting our departmental activities on global platform. The society conducts guest lectures by eminent personalities, interactive sessions between students and industry personnel, Student-alumni meet etc. The society strives for the betterment of the members and for their all-round development.

PETRO GAIA

AA national level event organized by the department during University's annual Techno-Management cum Cultural Festival: SRIJAN. It provides a unique opportunity for students pursuing a career in the energy sector from all over India to converge at a common forum and compete in various events:

- Papyrus- paper presentation competition
- E-pursuit- Open Software Competition
- Petro Panacea- a case study competition
- Erudite- guest lecture
- Petro Quiz- a real test of oil gyaan
- Oeuvre- Poster competition
- Eureka!- Innovation at the frontlines