P.E. Society's
Modern College of Pharmacy, Nigdi, Pune.

Department of Pharmaceutics

Research Facilities

The Department of Pharmaceutics is equipped with a comprehensive range of sophisticated, modern, and regulatory-compliant instruments to support UG and PG teaching, research, product development, and formulation innovation. Our laboratories are designed to facilitate high-quality research in novel drug delivery systems, advanced pharmaceutics, pharmaceutical quality assurance, and industrial pharmacy.

B. Pharm – Pharmaceutics Laboratory Facilities

The undergraduate pharmaceutics laboratories are well-established with essential and advanced instruments required for core practical training, formulation development, and evaluation. Major facilities include:

Formulation & Processing Equipment

- Hot air ovens
- Mechanical and magnetic stirrers with hot plate
- Homogenizers
- Tablet punching machines (manual & rotary)
- Capsule filling machines
- Ointment and collapsible tube filling machines
- Ball mill, blender, size reduction mill
- Tray dryer
- Double cone blender
- Tablet coating pan
- Polishing pan
- Percolators, tincture press
- Aseptic cabinets

- Laminar airflow

Analytical & Quality Evaluation Instruments

- pH meters & conductivity meters
- Electronic balances & triple beam balances
- Hardness testers (Monsanto, Pfizer & digital models)
- Friability testing apparatus
- Tablet disintegration and dissolution testers
- UV-Visible spectrophotometer
- Colony counters
- Incubators (BOD, microbiological)
- Autoclaves & steam sterilizers
- Microscopes (compound, oil immersion)
- Ampoule filling, sealing & clarity testing equipment
- Ultra-sonicators
- Distillation units & deionisation plants
- Sieves, sieve shaker (pharmacopoeial)
- Bulk density apparatus
- Vacuum pumps

These laboratories collectively support undergraduate formulation science and pharmaceutics practicals.

M. Pharm – Pharmaceutics

The postgraduate research laboratories are equipped with advanced pilot-scale, analytical, and characterization instruments for formulation development, polymer science, nano-systems, drug delivery, and product evaluation.

Advanced Processing & Formulation Systems

- Spray Dryer (Labultima LU222)
- Fluidized Bed Processor (VJ Instruments)
- Hot Melt Extrusion System & Mini Melt Extruder with Spheronizer
- R&D Tablet Coater
- Laboratory Freeze Dryer (FD-10 MTP)

- Homogenizers (IKA Ultra-Turrax)
- Probe Sonicator / Ultrasonicator
- Thermostatic water baths

Analytical & Characterization Facilities

- **HPLC (Waters & Shimadzu)**
- UV-Visible Spectrophotometer (Shimadzu UV-1800)
- Brookfield Viscometer with Small-Scale Adapter
- Texture Analyzer (Brookfield CT3)
- Tensile Tester Analyzer
- Dynamic Light Scattering Particle Analyzer & Zetasizer (Horiba SL-100Z)
- Diffusion Cell Apparatus (Orchid, EDC-02)
- Tap Density Tester
- Tablet Dissolution Test Apparatus (USP-compliant)
- Tablet Disintegration testers
- Orbital shaker incubator
- Air compressor
- pH and conductivity meters
- Digital analytical balances
- Gel electrophoresis system
- Hot air oven, heating mantles, magnetic stirrers

These facilities enhance formulation research capabilities, including nanoparticles, sustained release systems, transdermal drug delivery, polymeric systems, solid dispersions, and dosage form evaluation.

M. Pharm – Quality Assurance Techniques (QAT)

The QAT laboratory houses high-precision instruments for analytical method development, validation, stability studies, and quality evaluation of pharmaceutical products.

Analytical Instrumentation

- High-Performance Liquid Chromatography (Shimadzu P-series)
- UV-Visible Spectrophotometer (Jasco V630)

- IR Moisture Balance (Wensar)
- Digital Turbidity Meter
- Rotary Evaporator
- Stability Chamber (Triple Chamber)
- Digital Electronic Balances
- pH meter, conductivity meter
- Novel Fluorescence Microscope with image analysis system

Quality Testing & Evaluation Instruments

- Tablet disintegration tester
- Tablet dissolution testers (Electrolab & DS-8000)
- Friability test apparatus
- Ultra-sonicator
- Thermostatic water bath
- Heating mantles
- Distillation unit
- Magnetic stirrers with hot plate
- Vacuum pump portable
- HPLC columns (C18)

QAT labs strengthen analytical capability and quality control training to students and research scholars.

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Department of Pharmaceutical Chemistry

Research Facilities –

The Department of Pharmaceutical Chemistry is equipped with a comprehensive range of advanced research and analytical facilities that support undergraduate, postgraduate, and doctoral-level education and research. The department maintains a well-structured, versatile, and modern laboratory environment designed to foster high-quality scientific investigations in pharmaceutical analysis, medicinal chemistry, and drug discovery. State-of-the-art instruments such as UV–Visible spectrophotometers, FTIR spectrometers, HPLC, HPTLC systems, Polarimeters, flame photometers, and Rotary evaporators provide robust analytical and purification capabilities essential for qualitative and quantitative drug analysis. In addition, facilities for synthetic chemistry—including Paralar synthesizer fume hoods, magnetic stirrers, reflux systems, heating mantles, and precision weighing balances—enable students and researchers to design, synthesize, and optimize novel chemical entities. The department is also equipped with bioanalytical tools and microbiological support systems needed for evaluating the biological performance and stability of pharmaceutical compounds. These resources collectively strengthen experimental research, method development, standardization, and validation studies.

1. **Instrument facilities for Analytical research**

Analytical balance
Centrifuge machine
Colorimeter digital
Conductivity meter Digital
Deep freezer
Digital Electronic Balance 0.1mg
Digital Melting Point App.
Distilled water plant
Electronic balance
Flame photo meter
H2S Gas Assembly
Heating Mantle
Hot air oven
Hot Plate
HPLC
HPLC UV Detector
HPTLC

Karl Fisher Apparatus
Mechnical shaker
Melting point Apparatus
Millipore filter holder assebly
Nepheloturbidity meter
PH Meter
Photofluorimeter
Photostability Chamber
Polarimeter
Potentiometer
Refractometer
Refrigerator
Stability Chamber
Suction Pump water jet
Thermostatic water bath
TLC kit with Chamber
Tripple Beam Balance
U.V .Cabinet
UV-Vis Spectrophotometer
Vacuum Pump

2. **Instrument facilities for synthesis research**

Suction Pump, vacuum gauze with regulator
Oil free vacuum pump
Magnetic Stirrer with Hot plate
Melting Point Apparatus
Hot air oven
Distillation Unit
Fume hood
Parallel synthesizer
Rotary evaporator
TLC Chambers
Atomic model
Microwave oven for synthesis

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Department of Pharmacology

Research Facilities

The Department of Pharmacology is equipped with an extensive range of laboratory instruments that support postgraduate teaching, experimental research, and preclinical pharmacological evaluations. The department maintains a versatile and well-structured research environment equipped with essential behavioral, biochemical, analytical, and animal-handling facilities. This comprehensive infrastructure strengthens postgraduate research capabilities, supports high-quality scientific output, and fosters advanced training in experimental and translational pharmacology.

1. Behavioral and Neuropharmacological Instruments

The behavioral research laboratory includes instrumentation required for the assessment of learning, memory, anxiety, exploratory activity, and cognitive performance, including:

- Actophotometer
- Analgesiometer
- Bar Test Apparatus
- Elevated Plus Maze (Mice)
- Elevated Plus Maze (Rat)
- Elevated Plus Maze with Video-Tracking Software
- Radial Arm Maze (Mice)
- Radial Arm Maze (Rat)
- Radial Arm Maze Software
- Y-Maze (Mice)
- Y-Maze (Rat)
- Y-Maze Software
- Vogel Conflict Test Apparatus
- Camera System for Behavioral Studies
- Dark Room Lighting System
- Observation Cages

These instruments support systematic evaluation of locomotor behavior, nociception, anxiety paradigms, spatial learning, memory consolidation, and cognitive flexibility.

2. Biochemical and Analytical Facilities

Instrumentation essential for biochemical and hematological analysis includes:

- Autoanalyzer
- ELISA Reader
- Hematology Analyzer

- Cooling Centrifuge with Rotors
- Electronic Balances (precision and analytical)
- pH Meter
- Lux Meter
- Homogenizer
- Heating Mantles
- Glucometer
- Digital Vernier Calipers
- Stabilizer
- Plethysmometer with Camera

These facilities support enzymatic assays, oxidative stress evaluation, cytokine quantification, hematological profiling, and general analytical measurements.

3. Animal Housing and Experimental Support Facility

The dedicated animal facility includes:

- Rat Cages
- Mice Cages
- Rat Metabolic Cages

This setup ensures appropriate housing and monitoring for preclinical rodent studies, supporting behavioral, toxicological, and pharmacodynamic research under controlled laboratory conditions.

4. Motor Coordination & Auxiliary Support Systems

- Sherrington Rotating Drum
- Deep Freezer
- Additional Observation Cages
- Controlled Lighting and Imaging Setup

These instruments facilitate studies in motor coordination, sample preservation, and experimental documentation.

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Department of Pharmacognosy

Research Facilities

Pharmacognosy is a discipline concerned with the isolation of medicines from plants, animals, and minerals. It requires a comprehensive understanding of botany, chemistry, quality control, and the pharmacology of natural-source medications. Development of herbal drugs involves integrating traditional knowledge, modern science, and modern technologies. The Department of Pharmacognosy is engaged in imparting knowledge across various fields of natural medicinal products through theoretical and practical means. The department is well equipped with an undergraduate research laboratory, a crude drug museum & herbarium specimens of several plant materials, and modern equipment essential for the extraction and isolation of natural medicinal products.

Major Research Equipment:

- Microwave Assisted Extraction
- Soxhlet Extractor (1 Kg)
- Ultra Bath Sonicator (Cleaner)
- Trinocular Microscope with Image Plus Software
- UV Spectrophotometer
- Muffle Furnace
- Melting Point Apparatus
- Chromatography Columns and Plates
- Orbital Shaker
- Photocolorimeter
- Electronic balance
- Heating Mantle
- Hot air oven
- Incubator
- Magnetic stirrer with hot plate
- Microscopes
- Vacuum oven