Department of Chemical Engineering

1. Research Laboratories

Sl No.	Name of the Equipment
1	UV-VIS Spectrophotometer
2	Bomb Calorimeter
3	Flame Photometer
4	SuperCritical Fluid Extractor
5	Fourier Transform Infrared Spectrophotometer(FTIR)
6	P to I Trainer, I to P Trainer
7	Temperature Transducers, Pneumatic Valves
8	Fuel Testing Analyzer
9	Packed Bed Columns, Vapor Diffusion Set Up
10	Reynold's Apparatus
11	Jaw Crusher and Drop Weight Crusher
12	High Vacuum Pump THVD-150 and THVD-600
13	Orsat Apparatus, Cloud Point Apparatus
14	Fermenter, BOD Incubator
15	Evaporator and Double Pipe Heat Exchanger.

16	CSTR, Plug Flow Reactor
17	Steam Distillation, Simple Distillation set up
18	Tray Drier, Cabinet Tray Drier
19	Wetted Wall Column, Rotary Shaker
20	Steam Boiler, Horizontal Condenser

2. Additional facilities

Sl. No.	Facility Name	Details	Reasons for creating facility	Utilization	Areas in which students are expected to have enhanced learning
1	SFE 100 Super Critical Fluid Extractor	With restrictor valve, oven with temp range 0-200° C, SS Vessel 100 ml cap with CO2 Pump	Research under VGST Grants	Project/lab/ Research	Chemical and Environmental Engineering
2	Spectrum Two Fourier Transform Infrared Spectrophotometer	Mid IR Range 7800 cm-1 to 350 cm-1 Spectral Resolution of 0.5-16 cm-1	Research under VGST Grants	Project/lab/ Research	Chemical and Environmental Engineering
3	Muffle Furnace	TI-58 HTA Tempo Size:23 x 10 x 10 cm	Research	Project/lab/ Research	Chemical and Environmental

		,Rating 1.8 kW, max temp:1200 °C			Engineering
4	UV-Vis Spectro-photometer	Model 117, Systronics Range:200-1100 nm Accuracy ±0.5 nm	Research	Project/lab/ Research	Chemical and Environmental Engineering
5	Digital pH Meter	Model MK-VI, Range:0-14 pH, Accuracy:0.01 pH±1	Research	Project/lab/ Research	Chemical and Environmental Engineering
6	Unisim Software	Process simulation software	Design of heat & mass transfer equipment , process simulation	Complete Semester for the lab	Design, simulation
7	E-Journals, E-Books facility	IEEE, Springer, Elsevier Science, Taylor & Francis	For Research projects/Internship activities and to update the subject knowledge using books & journal	Throughout the semester	Chemical, Biotechnology, Environmental
8	Departmental Library	Collection of text books, CDs, Reference Books, Project /Seminar Reports, Internship and Training reports	To provide reference facilities and information for project , seminar and projects	Throughout the semester	Chemical, Biotechnology, Environmental

		
Supercritical Fluid Extractor	**FTIR**	**Fermenter**

3. Laboratories: Maintenance and overall ambience

Maintenance

- **DOs and DONTs and safety measures are displayed in the laboratory**
- **One faculty and a lab instructor are in charge of overall functioning and maintenance of each lab.**
- **Well trained Technical Staff are available for maintenance.**
- **Periodic calibration and Servicing of instruments and equipment is carried out as per suppliers' recommendations.**
- **100 Mbps internet facility is maintained for students and faculty usage.**
- **All necessary computer system software like microsoft office, browser, lab software, antivirus software etc are installed and maintained.**
- **Maintenance register of equipment is maintained in the laboratories.**
- **Each lab maintains a stock ledger detailing equipment history.**
- **Annual stock verification is carried out to ensure availability of chemicals and glassware. Older redundant equipment are discarded and replaced by new one.**

Ambience

- **All laboratories in the department are equipped with state of the art equipment to meet the requirements of the curriculum.**
- **A good housekeeping ensures a clean and tidy work area.**
- **Sufficient floor space is available in all labs to help students perform experiments without congestion.**
- **Every lab is provided with sufficient furniture facilities to ensure proper arrangements to perform experiments**
- **Laboratory manuals are distributed to students.**

- Sufficient numbers of windows are available for ventilation and natural light. Electric lighting system is also very effective.
- Exhaust fans and fuming hoods are provided to expel chemical vapors during conduct of experiments.
- Labs are equipped with white/black boards, computer, internet, and other such amenities.
- All labs are supported by uninterrupted power supply which ensures that all laboratory slots are utilized.
- All laboratories have store facilities to keep lab equipment, chemicals and glassware.

4. Project Laboratory

The project laboratory enables students to get hands-on experience and to realize their ideas become practical realities. The students carry out project work in the project laboratory of the department.

Project Laboratory

Details of Facilities for Project Work

Sl. No	Facility Name	Details	Reasons for creating facility	Utilization	Areas in which Research Scholars are expected to have enhanced learning
1	UV-VIS Spectrophotometer	UV-VIS Spectrophotometer Systronics Make	Chemical element analysis	Students use this instrument for analysis of iron, nitrates, sulfates, phosphates in water	Chemical, Environmental
2	Sterilizer	Sterilizer	To sterilize the materials	Students use this for sterilization of products in project works	Sterilization
3	Centrifuge	Centrifuge Remi R-4C	Centrifugal separations	Separation of mixtures using centrifuge	Chemical /Biotech
4	Flash and Fire point Apparatus	Flash & Fire Point Apparatus	Diesel Fuel flash & fire point estimation	Students use the apparatus for estimation of flash & fire points	BioDiesel development
5	Redwood Viscometer No 1 & 2	Redwood Viscometer No 1 & Redwood Viscometer No 2	Determination of Viscosity	Viscosity of samples	Chemical /Environmental
6	Thermostatic	Thermostatic Water	Constant	To Maintain constant	Chemical

	Water Bath	bath	Temperature Reactions	temperature during chemical Reactions	
7	Distillation Set Up	Distillation of Petroleum	To get different petroleum fractions	Distillation of crude, biodiesel	Chemical/Environmental
8	pH Meter	Digital pH Meter MK VI, Systronics Make	pH of reactants, products, titration	pH estimation	Chemical
9	Conductivity Meter	µC Conductivity Meter 306, Systronics Make	TDS of water	Conductivity and TDS	Chemical
10	Vacuum Pump	ULTIVAC -150, 150 lpm	Filtration	Filtration of reaction products	Chemical
11	BOD Incubator	BOD Incubator	BOD Estimation	BOD of effluent samples	Chemical
12	Muffle Furnace	Muffle Furnace Tempo Instruments	Ashing experiments	Solid content analysis	Chemical

 **UV-VIS Spectrophotometer**	 **Electronic Balance**	 **TLC Kit**

 Constant Water bath	 Muffle Furnace	 **REMI R-4C Centrifuge**	 **Redwood Viscometer No 1&2**

5. Safety Measures in Laboratory

Working in laboratories poses significant risks and the prevention of laboratory accidents requires greater attention. Examples of risk factors are high and low pressures and temperatures, corrosive and toxic chemicals and chemical vapors, radiation, fire and explosion etc. The following safety measures are adopted in various laboratories of the department.

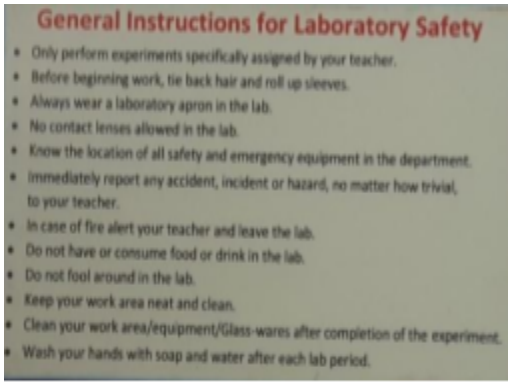
Safety Measures in Lab

Sl. No	Name of the Laboratory	Safety Measures
1	Pollution Control & Instrumental Analysis Lab	• Safety Instruction Charts • First Aid Box • Safety Goggles • Eye Wash • Fire Extinguisher • Apron, Shoes and Hand gloves
2	Mechanical Operations Lab.	• Safety Instruction Charts • First Aid Box • Safety Goggles • Apron, Shoes and Hand gloves
3	Chemical Reaction Engineering Lab	• Safety Instruction Charts • Apron, Shoes and Hand gloves
4	Project Lab	• Safety Instruction Charts • Safety Goggles • Fire Extinguisher • Apron, Shoes and Hand gloves

5	Technical Chemistry Lab	• Safety Instruction Charts • First Aid Box • Safety Goggles • Fire Extinguisher • Apron, Shoes and Hand gloves
6	Mass Transfer Lab	• Safety Instruction Charts • First Aid Box • Safety Goggles • Fire Extinguisher • Apron, Shoes and Hand gloves
7	Computer Application & Simulation Lab	• Instruction Charts • Fire Extinguisher • Apron, Shoes
8	Momentum Transfer Lab	• Safety Instruction Charts • Safety Goggles • Apron, Shoes and Hand gloves
9	Heat Transfer Lab	• Safety Instruction Charts • Safety Goggles • Apron, Shoes and Hand gloves

First Aid Box

Fire Extinguisher



Instructions Chart

Eye Wash

Safety Goggles

Hand Gloves