ADVANCED RESEARCH FACILITIES

SVERI's College of Engineering Pandharpur

Department of Civit Engineering							
Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning			
Loading Frame of 200 KN Capacity	Steel fabricated Frame Structure, with, Servo Hydraulic Power Pack,	1.To get the practical idea of single, two point and multipoint UDL loading	Research work of UG, PG and Ph. D students	 Materials science and mechanics Structural engineering 			

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110.			facility		have enhanced learning
1.	Loading Frame of 200 KN Capacity	Steel fabricated Frame Structure, with, Servo Hydraulic Power Pack, Servo Hydraulic Static Actuator, Hydraulic System for Lateral Loading, Data Acquisition System And Controls With Software, Apple Laptop 13 inch, 2.0 GHZ Quad Core, 10th Gen Intel Core 15 Processor, 512 GB SSD, Hydraulic Crane. Funded By Department of Science & Technology Under Fund For Improvement of S&T Infrastructure (FIST) Scheme Sanctioned Amount: (Rs. 25,88,250/-)	1.To get the practical idea of single, two point and multipoint UDL loading conditions for beam, slab and column structures 2. To provide Hands-on learning for engineering students 3. To provide research and development opportunities for faculty and students 4. To enhance industry collaboration for testing and research 5. To enhance professional development of students in respect of technical skills.	Research work of UG, PG and Ph. D students	 Materials science and mechanics Structural engineering principles Instrumentation and measurement techniques Data analysis and interpretation skills Problem-solving and critical thinking abilities Teamwork and collaboration skills Industry-specific knowledge and skills.
2.	Digital Geotechnical Engineering Laboratory	Digital Consolidation Apparatus	1.To Get The Practical Exposure for Digital Consolidation of Soil	Research work of UG, PG and Ph.D. students	1.Geotechnical engineering principles in analyzing the soils

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			 2. To provide hands- on experience in geotechnical engineering principles and practices 3. To enhance software skills and To develop data analysis and interpretation abilities 4. To promote problem-solving and critical thinking skills 5. To foster collaborative skills 6. To develop research skills 7. To provide industry-specific knowledge and skills. 		 2.Software skills 3.Data analysis and interpretation abilities 4.Problem-solving and critical thinking skills 5.Collaborative skills 6.Research skills 7. Industry-specific knowledge and skills.
3.	Digital Geotechnical Engineering Laboratory	Digital Triaxial Shear Test	 To Get The Practical Exposure for Digital Triaxial Shear of Soil. To provide hands- on experience in geotechnical engineering principles and practices 	Research work of UG, PG and Ph.D. students	 Geotechnical engineering principles in analyzing the soils Software skills

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			 3.To enhance software skills and to develop data analysis and interpretation abilities 4.To promote problem-solving and critical thinking skills 5.To foster collaborative skills 6.To develop research skills 7. To provide industry-specific knowledge and skills. 		 3.Data analysis and interpretation abilities 4.Problem-solving and critical thinking skills 5.Collaborative skills 6.Research skills 7. Industry-specific knowledge and skills.
4.	Digital Geotechnical Engineering Laboratory	Direct Shear Test	 To Get The Practical Exposure for Digital Direct Shear Test on Soil To provide hands- on experience in geotechnical engineering principles and practices To enhance software skills and To develop data analysis and interpretation abilities 	Research work of UG, PG and Ph.D students	 Geotechnical engineering principles in analyzing the soils Software skills Data analysis and interpretation abilities Problem-solving and critical thinking skills Collaborative skills Research skills Industry-specific knowledge and skills.

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			 4. To promote problem-solving and critical thinking skills 5. To foster collaborative skills 6. To develop research skills 7. To provide industry-specific knowledge and skills. 		
5.	Digital Geotechnical Engineering Laboratory	Standard Penetration Test	 To Get The Practical Exposure for Digital Penetration on Soil To provide hands- on experience in geotechnical engineering principles and practices To enhance software skills and To develop data analysis and interpretation abilities To promote problem-solving and critical thinking skills To foster collaborative skills 	Research work of UG, PG and Ph.D. students	 Geotechnical engineering principles in analyzing the soils Software skills Data analysis and interpretation abilities Problem-solving and critical thinking skills Collaborative skills Research skills Industry-specific knowledge and skills.

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			6.To develop research skills7. To provide industry-specific knowledge and skills.		
6.	Digital Geotechnical Engineering Laboratory	Swelling Pressure Test	 To Get The Practical Exposure for Digital Swelling Pressure Test on Soil To provide hands- on experience in geotechnical engineering principles and practices To enhance software skills and To develop data analysis and interpretation abilities To promote problem-solving and critical thinking skills To foster collaborative skills To develop research skills To provide industry-specific knowledge and skills. 	Research work of UG, PG and Ph.D. students	 Geotechnical engineering principles in analyzing the soils Software skills Data analysis and interpretation abilities Problem-solving and critical thinking skills Collaborative skills Research skills Industry-specific knowledge and skills.

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
7.	Basic Mechanics Integrated Lab	 Basic Mechanics Integrated Laboratory Computer Aided Instruction Software System Computer Aided Learning Software Funded By- AICTE under MODROB Scheme Sanctioned Amount- (Rs. 15,25,000/-) 	 To provide hands- on experience in basic mechanics principles and practices To enhance experimental techniques, data analysis, and interpretation abilities To promote problem-solving and critical thinking skills To foster collaborative skills To develop technical communication abilities To provide industry-specific knowledge and skills. 	Research work and Practical exposure to UG students	 Principles of Mechanics Experimental techniques Data analysis and interpretation abilities Problem-solving and critical thinking skills Collaborative skills Technical communication abilities Industry-specific knowledge and skills.
8.	Non Destructive Testing Lab	Rebound Hammer	 To provide hands- on experience in non-destructive testing principles and practices To enhance understanding of material behavior and loading conditions 	Research work of UG, PG and PHD Student, Consultancy	 Principles of non- destructive testing Materials and structures NDT equipment and techniques Data analysis and interpretation abilities

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			 3. To develop NDT equipment and technique skills 4. To promote problem-solving and critical thinking skills 5. To foster collaborative skills 6. To provide industry-specific knowledge and skills. 		 5.Safety and life explanatory aspect compliance 6.Problem-solving and critical thinking skills 7.Collaborative skills 8.Industry-specific knowledge and skills
9.	Non Destructive Testing Lab	Ultrasonic Pulse Velocity	 To provide hands- on experience in non-destructive testing principles and practices To enhance understanding of material behavior and loading conditions To develop NDT equipment and technique skills To promote problem-solving and critical thinking skills To foster collaborative skills To provide industry-specific 	Research work of UG, PG and PHD Student, Consultancy	 Principles of non- destructive testing Materials and structures NDT equipment and techniques Data analysis and interpretation abilities Safety and life explanatory aspect compliance Problem-solving and critical thinking skills Collaborative skills Industry-specific knowledge and skills

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			knowledge and skills.		
10.	Non Destructive Testing Lab	Cover Meter/ Rebar Locator	 To provide hands- on experience in non-destructive testing principles and practices To enhance understanding of material behavior and loading conditions To develop NDT equipment and technique skills To promote problem-solving and critical thinking skills To foster collaborative skills To provide industry-specific knowledge and akilla 	Research work of UG, PG and PHD Student, Consultancy	 Principles of non- destructive testing Materials and structures NDT equipment and techniques Data analysis and interpretation abilities Safety and life explanatory aspect compliance Problem-solving and critical thinking skills Collaborative skills Industry-specific knowledge and skills
11.	Non Destructive Testing Lab	Concrete Core Cutter	 1.To provide hands- on experience in non-destructive testing principles and practices 2.To enhance understanding of material behavior and loading conditions 	Research work of UG, PG and PHD Student, Consultancy	 Principles of non- destructive testing Materials and structures NDT equipment and techniques Data analysis and interpretation abilities

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			 3. To develop NDT equipment and technique skills 4. To promote problem-solving and critical thinking skills 5. To foster collaborative skills 6. To provide industry-specific knowledge and skills. 		 5.Safety and life explanatory aspect compliance 6.Problem-solving and critical thinking skills 7.Collaborative skills 8.Industry-specific knowledge and skills
12.	Non Destructive Testing Lab	Half Cell Potential Test and Resistivity	 To provide hands- on experience in non-destructive testing principles and practices To enhance understanding of material behavior and loading conditions To develop NDT equipment and technique skills To promote problem-solving and critical thinking skills To foster collaborative skills To provide industry-specific 	Research work of UG, PG and PHD Student, Consultancy	 Principles of non- destructive testing Materials and structures NDT equipment and techniques Data analysis and interpretation abilities Safety and life explanatory aspect compliance Problem-solving and critical thinking skills Collaborative skills Industry-specific knowledge and skills

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
			knowledge and skills.		
13.	Five Work Station (Dell Power Edge R440 Server)	1X Intel Xeon Silver 4208 (8 core, 2.1 GHZ) Processor 1x Dell 16 GB DDR4 2666 MHz RDIMM 2x Dell 1.2 TB 10K RPM SAS 12 GBPS 512e 2.5 Hot- Plug Hard Drive Raid Controller 0,1,5 (PERC H730p) 2x 1 GbE LOM (Lan on Motherboard) (Rs. 6,49,000/-)	Some civil engineering software need higher configuration devices to run and learn advanced or ultra-advanced software	Research work of UG, PG and PHD Students	Research work of UG, PG and Ph.D. Students through Model and Numerical Simulation



Loading Frame of 200 Tons Capacity Funded By Department of Science & Technology Under Fund For Improvement of S&T Infrastructure (FIST) Scheme Cost: 25,88,250/-



Digital Geotechnical Engineering Laboratory



Digital Geotechnical Engineering Laboratory



Basic Mechanics Integrated Lab



Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
1.	HP DL360 Server: Dual CPU Xeon 3.3GHz/8Cores , 64GB DDR4 RAM, 4.8TB SSD	Infra Management: Network Management System, Domain Host Configuration System Server, Domain Name Server System, Wireshark/Packet Sniffing tool, Hypervisor to management Multiple OS on Single Hardware Under Fund For Improvement of Science & Technology Infrastructure (FIST) Scheme Sanctioned Amount: Rs. 9.85,000/-	Campus network management and smooth functioning of infrastructure	All Students	Computer Network and Security Simple Network Management Protocols (SNMP)
2.	HP DL380 Server: Dual Intel Xeon 2.4Ghz/10Core , 32GBDDR4, 2.8TB SSD Storage	Used for creating Learning Management System (Moodle) : Moodle allow students to Access to course materials, Online assessments, Collaboration, Overall, Moodle can help students stay organized, engaged, and on track in their coursework, making it a	Learning management system and learning, examining, evaluation modeling.	All Students	Students can create content to share the knowledge with other students.

Department of Computer Science & Engineering

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Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
2		valuable tool for both online and traditional classroom settings. Facility created under MODROB proposal, Funding provided by AICTE. Sanctioned Amount: Rs.3,73,000/-			
3.	HP DL380 Server: Dual Intel Xeon 2.4Ghz/10Core , 32GBDDR4, 2.8TB SSD Storage	Openstack Private Cloud System: OpenStack is an open-source cloud computing platform that provides a flexible and scalable infrastructure for deploying and managing cloud- based services. Given access to students with end user accounts and students are able learn with all the options of cloud computing concept with private cloud. Facility created under MODROB proposal, Funding provided by AICTE. Sanctioned Amount: Rs.3,73,000/-	To create a learning experience of virtualization in private cloud system. (Acting as master node)	All Students	To enhance the concept of Virtualization in private cloud.

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
4.	Dell Power Edge R440 Server: Intel 2.1GHz/8Core/ 16GB DDR4, 2.4TB SAS	Three numbers of servers: are Aggregated and added to Openstack Private Cloud System Server for Compute and Storage Aggregation Under Fund For Improvement of Science & Technology Infrastructure (FIST) Scheme Sanctioned Amount: Rs. 5,67,000/-	Act as a slave nodes of the private cloud (created using HP DL380 Server as a master node)	All Students	To enhance the concept of Virtualization in private cloud.
5	HP DL360 Server: Dual Intel Xeon 3.5Ghz/6 Cores, 16GBDDR3 Ram, 1.2TB SAS With 12TB Storage Area Network	Centralized Data Management: Manage a vast amount of data, including student records, financial information, administrative records, research data, and other confidential information. A server can provide a centralized location for storing and managing this data, ensuring its security, accessibility, and integrity. Facility created under FIST proposal, Received funds from	Utilizing for data sharing with students	All Students	Data sharing and management

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
		DST(Department of science and technology)			
		Sanctioned Amount: Rs. 16,00,000/-			



Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
1.	Rectifying Unit	Rectifying unit facilitates the conversion of alternating current (AC) to direct current (DC).Rectifying unit cost is Rs. 75,000/-	 To provide Hands- on experience in converting AC to DC power. To support research and development activities in power electronics. 	UG	1. Projects involving rectifying units provide students with a learning experience that integrates theoretical knowledge with practical skills.
2.	Autotransforme r (VARIC), 3 phase,20 A	It is utilized to regulate voltage levels in three- phase power systems, offering efficient and precise control over electrical equipment. The total cost of VARIAC is Rs. 30,000/- Rs.3,73,000/-	 To provide Interdisciplinary Learning for various engineering disciplines. To understand the principles behind these systems and how to manipulate and control them. 	UG	 Working with three-phase VARIACs introduces students to the complexities of three- phase power systems, including phase balancing, load distribution, and system stability. Students learn about practical applications of VARIACs in various industries, such as motor speed control, voltage regulation, and power quality improvement, enhancing their understanding of real- world engineering challenges and solutions.
3.	Matlab R2023 software Storage	MATLAB R2023 is likely to come with updated documentation, tutorials, and examples to help	1. To create model and simulate circuits, analyze their behavior under different conditions, and	All Students	Enhanced learning in MATLAB R2023a & R2023b across various areas, including numerical computation, data

Department of Electrical Engineering

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Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
		users take	optimize designs		visualization,
		advantage of new	before		algorithm
		features and	implementation.		development,
		functionalities.			simulations, signal
		Math Works also			processing, control
		provides technical			systems, image
		support and online			processing, machine
		resources to assist			learning, and
		users with any			interdisciplinary
		questions or issues			applications.
		they encounter.			

G					Areas in which
Sr.	Facility Name	Details	Reason(s) for	Utilization	students' are
No.			creating facility		expected to have
					enhanced learning
1	Vector	It measure	1) To provide	PG and PhD	1) Enhance design
	Network	parameters about	parameter analysis		and simulation
	Analyzer	the device under	of various antenna		applications,.
	(VNA)	test. It measures the	design.		
		amplitude response			2) Hands-on various
		and phase as well.	2) To promote		design analysis.
			critical thinking		
			skills.		3) Enhances skills in
		Under the Modrob			the antenna design.
		proposal VNA	3) To develop		_
		purchased at	research skills in		
		14,00,000/-	the field of antenna.		
2	РСВ	This device	1) To provide	PG and PhD	1) Antenna design
	Prototyping	connects electronic	modern tool usage.		for various electronic
	Machine	components to	C C		modules.
		ensure smooth	2) To Provide		
		functioning of the	hands-on various		2) Fabrication of
		product. Provide	design analysis.		various design of
		electrical			antenna.
		connection and			
		mechanical support			3) Problem solving
		to the electrical			and critical design
		components of a			ability.
		circuit.			
		Under the Modrob			
		proposal PCB			
		Machine purchased			
		at 4,10,000/-			
3	CAD FEKO	FEKO is a	1) To provide	PG and PhD	1) Problem solving
	Software	comprehensive	antenna design and		and critical thinking
		computational	analysis using		ability.
		electromagnetic	electromagnetic		
		software product	software FEKO.		2) Understand and
		used in widely in			simulation of design
		the	2) To enhance		of antenna under
		telecommunication.	software skills and		study.
		automotive etc.	to develop data		
			analysis.		3) Data analysis and
			······································		interpretation
		CAED FEKO			knowledge.
		Software purchased			
		at 6,82,500/-			

Department of Electronics and Telecommunication Engineering

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
4	NI Lab View	Build various models in the field of Electronics. It has comprehensive set of tools for acquiring, analyzing, displaying, and storing data, as well as tools to help you troubleshoot the code you write. Under the FIST proposal NI Lab View software purchased at 10,47,537/-	 To promote critical thinking skills. To enhance skills in the antenna design. Simulation of various design in embedded system ,machine learning etc 	PG and PhD	 1) To have hands-on analyzing ,store and display tools. 2) To foster collaborative skills. 3) Inculcate software skills. 4) Enhanced simulation learning in the field of machine learning, embedded system.
5	IOT based Microscope	This microscope is capable of transmitting images to a screen, e-mail or internet location around the world. It will scan an entire plate to create a single high resolution image for visualization of microscopic objects. Under RGSTC Proposal IOT based Microscope purchased at 4,90,000/-	 To introduce students and interested researchers to study the object at cellular level. To create a single high resolution image for visualization of microscopic objects. 	UG, PG and PhD	 To provoke research in the field of image. Various samples of blood have tested using the microscope.







IOT based Microscope



Additional Facilities Created for Improving the Quality of Learning Experience in Laboratories Department of Mechanical Engineering

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
	Advanced Manufacturing Laboratory	1) Chemical Wet Bench:- The total overall dimension of wet bench 1500 mm (L) ×500 mm (W) + 150 mm exhaust box × 2000 mm (H). Front Visor opening- 100% visor should be movable and can be stop whenever the visor needs to be stopped. Inner size of working area 1475 mm (L)× Depth 425 mm Funded By Department of Science & Technology Under Fund For Improvement of Science & Technology Infrastructure (FIST) Scheme Sanctioned Amount: Rs. 4,30,500/-	 To Conduct chemical experiments and procedures that involves the use of chemicals. To provide a safe and controlled environment for handling chemicals To attain required set temperature with continues stirring of chemical during etching process 	Research work of UG, PG and PhD students	 To perform chemical reactions, wet etching, cleaning, and surface preparation of materials Synthesis of new molecules and compounds Surface modification and characterization of materials Microelectronic Fabrication
		2) Magnetic stirrer:- Max stirring quantity-20 L, Speed Range- 0-1500 rpm resolution ±1 rpm, LCD speed and temperature display Heating	 To provide a convenient and effective method for mixing and stirring liquids in a laboratory environment To stir liquids 	Research work of UG, PG and PhD students	 To dissolve solids, mix solutions, and synthesize new compounds To mix and suspend cells or particles in solution for experiments or

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
		temperature range – room-550°C increment 1 °C , over heat protection 580 °C, temperature display accurancy ± 0.1 °C, dimentions $215 \times 360 \times 112$ mm , hot warning, data connector RS232 Funded By Department of Science & Technology Under Fund For Improvement of Science &Technology Under Fund For Improvement of Science &Technology Infrastructure (FIST) Scheme Sanctioned Amount: Rs. 52,762/-	and solutions by using a rotating magnetic field		 analysis 3. In drug development and manufacturing to mix and dissolve active ingredients and excipients 4. To mix and blend ingredients for recipes and quality control
		3) Vacuum Pumping System & Accessories: A vacuum pumping system is a device or set of devices used to create and maintain vacuum, which is a space devoid of matter or gas. Vacuum pumping systems are commonly employed in various scientific, Industrial, and commercial applications where a controlled or low- pressure environment is necessary. Cost:-49,200/-	1. To create and maintain a vacuum environment in a controlled manner	Research work of UG, PG and PhD students	1. To achieve a vacuum environment in a specific area or equipment,

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		4) CNC Micromachining station: A CNC (Computer Numerical Control) Micromachining station is a specialized manufacturing system designed for precision machining of small and intricate parts with high accuracy and repeatability. It is commonly used in industries such as electronics, medical, aerospace, and watch making, where small components with tight tolerances are required. Cost:-6,00,000/-	1. Micromachining is a process of producing high- quality products with close tolerances and high surface finish.	Research work of UG, PG and PhD students	1. Art and design, Manufacturing,
		5) LASER Engraving machine: A Laser Engraving Machine is a tool that uses laser technology to etch or mark various materials with high precision and detail. It is commonly used in industries like manufacturing, jewelry, signage, woodworking, and personalization. The laser engraving process involves removing material from the surface of	1. Laser machine and 3D printing is used to create custom prosthetics, implants, and models.	Research work of UG, PG and PhD students	1. Medical Models and equipment.

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have
					enhanced learning
		an object to create a permanent mark or			
		design Cost:-2,63,250/-			
		6) Vision	1. A vision	Research	1. Medical Models
		measuring system Rapid-I V2015J LX:	measuring system also known as a vision measurement	work of UG, PG and PhD students	and equipment.
		Micromachining where a controlled environment it is	machine or video measuring system, is an advanced		
		necessary for	metrology tool used		
		producing high-	for non-contact		
		quality products	measurement and		
		accurate	various objects.		
		experiments.	parts, and		
			components with		
		$C_{act} \in 0.1, 140/$	high accuracy and		
		Cost:-0,04,149/-	optical technology		
			and image		
			processing to		
			capture detailed		
			visual information		
			measurement data		
			for analysis.		
		7) Dynamic	1. Dynamic	Research	1.Technical
		Mechanical	Mechanical	work of UG,	communication
		Analyzer:	Analysis (DMA) is	PG and PhD	abilities
		Dynamic Machanical	a technique that is	students	
		Analysis (DMA) is	characterize a		
		a sophisticated	material's		
		scientific	properties as a		
		instrument used to	function of		
		study the	temperature, time,		
		mechanical	trequency, stress,		
		behavior of	combination of		
		materials under	these parameters		
		varying			
		temperature,			
		trequency, and deformation			

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
		conditions. It is commonly used in research, development and quality control of materials, including polymers, composites, elastomers, and various other materials Cost:-65.125/			
		8) 3D printing machine: Laser machine and 3D printing is used to create custom prosthetics, implants, and models for surgical planning Cost:-3,40,000/-	1. 3D printing, also known as additive manufacturing, is a method of creating a three dimensional object layer-by- layer using a computer created design. 3D printing is an additive process whereby layers of material are built up to create a 3D part	Research work of UG, PG and PhD students	1. Medical Models and equipment.
		9) Twin Syringe Pump Cost:-45,000/- Total Investment: 36,52,498/-	1. The purpose of using a syringe pump in clinical settings is to administer an accurate amount of drug or fluid over a relatively long duration.	Research work of UG, PG and PhD students	1. Art and design, Manufacturing,
2.	Metallurgy Laboratory	1) Inverted Metallurgical Microscope:- Microscope with optical lens fully plan achromatic with infinity	1. To examine metallurgical specimens by reflecting light from the surface of the sample.	Research work of UG, PG and PhD students	1. To look for metal fatigue, corrosion, fractures and ruptures that resulted from stress, cracks and hydrogen embrittlement.

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		corrected, camera matrix vision German made, Fully coded software, Z stacking, Binocular siendent off head, Large sturdy stage with X-Y axis movements, focusing by coarse and fine focusing knobs, objectives M5x, M10x, M20x, M40x/45x, 100x, Eye pieces WF 10x, 15x, CCD camera port Facility created under MODROB proposal, funding provided by AICTE Sanctioned Amount: Ps. 2 00 000/	 2. To study and investigate microstructures of various materials to understand the phases. 3. To enhance software skills and to develop data analysis and interpretation abilities 		 2. Principles of Metallurgy 3.Experimental techniques 4.Collaborative skills 5.Software skills
		2) Indigenous Micro Hardness Tester (Digital Version):- Full digital with computer display OMRON Japan made rotary encoder, Camera matrix vision German made, fully coded software, Test load- 5gf, 10gf to 1000gf 10,25,50,100,200,3 00,500,1000 gm, Dwell time-5-99 seconds, 5-99 Seconds, Automatic	 Measuring the hardness of materials, including metals, ceramics, and plastics To provide hands-on experience in Indigenous Micro Hardness Tester To develop research skills To provide industry-specific knowledge and skills. 	Research work of UG, PG and PhD students	 Weight loss, Wear volume, Wear rate, Wear resistance impact/ Toughness Industry-specific knowledge and skills. Data analysis and interpretation abilities Instrumentation and measurement techniques

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
		motorized loading and unloading, Magnification-for scanning 100x, measurement 400x, Diagonal reading- Micrometer eyepiece(10x) with 0.5 micron accuracy, Max specimen dim Height 65 mm, depth 85 mm, test table dimensions- 100×100 mm, max. movement 25 mm in X-Y direction with micrometer, camera port with optical diversion knob Facility created under MODROB proposal, funding provided by AICTE Sanctioned Amount:			
		 Rs. 3,19,000/- 3) Chemical analyzer Tester: Ores and Minerals, Glass, Ceramics, Cement, Scaling etc., Welding electrodes, fluxes, Brazing Alloys, Ferro Alloys, Powder or sintered Metal, All types of steels, oils, rubber, plastics, food and processed food articles, High alloys, copper alloys, nickel and 	1. To analyze various chemical composition of the materials.	Research work of UG, PG and PhD students	 To calculate the concentration of certain substances within samples of serum, plasma, urine and/or other body fluids Pharmaceuticals, food and beverage Experimental techniques

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
		other special alloys, Pure Metals, Alloys and composites, Purity of coating, Wires, rods, powder and liquids – any shape, any matter. Facility created under MODROB proposal, funding provided by AICTE Sanctioned Amount: Rs. 2,52,000/-			
		 4) Wear testing machine: Load range 600N, rotational speed 5000rpm, frictional force measurement 0 to 20N, wear measurement up to 1200μm. Facility created under MODROB proposal, funding provided by AICTE Sanctioned Amount: Rs. 1,38,000/- 	 To analyze the wear and tear of different materials. To carry out the research on wear behavior under load. 	Research work of UG, PG and PhD students	 To study the tribological properties like wear and friction behavior of materials/ coatings in sliding contact Experimental techniques
		5) Thermal Conductivity Tester: TC Measurement range 1 – 5000 mW/mK, Measurement accuracy +/- 5 %, Test Material Size 150 – 760 mm, Test Material Thickness 5 – 50 mm, Measurement	 To measure the thermal conductivity of different materials. To enhance experimental techniques, data analysis, and interpretation abilities. 	Research work of UG, PG and PhD students	 Measuring conductive heat transfer Building materials Electronics industry Energy industry Industry-specific knowledge and

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
		temperature range 5 – 40 °C, Weight 4kg, Power supply AC adapter 100- 240VAC, 50/60Hz. Facility created under MODROB proposal, funding provided by AICTE Sanctioned Amount: Rs. 75,000/-			
3.	Vibration Laboratory	 OR 34-4 Channel Integrated Portable Mobile Analyser with accessories & Software: OR NV- OCT-8, PCB Piezotrovics ORAC-1ACC-P04, PCB Maget model 080A27, GRAS Microphone model 40 AE, GRAS preamplifier model 26CA Vibration Exciter Model ID 230 SC No. 1844 Vibration meter 4)Impact Hammer Total Investment: 14,37,238.00 /- 	 To conduct research and development on the behavior of materials and structures under different vibration conditions. To learn about the principles of vibration and its impact on different materials and structures. 	Research work of UG, PG and PhD students	 To test and validate the performance of products and components under different vibration conditions. Vibration analysis Research and development Environmental testing
4.	Power Plant & Energy Engineering Laboratory	1) Solar radiation measurement instrument:- Solar meter which measures radiation up to 1999 W/m2	1. To measure the intensity of solar radiation	Research work of UG, PG and PhD students	1. To monitoring the performance of solar PV systems and assessing their potential for energy generation.

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have
		2) Solar Water heater test rig.:- Capacity 1000-200 lit/day, temperature measurement arrangement with digital display	1. To understand working of solar water heater and performance measurement		1. To provide hands- on experience in designing, building, and testing standalone solar PV systems.
		3) Efficiency measurement of standalone Solar PV test rig. :- Solar panel of 100 W capacity, power generation and battery backup	1. To measure the efficiency of solar PV cell and to calculate power generation of from solar panel		1. Testing new designs and materials for solar water heating systems, and for optimizing their performance.
		4) Windmill model:- Demonstrative model of windmill	1. To understand different components and working of windmill		1. Renewable energy and the basic physics behind wind energy conversion
		5) Identify and measuring the parameters of PV module test rig. :- Solar module, Halogen bulb, cabinet for testing	1. To measure the current and voltage of PV panel and plot the I-V graph		1. Determine the output power of the module & effect of temperature on the performance of the module.
		Total Investment: 1,42,780.00 /-			



Chemical Wet Bench

CNC Micromachining station





Dynamic Mechanical Analyzer and Vision and Measuring System Rapid-I V2015J LX



3D Printing Machine







1) Inverted Metallurgical Microscope, 2) Indigenous Micro Hardness Tester and 3) wear Testing machine



6			Deegew(g) few		Areas in which
Sr. No.	Facility Name	Details	creating facility	Utilization	expected to have
					enhanced learning
1	Soil Testing Lab	pH meter (1995)	1) To measure of pH of soil and water	PG and PhD	1) Enhance design and simulation applications,.
		Flame photometer (3324)	2) Determination of sodium, potassium, lithium and calcium ions present in soil.		2) Hands-on various design analysis.3) Enhances skills in
		Weighing balance (1402107)	3) To measure weight of soil.		the antenna design.
		Conductivity meter (10632)	Measure conductivity of soil sample and water		
		Atomic absorption spectrophotometer 1-AAS263	i) Measures the concentration of micro elements in soil, fertilizer and plant sample solutions.		
			ii) It is so sensitive that it can measure down the concentration of elements to parts per billion in any sample.		
		Automatic Weather Station (watchdog)	To measure, record, and often transmit weather parameters such as temperature, wind speed and direction, solar radiation, and precipitation		

Sr. No.	Facility Name	Details	Reason(s) for creating facility	Utilization	Areas in which students' are expected to have enhanced learning
2	Food Processing	Vacuum Tray Dryer(13-3) Solar Air Dryer (64) Vibrothermal Dryer	Drying of high grade, temperature and oxygen sensitive products	Empowerme nt of rural Indian villages	 Research work of UG, PG and Ph.D. Students Safety and life explanatory aspect compliance Research skills
		Solar Panel PNX- A-100watt			3) Data analysis and interpretation Abilities
3	Tissue Culture	Autoclave (123,1232)	To decontaminate certain biological waste and sterilize media, instruments and lab ware.		4) Collaborative skills5) Experimental Techniques
		Laminar air flow	equipment and working environment from particles		6) Data analysis and interpretation abilities
4	Domestic Water Purifier and Nisargruna Biogas	Candle Dipping Machine Nisargruna Biogas	To purify water To generate Biogas		





























Candle dipping Machine





Nisargruna Biogas