Research Centers

Name of the Department	Name of the research centre	Name of the recognizing body
Institution	National MEMS Design Centre (NMDC)	National Program on Micro and Smart Systems (NPMASS)
Mechanical Engineering	Advanced CNC Lab (Industry grade)	Siemens India.
Mechanical Engineering	Advanced CAD Lab (CBT)	Siemens India.
Electrical and Electronics Engineering	Electrical Lab (Industry grade)	Siemens India.
Mechanical Engineering	Advanced welding Lab (Industry grade)	Siemens India.
Civil Engineering	Agro Lab	Siemens India.
Mechanical Engineering	Refrigeration & Air conditioning Lab (Industry grade)	Siemens India.
Institution	Atmospheric Research Lab	DST & Governing Body, SVET
Mechanical Engineering	Micro Machining Research Lab	Governing Body, SVET
Electronics and Communication Engineering	ECE Research Centre	JNTU Ananthapur, Ananthapuramu.
Electrical and Electronics Engineering	EEE Research Centre	JNTU Ananthapur, Ananthapuramu.
Computer Science and Engineering	CSE Research Centre	JNTU Ananthapur, Ananthapuramu.
Electronics and Communication Engineering	Nano Electronics Lab	Governing Body, SVET
Electronics and Communication Engineering	Antenna Research Lab	Governing Body, SVET
Computer Science and Systems Engineering	Cyber Security and Cryptology	Governing Body, SVET
Information Technology	Data Analytics Research Lab	Governing Body, SVET
Electronics and Instrumentation Engineering	Bio-Instrumentation Research Laboratory	Governing Body, SVET
Civil Engineering	Water and Environment Research Centre	Governing Body, SVET
Civil Engineering	Geotechnical Engineering Research Laboratory	Governing Body, SVET

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National MEMS Design Centre

MEMS Design Centre at our college was inaugurated on 30th March 2012 by Dr. V. Ramgopal Rao, IIT Bombay and Dr. S. Mohan, IISc Bangalore for the benefit of users from this region. Later the centre has been renamed as a national MEMS design Centre equipping with site licenses of software's programs such as COVENTOR MEMS+, Intellisuite and COMSOL (as a Class kit of 30 licenses) under National Program on Micro and Smart Systems (NPMASS). Also have collaboration with IITB, Mumbai and IISc, Bangalore. Centre motivates the research activity in the field of MEMS by proper utilization of the facilities provided by NPMASS from design to fabrication of prototype MEMS products and specific field applications.

SVEC will also facilitate external researchers from other interested institutes (academic or National labs subject to individual software licensing conditions) to use the design tools. In this centre all the departments share the simulation facility supported by NPMASS and fabrication will be done in IITB or IISc Bangalore. The departments are required to promote the area of MEMS through independent department course at UG/PG levels to involve students and faculties in developing MEMS related projects and research activities. In the absence of required in -house comprehensive facilities for complete fabrication of MEMS, the short term strategy is to focus on design modeling and characterization.

Many of the faculty members were chosen the specialized topics on their discipline and their work is under progress. In the Institution we were organized training programs on MEMS Design using COMSOL Multiphysics and MEMS Design using CoventorWare. Many faculties attended various programs like

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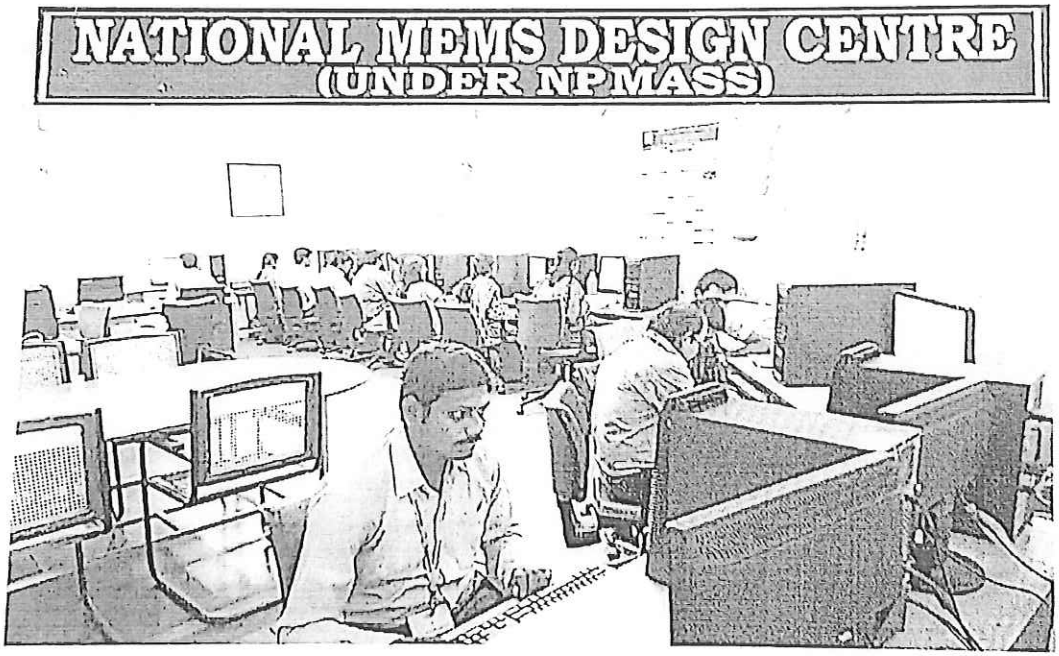
conferences/workshops/training programs in India. The output generated by the centre is in the form of Prototypes, two research projects were completed and two were under progression.

Objectives:

- To promote interdisciplinary research and to provide excellent opportunity for the faculty and students to endeavor innovation in MEMS.
- Further, to serve as a nodal centre of this region by extending facilities of National MEMS Design Centre to other Institutions.



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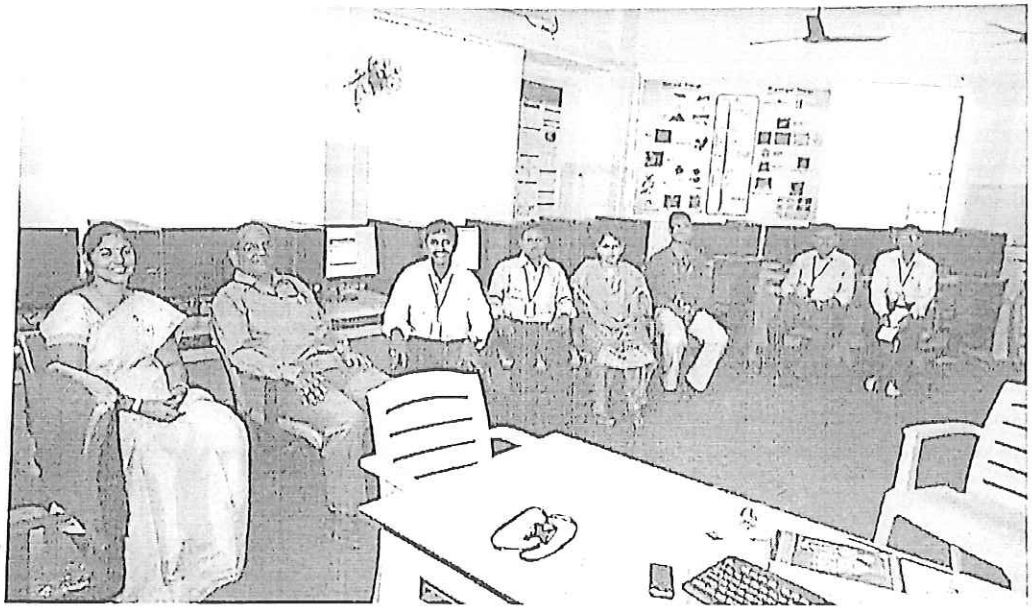

Lab In-charge

(Dr.V.R.Anitha)

HOD, ECE

Principal

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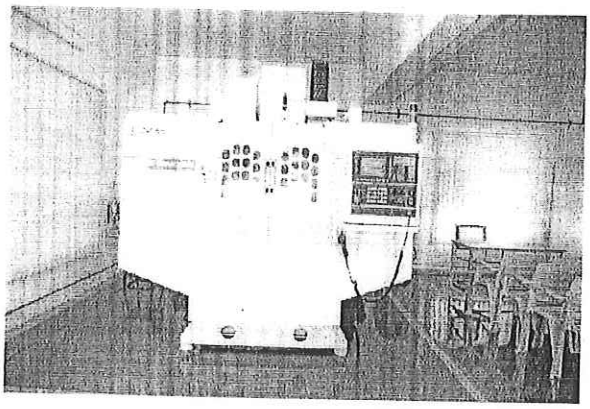
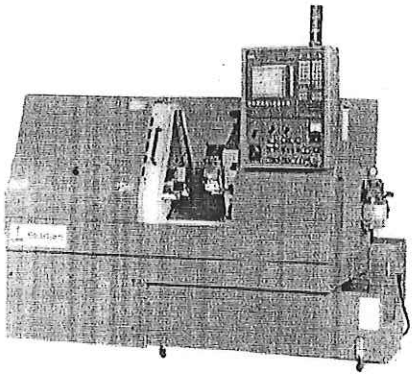
COMPUTER NUMERICAL CONTROL LAB

Description

The Computer Numerical Control (CNC) Laboratory is designed to facilitate the basic research support for faculty and students by providing fundamental knowledge and experience in CNC programming, understanding different machining processes and to implement the same in the areas of their research, career building and job. This lab consists of LMW VJ 55 Vertical Machining Centre (VMC), SMARTURN, MasterCAm software and Siemens Simulation controllers for programming.



LMW VJ 55 VERTICAL MACHINING CENTRE (VMC)



SMARTURN CNC LATHE

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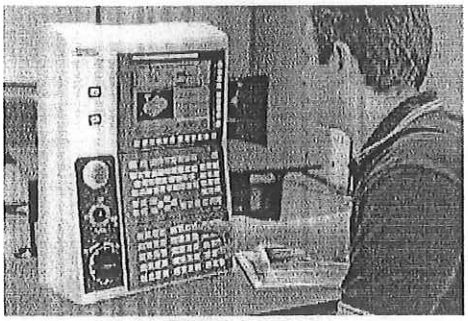

SIEMENS SIMULATION CONTROLLERS

Objectives

The CNC laboratory aims to enhance the student's knowledge in development of practical knowledge on CNC machines and the lab caters the skills necessary for the development of a mechanical engineer pursuing further studies, research studies and a career in manufacturing area.

The following are the main objectives of CNC Lab:

- To provide basic research facility for programming by understanding the fundamentals of part programming in terms of the various steps needed to be taken for completing a successful CNC program.
- To introduce the basic advanced capabilities of CNC to increase productivity
- To use effectively CAD/CAM systems in order to produce the final NC code for the manufacturing of various mechanical parts and carry out exchange of data between CAD and CAM systems.

R&D Facilities:

1. Computer-aided manufacturing (CAM) (Manufacturing) softwares
2. CNC Milling Machine
3. CNC Lathe Machine
4. Sinumeric CNC Simulators (4 Nos.)
5. MasterCAM Software
6. Robotics Siumaltion Softwares

Lab Coordinator: **Mr.G.V.V.S.Reddy Prasad**

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Professor & Head
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ADVANCED COMPUTER AIDED DESIGN LAB

Description

Advanced Computer Aided Design Lab is designed to focus basic research facilities to analyze and comprehend diverse designs in nature that are time-tested and robust, and to implement assimilated concepts for optimal form design in engineering problems. The lab provides a facility to the faculty and students where the theory and tools of Computer Aided Design (CAD) for the product development cycle can be utilized during their research. The users are encouraged to learn, practice and apply the knowledge gained into their research areas.

Inside view of the advanced CAD Lab

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Objectives

Advanced Computer Aided Design lab provides a convenient mean to create designs for almost every engineering discipline. It can be used for mechanical, industrial design, and product design.

The following are the main objectives of CAD Lab:

- To provide basic research facility for design through quality graphics for the researchers
- To introduce the basic advanced capabilities of CADD to increase productivity
- Improve visualization ability of machine components and assemblies before their actual fabrication through modeling, animation, shading, rendering, lighting and coloring
- To provide the relevant software's to model complex shapes including freeform curves and surfaces.

Above all, the advanced CAD lab provides digitally integrated environment where the researchers can design, analyze, simulate and build components. The Laboratory has the following research areas:

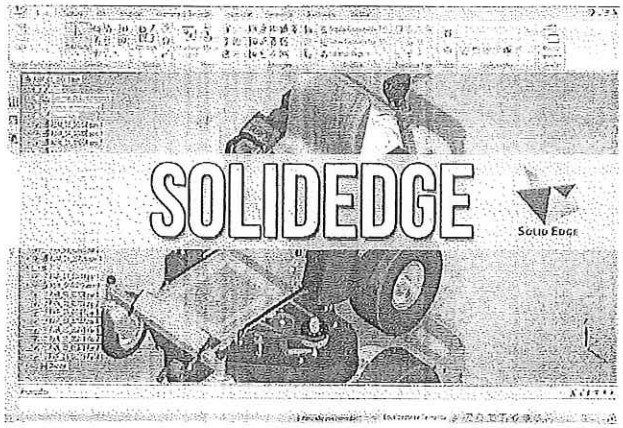
- Engineering graphics & Design
- Geometric Modeling
- Finite Element Analysis
- Product Development
- Rapid Prototyping

Software's Available

- Solid edge
- NX CAD
- Solidworks
- Creo 2.0
- AutoCAD 2016
- Siemens PLM Software
- 3D Printer

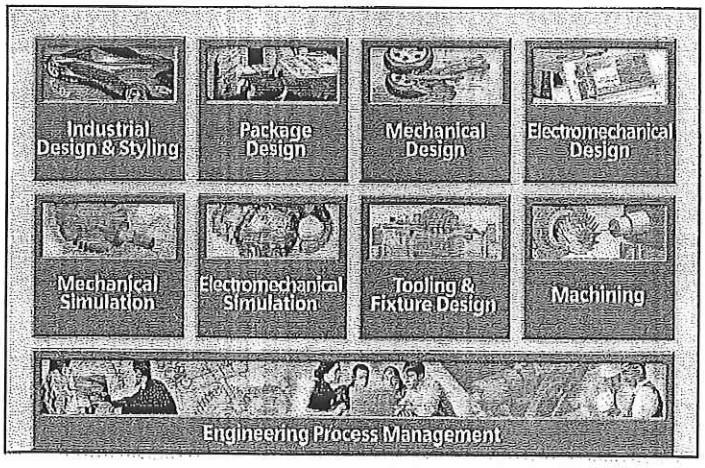
About Solidedge

Solid Edge is a 3D CAD, parametric feature (history based) and synchronous technology solid modeling software. It runs on Microsoft Windows and provides solid modeling, assembly modelling and 2D orthographic view functionality for mechanical designers. Through third party applications it has links to many other Product Lifecycle Management (PLM) technologies.



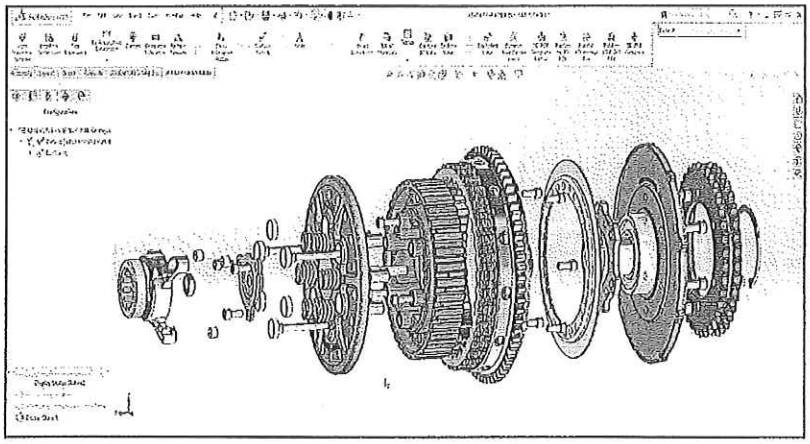
About NX CAD

Siemens NX software is an integrated product design, engineering and manufacturing solution that helps you deliver better products faster and more efficiently. NX for Design is an integrated product design solution that streamlines and accelerates the product development process for engineers who need to deliver innovative products in a collaborative environment.



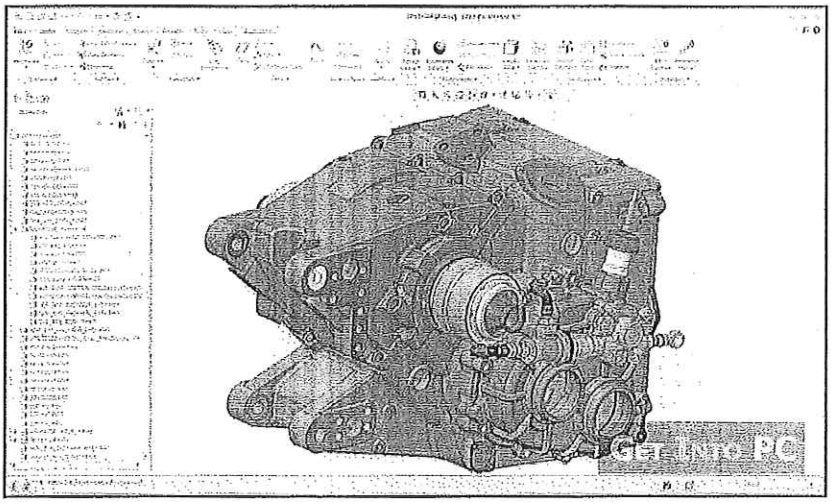
About Solid Works

SolidWorks is a solid modeling computer-aided design (CAD) and computer-aided engineering (CAE) computer program that runs on Microsoft Windows. SolidWorks is published by Dassault Systèmes.



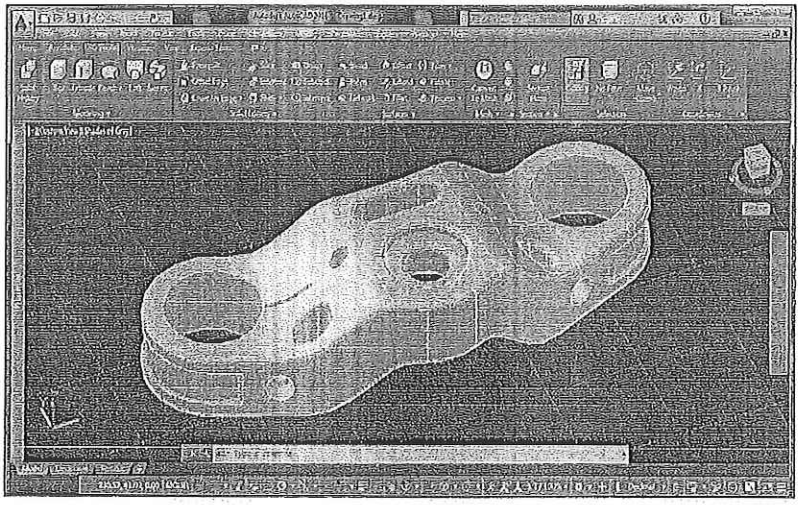
About Creo 2.0

Creo is a family or suite of Computer-aided design (CAD) apps supporting product design for discrete manufacturers and is developed by PTC. The suite consists of apps, each delivering a distinct set of capabilities for a user role within product development. Creo runs on Microsoft Windows and provides apps for 3D CAD parametric feature solid modeling, 3D direct modeling, 2D orthographic views, Finite Element Analysis and simulation, schematic design, technical illustrations, and viewing and visualization.



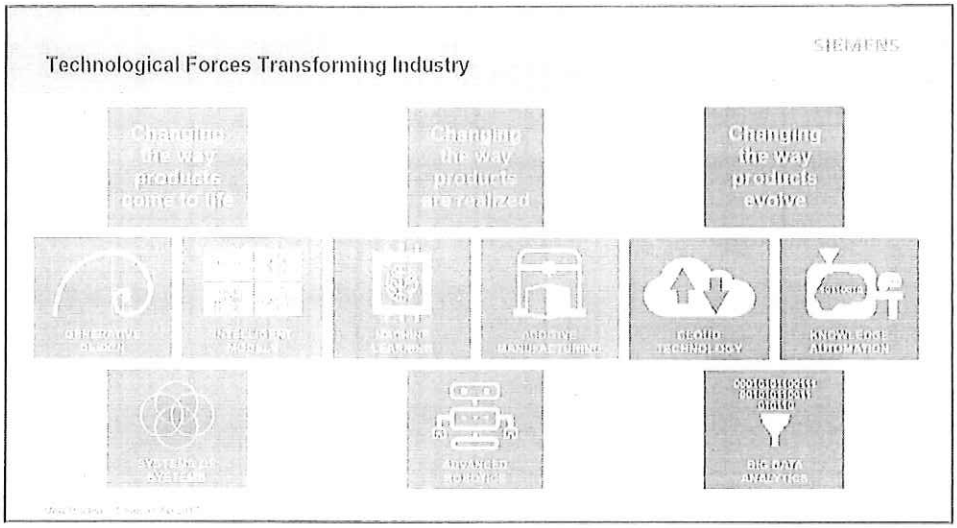
About AutoCAD 2016

AutoCAD is a commercial computer-aided design (CAD) and drafting software application. Developed and marketed by Autodesk,] AutoCAD was first released in December 1982 as a desktop app running on microcomputers with internal graphics controllers. Before AutoCAD was introduced, most commercial CAD programs ran on mainframe computers or minicomputers, with each CAD operator (user) working at a separate graphics terminal.



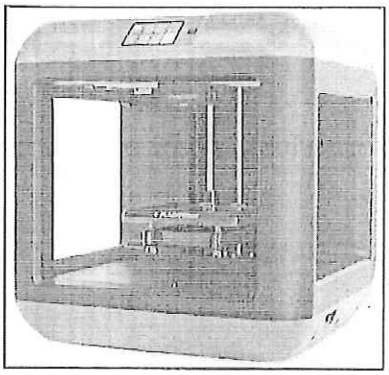
About Siemens PLM Software

Siemens PLM Software (formerly UGS) is a computer software company specializing in 3D & 2D Product Lifecycle Management (PLM) software. The company is a business unit of Siemens, and is headquartered in Plano, Texas. Siemens PLM Software is a world-leading provider of product lifecycle management and manufacturing operations management software. It helps to users to realize innovation by optimizing their processes, from planning and development through manufacturing, production and support. Siemens PLM Software, a business unit of the Siemens Digital Factory Division, works collaboratively with companies to deliver open solutions that help them realize innovation. Siemens PLM Software's products include NX, a CAD/CAM/CAE commercial software suite, Teamcenter, an integrated set of PLM and collaboration (cPD) tools, Tecnomatix, a manufacturing and factory planning suite and Velocity Series, an application bundle focused at the mid-market that includes Solid Edge.



About 3D Printer

3D printing is any of various processes in which material is joined or solidified under computer control to create a three-dimensional object, with material being added together (such as liquid molecules or powder grains being fused together). 3D printing is used in both rapid prototyping and additive manufacturing (AM). Objects can be of almost any shape or geometry and typically are produced using digital model data from a 3D model or another electronic data source such as an Additive Manufacturing File (AMF) file (usually in sequential layers). There are many different technologies, like stereolithography (SLA) or fused deposit modeling (FDM).



3-D Printer

Lab Coordinator: Mr.A.Venkatesh

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ELECTRICAL LAB

Objective:

The main objective of this lab is to provide research facilities with basic and advanced electrical control simulating devices.

Research Areas:

Electrical lab is designed to conduct various experiments related to Electrical technology with various tools of electrical in a safe manner as per the Indian electricity rules.

The following advanced research areas are focused in this lab:

- Read blueprints, designing basic and completed circuits.
- Selection and Installation procedures of wiring as per the drawing
- Study and application of suitable protective devices for circuit protection
- Safety precautions for avoiding accidents
- Conduct various research oriented simulating works

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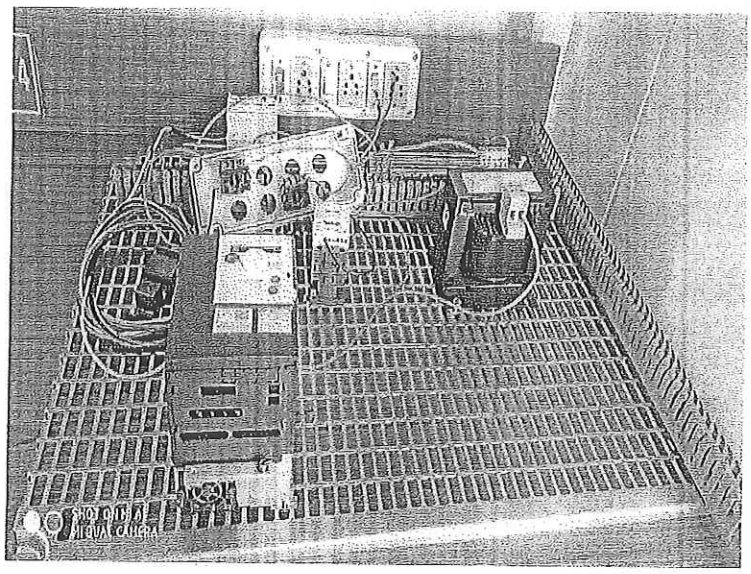
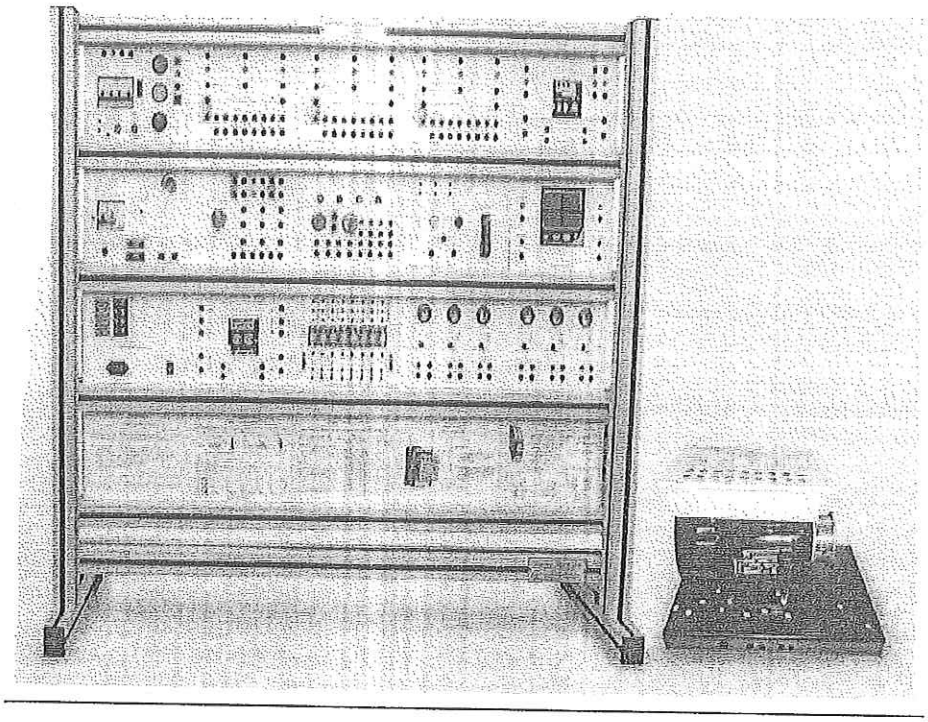
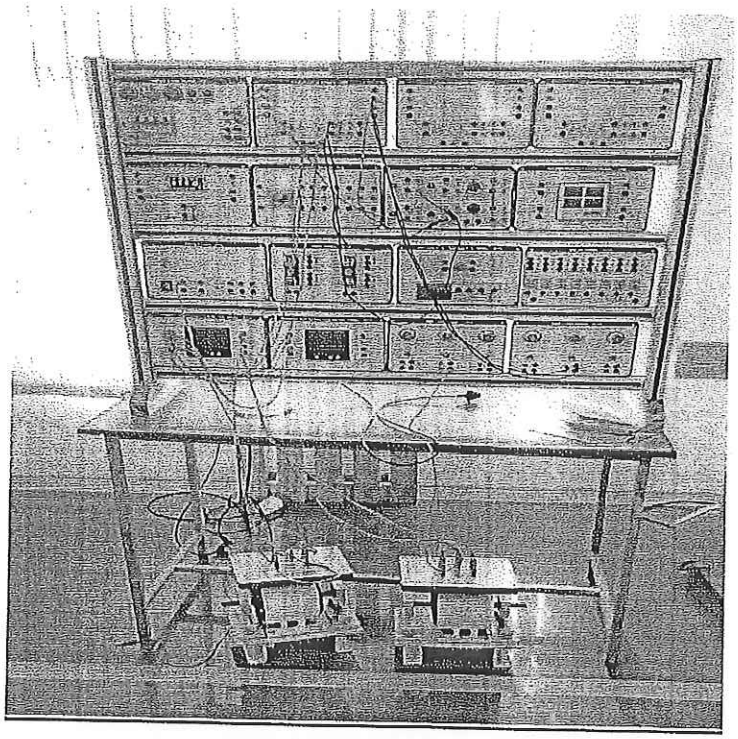


Read blueprints, designing basic and completed circuits

Study and application of suitable protective devices for circuit protection



Installation Trainer Kit



Trainer Kit with Motor-Generator Set Connections

Outcomes:

After completing this course, a student will be able to:

- Read blueprints or technical diagrams of electrical wiring.
- Select right and suitable components, devices for controlling and protecting the electrical items and peripherals
- Install and maintain electrical wiring circuits in a safe manner
- Inspect and make clearance for giving main supply by avoiding loose contacts in controllers, fuse and circuit breakers.
- Replace wiring, equipment and protective devices using hand tools and power tools.
- Learn and follow the Indian Electricity Rules during providing connection and in installation.

Lab Incharge : Mr.K.Kamal Kumar

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ADVANCED WELDING LAB

Objectives:

The activities in Advanced Welding lab are focused on developing cutting edge technologies in welding & allied areas through systematic welding techniques, providing welding technology solutions to all the students and researchers. The main objective of this lab is to provide advanced welding techniques and methods including safety precautions necessary while welding.

- Describe and demonstrate proper welding shop safety.
- Read and interpret symbols and plans utilized in the Welding industry.
- Demonstrate competency in shielded metal arc welding.
- Demonstrate competency in metal inert gas welding
- Demonstrate competency in flux cored arc welding
- Describe how the effects of heat, metal thickness and metal length influence welding/cutting techniques.
- Describe how the effects of heat, metal thickness and metal length influence cutting techniques.

Facilities

1. Auto K-400,
2. Easyweld 400-T,
3. RS 400,
4. Migmatic 250,
5. Transweld,
6. Gas welding,
7. Gas Cutting equipment,
8. Safety equipment and tools.

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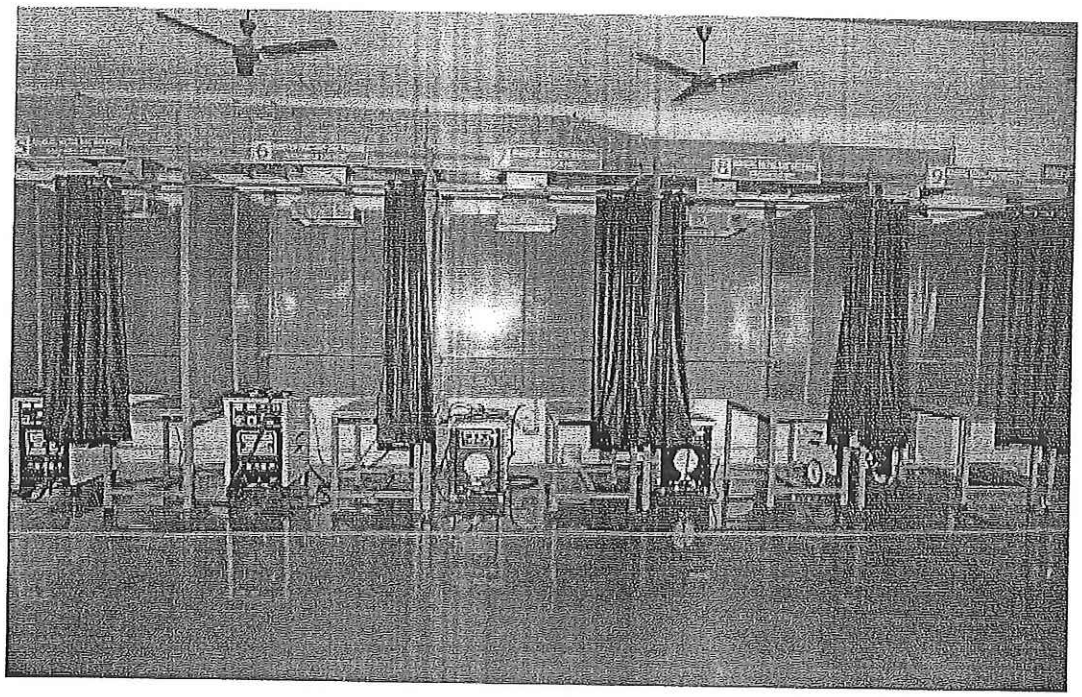
Research Areas

The following advanced research areas are focused in this lab:

- Design and fabrication of semi-automatic fixture to weld pipes using MIG/TIG.
- Experimental study on microstructure and mechanical properties of AA6061/Ti-6Al-4V joints made by bypass-current MIG welding-brazing.
- Evaluation of MIG welding process parameter using Activated Flux on SS316L by using Taguchi method.
- Influence of low current auxiliary TIG arc on high speed TIG-MIG hybrid welding.
- A comparative study on the microstructure and properties of copper joint between MIG welding and laser-MIG hybrid welding.
- An investigation on butt joints of Ti6Al4V and 5A06 using MIG/TIG double-side arc welding-brazing.



Shielded Metal Arc Welding:

SMAW is one of the oldest, simplest and most versatile joining processes. The electric arc is generated by touching the tip of a coated electrode against the work piece. The electrodes are in the shape of a thin long stick (stick welding). The heat generated, melts a portion of the tip of the electrode, its coating, and the base metal in the immediate area of the arc. A weld will be formed the molten metal (a mixture of the work piece and the electrode metal) and substances from the coating of the electrode, solidifies in the weld area. The electrode coating deoxidizes and provides a shielding gas in the weld area to protect it from oxygen and nitrogen in the environment. Electrodes are available for welding most carbon, low alloy and stainless steels, some non–ferrous metals, and a wide range of maintenance and repair applications.

Gas Metal Arc Welding:

GMAW was developed in the late 1940's and is also called MIG/MAG Welding. Since then it unfolded into becoming a major element in industry today. It is suitable for welding a variety of ferrous and nonferrous metals. The arc continuously melts the wire as it is fed in the weld puddle. The weld area is shielded by a flow of gas such as argon, helium, carbon dioxide, or gas mixtures. The consumable bare wire is fed automatically through a nozzle into the weld area. Metal can be transferred into the weld–bead in three ways: Spray, Globular and Short circuiting. Each way has its own advantages and disadvantages. The process is rapid, versatile, economical and can easily be automated (continuos welding without electrode changing).

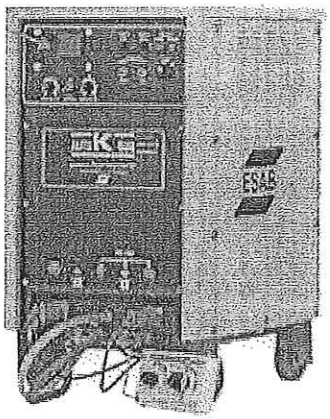
Gas Tungsten Arc Welding:

GTAW also known as TIG welding (Tungsten Inert Gas). The filler metal is supplied from a filler wire and is similar to the metals to be welded. The tungsten electrode is not consumed in this operation and the shielding gas is usually argon or helium or a mixture of it. Welding with GTAW can also be done without filler metals, as in welding close–fit joints. GTAW is used for a wide variety of metals and applications, particular aluminum, copper, brass, magnesium, titanium and high alloy metals. It is especially suited for thin metals. In general AC power supply is preferred for aluminum and magnesium because the cleaning action of AC removes oxides and improves weld quality. DC power supply is also possible. The cost of the inert gas

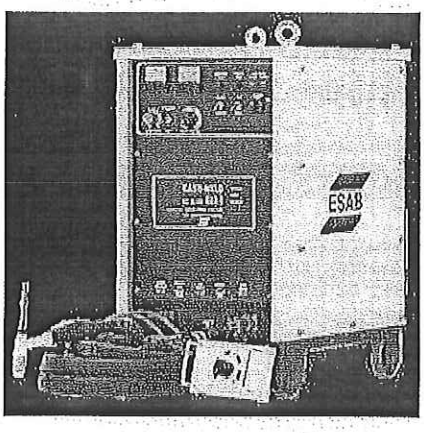
makes this process more expensive than SMAW, but it provides welds with very high quality and surface finish.

Gas Welding:

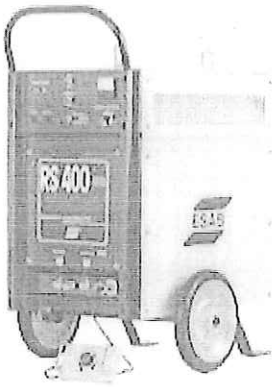
Oxy–Acetylene welding is developed in the 1900s and is the most common gas welding process. It uses acetylene fuel. The proportions of oxygen and acetylene are an important factor. At a ratio of 1:1, the burning gases get a neutral flame. If the supply of oxygen is lower it becomes a reducing flame. With a greater oxygen supply it becomes an oxidizing flame. Filler metals are used to bring additional material to the weld zone during welding. They are available as rods or wire, coated and uncoated, and are made of metals compatible with those to be welded. Oxyacetylene welding can be used with most ferrous and nonferrous metals for any thickness of workpieces, but the relatively low heat input limits the process economically to less than 6 mm. A variety of joints can be produced by this method. It is portable, versatile and economic for low quantity and simple work.



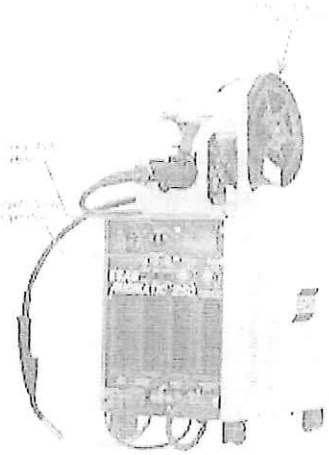
Auto K-400



Easyweld 400-T

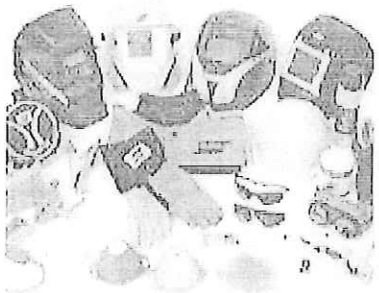


RS400



Migmatic 250

Gas Cutting equipment



Safety equipment and tools

Safety and Precautions:

As in any welding process, Gas Metal Arc Welding (GMAW) safety precautions are very important. All information relating to the safe operation of the welding equipment and the welding process must be fully understood before attempting to begin work. A careless welder who does not observe some simple rules can cause a dangerous situation for everyone in the area. The process of arc welding creates several hazards which must be guarded against. Useful safety information can be found in the Owner's Manual that comes with each item of welding equipment.

Lab Incharge : Dr. S. Ragu Nathan

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AGRO LAB

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DESCRIPTION

Agro-Machinery lab is established in Sree Vidyanikethan Engineering College to provide a basic knowledge on soil and water testing equipment, irrigation equipment, seed drills, tillage equipment's, solar water pumping system, air-cooling system, IC engines parts and cultivators. Agro-Machinery lab is equipped with the machinery for soil preparations, seed plantation, inter-cultural operations, plant protection, harvesting and threshing. The laboratory is having tractor operated, power tiller operated, self-propelled, stationary engine operated, and manually operated equipment. The cut-sections of different machinery, drip and sprinkler system are the beauty of laboratory that helps to explain the students of the different modules. Consultancy services can be taken up with instruments to test water and soil properties.

Name of the Research Lab : Agro-Machinery lab

Name of the Coordinator : Dr.M.V.Subba Reddy

Aim of the Research Lab : To provide a basic knowledge about irrigation equipment, seed drills, tillage equipment's, solar water pumping system, air-cooling system, IC engines parts and cultivators.

Objectives of the Cluster :

- Lean about the basic sub-systems of a tractor and its functioning.
- Perform basic servicing of tractor like brake pedal play adjustment,
- Wheel replacement and fuel filter replacement
- Perform basic inspection and maintenance of a tractor and troubleshooting of irrigation equipment
- Learn about structure of irrigation system and functions of and their components
- Learn maintenance and adjustment of components like dripper, seed drill sand filter etc.
- Conduct experiments to test Water and Soil Testing
- Study Drip and sprinkler Irrigation system

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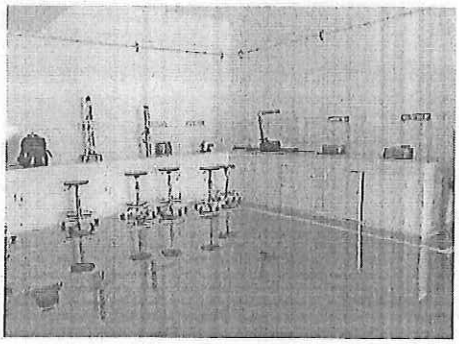
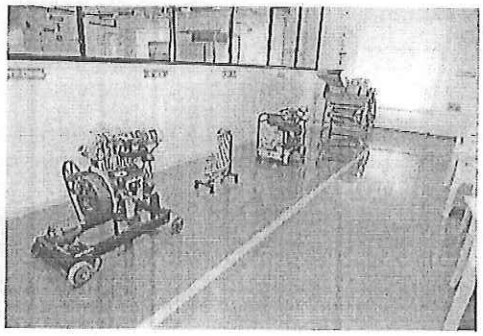
Facilities Available in the Centre	:	1. Tractor 2. Drip Irrigation system 3. Sprinkler Irrigation system 4. Cultivator 5. Disc-Cultivator 6. Seed Drill Threshing Equipment's 7. Multi crop thresher 8. Chara-cutter 9. Solar panel pumps 10. Submersible pumps 11. Centrifugal pumps 12. Generator 13. Water Testing Kit 14. Soil Testing Kit 15. Air Compressor 16. Tractor Engine cut-section
Action Plan of the Centre	:	1. Reducing water footprint in agricultural sector 2. Agricultural soil testing consultancy in and around SVEC 3. Agricultural water testing consultancy in and around SVEC 4. Organize a outreach/extension activity to create awareness on agronomic strategy to overcome the challenges of climate change





Equipments in the research laboratory

Dr. K.C. VARAPRASAD
Professor & Head
Dept. of Mechanical Engineering
Sree Vidyanikethan Engineering College
TIRUPATI - 517 102

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SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)
Sree Sainath Nagar, A. RANGAMPET
Chittoor (Dist.) - 517 102, A.P., INDIA.

SREE VIDYANIKETHAN
Engineering College
(Autonomous)

REFRIGERATION & AIR CONDITIONING LAB

Objective:

Provision of facilities and equipments to the researches working in the field of various refrigerating and air conditioning systems for comfort and industrial applications.

Facilities:

- Scroll Chiller (Air-cooled) 10 TR
- VRF IV Plus system 8 HP
- Ducted split unit 5.5 TR - Indoor, Outdoor
- Cassette unit 1.5 TR – (Indoor, Outdoor)
- High wall split (2 star) 1 tr – (Indoor, outdoor)
- Window unit (2 star) 1 tr – (Indoor, outdoor)
- Deep Freezer Hard Top 100 Litres
- Bottle Cooler Hard Top 300 Litres
- Water cooler 20/20 Litres
- Bottle Water Dispenser
- Cold room 6000 BTU/ Hr - Assembled Unit

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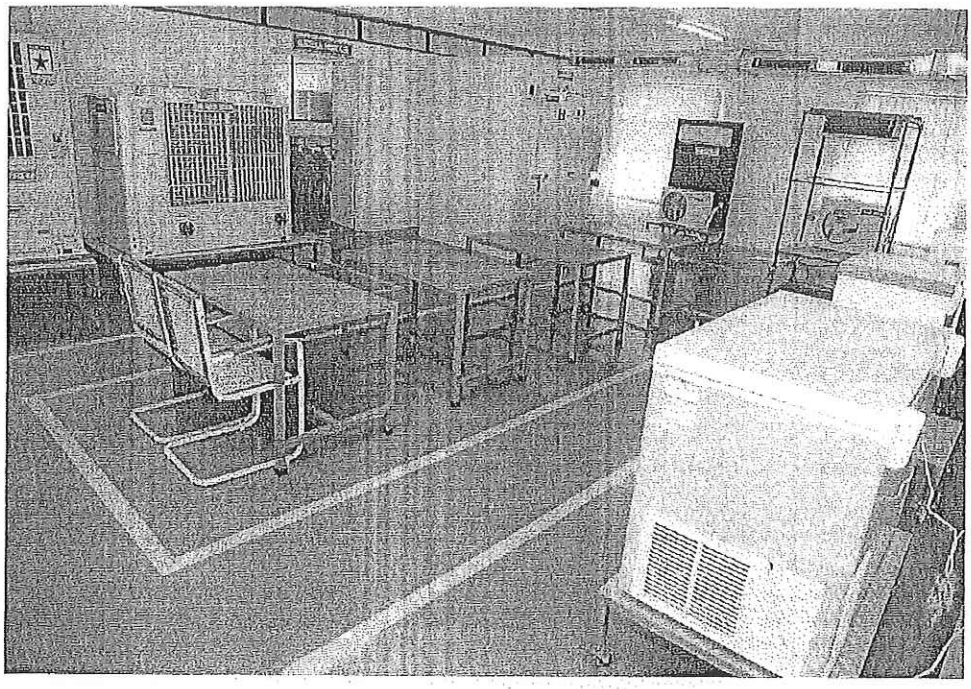
Research Areas:

The following advanced research areas are focused in this lab:

- Alternate Refrigerants including Hydro carbon mixtures and olefins as refrigerant mixtures
- Improvement of efficiency of Refrigeration and Air conditioning Systems with sub-cooling and superheating technology
- Designing of new refrigeration & air conditioning systems which increase the cop of the system.



Outlook of Commercial Lab

Outcomes:

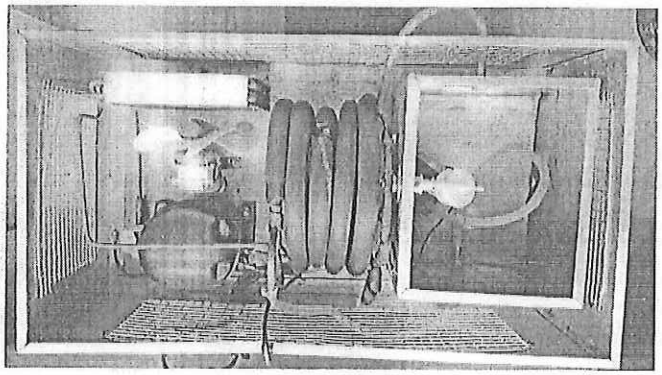
After completing this course, a student will be able to:

- Familiarize the components of refrigeration systems.
- Understand the principles of refrigeration and air conditioning.
- to understand vapour compression and vapour absorption system operation.
- Analyze the refrigeration cycles & methods for improving performance.

- Design refrigeration & air conditioning systems using cooling load Calculations.
- know the application of refrigeration and air conditioning.
- Energy Conservation and Management.

Project Work Carried Out

A chiller unit was fabricated in which the evaporator used was a helical coiled tube in tube heat exchanger. The design of the helical coiled tube in tube evaporator was also carried out. The experimental refrigeration unit that was fabricated was filled with the R134a working fluid and experiments were conducted to test the performance of the refrigeration system. The first conclusion inferred from the work was that the coefficient of performance of the system increased by suitably designing the evaporator. Analyzing the obtained value of COP, it was concluded that the design of the heat exchanger plays a major role in increasing the performance of the chiller unit. The temperature of the water is decreased with less time to get the desired cooling effect from the refrigeration system.



Fabricated water chiller unit

Coordinator: Dr.R.Satya Mehar

Dr. K.C. VARAPRASAD
Professor & Head
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Sree Vidyanikethan Engineering College
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ATMOSPHERIC RESEARCH LAB (ARL)

Atmospheric Research Lab (ARL) is the developing capability to predict the behavior of the atmosphere through Lidar and Radar observations and involved in carrying out fundamental and applied research in Atmospheric Sciences.

In ARL, the main objective is to study atmospheric gravity waves and their spectral characteristics in troposphere, stratosphere and mesosphere using a high power and highly sensitive coherent pulsed Doppler VHF radar and Lidar facilities located at Gadanki, a northern hemisphere and lidar at Reunion islands, France, a southern hemisphere site and also to study the wave coupling processes in the MLT region over a tropical station, Gadanki/Tirupati, which is located in the Northern hemisphere. No study exists to the best our knowledge dealing the wave coupling between lower and MLT region during cyclone activity. Since our location is close to the Bay of Bengal (BoB), many episodes exists where the effect of tropical cyclones originated over BoB have signatures of GWs in the observations made over Gadanki using MST radar and Rayliegh lidar. Since Meteor radar is added to fill the gap region of 70-110 km, the proposed study is timely and will contribute to the better understanding both vertical and latitudinal coupling particularly during disturbed conditions.

Objectives:

- Study the gravity wave characteristics in terms of time (frequency) and height (wave number), associated Potential Energy and their seasonal dependences based on large data set(14 years) using lidars located at Gadanki and Reunion Islands, Reunion.
- Study to estimate gravity wave vertical wave number spectra and to compare them with model spectra using Indian MST radar observations of zonal, meridional and vertical winds.
- Climatological characteristics of the middle atmospheric temperature structure and its relation to different aspects, like, stratopause, tropopause, temperature warming and cooling.
- To investigate the tropical cyclone generated GWs and their role in altering the MLT dynamics and mean circulation.
- Identifying the exact source for the generation of various GWs that are propagated to the MLT region using Ray tracing technique (vertical coupling).

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OUTCOMES

- Long term variability of gravity wave activity are also needed in order to have a better idea about the gravity wave variability in the low latitudes which may improve the perceptive of climatic models and atmospheric dynamics in the middle atmosphere.
- Simulation and Modeling of atmospheric gravity waves generated due to synoptic scale and mesoscale convective events and their propagation characteristics both in horizontal as well as in the vertical direction will be very much beneficial for the improvement of convective gravity wave parameterization scheme.
- Convective gravity wave parameterization scheme is improved we will have improved forecast predictions of severe weather events such as thunderstorms, flash floods, cyclones thereby protecting the society from the convective weather disasters

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MICROMACHINING RESEARCH LAB

There has been a rapid growth in the development of harder and difficult-to-machine metals, composites and alloys during the last two decades. Conventional edged tool machining to micro level is uneconomical for such materials and degree of accuracy, surface finish attainable is poor. The micro scale manufacturing poses unique challenges with respect to machine tool design, development and the process dynamics. Micro systems find wide applications in bio-medical electronics, optics, micro-mechanics, micro fluidics, dies, moulds etc. Component parts used in these systems have feature dimensions in micrometers and part volumes less than $1mm^3$. Manufacture of these miniature components with high accuracy is a challenge. Further, Micromachining is defined as:

- Material removal at Micro/Nano level with no constraint on the size of the component being machined.
- Creating micro features or surface characteristics (especially surface finish) in the Micro/Nano level.
- Removal of material in the form of chips or debris having the size in the range of microns.

OBJECTIVES

The main objective of Micromachining research lab in the Department of Mechanical Engineering at Sree Vidyanikethan is to perform a feasible study of modeling material removal processes (machining) at micro level on Electro Discharge Machining, Wirecut EDM machines, CNC Milling and turning with special attachments and to explore diverse areas of Micro/Nano technology with the aim of identifying potential applications of interest. The principal objective of this Micromachining research lab is to:

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- Perform a feasibility study of modeling material removal processes (machining) at the micro level and to explore diverse areas of Micro technology with the aim of identifying potential applications of interest.
- Machine alloys, composites at micron level surface finish on EDM (Electric Discharge Machining) for manufacturing micro components.
- Connect industry with academic world for collaboration with faculty and students.
- Provide solutions and technology transfer to support manufacturing industries.
- Explore the potential of manufacturing engineering in MEMS and NON-MEMS applications.
- To design and implement a complete solution for an inline topography measurement and analysis for monitoring before, during and after the micro machining.
- To identify the gap and perform a feasibility study of modelling and simulation of micro-machining for various applications.

DESCRIPTION OF THE LAB

The Micromachining research lab in the Department of Mechanical Engineering at Sree Vidyanikethan Engineering College, Tirupati draws upon expertise from academic faculty and interdisciplinary collaborative research and development group. With wide range of state-of-art high technology equipment and supported by specialist technicians/faculty of the department provides a unique opportunity to carry out activities from concept generation, simulation, micromachining extended to industrial applications and students/faculty research. The micromachining research laboratory facilities are continuously being enhanced to cater the ever expanding academic and research needs. The research lab is equipped with the latest technology incorporated micro machines, attachments and accessories to support production activities. The major equipment includes:

1. Electro Discharge Machine(EDM)
2. Wirecut EDM,
3. Micromachining attachment for micro milling
4. Micromachining attachment for micro turning
5. Trinocular Microscopes
6. Material Plus software
7. ANSYS Software
8. Rockwell Hardness Tester

9. Muffle Furnace
10. Mitutoyo surface roughness tester
11. Specimen development tools

EXPECTED OUTCOMES

1. Researcher will be able to develop knowledge driven micromachining and create high value products, materials, methods and processes.
2. Researcher will be able to machine to a micron level in developing MEMS and Non-MEMS devices.
3. Researchers will be able to develop and design special attachments to existing conventional machines to achieve surface finish at Micro/Meso levels.
4. Researchers will be able to apply their critical thinking skills and knowledge of engineering and technology to identify, analyze, and solve problems during the design, development, implementation and improvement phases of research projects.

THRUST RESEARCH AREAS

The Micromachining research lab builds research on the following three indigenous micro machines to design solutions to modern engineering challenges in MEMS and Non-MEMS and applies the Mechanical Engineering core strengths to key thrust areas of great current and future need.

1. Micro-Electro-Discharge Machining (ZNC)

Machining (micro-EDM) Micro EDM is a thermo-electric process for machining electrically conducting materials regardless of their mechanical properties. Being a noncontact process, micro-EDM is one of the best alternative methods that can be used for machining high aspect ratio 3D micro structures.

2. Micro-Wirecut Electro-Discharge Machining

Wire cut EDM machining is mainly used to process various punch tie, plastic mold, Powder metallurgy mold and etc, which have 2D and 3D faces combined, or components. It can also

cut various sample plate, magnetic steel, Silicon Steel Sheet, semi-conductive material or precious metal. Furthermore, it is able to do tiny machining, abnormal shape groove or machining of standard defect of sample parts, widely used in electrics, precious machine tools, light industry, army industry and so on. The Wirecut Electric Discharge Machining (WEDM) is a variation of EDM and is commonly known as wire-cut EDM or wire cutting. In this process, a thin metallic wire is fed on-to the work piece, which is submerged in a tank of dielectric fluid such as deionized water. This process can also cut plates as thick as 300mm and is used for making punches, tools and dies from hard metals that are difficult to machine with other methods.

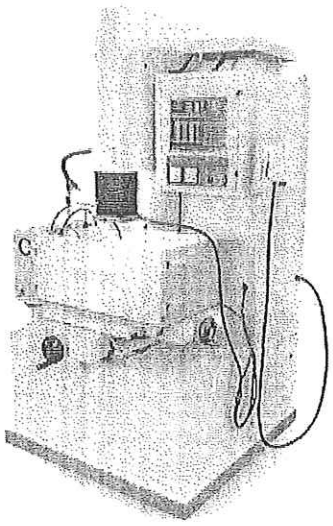
3. Tool based Mechanical Micromachining

The micro-products and micro-components are used in many industries especially related with micro-electromechanical, aerospace, medical, environment, biomedical and biochemical industries etc. Tool based mechanical micromachining technology is gaining importance in Micro-Electro Mechanical System device fabrication because of its ability to machine 3D micro features on different engineering materials. Micromachining with mechanical cutting tools is capable of producing high profile accuracy, surface finish quality, and sub-surface integrity at a reasonable cost. It is the primary choice amongst various manufacturing processes in fabricating micro components. Micro cutting and micro grinding are two typical micro mechanical machining processes that employ a defined cutting edge and an undefined cutting edge respectively. Many manufacturing methods have been developed to produce these micro-sized products, namely micro electro mechanical system (MEMS) based processes such as dry etching, lithography, electroplating, ultraviolet - lithographie galvanoformung abformung (UV-LiGA), non-conventional based micro-machining such as micro- electron discharge machining (EDM), and mechanicalmicro-machining Mechanical Micro-machining

RESEARCH FACILITIES

The mechanical micromachining research lab at Sree Vidyanikethan is established in an air-conditioned environment within an area of 900 sq ft. with machining, computing, characterization and data acquisition facilities.

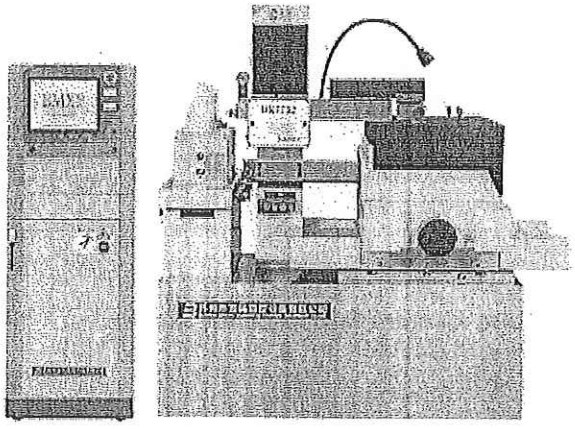
1. EDM (ZNC)



Special Features

Travel X x Y x Z : 300 x 200 x 250 mm
Work tank : 800 x 500 x 350 mm
Programmable Z axis
99 programs, 50 steps per program
Hand-held remote control
Built-in 'Ez – GURU'
Head orbital (optional)

2. Wire EDM



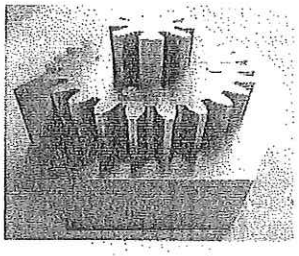
Specification of the Machine

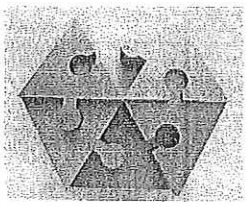
• Table Travel X,Y Axis (mm)	• 250 x 320
• Work Table Size L x W (mm)	• 380 x 525
• Maximum Work Piece Thickness (mm)	• 300
• Maximum Taper / 100 mm Thickness	• ±3° (Standard) • ±30° (Optional)
• Maximum Work Piece Weight (kgs)	• 300
• Machine Weight (kgs)	• 1600

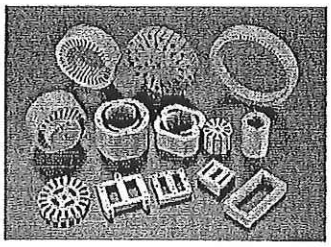
Standard Features

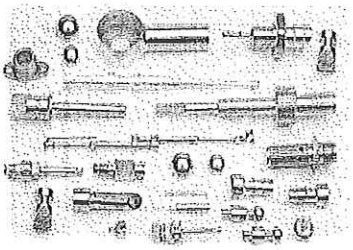
- Maximum Speed - 80mm2/Min.*
- Machining accuracy - 0.01mm *
- Best Surface Finish - Ra 1.25 to 1.75 *
- A.C. - Not Required up to 40° C
- BMXP pm-k system software controller works on Windows 7 operating platform
- Inbuilt database for cutting different materials.
- Coolant filtering system - Fine stainless steel wire mesh for coolant filter
- No need to change wire guide for different diameters
- Two axis DRO (Std.)
- 4-Axes synthesizer to cut different profiles at top and bottom
- Auto centre and auto stop at the end of the job

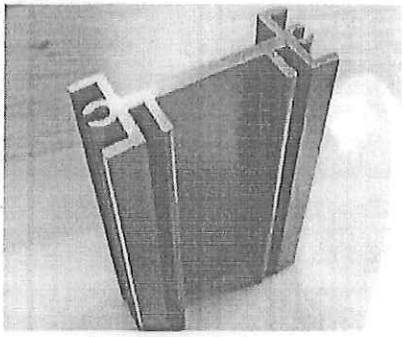
Possible types of profiles machined to EDM(ZNC) and Wirecut EDM

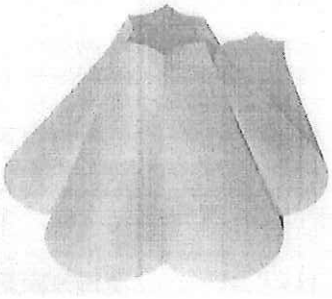


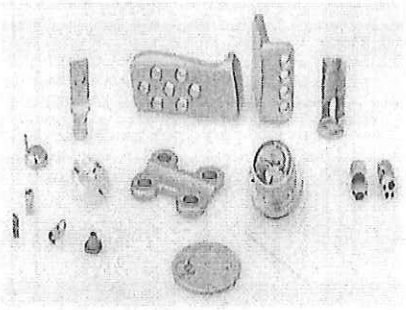


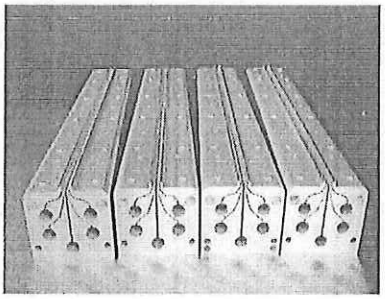


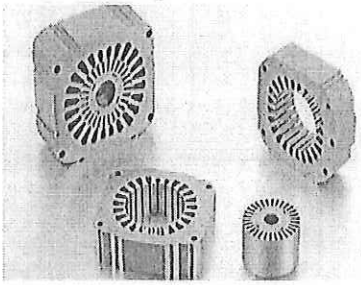


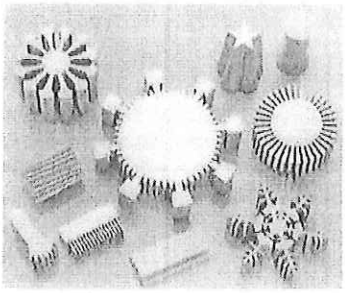












Lab Coordinator: **Dr.S.Ragunathan**

Dr. K.C. VARAPRASAD
Professor & Head
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JAWAHAR LAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
ANANTHAPURAMU - 515 002 (A.P)
RESEARCH & DEVELOPMENT

Prof.S.V.Satyanarayana
Ph.D., (IITK)
Professor of Chemical Engg. &
Director.

To
The Principal
Sree Vidyanikethan Engg. College
Sree Sainath Nagar, A.Rangampet,
Tirupathi – 517 102.

Rc.No. JNTUA/R & D/Ph.D/ Recognition/permission/2016-17
Dt. 22.12.2016

Sub: JNTUA – R & D - Ph.D - Recognition as Research Centre - **ECE EE, & CSE**. – permission - Annual fee – requested – Reg.

***

It is informed that your Institution is provisionally selected as Recognized Research Centre in the following disciplines for Ph.D. (Full Time) programme under JNTUA.

1. E.C.E.
2. Electrical Engineering
3. C.S.E.

Therefore, you are requested to send the demand draft for Rs.75,000/- (Rupees seventy five thousand only) drawn in favour of the Registrar, JNTUA, Ananthapuramu towards annual fee for the above disciplines.

Yours faithfully

DIRECTOR

D37

JAWAHAR LAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR
ANANTHAPURAMU - 515 002 (A.P)
RESEARCH & DEVELOPMENT

Prof.S.Krishnaiah
Ph.D.
REGISTRAR

To

The Principal
Sri Vidyanikethan Engineering College
Sri Sainath Nagar
A-Rangampet, Chandragiri Mandal
Near Tirupathi – 517 102.

Rc.No. JNTUA/R & D/Ph.D/ RRC/Annual Registration fee/2014-15
Dt. 13.03.2015

Sir,

Sub: JNTUA – R & D - Recognition of Research Centre - Ph.D. Programme – Annual Registration fee – requested - Reg.

Ref: 1) Note submitted by the Director, R & D, JNTUA, Ananthapuramu, Dt.4.3.2015.
2) Note orders of the Vice-Chancellor dt.9.3.2015.

***

It is informed that your Institution has been recognized as Research Centers for Ph.D. programme (Full-Time) from the academic year 2013-14 in the discipline of (1) ECE (2) Electrical Engineering.

As per the note orders of the Vice-Chancellor, the Recognized Research Centre has to pay the annual registration fee of Rs.10,000/- (Rupees ten thousand only) for each department to the University before commencement of the every academic year.

Therefore, it is requested to pay an amount of Rs.40,000/- (Rupees forty thousand only) as registration for the academic year 2013-14 & 2014-15 by way of demand draft in favour of the Registrar, JNTUA, Ananthapuramu payable at JNTUA EC Branch (2723), Ananthapuramu.

Yours faithfully,

REGISTRAR

SREE VIDYANIKETHAN
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Nanoelectronics Lab

Objective:

To provide advanced and sophisticated equipment to researches who are working in the field of synthesis/fabrication of nanomaterials and nanoelectronics devices

Facilities

- **Thermal evaporation Unit** **Hind High Vac. BC300**
- **Spin coater** **SPEKTRON Instruments Inc**
- **Tubular furnace**
- **Vacuum Oven**
- **I-V Parameter analyzer**

Research Areas

The following advanced research areas are focused in this lab:

- Fabrication and characterization of high speed electronic devices based on the ZnO nanostructure e.g. MESFET, Schottky diode etc.
- Fabrication and characterization of high speed electronic devices based on the SnO_2 nanostructure e.g. MESFET, Schottky diode etc.
- Fabrication and characterization of high speed electronic devices based on the SnO_2 nanostructure e.g. MESFET, Schottky diode etc.

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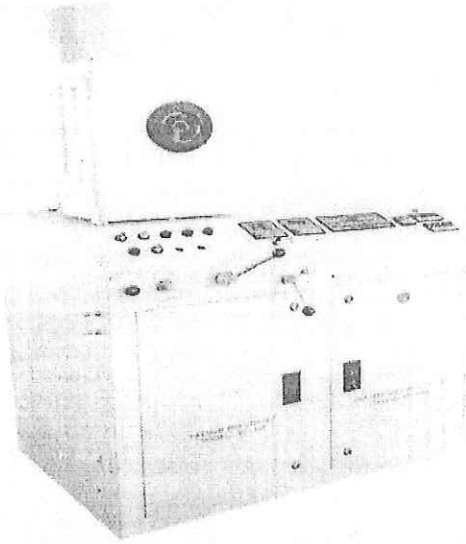
- **Thermal evaporation Unit** **Hind High Vac. BC300**

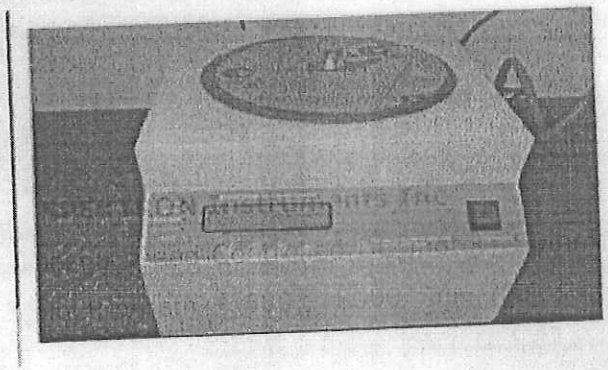
The vacuum chamber is made out of non magnetic stainless steel grade, AISI-304. D shaped chamber with water cooling having dimension (Approx.) 400mm (W) X 400mm (D) X 500mm (Ht). A front opening quick access door is provided for loading & unloading of the substrates. One high vacuum compatible, toughened glass view port provided on the front door.One set of thin stainless steel sheet liner to prevent the deposition on the chamber wall. Chamber is provided with ports to connect diffusion pump, rotary pump and gauges. Chamber is also provided with ports for evacuation, vacuum measuring gauge heads, gas feeding valves, etc. Chamber base plate is provided with necessary required Feedthrough ports for mounting magnetron sources, shutters etc.The chamber, all stainless steel components & sub-assemblies are electro-polished.

HHV make direct drive Rotary vacuum pump model FD-12 having a displacement capacity of 200 lit/min (12 m^3/hr) giving an ultimate vacuum of 1 x 10^{-3} m.bar under no load condition on Mcled gauge with gas ballast in fully closed condition



- **Spin coater SPEKTRON Instruments Inc**

Actuator: PID based speed Controlled DC motor; Spinning speed max 8,000 RPM; Spin Program – 500 - 8000 RPM Multistep RPM / Time programming Speed accuracy – ± 0.1 % Time Prog : 10 – 1200 secs. Display – 2 Line LED digital display.of Real time Rpm / Time Spinning disk size – 50mm Various substrate sizes - 0.5 ,1 ,up to 2 inch Gas purging facility available as standard + V



- **Tubular furnace**

Furnace type :Horizontal Tube Type Furnace Overall Dimension :75 mm dia x 600 mm Length Hot Zone Length : 300 mm Isothermal Zone :~ 300 mm Max. Operating Temp. 1000 deg C Insulation : Imported high density high alumina content vacuum forming board. Accuracy :+/- 2 deg C Thermocouple : K type thermocouple of suitable diameter & length for controlling temperature. Max. Power Cons. :3000 Watts Heating Element :Kanthal A1 Control Panel Programmable Temperature Controller Taie make or Equivalent. 8 x 2 = 16 Programs along with Thyristor Pls not We have not Quoted for Quartz Tube.

- **Vacuum Oven**

  Furnace type :Horizontal Tube Type Furnace Overall Dimension :75 mm dia x 600 mm Length Hot Zone Length : 300 mm Isothermal Zone :~ 300 mm Max. Operating Temp. 1000 deg C Insulation : Imported high density high alumina content vacuum forming board. Accuracy :+/- 2 deg C Thermocouple : K type thermocouple of suitable diameter & length for controlling temperature. Max. Power Cons. :3000 Watts Heating Element :Kanthal A1 Control Panel Programmable Temperature Controller Taie make or Equivalent. 8 x 2 = 16 Programs along with Thyristor Pls not We have not Quoted for Quartz Tube

- **I-V Parameter analyzer**

  Keysight(Agilent) B2902A 736,131.00.

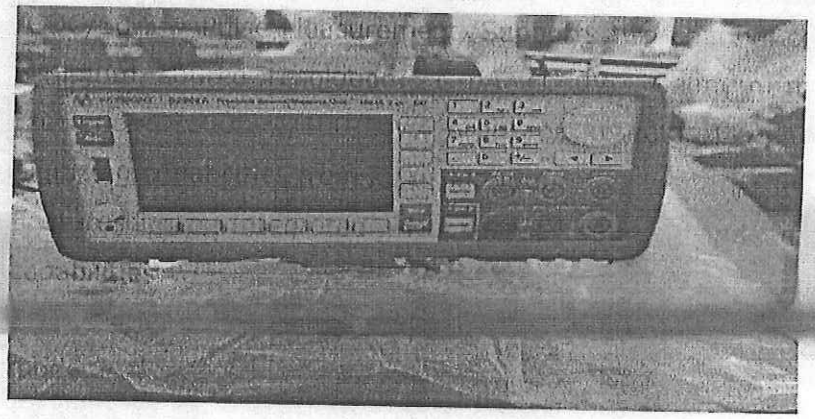
  Specifications: Precision Source/Measure Unit, 2 ch, 100 fA, 210 V, 3 A DC/10.5 A Pulse Measurement, Supports two-channel configuration, Minimum source resolution: 1 pA /1 μV, Minimum measurement resolution: 100 fA/100 nV, Arbitrary waveform generation and digitizing capabilities from 20 μs interval.

  Features: 1. Integrated 4-quadrant source and measurement capabilities

  2. The 4.3" color display supports both graphical and numerical view modes

  3. Free application software to facilitate PC-based instrument control,

  4. High throughput.



- **Magnetic Stirer**

  1MLH Magnetic stirrer 1Liter capacity with hot plate and digital speed indicator.

  Make: Remi

- **Ultrasonicator**

  Model: LMUC-4 Digital Ultrasonic CleanerTank & Outer body are of SS. Ultrasonic: 40±3KHz. Heating: ambient to 80C digital. Timer: 5-60min digital.

  Make: Labman Tank Size: 235x135x150mm, Capacity: 4Li

Lab Incharge

Dr. A. B. Yadav

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ANTENNA RESEARCH LAB (ARL)

Main aim of the proposed initiative is to strengthen the activities in the field of Antenna systems & Propagation (A&P) within the department of Electronics and Communication Engineering. The role of lab can be further strengthened when Antenna lab is a Strategic Research Area (SRA) within the Sree Vidyanikethan Engineering College (SVEC).

Antenna lab focuses on the domain of Antenna systems & Propagation (A&P), including theory, experiments and applications. By cooperating with related disciplines such as signal processing, electronics, material sciences and mathematics - new breakthroughs can be created that will enable improvements in existing applications and will enable new application domains.

A&P play a key role in today's society. The number of wireless devices and application domains are growing exponentially. It is crucial to maintain and further expand our strong expertise in SVEC in the domain of A&P. This requires top-research in this domain that attracts talented students.

Research lab also will drive and align the academic research in A&P in SVEC. This should generate the required manpower and experimental facilities. In addition, Lab accomplishments will also be presented in various forums (eg. National and International conferences, workshops, etc). Hence, it will also provide an improved visibility on national and international level. ARL will support national industries, and research centers in R&D related to the field of A&P. In addition, ARL will help to develop human resources at master and Ph.D. levels.

Antenna systems and the associated propagation channel form an essential element in any system that makes use of electromagnetic waves. For the year 2020 the World Wireless Research Forum estimates that 7 trillion wireless devices will serve about 7 billion people, not only in telecommunication systems but also in new application areas such as IoT, e-health, traffic management and smart buildings. People will be served by

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many wireless devices, sensors and tags (e.g. in transport and weather systems), providing ambient intelligence and context sensitivity. This fast growth can only be enabled by developing smart antenna systems that can combat for spectrum and energy efficiency at low-cost and small size and can operate in variable embeddings (e.g. chip packaging or human body). The performance is also expected to increase significantly. Based on Edholm's law (increase of bandwidth by factor 2 each 18 month), we can expect Tbit/s data rates in wireless communication 10-15 years from now. This will require new concepts with electronic beam steering, operating at much higher frequencies as of today (e.g. 60 GHz up to THz). Also break-throughs in other disciplines, like material sciences and nanostructures, will enable new antenna concepts.

Presently, most communication systems in the world are based on Wireless Systems, where Antennas are playing a vital role. In this context, Antennas form an interdisciplinary technology which covers electrical, electronics and communications engineering for various applications like IOT, smart buildings/cities, novel materials and their applications, etc.

The main ***objective*** of the centre is to coordinate and facilitate strategic collaboration and linkage between various research units, educational institutions, industrial sector by undergoing innovative application oriented research in the area of Antennas.

Based on the recommendations, the Institution was sanctioned an amount of Rs. 15 lakhs. An amount of Rs. 9.0 lakhs was released during the Academic Year 2017-18 to augment research facilities. ***FIKO Simulation Software*** was procured and installed. Students of UG, & PG are undertaking project works, PhD Scholars and Faculty are doing research by utilizing Simulation Software and EMI/EMC setup.

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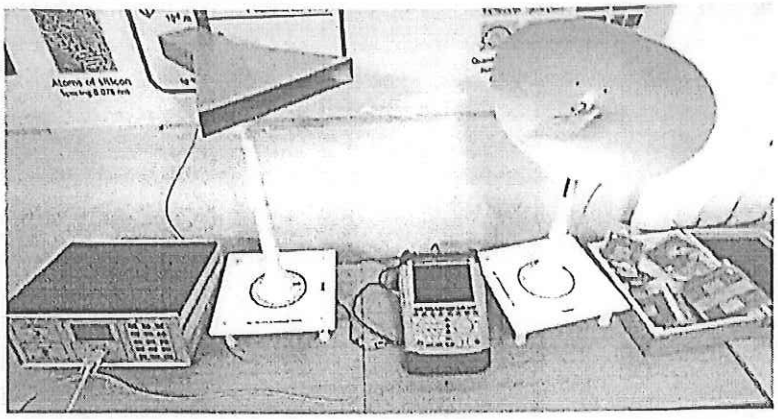
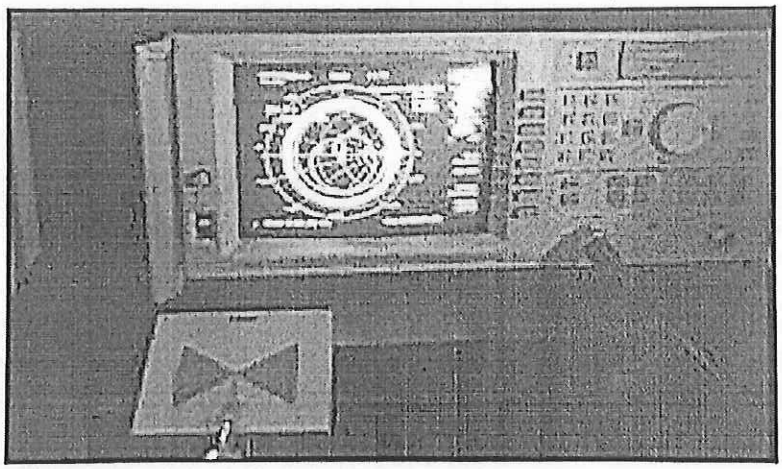
Equipment photos/ Developed devices



Complete EMI/EMC Setup



Characterization of the Developed Bow-Tie Antenna

Lab In-charge

(Dr.V.R.Anitha)

HOD, ECE

Principal

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Department of Computer Science and Systems Engineering

Cyber Security and Cryptology Research Lab

Vision

To be identified as a prominent Cyber Security and Cryptology Centre for carrying out Research and Development.

Mission

The Cyber Security and Cryptology Research Lab of Sree Vidyanikethan Engineering College (Autonomous) will identify and address the grand challenges in Cyber Security and Privacy.

Educate and train students through professional degree and life-long learning programs.

Objectives

1. Implementation of existing ciphers
   We will implement popular ciphers like DES, AES, IDEA, SIMON, SPECK, RSA,SALSA etc.,
2. Development of tools for cryptanalysis of the ciphers
   We implement the existing attacks from the literature on the above mentioned ciphers.
3. Design, Development and analysis of new cryptosystems
   We will develop new cryptosystems with security analysis
4. Cyber security education and awareness
   To create awareness on cyber threats and educate the users to safe guards their infrastructure.
5. Research in Intrusion Detection
6. Training in Malware Analysis, Vulnerability Assessment and Penetration testing
7. R&D in cryptology and Cyber Security

Equipment

Hardware:
Desktops
i5/i3 with 16GB RAM, 1TB HDD, 19" Monitor

Software:
Ubuntu 16.04 -- **16nos**
NS2
Virtual Box
OLLYDBG
IDAPRO

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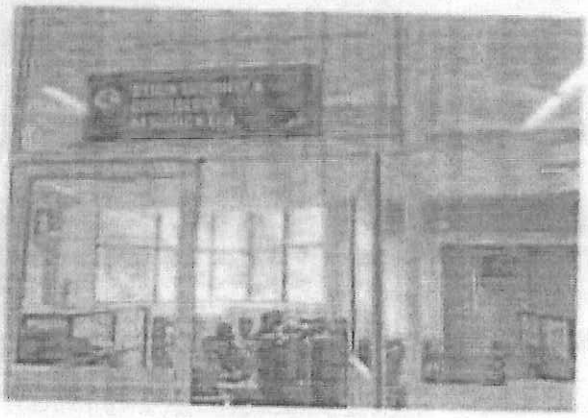
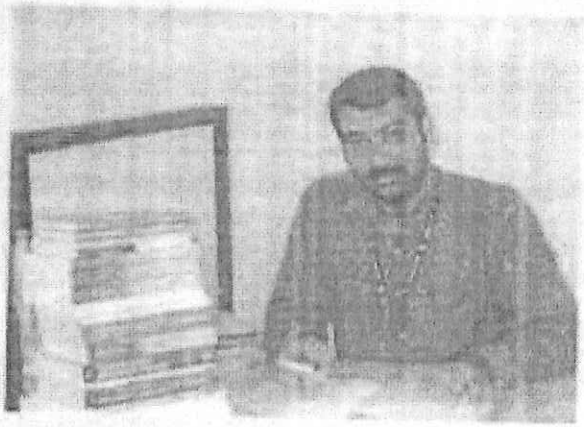


Cyber Security &Cryptology Research Lab

Students working in Research Lab



Lab Incharge: Dr.M.Naresh Babu

HOD, CSSE
HEAD
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SREE VIDYANIKETHAN Engineering College (Autonomous)

DEPARTMENT OF INFORMATION TECHNOLOGY

DATA ANALYTICS RESEARCH LAB

Objectives of the lab	• To promote interdisciplinary research and to provide excellent opportunities for the faculty and students to endeavor innovations in Data Science and cloud computing areas. • To conduct advanced Research & Development in Data Science and Cloud Computing and to solve the issues of Social Networks, Agriculture and Healthcare domains. • To serve as a nodal lab of this region by extending facilities of Data Analytics and Cloud Computing tools to other Institutions.
Facilities Available in the Lab	**Desktop Systems – 20 No.s**
	Hardware Configurations
	EQUIPMENT – **MODEL**
	• Processor – intel i5 – 7th Generation 3.00 GHZ
	• Motherboard – Lenovo 3102 Model
	• RAM – DDR4 12 GB RAM
	• Hard Disk – 1 TB Seagate-Blue
	• Monitor – 19.5 inch TFT LCD
	• Cabinet – Lenovo V520
	• Keyboard + Mouse – Lenovo
	List of Software
	• WEKA 3.8.1
	• XAMPP 5.6
	• R STUDIO 1.1.4
	• PYTHON 3.5
	• ORACLE DATABASE 10G EXPRESS EDITION 10.2
	• ANDROID STUDIO 1.0
	• MONGO DB 3.2
	• ARGO UML 0.34
	• R for WINDOWS 3.4.1
	• APACHE TOMCAT 7.0
	• JAVA 8.0
	• ECLIPSE JAVA EE IDE OXYGEN.3a Release (4.7.3a)
	• BOSS Linux 3.14
	• Anaconda 5.2
	• TensorFlow 1.9
	• Keras 2.2.0
	• Deepy 0.2.1
	• Gensim 0.13.4
	• PyML 7.3
	• Pandas 0.22.0
	• MatplotLib 2.2.2
	• NumPy 1.11.3

K. Rao
HOD, IT
HEAD
Department of Information Technology
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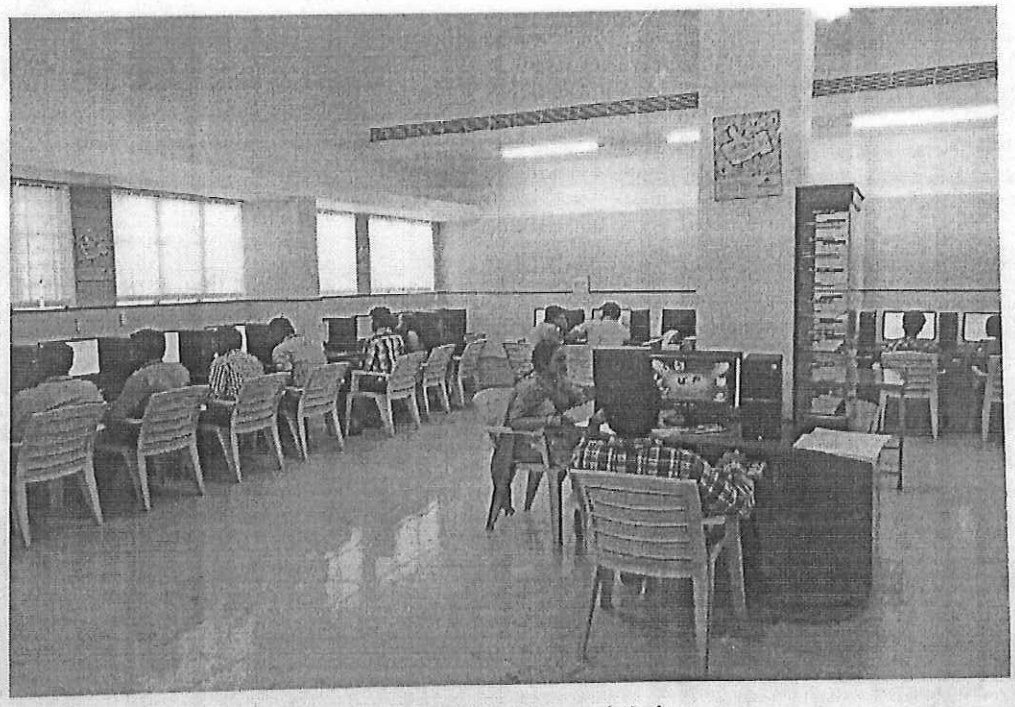
Name of the Coordinator	Dr. O. Obulesu, Associate Professor, Dept. of IT, SVEC
Total Number of Members	22 1. Dr. L. V. Reddy, Professor, IT 2. Dr. A. Srinivasulu, Professor, IT 3. Dr. K. K. Baseer, Assoc. Professor, IT 4. Dr. Vellingiri J, Assoc. Professor, IT 5. M. Thrilok Reddy, Asst. Professor, IT 6. M. Mahendra, Asst. Professor, IT 7. Ch. Prathima, Asst. Professor, IT 8. Ch. Sreenu Babu, Asst. Professor, IT 9. K. Lakshmi Prasanna, Asst. Professor, IT 10. G. M. Chanakya, Asst. Professor, IT 11. S. Bharath Bhushan, Asst. Professor, CSSE 12. B. Tharakeswara Raju, Asst. Professor, CSSE 13. Dr. G. Sunitha, Professor, CSE 14. Dr. J. Avanija, Assoc. Professor, CSE 15. Dr. K. Reddy Madhavi, Assoc. Professor, CSE 16. Dr. B. Uma Maheswara Rao, Assoc. Professor, CSE 17. Shaik Salam, Assoc. Professor, CSE 18. Dr. M. Lavanya, Asst. Professor (SL), MCA 19. M. Sowmya Vani, Asst. Professor, MCA 20. A. R. Kishore Kumar, Asst. Professor, MCA 21. Y. Kiran Kumar, Asst. Professor, MCA



Data Analytics Research Lab

HOD, IT
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Department of Electronics and Instrumentation Engineering

Bio-Signal Research Laboratory

The Research lab was established with a motive of augmenting research activities in the field of Biomedical Engineering. In this regard, state-of-the-arts facilities are being provided at the laboratory for the benefit of the researchers.

Objectives:

- To educate/motivate the students to be significant contributors in health care, research and development in biomedical instrumentation.
- To motivate faculty to carry out research in the fields of biomedical instrumentation /Signal processing.
- To promote interdisciplinary research.
- To contribute the society by improving the health standards of the public.

Facilities

- **ECG System -Recording and Analysis (Real time)**
- **EEG System -Recording and Analysis (Real time)**
- **EMG System -Recording and Analysis (Real time)**
- **EPR System- EPR Simulator**
- **BP Calibration and Measurement System**
- **Electrical Safety Analyzer**

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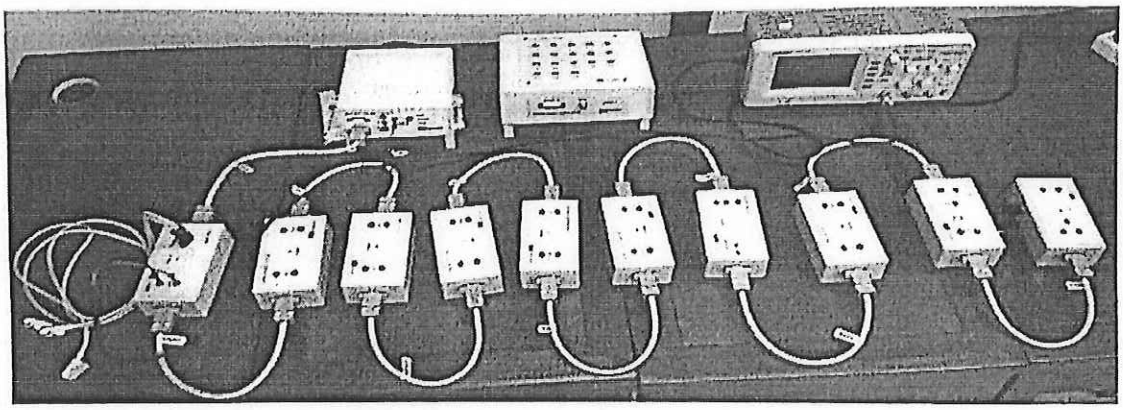
ResearchAreas

The following research areas are focused in this lab:

- Bio-Signal feature extraction.
- De-noising of Bio-Signals with statistical approaches.
- Compression of Bio-Signals.

- **ECG System -Recording and Analysis (Real time)**

ECG Heart Rate Alarm System



Modules:

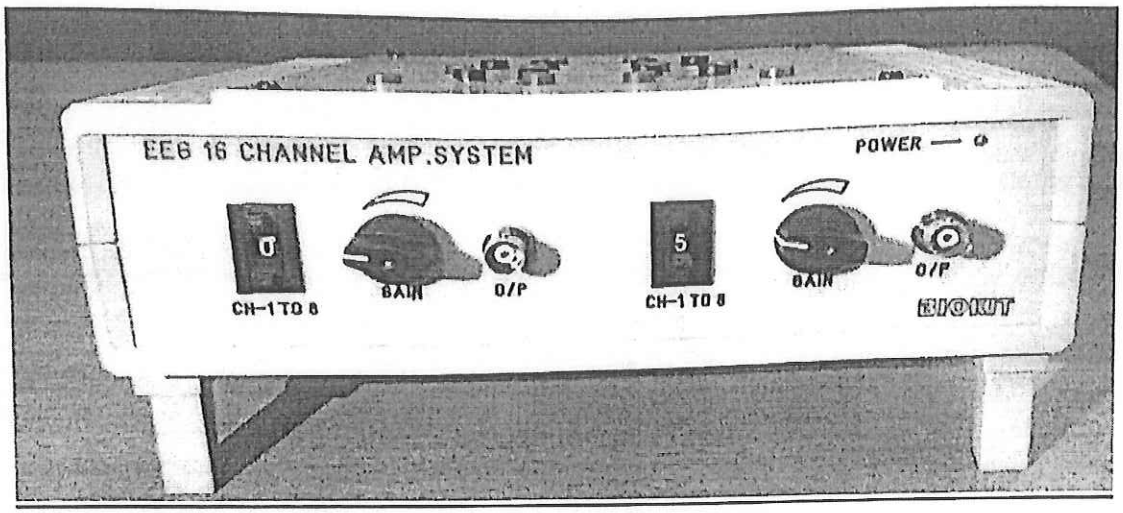
a) ECG Amplifier
b) Low Pass Filter
c) QRS Filter
d) QRS Detector
e) Refra Generator
f) Synch Generator
g) F to V Converter
h) DVM
i) Audio Buzzer
j) High Alarm
k) Low Alarm
l) HRV
m) Battery Power Supply

Arrhythmia Simulator

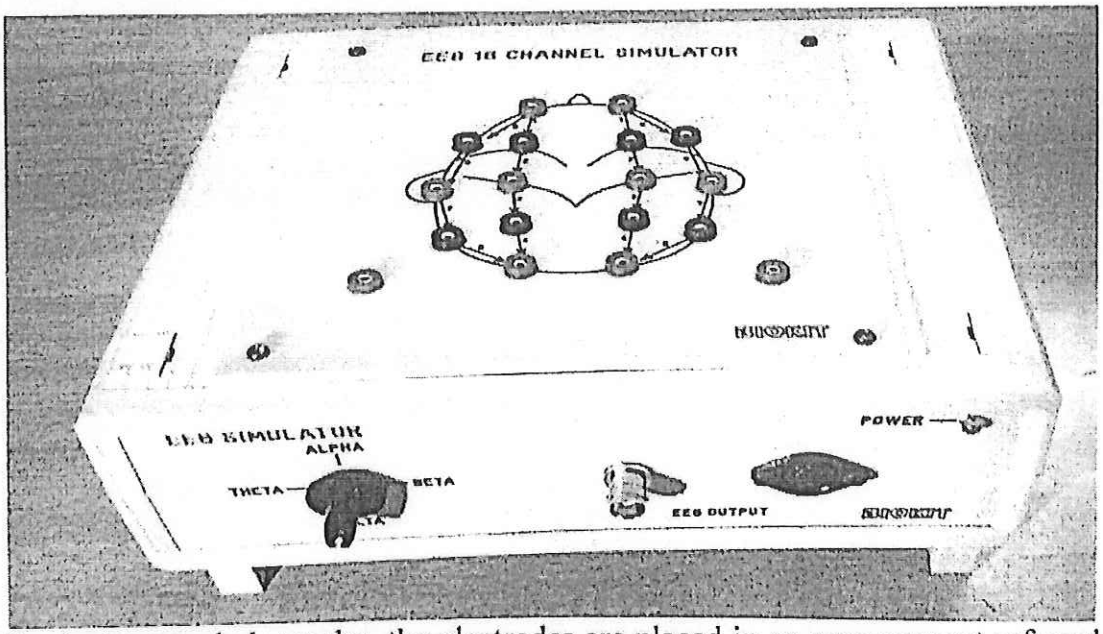
ECG is used on purpose to keep good health or monitor cardiac function of aged person as well as on purpose to diagnose the disease of heart patients. These systems can detect the temporary change of ECG that is very significant to diagnose heart disease such as myocardial ischemia, arrhythmia and cardiac infarction. ECG System monitor and plot the output waveform for each module on the same time axis and understand the relationship between them And also study various Arrhythmias associated with ECG using Arrhythmia Simulator.

➢ **EEG System -Recording and Analysis (Real time)**

16 Channel EEG Amplifier System

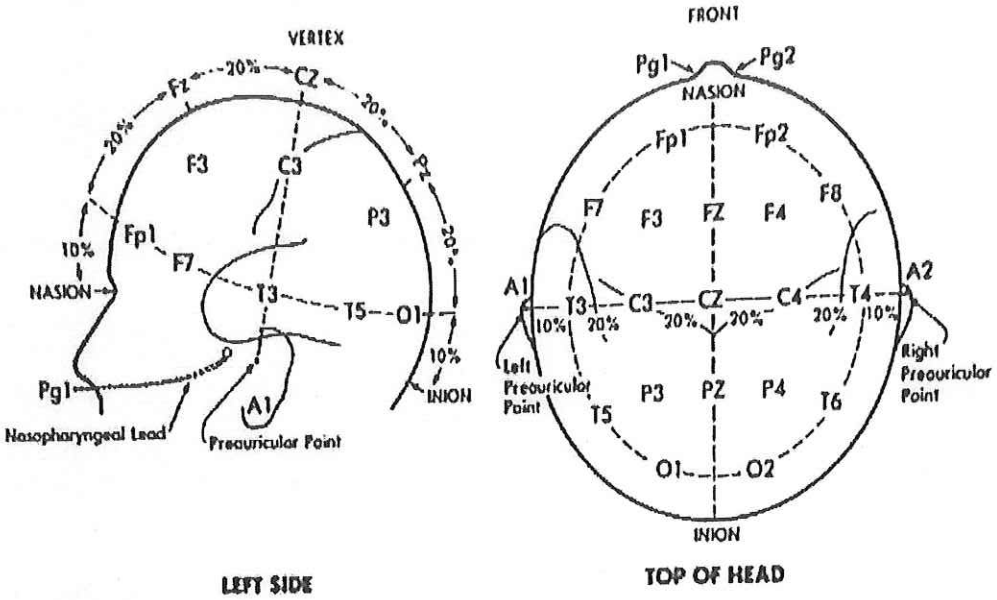


16 Channel EEG Simulator



In electroencephalography, the electrodes are placed in an arrangement referred to as the 10-20 system. This is a placement scheme devised by the International Federation of Societies of Electroencephalography.

- The electrodes are placed along a line drawn on the skull from the root of the nose, the nasion, to the inion ossification (bump on the occipital lobe).
- The first mark is placed 10% of the distance along this line and others are arranged at 20% intervals.

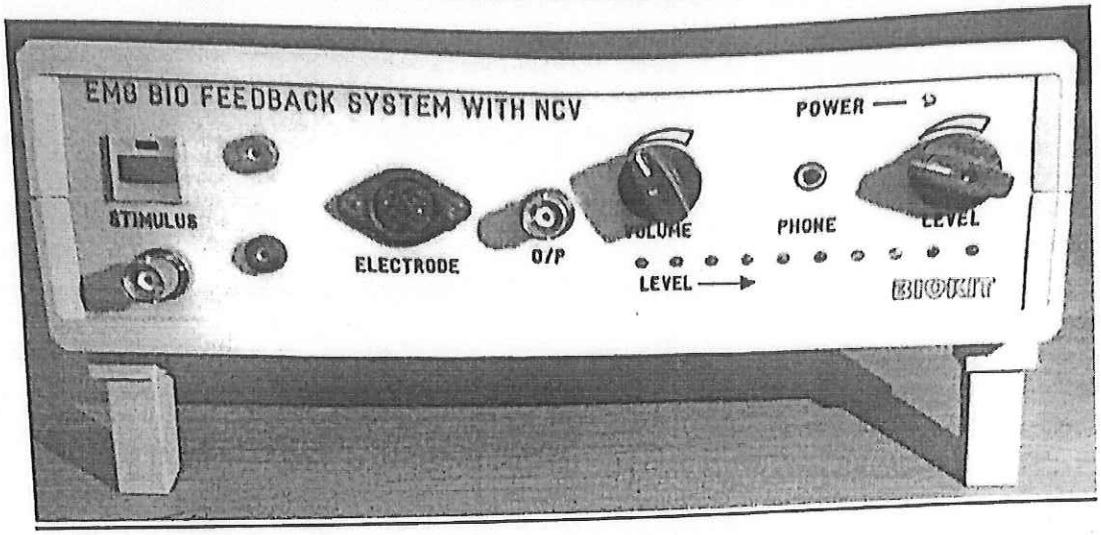


Diagrammatic representation of the International 10-20 system for EEG electrode placement on the scalp.

EEG Signals are used to diagnose Epilepsy, Sleep Disorders, Coma, Encephalopathies and Brain Death. Derivatives of the EEG technique include Evoked Potentials (EP), which involves averaging the EEG activity time-locked to the presentation of a stimulus of some sort (visual, Somatosensory or auditory). Event Related Potentials (ERPs) refer to averaged EEG responses that are time-locked to more complex processing of stimuli; this technique is used in Cognitive Science, Cognitive Psychology and Psychophysiological research.

➢ **EMG System -Recording and Analysis (Real time)**

EMG System for Nerve Conduction Velocity Measurement

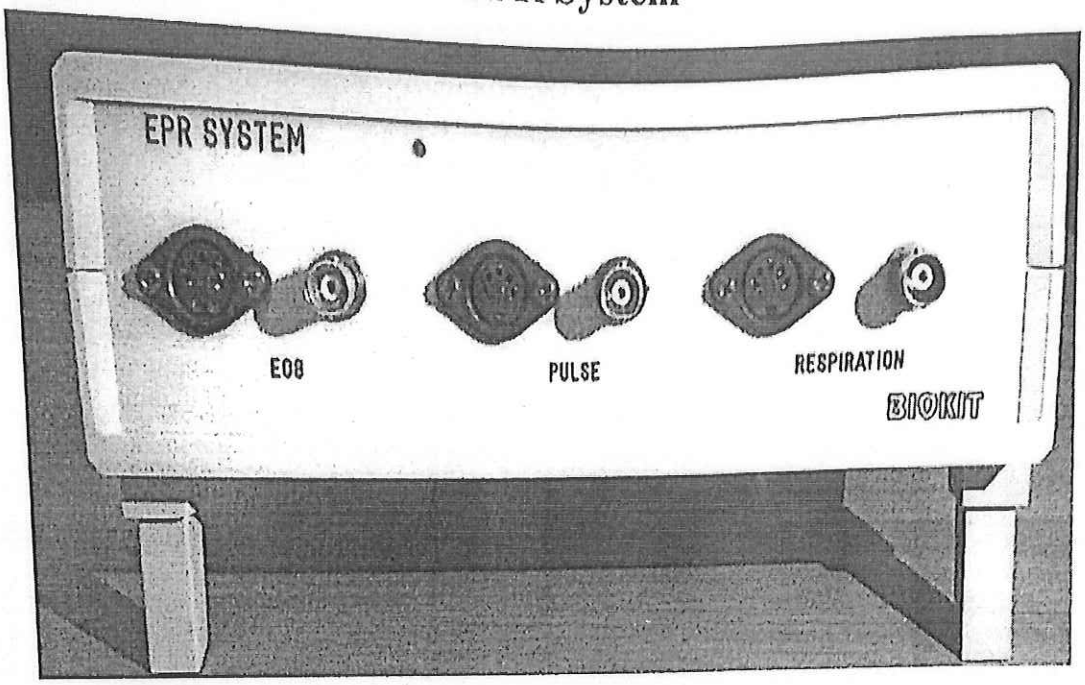


EMG is very useful for studying the neuromuscular function, neuromuscular condition, reflex responses and extent of nerve lesion and diagnosing the muscular diseases like myasthenia gravis which can produce highly damped impulses during contraction of the muscles due to too rapid fatigue of the neuromuscular synapses. To record the action potentials of individual motor units, the needle electrode is inserted into the muscle. Thus EMG indicates the amount of activity of a given muscle or a group of muscle and not an individual nerve fiber. Thus EMG appears, very much like a random noise wave form. The contraction of a muscle produces action potentials. When there is stimulation to a nerve fiber, all the muscle fibers contract simultaneously developing action potentials. In a relaxed muscle, there is no action potential. The nervous system is both the controlling and communications system of the body. This system consists of a large number of excitable connected cells called neurons that communicate with different parts of the body by means of electrical signals, which are rapid and specific.

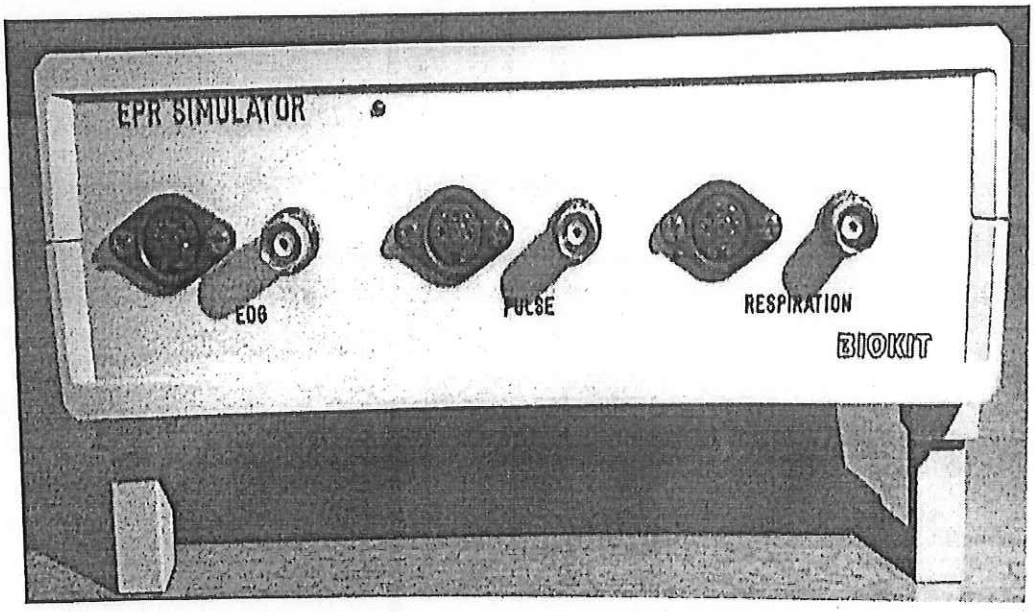
EMG signals can be analyzed to detect medical abnormalities, activation level, to analyze the Biomechanics of Humans.

➢ EPR System-EPR Simulator

EPR System



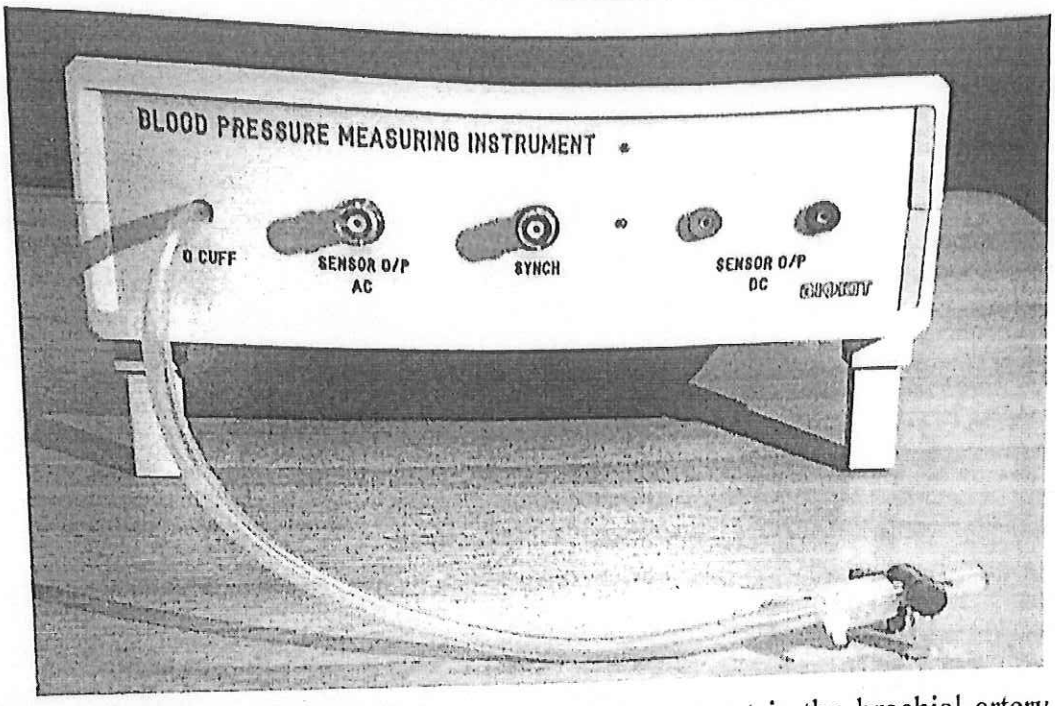
EPR Simulator



The EPR simulator outputs from each parameter can be fed as an input to the EPR Amplifier System, to the respective Amplifier.

➢ **BP Calibration and Measurement System**

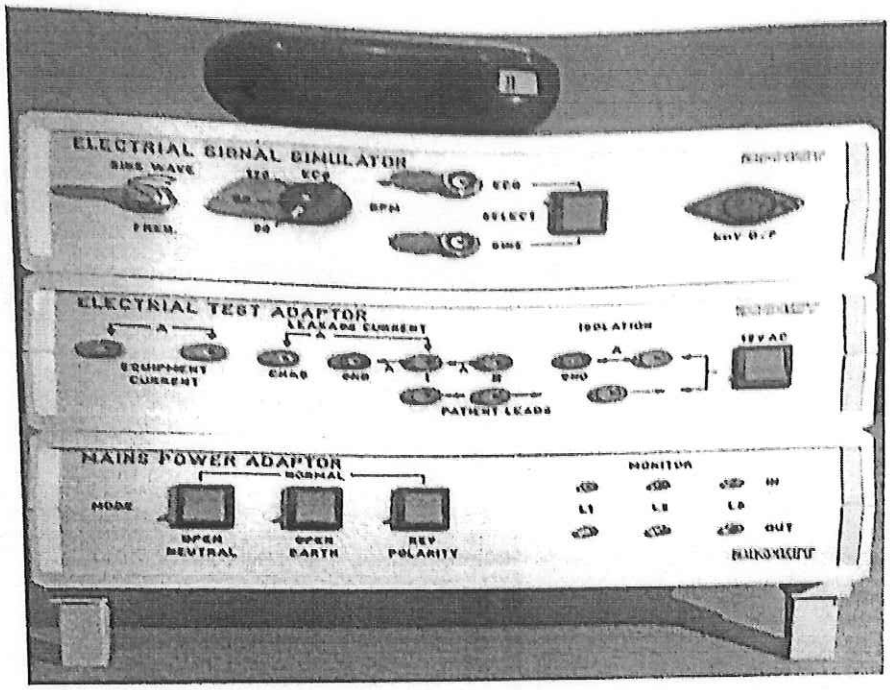
B.P. Measurement System



The standard location for blood pressure measurement is the brachial artery. Monitors that measure pressure at the wrist and fingers have become popular, but it is important to realize that systolic and diastolic pressures vary substantially in different parts of the arterial tree with systolic pressure increasing in more distal arteries, and diastolic pressure decreasing. BP is measured with the patient lying down or sitting. The cuff is placed on the arm in advance (1-2 min. without any inflation, - vascular and neural adaptation). Measurements are carried out with the patient sitting, his arm at an angle of 45o held against the chest. The cuff should be at the level of the heart. Ensure that the cuff is placed onto the upper arm tightly, while completely deflated. The cuff should take up 40% of the upper arm volume.

➢ Electrical Safety Analyzer

Electrical Safety Analyzer consists of 4 Modules:-



An Electrical safety analyzer is a device dedicated to a various range of electrical safety tests in order to check that the device under test is in compliance with electrical safety requirements.

The typical tests an **electrical safety analyzer** does are:

- Ground continuity test
- Insulation test
- High voltage test
- Line leakage test

Lab Incharge

Y. Dileep Kumar

Dr. Y.Dileep Kumar

HOD-EIE

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DEPARTMENT OF CIVIL ENGINEERING

Water and Environment Research Center

Based on the recommendations, the Institution was sanctioned an amount of Rs. 20 lakhs. An amount of Rs. 6.98 lakhs was released during the Academic Year 2017-18 to augment research facilities. Aquachem software and Visual Modflow Software were procured and installed. Double Ring Infiltrometer, Water Level Indicator, Weather Monitoring Station, 5 in 1 Multi Enviro-meter and Ambient Fine Dust Sampler were purchased. Students of UG are undertaking project works and Faculty are doing research by utilizing Software and Equipments.

Name of the Research Lab	:	Water and Environment Center
Name of the Coordinator	:	Dr. M.V.Subba Reddy, Assistant Professor& Head, Dept. of CE, SVEC
Total Number of Faculty Members in the Team	:	10 1. Dr. M. V. Subba Reddy Asst. Professor & Head 2. Dr. D. Sreenivasulu Assoc. Professor 3. Dr. Hemadri Prasad Raju Assoc. Professor 4. Mr. D. Srinivasa Murthy Asst. Professor 5. Mr. B. Hari Krishna Asst. Professor 6. Mr. P. Anil Kumar Asst. Professor 7. Mrs. C. Anjali Asst. Professor 8. Mr. B. Sudhakar Asst. Professor 9. Mr. K. Sandeep Kumar Asst. Professor 10. Dr. M. Kesavulu Assoc. Professor, Dept of GEBH
Aim of the Research Lab	:	To provide a platform for multidisciplinary research and consultancy through a collaboration and linkage between various research units, educational institutions and industries in the area of Water and Environment.

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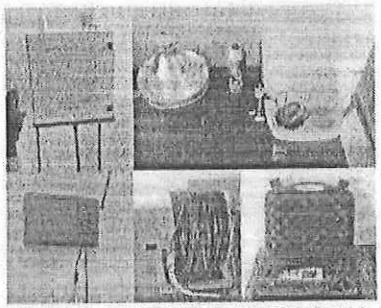
svecp@vidyanikethan.edu

SREE VIDYANIKETHAN
Engineering College
(Autonomous)

Objectives of the Cluster	:	a) To carry out research on quality of water, air and noise b) To offer consultancy services for various industries with regards to treatment of their effluents, solid waste and air pollution. c) To carry out research on reusability studies on industrial wastewater and solid waste. d) To carry out research on renewable energy like biogas generation To offer consultancy services with regards to availability of ground water and its quality.
Facilities Available in the Centre	:	**Softwares:** 1. Aquachem Software 2. 2.Visual Modflow Software **Equipment:** 1. Double Ring Infiltrometer 2. Water Level Indicator 3. Weather Monitoring Station 4. Multi Enviro-meter 5. Ambient Fine Dust Sampler
Action Plan of the Centre	:	• Publish research papers in reputed journals by each member. • Submit 3 research projects for external funding agencies. • Organize a Seminar/Guest Lecture on Water and Environment in every semester. • Plan to include student projects. • Guide minimum of 5 student (UG) projects. • Internal meetings to be conducted regularly to exchange ideas. • Initiate to collaborate with reputed Institutions across the India in both private and Govt. sectors.



EQUIPMENTS IN THE RESEARCH CENTER

PRINCIPAL
Dr. P C KRISHNAMACHARY
PRINCIPAL
SREE VIDYANIKETHAN ENGINEERING COLLEGE
(AUTONOMOUS)
Sree Sainath Nagar, A. RANGAI.
Chittoor (Dist.) - 517 102, A.P., INDIA.

Research Lab Coordinator
Dr. M V SUBBA REDDY

Sree Sainath Nagar, Tirupati,
Andhra Pradesh - 517 102
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DEPARTMENT OF CIVIL ENGINEERING

Geotechnical Engineering Research Lab

Geotechnical Engineering Research Lab (GTERL) will give an impetus to research and consultancy services in the field of geotechnical engineering. GTERL facilitates to conduct research in the major research areas of geotechnical engineering such as expansive soils, reinforced earth, soil dynamics, environmental geotechniques, foundation engineering and field investigation of soils to a reasonable. In addition, the lab will cater the needs of major consultancy and testing services in and around Tirupati. Based on the recommendations of the Geotechnical Engineering Research Group of Department of Civil Engineering, the Institution has sanctioned an amount of Rs. 20 lakhs. The establishment of the lab is in progress.

Name of the Research Lab	:	Geotechnical Engineering Research Lab
Vision	:	To be the research centre of excellence in the field of Geotechnical Engineering in general and Ground Improvement and Foundation Engineering in particular.
Mission	:	• Creating suitable environment for conducting research • Inspiring students to pursue research • Conducting internationally acceptable quality research • Writing proposals for external funding • Aiming at patents • Industrial consultancy and testing services
Objectives		• To cater the needs of geotechnical engineering research in general and Ground Improvement and Foundation Engineering in particular • To facilitate faculty and students to realize research in the field of geotechnical engineering • To motivate faculty and students to contribute to research • To create research atmosphere in the department • To become the centre of excellence in the field of geotechnical engineering for research and consultancy

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Name of the Coordinator	:	Dr. O. Eswara Reddy Professor and BOS Chairman, Dept. of CE, SVEC
Total Number of Faculty Members in the Team	:	06 1. Dr. O. Eswara Reddy Professor and BOS Chairman, Department of Civil Engineering, SVEC. 2. Dr. P. Ramesh Assoc. Professor, Department of Civil Engineering, SVEC. 3. Mrs. P. Indiramma Associate Professor, Department of Civil Engineering, SVEC. 4. Mrs. G. Gnana Prasanna Asst. Professor, Department of Civil Engineering, SVEC. 5. Mr. R. Vinod Kumar Asst. Professor, Department of Civil Engineering, SVEC. 6. Mr. M.Tharun Kumar Asst. Professor , Department of Civil Engineering, SVEC.
Equipment	:	1. Swelling Pressure By Constant Volume Method Apparatus 2. Digital Consolidation Apparatus (3 Gang) 3. Lateral Pressure Pressure Assembly 4. Compression Load Cell with Digital Indicator Unit 5. Compression cum Tension Load Cell 6. Hydraulic Extruder, Hand Operated 7. Sampling Tubes - 38 mm Inner Diameter 8. Sampling Tubes - 50 mm Inner Diameter 9. LVDT - 100 mm 10. LVDT - 50 mm 11. LVDT - 25 mm 12. Remotely Hand Operated Hydraulic Jack with Pumping Unit - 10 ton Capacity 13. Remotely Hand Operated Hydraulic Jack with Pumping Unit - 200 ton Capacity 14. DT 85G Series 3 - 8 channel Geotechnical Data Logger 15. Vaccum Pump/De Airing System 16. Portable Swelling Pressure and Heave Evaluating Apparatus (Digital) 17. Desiccator 18. Air Compressor - 10 kg/sq.m. 19. Standard Penetration Test Apparatus Miscellaneous Equipment

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Action Plan	:	• Publishing research papers in reputed journals by each member. • Submitting a minimum of two research projects per year for external funding agencies. • Organizing a minimum of one Seminar/Conference/Workshop per year in the field of geotechnical engineering. • Organizing a minimum of two Expert Lectures/Guest Lectures per year in the field of geotechnical engineering. • Plan to include student projects. • Supervising a minimum of 6 UG Projects per year. • Conducting internal meetings regularly to exchange ideas. • Attracting students to the field of Geotechnical Engineering. • Collaborating with reputed Institutions across India in both private and government sectors. • Visiting reputed geotechnical companies for technology updates and engineering challenges.

PRINCIPAL
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Research Lab Coordinator
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CENTRAL LIBRARY

The Central library has been established with state-of-the-art infrastructure to the International Standards, spread over Ground + Two floors with built-in area of 4500 Sq. M. It is provided with central air-conditioning system, fire alarm, CCTV, and RFID book security system. Reference and textbooks of national and international authors, International and national Journals & Non-book materials are available to cater to various fields of Basic Sciences, Engineering and Technology, Humanities and Social Sciences. The library has a collection of 1,27,465 volumes of books, 18,720 titles, 1258 back volumes, 2988 CDs and DVDs. The Central Library subscribes to National & International Print Journals and to more than 2929 e-Journals. The subscribed e-resources include IEEE with POP, ASCE and ASME Journals. Within Central Library, a Digital library is also provided for classroom teaching through NPTEL video courses in the different fields of education.

FLOOR MAP:

Ground Floor – Circulation Section, Office of the Librarian, Journals Section, Individual Reading Cabins, Photocopier Section, Stack area – I and Library OPAC.

1st Floor – Reference Section, Reading Hall, Discussion rooms and Stack area – II

2nd Floor –Digital library, Reading Hall, Discussion Room and Stack Area III.

Carpet area of Library	:	4500 Sq. M
Reading space	:	2000 Sq. M
Seating Capacity	:	600
No. of Users (Transactions)	:	350
No. of Users (Visiting)	:	450

TIMINGS:

Working Days	:	08.00 AM to 08.00 PM
Holidays	:	09.00 AM to 05.00 PM

E-RESOURCES ACCESS:

IEEE – ASPP	:	All Society Periodicals Package – 169
IEEE- POP	:	Proceedings Order Plan – 2695
ASCE	:	American Society for Civil Engineering – 36
ASME	:	American Society for Mechanical Engineering – 29
NPTEL	:	National Programme on Technology Enhanced Learning

INSTITUTIONAL MEMBERSHIPS:

CSI – Computer Society of India

IETE – Institution of Electronics & Telecommunication Engineers

IE – Institution of Engineers

ISTE – Indian Society for Technical Education

ISOI – Instrument Society of India

DELNET – Developing Library Network

American Council Library

British Council Library