



Jayawant Shikshan Prasarak Mandal

**Bhivarabai Sawant Institute of Technology and Research**  
**Wagholi, Pune - 412207**



Accredited by National Assessment and Accreditation Council (NAAC), Bengaluru  
Approved by AICTE & DTE | Affiliated to Savitribai Phule Pune University  
Gat No 719 (1/2), Pune-Nagar Highway, Wagholi, Pune - 412207

# Department of Electronics and Telecommunication Engineering

## *Information Booklet*

College DTE Code: **EN6311**

E&TC Branch Code: **631137210 (UG)**

E&TC Branch Code: **631134110 (PG)**

**PG-Specialization in VLSI & Embedded Systems**

*Intake*

*UG-60*

*PG-24*

### *Contact Details*

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## Why E&TC

"We transform E&TC students into competent technocrats and responsible citizens through state-of-art Technology"



## Honourable Founder Secretary's Message



**Dr. (Prof.) T. J. Sawant**

**Founder Secretary, JSPM Group of Institutes President, TSSM & SBERCT Group of Institutes MLA- Government of Maharashtra**

Jayawant Shikshan Prasarak Mandal (JSPM) was established in 1998 with the objective of creating centres of excellence for education in the field of Engineering, Medical, Pharmacy, Management and Computers. Our objective behind starting JSPM was to make higher education available to all who are desirous of achieving it. I also visualized that a social transformation can be brought about through the medium of dynamic education. JSPM is thus an institution of higher education with social commitment.

With India & Indians, emerging as leaders across various professional sectors, it becomes an even greater challenge for the education sector to nurture and groom such abundant talent, which is all set to take industry's quest for excellence to dazzling new heights. It is in this same spirit of excellence, that we at JSPM have laid each brick. We have created a learning culture, a friendly environment that facilitates complete development of our students. Our three pronged focus on knowledge, skill and attitude is aimed at meeting the needs of our customers i.e. the industry.

To achieve this, we have handpicked the best faculty from diverse fields & expertise. We have invested in state of the art facilities, infrastructure and skilled human resources to supplement the culture and environment of JSPM's good governance. Moreover, it's our pledge to change in tandem with the changing requirements of the industry and mould, develop and nurture talent that will make the nation proud.

I hope you would be one of those fortunate students who would get an opportunity to be a part of our Institutes to pursue quality education and shape your dream carrier. I am certain that your life at our campus will be academically fruitful and otherwise pleasant. My best wishes to all of you.

## Director's Message



**Hon. Rushiraj Sawant**  
Director JSPM & TSSM Group of Institutes

JSPM and TSSM Group of Institutes which has grown into a centre of educational excellence in Maharashtra, offering education from KG to PhD. Our commitment is to impart quality education to the member students and also shape their personality with moral and ethical values. The mission of JSPM and TSSM Group of Institutes is to provide, nurture and maintain an environment of high academic excellence, research and entrepreneurship for all aspiring students, which will prepare them to face global challenges maintaining high ethical and moral standards. I welcome the aspiring students to be part of our Institutes to peruse technical education and shape their career. Wish you all the best.

## Campus Director's Message



**Dr. Sachin Admane**  
Campus Director Wagholi Campus

JSPM and TSSM Group is committed to achieve excellence in technical, management, pharmacy education & research and assesses the success and leadership of its programs using the highest standards of quality, innovation, and visibility. Our goal is to be the most preferred choice of students, faculty & industries and to be in the top in every discipline of engineering, management, and pharmacy. Our aim is to achieve global leadership in human development & excellence in education. Our objectives of imparting professional education, combined with fostering innovative thinking, application of knowledge, inculcating professional ethics and consciousness to social responsibilities, are being met at JSPM and TSSM Group in an integrated form.



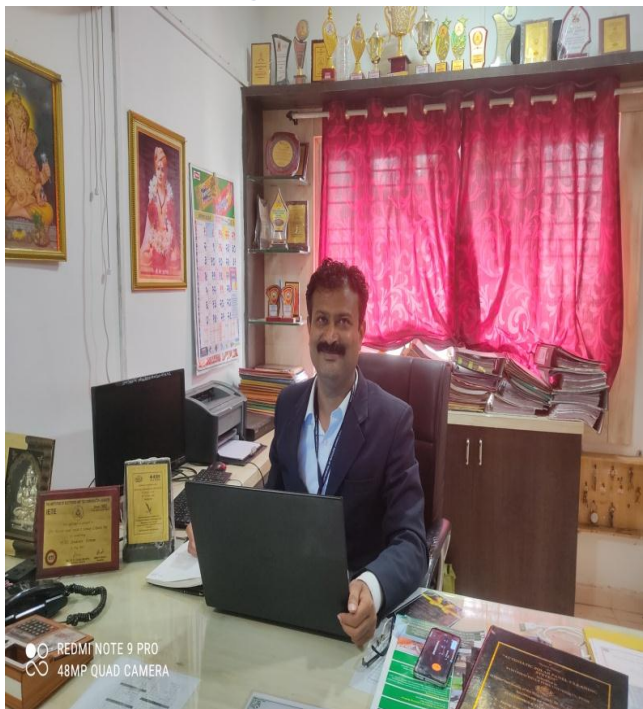
## Principal's Message



**Dr. T. K. Nagaraj**  
Principal, BSIOTR

Jayawant Shikshan Prasarak Mandal's Bhivarabai Sawant Institute of Technology & Research (BSIOTR) is an institution where students are groomed into technocrats having the skill sets compatible to the industries/employers and the society at large. The academic infrastructure of the institute is having state of the art facilities like smart boards, virtual class rooms and internet and Wi-Fi enabled class rooms to facilitate the teacher to implement the well-crafted curriculum in an effective manner to achieve the goal of outcome based education. Different teaching methodologies and ICT tools are used in teaching learning process to achieve outcome based education. We believe in strong and cordial interaction between teachers and students which is an essential parameter to help the students to achieve greatness in academics, Extracurricular and co-curricular achievements.

## HOD's Message



**Dr. Yogesh S Angal**  
HOD (E&TC)

Department of Electronics and Telecommunication Engineering is one of the major Departments of JSPM's Bhivarabai Sawant Institute of technology and Research established in 2009 offering Undergraduate and Postgraduate Programs (Specialisation in VLSI and Embedded Systems). With the change in engineering education scenario, we impart education with an appropriate skill to make our graduate competent for Industry, higher education, research, and entrepreneurship. We strive to satisfy demand raised by Industry by making students to face future generation technology and applications in consortium with our stakeholders like Industry and research institute of repute.

Faculty members in the department modulate teaching based on their experience and strive continuously to become effective facilitator. In the philosophy of Outcome Based Education (OBE), curricular, co-curricular and extra-curricular activities are organized.



## ABOUT INSTITUTE

Jayawant Shikshan Prasarak Mandal is a Charitable Educational Trust established in 1998, is a pioneer in imparting quality technical education in the field of Engineering, Pharmacy, Management, Computer Applications etc. It has established five campuses in Pune at Tathawade, Hadapsar, Wagholi, Bavadhan & Narhe.

Bhivarabai Sawant Institute of Technology & Research (BSIOTR) is one among the competent engineering colleges, established in 2009 and is situated on a picturesque landscape at Wagholi on Nagar –Pune Road. The institute offers Under Graduate courses in Electronics & Telecommunication Engineering, Computer Engineering, Information Technology, Mechanical Engineering, and Electrical Engineering. The core strength of the institute is highly qualified, dedicated & experienced faculty, well equipped laboratories and state of the art infrastructure. Faculty members in institute strive hard to impart quality technical knowledge so as to produce the technocrats of futuristic vision. The Institute promotes Research activities through “Research Club” which provide a platform to enhance the research attitude. The students who aspire to become engineers are groomed with appropriate technology expected in the industries. Technical forums, student associations and study groups are the avenues in the institute to enhance the technical & soft skills. The students are oriented and counselled through a unique concept of Guardian Faculty Member. A teacher is GFM for a group of students (not more than 20) who is responsible to guide the students through counselling to achieve academic excellence.



### Vision of Institute

"Satisfy the aspirations of youth force, who want to lead nation towards prosperity through techno-economic development."

### Mission of Institute

"To provide, nurture and maintain an environment of high academic excellence, research and entrepreneurship for all aspiring students, which will prepare them to face global challenges maintaining high ethical and moral standards."

## ABOUT DEPARTMENT

Department of Electronics and Telecommunication Engineering were established in 2009. Department has completed 12 years successfully and has grown tremendously in Teaching-Learning academic and curricular achievements. The Department offers a regular four-year B.E program in “E&TC Engineering” having an intake of 60 and Post Graduate program M.E. (Electronics & Telecommunications Engineering – VLSI and Embedded Systems) having an intake of 24 students.

### Best Practices of the Department

#### Use of different teaching methodologies:

Teachers use different teaching methodologies namely Role Play, Participative Learning, cooperative learning, Project Based learning etc. to impart quality technical education so that competency level of the students is as per the industry expectations.

#### Use of Modern Teaching Tools:

Class rooms in department are fitted with ICT enabled tools like LCD and Intelligent Interactive Board (Smart Board) which are used by all teachers to make teaching-learning more effective. MOODLE is used to provide the students required study material including video lectures and also for assessment purpose.

#### Conduction of Technical Training Programs/workshops/seminar:

Department has been conducting various co-curricular and extracurricular activities which include various technical training programs, Entrepreneurship development programs, Industry expert lectures, Alumni interactions for overall development of students.

#### Outcome based Education:

Department is having state of arts laboratories with high-end equipment's in the field of Communication Engineering, Automation, VLSI and Embedded Systems. Students of E&TC Department are developed to get jobs in core industries as well as in IT industries. Some Students from E&TC Department are taking higher education (Preferably MS Program) at USA, UK, Germany, Australia, and Canada.

#### Research Oriented Activities:

Department has received grants from AICTE, DST, BCUD SPPU etc. for conduction of various training programs and research activities. Students are part of such activities which gives them exposure to latest technological innovations.

**“Creativity leads to thinking, Thinking provides knowledge, Knowledge makes you GREAT.”**

## Vision statement

- To emerge as a department of repute compatible to the changing needs of society at large.

## Mission statements

M1: To cultivate creativity and innovativeness in teaching learning process for developing competent professionals.

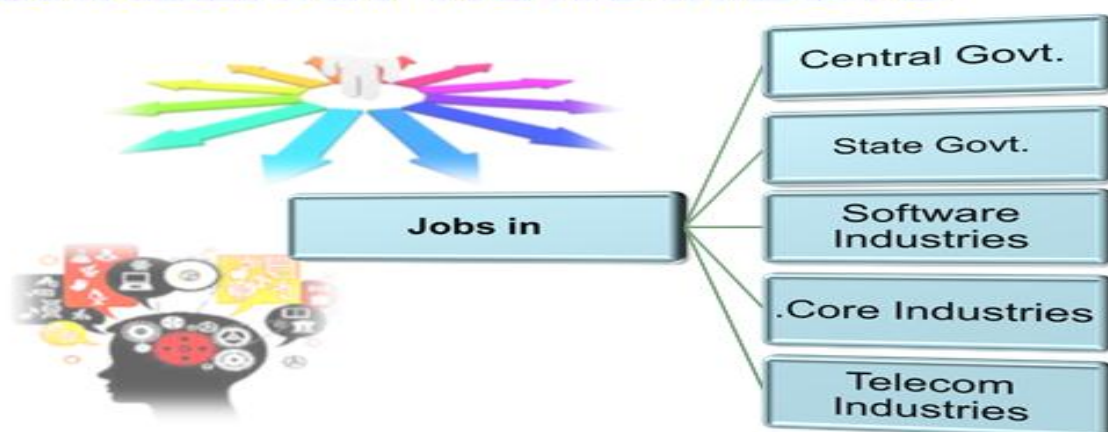
M2: To equip graduating students with skill sets to meet current and future demands of industry, academia and society through well designed curriculum.

## Reasons to study Electronics and Telecommunication Engineering

### Career Opportunities of Electronics and Telecommunications Engineers

- E&TC Engineering is one of the largest and most sophisticated branches of engineering.
- It has made us available the equipment's like Television, Radio, computers, telephones etc.
- E&TC has a major role in improving productivity in industries like oil, energy, agriculture and so many other important sectors of economy.
- E&TC engineer works in groups to design, fabricate, produce, test and supervise the manufacturing of complex products and systems i.e. electronic equipment and components.
- E&TC Engineer works for a number of industries including hospitals, computer industries, electronic data processing systems for communication and in defence etc.
- They work with microprocessors, fiber-optics, telecommunication, television, radios etc.
- E&TC Engineering is a rapidly growing sector where there is excellent job opportunity for the skilled professionals.
- E&TC Students have great opportunities in Software/IT/Computer Industries.

## CAREER OPTIONS in E&TC





## Carrier Opportunities for E&TC Graduates

### Core Industries

Havells India Ltd	Bajaj Electronics	Midas Communication	Flex India Pvt Ltd.
Jabil Circuits	Bharat Electronics Ltd.	Honeywell Automation	Amara Raja Batteries
Centum Electronics	Philips Electronics India	LG Electronics	Samsung Electronics
Vodafone	National Semiconductors	Exide Batteries Limited	Bosch
Compton Greaves	ABB India	Sterlite Technologies	Surya Roshni Ltd
LG Electronics	John deere India Pvt. Ltd	Yazaki India Pvt. Ltd.	Sigma Electric Corp.
CISCO	Nokia	Airtel	Jio-Telecomm
Videocon	Reliance Telecomm.	Panasonic	Intel

### IT Industries

Google	Yahoo	Hewlett-Packard	Wavelet
Toshiba Corporation	Dell	NEC Corporation	Canon
Apple	ASUSTEK Computer	Acer	Lenovo Group Limited
SAIC	Sun Microsystem	TCS	Infosys
Wipro	Tech Mahindra	Zensor	Capgemini
IBM	Unique Circle Group	Minda-industries-limited	Cataleya

### Public Sector Units (PSU's)

Bharat Sanchar Nigam Ltd. (BSNL)	Bharat Heavy Electricals Limited (BHEL)	Gas Authority of India Limited (Gail)	Indian Oil Corporation Limited (IOCL)
Central Electronics Limited (CEL)	Oil & Natural Gas Corp.(ONGC)	Bharat Electronics Limited (BEL)	National Research Development Corp.
Rail India Technical & Economic Service (RITES)	National Thermal Power Corporation Limited (NTPC)	National Fertilizers Limited (NFL)	Hindustan Petroleum Pvt. Ltd.(HPCL)

### Govt. Sector

Indian Engineering Services (IES)	Public Word Department (PWD)	Defence Research & Development Organization (DRDO)	Bharat Petroleum Corporation(BPCL)
Indian Airlines	Civil Aviation Department (CAD)	Indian Space Research Organization(ISRO)	Power grid india limited
Steel Authority India Ltd.(SAIL)	Hindustan Aeronautics Ltd (HAL)	Gail (India) Ltd.	Bhabha Atomic Research Centre (BARC)

*And many more....*

## **Opportunities through Competitive Examinations**

### **MPSC Engineering Services Examination:**

1. Deputy Engineer
2. Assistant Engineer

### **State Service Examination**

1. Deputy Collector
2. Deputy Superintendent of Police
3. Deputy CEO
4. Chief Officer- Municipal Council
5. Executive Engineers
6. Tehsildar
7. Block Development Officer (BDO)

### **Indian Engineering Service Examination**

1. Border Roads Engineering Service (Border Roads Organization)
2. Central Engineering Service (Ministry of Road Transport & Highways)
3. Central Power Engineering Service (Central Electricity Authority)
4. Central Water Engineering Service (Central Water Commission)
5. Indian Defence Service of Engineers (Military Engineer Services)
6. Indian Inspection Service (Directorate General of Supply and Disposals)
7. Indian Naval Armament Service (Directorate of Naval Armament)
8. Indian Naval Stores Service (Indian Navy)
9. Indian Ordnance Factories Service (IOFS)
10. Indian Railway Service of Electronics Engineers
11. Indian Railway Stores Service
12. Indian Supply Service (Directorate General of Supply and Disposals)
13. Department of Telecommunication of India.

### **Civil Service Examination:**

1. Indian Administrative Service (IAS)
2. Indian Police Service (IPS)
3. Indian Forest Services (IFS)

### Group A Service:

1. Indian Foreign Service
2. Indian P & T Accounts & Finance Service
3. Indian Audit and Accounts Service
4. Indian Revenue Service (Customs and Central Excise)
5. Indian Defence Accounts Service
6. Indian Revenue Service (Income Tax)
7. Indian Ordnance Factories
8. Indian Postal Service
9. Indian Civil Accounts Service
10. Indian Railway Traffic Service
11. Indian Railway Accounts Service
12. Indian Railway Personnel Service
13. Post of Assistant Security
14. Indian Defence Estates Service
15. Indian Information Service (Junior Grade)
16. Indian Trade Service, Group 'A' (Gr. III)
17. Indian Corporate Law Service

### Group – B Services:

18. Armed Forces Headquarters Civil Service (Section Officer's Grade)
19. Delhi, Andaman & Nicobar Islands, Lakshadweep, Daman & Diu and Dadra & Nagar Haveli Civil Service
20. Delhi, Andaman & Nicobar Islands, Lakshadweep, Daman & Diu and Dadra & Nagar Haveli Police Service
21. Pondicherry Civil Service
22. Pondicherry Police Service



**SIEMENS**

*Ingenuity for life*



**LARSEN & TOUBRO**



**accenture**





## Reasons to Study in Electronics and Telecommunication (E&TC)

### Engineering in BSIOTR

#### 1. Salient Features of E&TC Department

- Strong Academics, Well Qualified and Experienced faculty
- State of Art of Laboratory Facility
- ICT enabled Class Room, MOODLE
- Active Students Forum ETSA and ISF forum
- Students Ranked in SPPU merit list
- Many Students taking Higher Education and doing JOBS in abroad in various countries like USA, UK, Australia, Germany, Sweden, Switzerland(Europe)
- Innovative Projects and Patents published by students and faculty
- Recognition to E&TC Department at University and Global level due to Students and faculty achievements
- Placements of students at reputed Organization

#### 2. Advantages of Location of the Institute:

Institute is located near following MIDC Industrial Zones where core and IT industries are located.

- Ranjangaon & Chakan : Core& Embedded Industrial Zone
- Magarpatta & Hadapsar : Electronics&IT Processing Zone
- Viman nagar & Kalyani Nagar : Electronics Export Processing Zone
- Pirangut MIDC : Core E&TC and other industries
- Kharadi : India's fourth operational World Trade Centre, Pune
- Bhosari,Pune :Core E&TC and Automation Industry

Institute and E&TC Engineering Department has MOUs with industries from these areas. There is strong interaction with these industries. This helps the department to get following advantages for the benefit of the students.

- Industry sponsored projects/ Internships for Students
- Expert Lectures/Resource Persons from Industry
- Conduction of Seminar/Workshops/Training Programs
- Summer Training Programs.
- Industrial visits and other activities.

#### 3. Training and Placement Activities.

The institute has been conducting training programs from First to final year through our training partners having industrial experience. For E&TC Engineering students the department's conducts application based training programs namely

- ✓ Software Testing
- ✓ JAVA Programming
- ✓ Recent Trends in VLSI Technology
- ✓ Recent Trends in PLC and Industrial Automation
- ✓ Digital Skill Developments for Professionals
- ✓ Internet of things and Automation

- ✓ Antenna Design
- ✓ PCB Design Workshop
- ✓ Soft Skill Training

These training programs help the students to get recruitment in core industries.

#### 4. Multiple Campus Drives and Multiple Job Offers for Every student of BSIOTR

JSPM has seven Engineering Colleges at its different campuses located at Wagholi, Hadapsar, Narhe, Bhavdhan and Tathawade. These institutes have dedicated Training and Placement Cell and Placement officer. Campus drives by reputed core and IT companies are organized at these campuses. Students of all JSPM Engineering Colleges are permitted attend these campus drives. That mean pool campus drives are organized for students. Because of combined placement activities by all Engineering Colleges of the JSPM, every student gets 20-25 multiple opportunities of campus drives. Therefore, chances of getting 3-4 multiple job offers each students are ensured.

#### 5. IT industry Compatible Training

Training and Placement Cell of the institute offers Soft Skill and Technical Skill training programs relevant to IT industries from first year to final year of E&TC Engineering students. This helps the students to pursue their career in IT industries also.

#### 6. Project Based Learning

Department gives importance on Project Based Learning through industry sponsored projects. Students are encouraged to Participate in various project Competitions at national/state/University level. Moreover, Students are taking part in prestigious AISHKAR project Competition initiated by Governor of Maharashtra State. This helps students to get larger exposure to industrial practices and processes which is very much useful to them in pursuing career in core industries.

#### 7. Advantage of Pursuing Education in Pune:

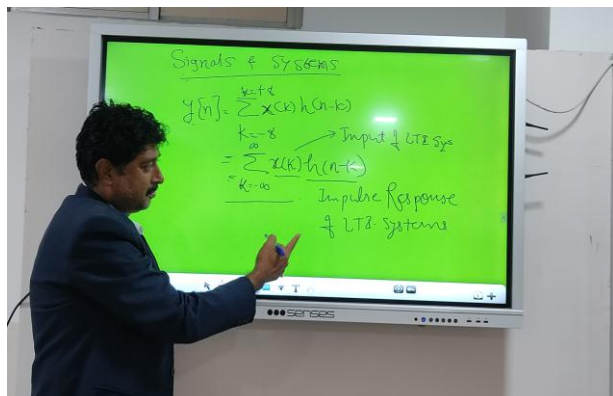
Students get opportunities to work with students in very much competitive environment through competitions organized by department and it is a best opportunity to get acquainted with Pune city where most of the students get placed in core as well as IT industries.

### Course Structure (FE to BE)

Sr No	Name of Class With Pattern	Pattern/ Duration	No of Subjects	Credits
1	FE- Common- 2019 Pattern	SEM- I and SEM- II	10	25
2	SE E&TC- 2019 pattern	SEM- III and SEM- IV	9	25
3	TE E&TC- 2019 pattern	SEM- V and SEM- VI	9	25
4	BE E&TC- 2015 pattern	SEM- VII and SEM- VIII	9	25

Various skill development subjects are also included in curriculum of E&TC Course

## Information Communication Technology (ICT) enabled teaching facilities



### Smart Board:

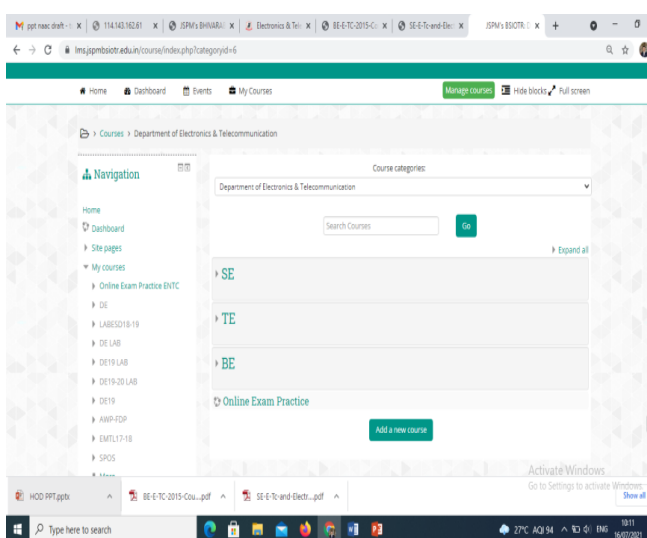
This Board is ICT enabled with Wi-Fi Facility which makes teaching and learning more effective. This facility can be used to store the teaching material and reproduce at the time of teaching. We can see online study material. It is having touch screen which makes teaching effective.



### Video Conferencing facility

This facility is used to telecast interactive lectures/ webinars delivered from central studio by industrial experts and professionals and also to view NPTEL/ MOOC lectures.

At a time all students of all institutes of JSPM's can take benefit of these lectures/ Webinars.



### MOODLE:

It is an online learning platform used for teaching learning process. Every faculty member upload all teaching material as Notes, PPTs, MCQs, Assignments, Videos etc. on MOODLE and students can use these study material. Online tests/ Quiz Assignments are conducted using MOODLE. It is a Module Object Oriented Dynamic Learning Environment.



## Laboratories

Total Laboratories: 11

Major Laboratories: 9



### **VLSI Lab:**

VLSI Laboratory is used by students under the course of VLSI Design and Technology, Object oriented programming, Information Theory, Coding & Communication Networks, Database management system and Computer networks. This lab provides platform to enhance knowledge in VLSI Technology and relevant domain.



### **Antenna Lab:**

Wave Theory Antenna Lab is used under the course of Broadband Communication Systems and Radiation and Microwave Techniques. This lab has Major equipments namely

- AM/TECH make Antenna Training Lab 5 MHz – 2 GHz with 30 antennas
- Satellite Communication Trainer [SATCOM 100],
- One channel Vector Network Analyzer Model Site Master ss331D. Make Anritsu.
- OSLNF50 A-8 Coaxial Calibration kit type N(F) SN.1725610 Product



### **Embedded Lab:**

Embedded laboratory is under the course Advanced Processors, Microcontrollers, Embedded and RTOS. This lab is used to study interfacing of peripherals such as

- Memories
- Keyboard
- Sensors
- Motors
- Displays



### Signal Processing Lab:

The laboratory has both software tools and DSP processors- both fixed point and floating point arithmetic. Students use MATLAB/ Scilab/ Octave to simulate their experiments on Signal Processing. Programming of the DSP chip is done in C (and some assembly) language using the Code Composer Studio integrated development environment. The knowledge acquired is used in audio and speech processing,



### Network and Power Lab:

Network and Power laboratory (NPL) comes under the course “Electrical Circuits & Machines and Power Electronics”. This lab is used to impart the knowledge on the concepts of power semiconductor devices and power electronics circuits. This lab also provides the platform to perform and test mini projects done by students. This lab consists of the components like

- Oscilloscopes (CRO & DSO),
- Single phase power supply,
- Signal generators,
- Soldering guns,
- Power electronics Kits and Network theory kits.



### Lab as a Museum:

In this lab an innovative projects done by students are displayed. This lab acts as a stimulant to students to pursue their studies and gain knowledge. This lab was highly appreciated by NAAC PEER team members. Few of the innovative projects and components displayed in this lab are:

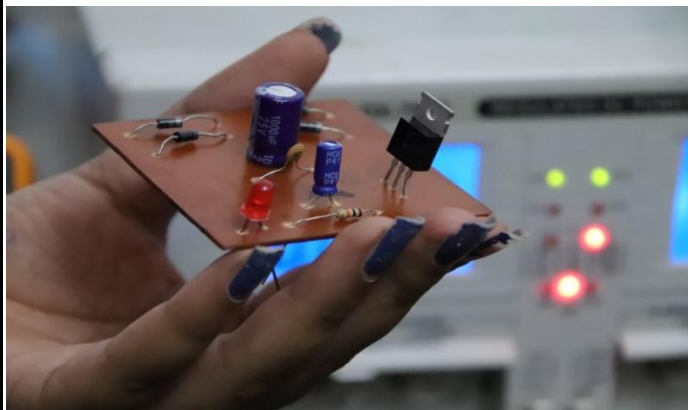
1. Developments of mobile trends.
2. Developments in audio and video engineering
3. Electronics design components.
4. Trends in antenna design.
5. Smart city model.





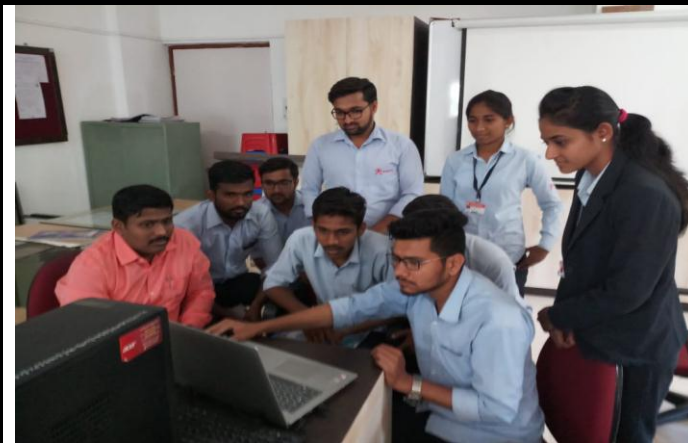
### Communication Lab:

Communication Lab comes under the courses Analog Communication, Digital Communication and mobile communication. The knowledge gained through this laboratory is applicable in mobile communication, wired and wireless communication area. Students have large carrier opportunities in this domain.



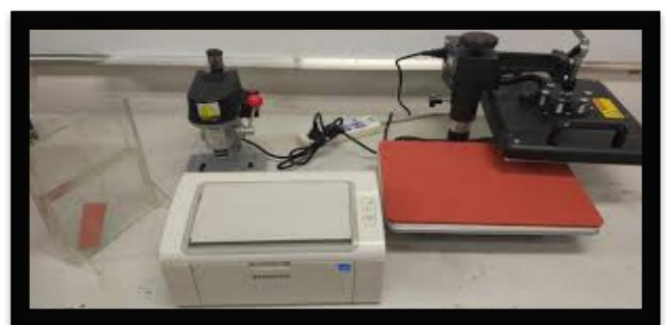
### Project Lab:

Project laboratory is used for Electronic design and developing Printed Circuit Boards opportunity to use PCB design software and to fabricate their own designed PCBs for desired project objective. This lab is also having experimental trainer kits of Television and audio video systems like CD/DVD player, Set-top box etc. for student's projects. Students get



### Research Lab:









Research lab is used to motivate the students for creating their innovative projects. This lab is utilized by UG as well as PG students. This research lab includes projects on LABVIEW, SCILAB, OCTAVE, Python software's. Various training activities such as Latex Training, PLC Training, Antenna design workshops, IOT based Automation, training on various recent trends.



PCB Manufacturing Equipments



## Application Software's

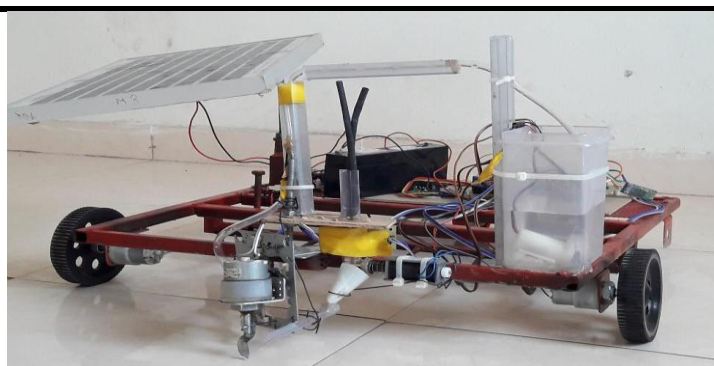
	<ul style="list-style-type: none"> <li>➤ Industrial and Educational Research applications.</li> <li>➤ Used for signal processing</li> <li>➤ To develop Transforms, require for image processing</li> <li>➤ For image comparison</li> </ul>
	<ul style="list-style-type: none"> <li>➤ VLSI Design software</li> <li>➤ Programming languages used are VHDL and Verilog</li> <li>➤ Micro wind used for the development of transistors</li> </ul>
	<ul style="list-style-type: none"> <li>➤ Embedded System development and programming</li> <li>➤ Simulation of various microcontrollers</li> <li>➤ Project developments in Electronics</li> <li>➤ Real world peripheral interfacing</li> </ul>
	<ul style="list-style-type: none"> <li>➤ Digital signal processing projects</li> <li>➤ Signal processing algorithms</li> <li>➤ Programming DSPs for various transforms</li> <li>➤ Convolutions and FFTS</li> </ul>
	<ul style="list-style-type: none"> <li>➤ PCB layout design</li> <li>➤ Printed circuit board schematic design</li> </ul>
	<ul style="list-style-type: none"> <li>➤ Electronic Design simulation software</li> <li>➤ Simulation environment for power conversion and motor control.</li> <li>➤ PSIM's friendly user interface means easy implementation</li> </ul>
	<ul style="list-style-type: none"> <li>➤ LabVIEW offers a graphical programming approach.</li> <li>➤ It helps to visualize every aspect of application.</li> <li>➤ It includes hardware configuration, measurement data, and debugging.</li> </ul>
	<ul style="list-style-type: none"> <li>➤ Used for control systems, industrial control components, information software, motor control devices,</li> <li>➤ Control sensing devices, network technology, safety technology, and industrial security.</li> </ul>

## ❖ Learning Resources in Department:



- No of Text books: 3203
- No. of Reference books: 493
- No. of e-journals like ASME, Science direct and others: 302
- e-books: 22050
- Printed Journals: 150
- Competitive examination books: 54
- MOODLE uploaded study materials for all subjects
- YouTube and MOODLE uploaded practical videos
- Departmental Library with more than 500 books

## Innovative Projects



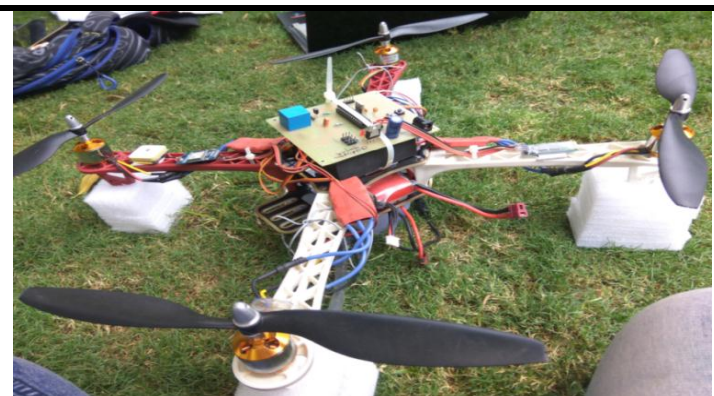
### Solar Powered Seed Sower Machine

- Design to contribute to agricultural field to automate the farming work.
- It is solar based project used in automation in agriculture for farming work like Grass cutting, fertilizer spreading.



### Current and Voltage source converters

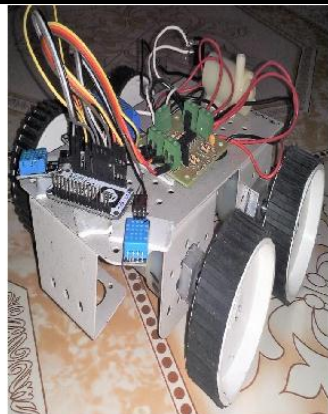
- Voltage Source Inverter with three phase Preventer and Selector for Industrial Application.
- Microcontroller Programming and MOSFET is used.
- Attempt to generate three phase power supply in absence of single phase.



### Model (Drone) of Unmanned Aerial Vehicle for Agricultural Applications.

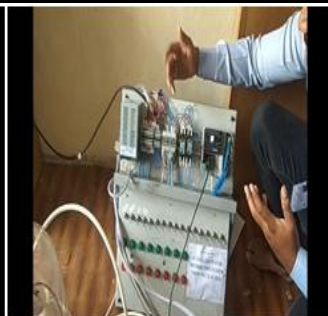
- The application of pesticides and fertilizers in agricultural areas is of prime importance for crop yields.
- The use of air craft's is becoming increasingly common in carrying out this task mainly because of its speed and effectiveness in the spraying operation.





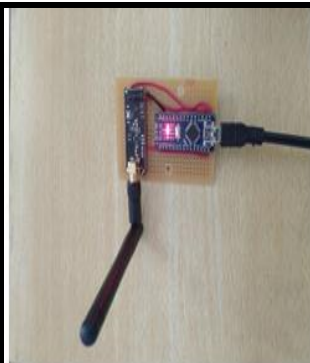
### Fire Detection & Prevention with Fire Fighting Robot Using Wireless Sensor Network

- This project is used for many applications, such as industrial automatic control, remote environmental monitoring and target tracking.
- The similar system is promising applications in fires can make a real-time monitoring and detection.



### Water Distribution System using PLC and SCADA

- This project is developed to provide effective water supply.
- It is used to detect the leakage sites and malpractices in the water distribution systems.
- Here work has been done on PLC based water distributed network.



### Wireless Monitoring and Controlling of Automatic Room Light Control System

- This project developed is developed for Automatic Lighting Control and Monitoring System for efficient use of light energy in class room.
- The system is developed to control lighting in particular area of class room based on the presence of human in that area.



### Android Based Home Automation

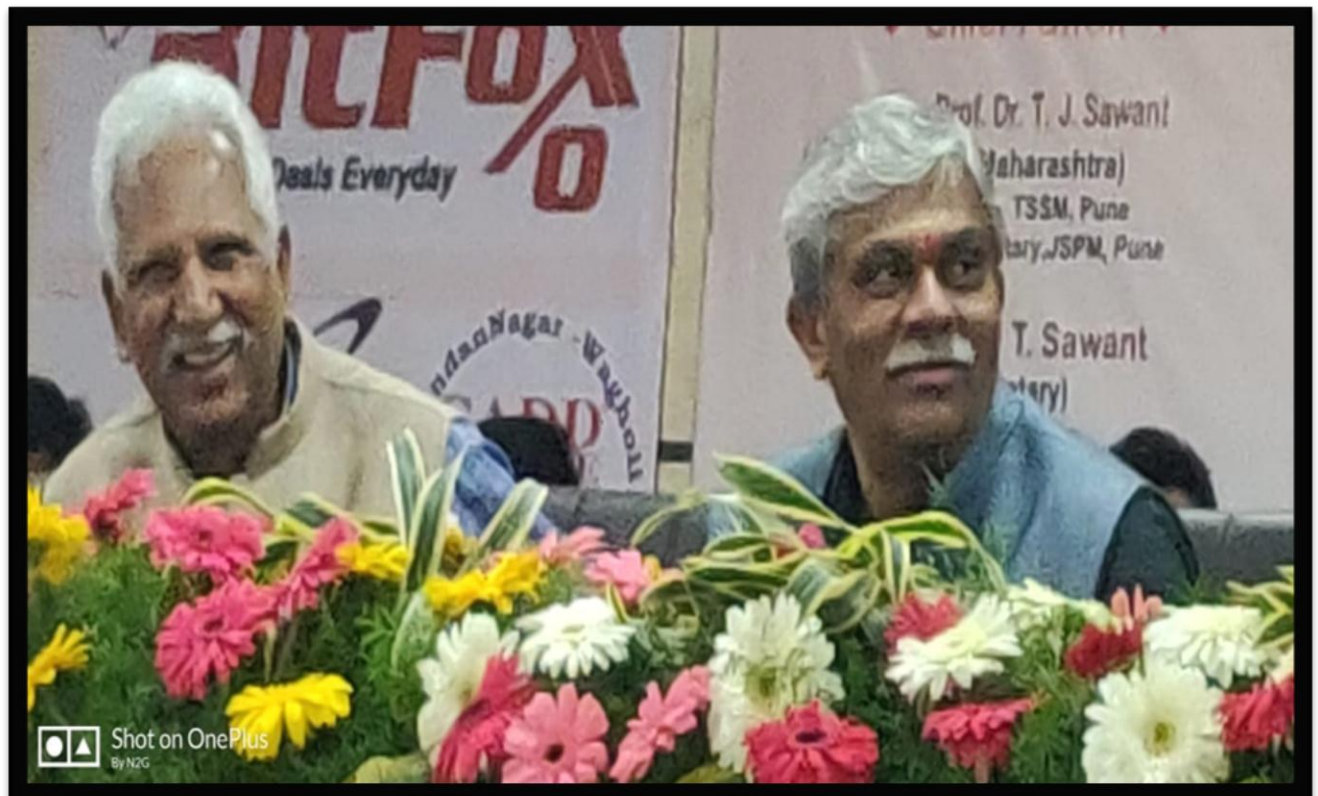
- Android operated home automation project was implemented to control home appliances as per requirement wirelessly using android phone.
- In this project MIT A12 is installed on android mobile and using bluetooth connection it is connected to the arduino based system.



LED Scrolling Display developed by Second year students



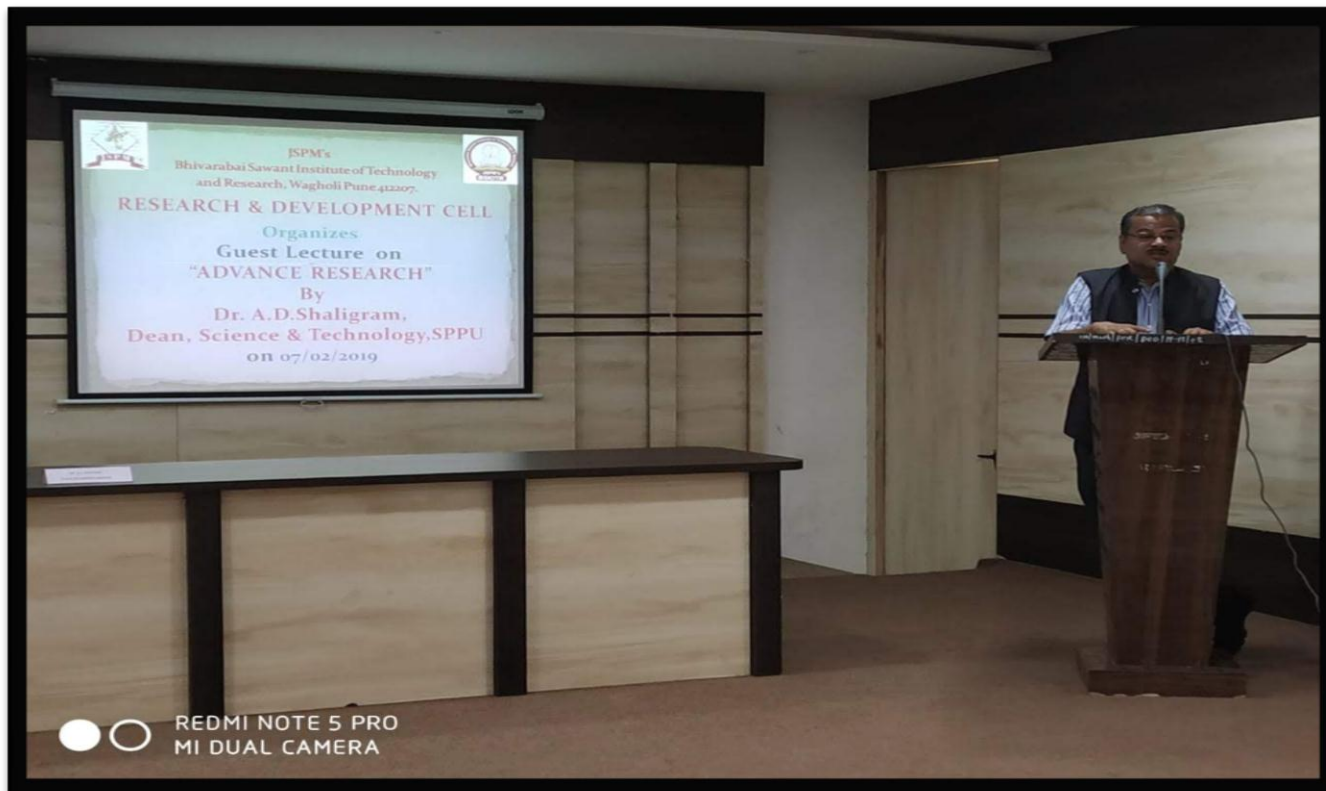
## Eminent Persons Visited to the department



Visit of Dr. Nitin Karmalkar Vice chancellor, SPPU



Dr. Aditya Abhyankar Dean, DOT SPPU Pune



**Dr. A. D. Shaligram Dean, Science and Technology, SPPU. Motivated students for research.**



**President, IETE- New Delhi Shrimati Smruti Dagur visited Department for Zonal Seminar on Wireless Sensor Network**






**Dr. Surendra Pal (Former Director of Indian Space Research Organization (ISRO) and Vice chancellor of Defence Institute of Advanced Technology (DIAT) Research Institution of India) Visited Department/ Institute**




**Convocation ceremony in auspicious hands of Dr. Surendra Pal, Vice Chancellor DAIT, Pune**






**JSPM's**  
**Bhivarabai Sawant Institute of Technology & Research, Wagholi, Pune.**  
**DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING**



### Learning Objectives:

- To learn the concepts and characteristics of common sensors, actuators, and electrical components.
- To apply concepts and run LabVIEW software by integrating sensors, actuators, and electrical components into system-level projects and
- Observe the functionality.

### NI myRIO




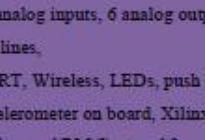
### Features of NI myRIO:

- Affordable instrument to instruct and execute different configuration.
- 10 analog inputs, 6 analog outputs, 40 digital I/O lines,
- UART, Wireless, LEDs, push button, accelerometer on board, Xilinx FPGA and dual-core ARM Cortex-A9 processor, Three-axis Accelerometer, Audio In/Out, US, 4 LEDs, 1 Push Button, 3 different I/O Connectors, Analog In / Analog Out, Digital In / Digital Out.
- Programmable with LabVIEW or C;

### Implemented Project


Smart Library Management Robot Using NI myRIO






### Job Opportunities:

LabVIEW Developer  
R & D Engineer  
Application Engineer

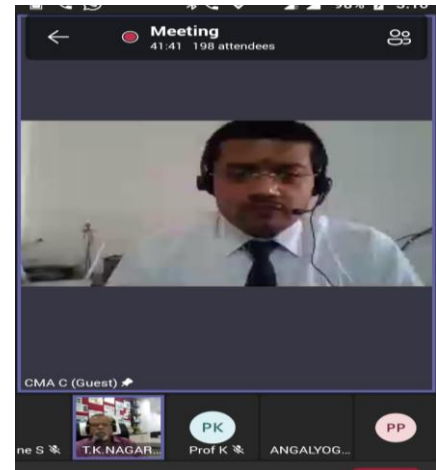
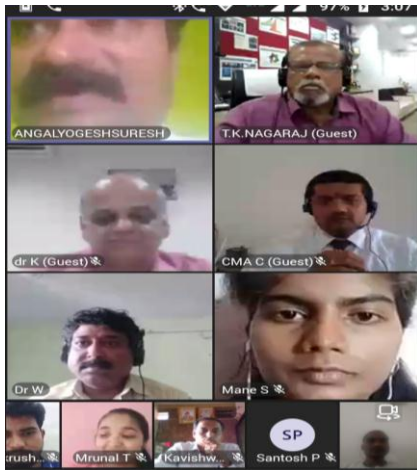


Agilent Technologies

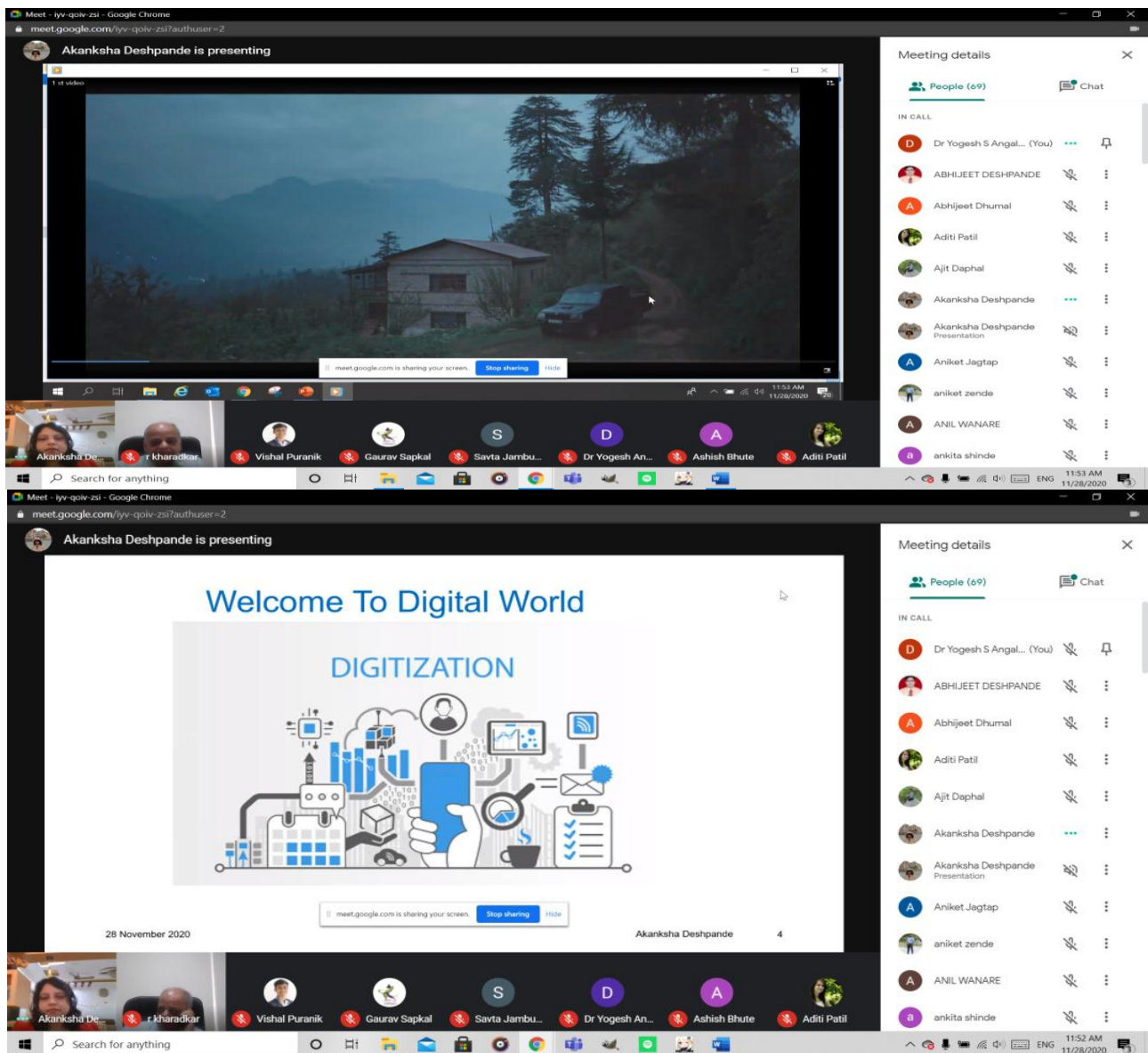


NATIONAL INSTRUMENTS

## Online Events and Lectures conducted during covid-2019 pandemic

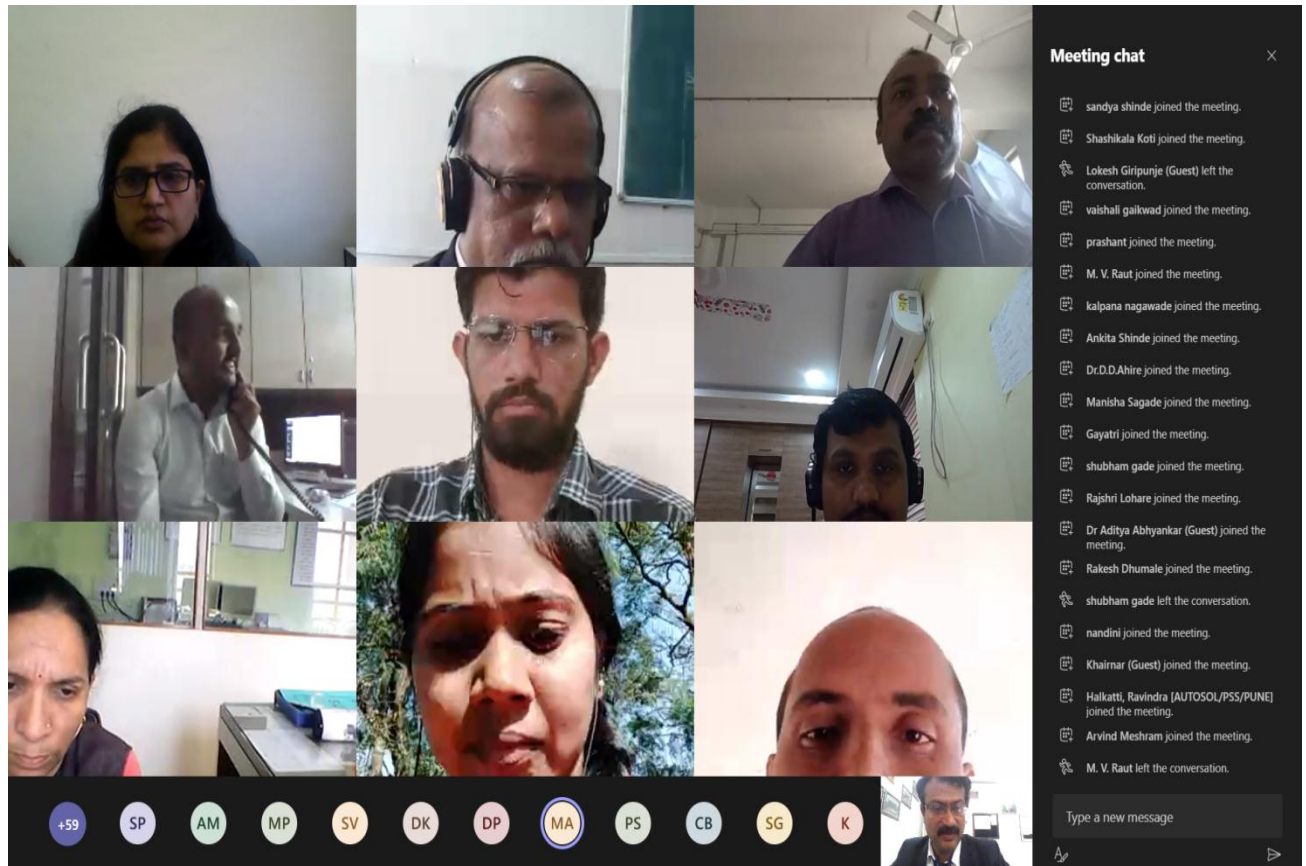


**A Webinar on “Accelerators/Incubation- Opportunities for the Students & Faculties- Early Stage Entrepreneurs”**

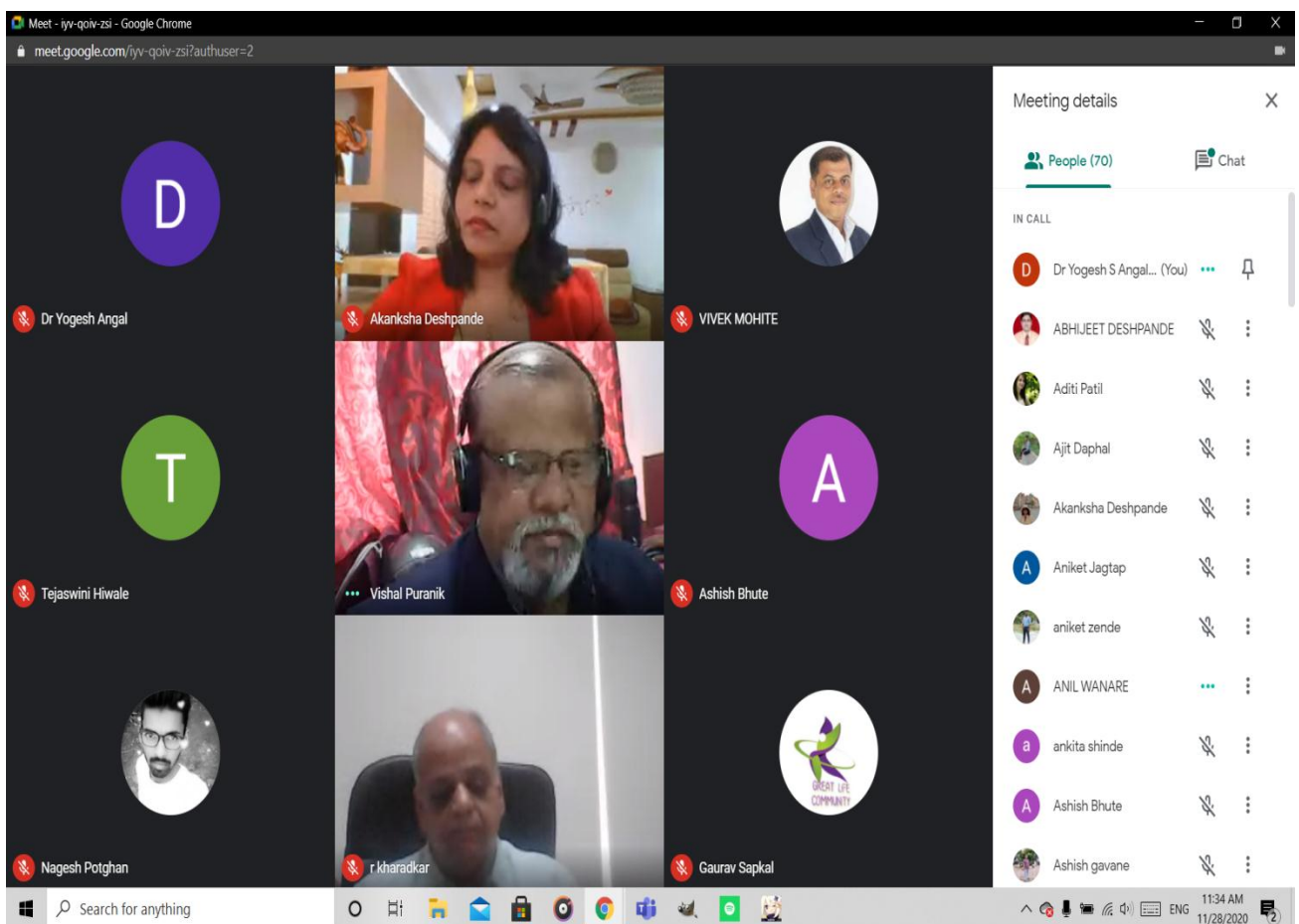


**“Online Lecture series during COVID 19 Pandemic”**





**AICTE Funded STTP on “Digital Skills Development for Professionals”**



**Webinar on “Digitization in Industry”**



### Department students participation in NSS activities



### NSS activities E&TC Students

**“We believe on Humanizing Technology for better tomorrow”**



## Major Recruiters



**JSPM & TSSM**  
Group Of Institutes, Pune  
Quality Education from KG to Ph.D

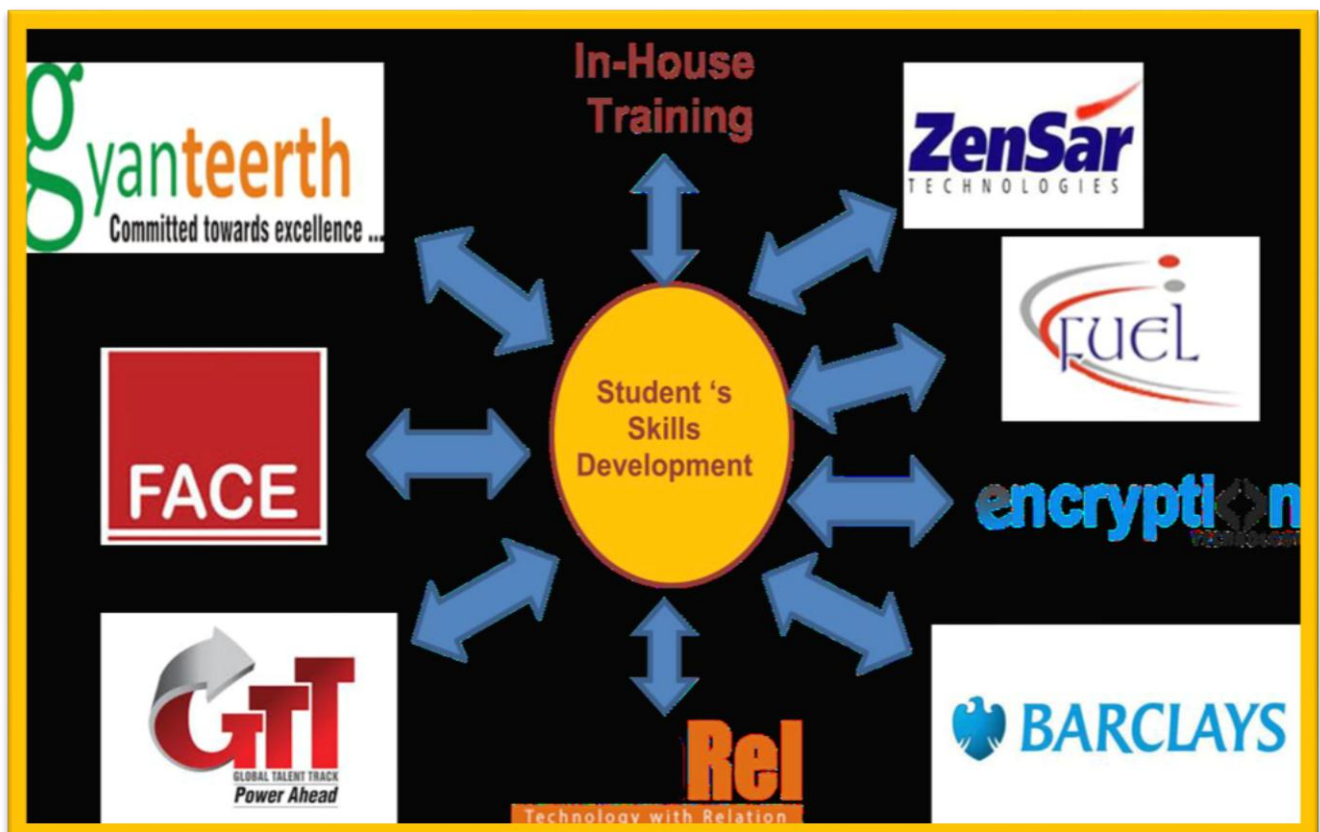


**OUR PROMINENT RECRUITERS**

[ Package range from 3 lacs to 24 lacs including International Offers ]

## Training Partners



## MOU's

<b>Sr. No.</b>	<b>Company Name</b>
1	Acctel System Pvt Ltd, Pune
2	Indus Aviation, Pune
3	Dreamway Foundation, Pune
4	Aarya Precision Technologies LLP, Pune
5	Seed Infotech Ltd., Pune
6	Neeshionics, Pune
7	Smartelix Academy, Pune
8	Focus Academy of Carrier Enhancement (Face), Pune
9	Internshala, Pune
10	Friends Union For Energising Level(Fuel), Pune
11	Vani Institute, Pune
12	Knowledge Solutions India
13	Stackzeal Pvt Ltd, Pune
14	Rpg Foundation, Pune
15	Maharashtra Centre For Entrepreneurship Development
16	Profound Edutech, Pune
17	Radiant IT Services Pvt Ltd, Pune
18	Aviro Energy India Pvt. Ltd, Pune.
19	Hit Bull Eye, Pune
20	Talent Battle, Pune
21	Jetking, Pune
22	Techhub, Pune
23	Evolvingx, Pune
24	BYJUS, Pune
25	Coursera- Online Digital Platform

## Training Programs

Sr. No.	Title of Training Program	Career opportunities after training
For Core Industries		
1	Robotics & Android Architecture	Students will get the opportunities in core industries.
2	MATLAB	
3	Microcontroller 8051 & PIC	
4	ARM 7& ARM 9	
5	Embedded Processor	
6	PCB Design	
7	The 8051 microcontrollers and Embedded Design	
8	Antenna Design	
9	Recent Trends in PLC’s and Automation	
10	Hands on training on ” PLCs and Automation”	
11	IOT & Embedded Systems.	
12	Add-on course on Android based Automation	
13	Digital Skill Development for professionals	
14	PCB Design	
15	Digitization in Industry	
16	Robotics Process Automation	
For IT Industries		
1	Software Testing	Students will get the opportunities in software industries.
2	Training on Microsoft Certification	
3	Training on Core Java	
4	Training on C, C++	
Entrepreneurship Skill development		To develop an Entrepreneur

*"Tell me and I forget, teach me and I may remember, involve me and I learn."*

*"We transform E&TC students into competent technocrats and responsible citizens through state-of-art Technology"*

### BSIOTRians Shining Globally

Sr No	Name of Student	Department	MS/Ph.D/MBA/other higher qualification	University name and Country
1	Rohit Sunil Chavan	Mechanical	MS-Computer Science	SRH Berlin Core Supply Chain Management Germany
2	Charudatta Sachin Jadhav	Mechanical	Automotive Service Technology and Process	Ostfalia University of Applied Sciences Germany
3	Manjiri Rane	Computer	Masters in Applied Computer Science	SRH Hochschule Heidelberg Germany
4	Rutuja Undale	Mechanical	Automotive Engineering	Coventry University United Kingdom
5	Shubham Kanade	Electrical	MSc in Electrical Power Engineering	Northumbria University United Kingdom
6	Sangram Jadhav	E&TC	MS ( Master of Cyber security ) (Computer Science)	Latrobe University, Melbourne , Australia
7	Uttara Deshmukh	Mechanical	Masters in Engineering Project Management	IUBH International Hochschule Germany
8	Priya raul	Computer Engineering	MS-Computer Science	School of Engineering & Technology (Tacoma) - University of Washington
9	Monali Murjani	Mechanical	Masters in Space Science and Technology(European Spcemasters program)	Julius Maximilians University Wurzburg, Germany
10	Rutuja Raghunath Kale	Information Technology	Software Engineering	San Jose State University, California, United States.
11	Pallavi Kohad	E&TC	MS-Artificial Intelligence	San Jose State University, California
12	Mitali Patil	Computer	Project Management	North eastern University, Boston
13	Tejal Katkar	E&TC	MS-Computer Science	Aukland University, USA



14	Pavithra Prabhakar Hebber	E&TC	MS-Electronics and Automation	University of Gawle in Sweden
15	Pallavi Shete	E&TC	MS-Information Technology	Pace University-New York City
16	Moumita Chaterjee	E&TC	MS-Biomedical Electronics	University of Hull-UK



## JSPM's BHIVARABAI SAWANT INSTITUTE OF TECHNOLOGY & RESEARCH

ACCREDITED BY NAAC  
COLLEGE CODE: 6311

Training & Placement Cell



*Department of Electronics & Telecommunication Engineering.*

### THE ACADEMIC YEAR 2020-2021 PLACEMENTS



**Mast. Aneesh Puranik**

**Company:** Zinzout Teletech Pvt Ltd  
**Designation:** Technical Architect.



**Miss. Shital Dhame**

**Company:** Yazaki India Ltd  
**Package:** 2 LPA  
**Designation:** Assistant Trainee.



**Miss. Pooja Kulkarni**

**Company:** Star Engineers PVT. LTD  
**Designation:** Jr. Production Engineer.



**Mast. Vijay Zare**

**Company:** Barqueton tech.ltd  
**Designation:** Software Developer.



**Mast. Akash Deshmukh**

**Company:** John Deere Financial  
India Pvt. Ltd.  
**Designation:** Operations Executive.



**Mast. Ganesh Jagtap**

**Company:** Chegg express India  
**Designation:** Subject Matter Expert.



**Mast. Shubham Kawade**

**Company:** Own Business Translant  
Fabrication  
**Designation:** Transformer Manufacturing  
Unit



**Mast. Shivraj Gadade**

**Company:** 24 vision staffing solutions  
pvt ltd  
**Designation:** Trainee Engineer



**Mast. Vikas Bhalke**

**Company:** : Mulani Battery Services  
**Designation:** Trainee Engineer



**Miss. Kavita Kachhwa**

**Company:** MPTA EDU pvt ltd.  
**Designation:** Trainee engineer



**Mast. Mahesh Tanpure**

**Company:** Yazaki pvt ltd  
**Designation:** Trainee engineer



**Mast. SACHIN KHADE**

**Company:** NCR CORPORATION pvt ltd  
**Designation:** DEPLOYMENT LEAD

*"Opportunities don't happen. You create them."*



## Placements Summary

Academic Year	Placements in %
2020-21	57
2019-20	76
2018-19	59

## Key Placements

**JSPM'S  
BHIVARABAI SAWANT INSTITUTE  
OF TECHNOLOGY & RESEARCH, WAGHOLI, PUNE**

**DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING**

**Key Placements** (Branch Code : 631137210)

 Pooam Adig Cybage Software	 Pallavi Khatke TechMahindra	 Pooja More Emphasis	 Bhagashree Salunkhe Amazon	 Renu Waniya TechMahindra	 Surabhi Raut EPIT	 Ankita Waghmare TechMahindra	 Kalyani Kulkarni Larsen & Toubro
 Shrutti Gogate Global Telecom Ltd.	 Priyanka Chavan GE Healthcare	 Ashwini Faragudri Rejion	 Sandhya Gharpade Inforsys	 Rutuja Chavet Inforsys	 Sarika Raut Larsen & Toubro	 Shrutti Gokwad ISIT	 Divyanshi Karkh ISIT
 Snehi Radgirkar TechMahindra	 Snehi Shubakar Electronics	 Rayaan Shomal Inforsys	 Tanusika Shaikh Waggon	 Ashwini Kadam Sigma Electric Ltd.	 Nisha Panchal Amazon	 Snehi Salaw Electronics	 Nikhil Marde Inforsys

### ALUMNI WORKING IN GOVERNMENT JOBS



**Ms. Darshana Hansraj Mandawade**  
Union Bank of India



**Ms. Maya Dhondiram Kamble**  
Maharashtra State Power Generation Co. Ltd



**Ms. Shivani Patel**  
State Bank of India

Department of E&TC Students as an Entrepreneurs



M: ashwin2abhang@gmail.com

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Mob: (+91) 7798799307

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POOJA KOSHTI

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trimaxelectronics@gmail.com



Chintamani Enterprises

Kumbharsahil32@gmail.com

Sahil Kumbhar : +917709687612

Sanjay Singh : +919823767779

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Satish Agarwal - +91 8149977726

**SUPREME DECOR LLP**

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Gat No. 135/1A, Near Essar Steel,  
Behind Kalyani Forge, Dingrajwadi,  
Koregaon Bhima, Tal. Shirur,  
Dist. Pune - 412216 (MH) India.  
Email : supremedecorllp@gmail.com



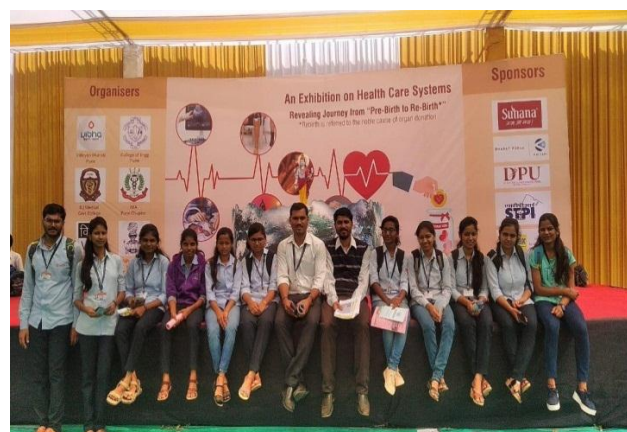
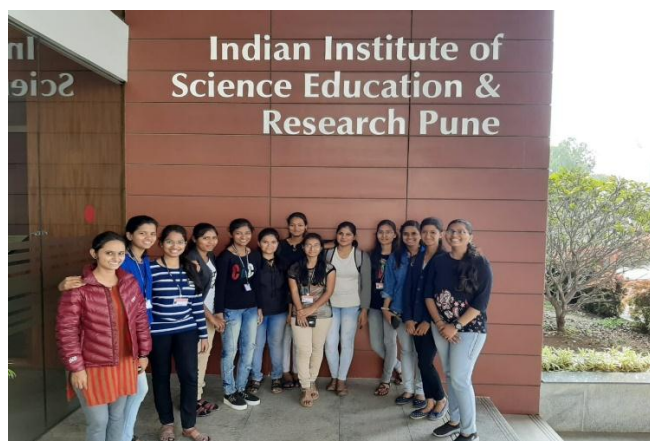
## Department of E&TC Students Studying abroad

	<b>Miss. Moumita Chaterjee</b> MS-Biomedical Electronics University of Hull-UK
	<b>Miss. Pallavi Kohad</b> MS-Artificial Intelligence San Jose State University, California
	<b>Miss. Kajal Katkar</b> MS-Computer Science Auckland University, USA
	<b>Miss. Pavithra Prabhakar Hebber</b> MS-Electronics and Automation University of Gawle in Sweden
	<b>Mr. Sangram Jadhav</b> MS (Master of Cyber security) (Computer Science) Latrobe University, Melbourne, Australia
	<b>Miss. Pallavi Shete</b> MS-Information Technology Pace University-New York City

## Industrial Visits



**Visit to Akashvani Kendra, Pune**



**Visit to IISER, Pune(Left) and Visit to Kutuhal Technical fest, Pune (Right)**



**Students Visited Barclays, IT Industry in Pune**





**Visit to GMRT — National Centre for Radio Astrophysics - NCRA-TIFR**



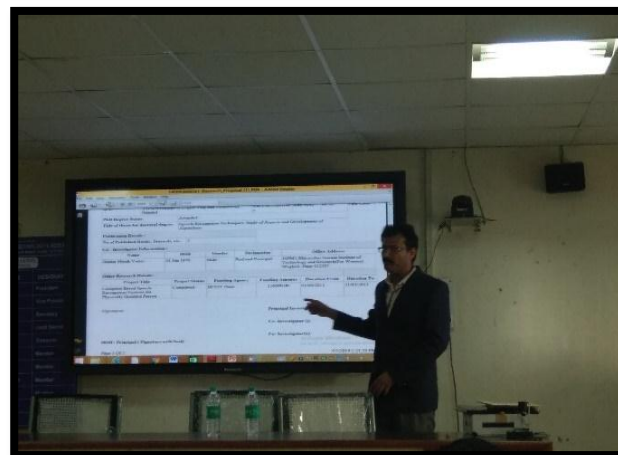
**Visit to Suddpram Pvt. Ltd. Chakan, Pune (Left) and Doordarshan Kendra, Pune (Right)**



**Visit to Vidnyan Ashram, Pabal**



## Some Co-Curricular, Extracurricular Activities and Achievements







**Recent Trends in Artificial Intelligence – IETE Apex Forum**



**Visit of students of E&TC Department to orphanage**



## Student Achievements in Sports





## Students and Faculty Achievements in Academics

### SPPU Rankers

 <p><b>JSPM's</b> Bhivarabai Sawant Institute of Technology and Research Wagholi ,Pune Electronics and Telecommunication Engineering Academic Year : <u>2019-20</u></p>   <p><b>Congratulations</b> To <b>Ms. Snehal Satav</b> (TE 2017-18) For getting <b>4th</b> ranked in SPPU with <b>9.52 CGPA</b></p>	 <p><b>JSPM's</b> Bhivarabai Sawant Institute of Technology and Research Wagholi ,Pune Electronics and Telecommunication Engineering Academic Year : <u>2019-20</u></p>   <p><b>Congratulations</b> To <b>Ms. Kalyani Pawase</b> (TE 2017-18) For getting <b>8th</b> ranked in SPPU with <b>9.43 CGPA</b></p>
--	---

 <p>2020/2/4 10:48</p>	<p>Dr .Nitin Karmalkar (vice –chancellor Savitribai Phule Pune University) Felicitates university rankers and HOD (E&amp;TC) BSIOTR.</p>
	<p>Dr. T. J. Sawant sir Hon. Founder secretary JSPM and TSSM Group of Institutes congratulated Dr. Y.S. Angal, HOD (E&amp;TC) for being elected as member BOS, SPPU, Pune</p>
	<p>Dr. A. L. Wanare invited as resource person in International conference on Signal Processing and Embedded Systems at Qingbao, National University at Taiwan, Republic of China (ROC).</p>





Mr. Swapnil Tawar (E&TC) and Team Won first prize at 'Impression' national level cultural Event at COEP



Prize distribution in Technovation Event

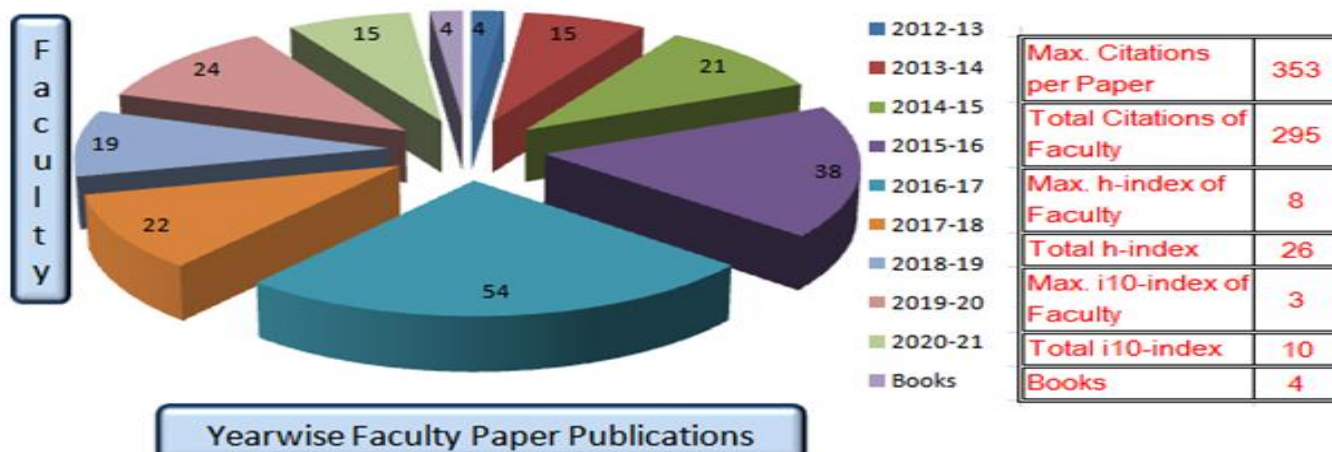
### Patent Published

Sr. No	Name of Inventor	Title of the Invention	Application No./ Date of Filing	International classification	Date of Published/File d Journal No/Issue No
1	Dr.A.L.Wanare	A System for Optimized Image Restoration Techniques	201821007283-A/ 27/02/2018	G06T2207	<b>Published:</b> 11/10/2019
2	Dr.A.L.Wanare	A Medical Waste Management	E1/48666/2019-MUM/12/11/2019	Yet to be declared	<b>Filed:</b> 12/11/2019
3	Dr.Y.S.Angal	Sound Source Localization in three Dimensions using Self rotating Asymmetrical positioned and Skew aligned two array microphone	202022032481/ 29/07/2020	G06T4503	<b>Published:</b> 19/02/2021

### Books Published by Department Faculty

Sr. No	Name of faculty	Title of Book	Published by
1	Dr.Y.S.Angal	Mechatronics	Publisher: Nirali publication, AbhyudayaPragati, Shivaji Nagar. Pune. ISBN: 978-93-86700-09-4
2	Dr.A.L.Wanare	Performance Analysis & Optimization Image Restoration Techniques	Publisher: LAP LAMBERT Academic Publishing: HaroldstraBe 14, D- 40217 Dusseldorf, Germany ISBN : 978-613-8-29758-1
3	Dr. Yogesh S Angal	Mechatronics	Publisher: Nirali publication, AbhyudayaPragati, Shivaji Nagar. Pune. Year of Publication 2005 For Students of E&TC Engineering
4	Dr. Yogesh S Angal	Mechatronics	Publisher: Nirali publication, AbhyudayaPragati, Shivaji Nagar. Pune. Year of Publication 2009 For Students of Mechanical Engineering

### Faculty Publication Details





### Grant Received by E&TC Department

Sr. No	Name of Funding Agency	Project Title	Amount
1	Savitribai Phule Pune University, Pune	A Mobile Robot Platform For Robotics Teaching and Research	2,30,000/-
2	AICTE	Digital skill Developments for Professionals	3,50000/-
3	IETE New Delhi	National Level Project Competition	50000/-
4	BCUD,SPPU	Zonal Level AVISHKAR Competition of SPPU	1,10,000/-
4	IETE, New Delhi	Zonal Seminar on Wireless Sensor Network	1,00,000/-
5	QIP, Planning and Development Savitribai Phule Pune University	Roof Top Solar System	5,00,000/-
6	IETE New Delhi	ISF Forum Activity	20000/-
7	QIP, Planning and Development Savitribai Phule Pune University	Purchase of lab Equipment's	1,00,000/-
8	QIP, Planning and Development Savitribai Phule Pune University	National Conference on Signal Processing	1,00,000/-
9	QIP, Planning and Development Savitribai Phule Pune University	State Level Seminar on Recent Trends in VLSI Techniques	60,000/-



**Utilization of Grants to develop the green energy system and NI myRIO for Lab**



*Teaching is the one profession that creates all other professions.*



## E&TC Department in News



18. विद्यार्थीय आनन्दनाथ रायचौधरी आचार्यशास्त्रालय उपरिष्ठान अमरावती, महाराष्ट्र

1. एसपीएममध्ये दोन दिवशीय कार्यशाळा

[illegible]

भारतकर्मचारीविशेष विधिवारकर्मचारीभारत प्रभुत्वप्रकार तथा प्रभुत्वप्रकार प्रभुत्वप्रकारप्रकार

त्रेणसपीणमस्ये निरोप सम्भारंभ

[illegible]

જી. વસ્તી, સ્ત્રી, પાલીકા પાલિકા કુલની જાણીતી સહાયકાઓના નિર્ધારે.

जेएसपीएसमध्ये विद्यार्थ्यांना बहिस्र वितरण

[illegible]

विद्यार्थी स्वयं इतिहासग्रन्थस्य लेखनार्थं कार्यरतः  
सोपानानि विवर्तिनी.

सावंत इन्स्टिट्यूटमध्ये कार्यशाळा

કાગળોની પેઠીમાં મેળવેલાં પાત્રોમાંથી પાંચે પાત્રો  
મિલકતુર અને તેઓનીથી એક સિનેમા શાલિયાલગણીને  
એક ટી. બી. ચિત્રપટ્ટાની દિશા ૧૫-૧૬ થીજોડી દેતી એવી  
દિશાને આ ચિત્રપટ્ટાની દિશામાંથી કાગળોને આવીને કાગળ  
અને તેને કાગળોમાંથી કાગળોમાંથી કાગળોને કાગળો  
અગિયારી અગિયારી સર્વ પાંચે પાત્રોની દેતી, એક ટી. બી.  
ચિત્રપટ્ટાની દેતી, એક ચિત્રપટ્ટાની દેતી, એક ચિત્રપટ્ટાની દેતી, એક  
ચિત્રપટ્ટાની દેતી, એક ચિત્રપટ્ટાની દેતી, એક ચિત્રપટ્ટાની દેતી, એક

[illegible]

ई अँड टीसी विभागाकडून विद्यार्थ्यांची सहल

[illegible]

Downloaded from <http://ajph.org/> at University of California, San Diego on June 11, 2015

विद्युत शक्ति संचयन प्रणाली  
संचयन प्रणाली प्रणाली प्रणाली  
संचयन प्रणाली प्रणाली प्रणाली  
संचयन प्रणाली प्रणाली प्रणाली  
संचयन प्रणाली प्रणाली प्रणाली

**Four-wheel drive** Four-wheel drive means that all four wheels are powered by the engine. This is the most common type of drive system. It is used in most cars and trucks. It is also used in some motorcycles. It is the most common type of drive system.

[illegible]



# इलेक्ट्रॉनिक्स अँड टेलीकम्युनिकेशन इंजिनिअरिंग अभियांत्रिकी शिक्षणाचा सर्वोत्तम पर्याय

## नोकरी व व्यवसायाच्या सर्वांगीण संधी

उद्योगधंद्यांची सध्याची परिस्थिती, उद्योगधंद्यांना आवश्यक असलेले बदलते तंत्रज्ञान, कोणत्या प्रकारचे इंजिनियर्स जास्त लागतील? नव नविन टेक्नॉलॉजी त्या अनुषंगाने आजच्या आणि येणा-या काळात उद्योग धंद्यांना लागणारे प्रशिक्षित मनुष्यबळ हे आपण लक्षात घेतले पाहिजे. येणा-या तंत्रगुणात कोणत्या प्रकारचे मनुष्यबळ आणि बदलत्या तंत्रज्ञानाप्रमाणे निर्माण होणा-या रोजगार, व्यापार, स्वयंरोजगाराच्या, उद्योगपती स्टार्टअपच्या, कोणत्या संधी असतील या सर्वांचा अभ्यास करून व त्यावर नजर ठेऊन जर आपण योग्य अभ्यासक्रम निवडला तर आपल्या आवुघ्याचा चित्र होऊ शकतं. योग्य तो अभ्यासक्रम निवडल्यास स्पर्धात्मक तंत्रगुणात आपण यशस्वी होऊ शकतो. परंतु विद्यार्थी या सर्व बाबींचा विचार न करता मित्र - मैत्रिणी, नातेवाईक यांच्या विचाराने अभियांत्रिकी प्रवेशासंबंधीचा निर्णय घेतांना दिसून येतात. यात ते वर नमूद केलेल्या बाबींकडे पूर्णपणे दुर्लक्ष केल्यामुळे त्यांच्या आवुघ्याची फरफट होतांना दिसते.

## इलेक्ट्रॉनिक्स अँड टेलीकम्युनिकेशन इंजिनिअरिंग का घ्यावे?

प्रथमतः मी नमूद करू इच्छितो की 'इलेक्ट्रॉनिक्स अँड टेलीकम्युनिकेशन इंजिनिअरिंग (E&TC)' शिवाय पर्याय नाही. अभियांत्रिकीमध्ये प्रत्येक शाखेच्या प्रत्येक विभागाचे एक वेगळे महत्त्व आहे. मला येथे कुठल्याही शाखेला किंवा कुठल्याही विभागाला कमी लेखायचे नाही पण हे आवर्जून सांगायचे आहे की रोजगार, व्यापार व नोकरीच्या अधिकाधिक संधी ई. अँड टी. सी. या शाखेत उपलब्ध आहेत.

ई. अँड टी. सी. अभियांत्रिकी शाखेत ऑटोमेशनच्या Internet Of Things (IoT) च्या स्पर्धात्मक युगात रोजगार, व्यापार, नोक-या, सरकारी नोकऱ्यांमध्ये सर्वात जास्त संधी उपलब्ध होणार आहेत. याच बरोबर संशोधन व इतर सर्व संधी या सर्वच बाबतीत राष्ट्रीय व आंतरराष्ट्रीय पातळीवर सर्वात जास्त मोठे बदल अनुभवणारी, मोठ्याप्रमाणात संधी उपलब्ध करून देणारी अशी विद्या शाखा आहे. ही विद्याशाखा अभियांत्रिकीच्या इतर शाखांना संलग्न करणारी शाखा आहे.

## ई. अँड टी. सी. क्षेत्रातील संधी :

आभियंत्र्यांना इलेक्ट्रॉनिक्स वस्तु व उपकरणे बनवणा-या कंपन्या, प्रिंटेड सर्किट बोर्ड, मोबाईल हॅन्डसेट, रिमोट बनवणा-या कंपन्या, इलेक्ट्रॉनिक्स कंपनी, मदर बोर्ड, मायक्रो प्रोसेसर, मायक्रो कंट्रोलर, यु.पी. एस. (Uninterrupted Power Supply) या क्षेत्रात मोठ्या प्रमाणावर रोजगार उपलब्ध आहेत. ई. अँड टी. सी. इंजिनिअर्सला कंपन्यांमध्ये रोजगार व संशोधनाच्या अनेक संधी उपलब्ध आहेत. १) भारतीय इंजिनियरींग सेवा (Indian Engineering Services) २) भारतीय टेलीफोन उद्योग ३) सेमीकंडक्टर चिप डिझाइन इंजिनिअर ४) इंडियन ऑईल कॉर्पोरेशन लिमिटेड ५) तेल आणि प्राकृतिक गॅस निगम लिमिटेड ६) सिव्हील एव्हराइन डीपार्टमेंट ७) स्टील ऑथॉरिटी ऑफ इंडिया ८) पॉवर सेक्टर ९) इंडियन रेल्वे १०) भारत इलेक्ट्रॉनिक्स लिमिटेड ११) भारतीय अंतरिक्ष अनुसंधान संस्था १२) सॉफ्टवेअर इंजिनिअर (TCS Infosys, Samsung, IBM Etc) १३) रक्षा अनुसंधान आणि विकास संस्था १४) एल जी, सोनी इत्यादी. हा अभ्यास पूर्ण केल्यावर आपल्याला वरील नमूद केलेल्या पर्यायांव्यतिरिक्त संधी उपलब्ध असणार आहेत. ते म्हणजे १) इन्स्ट्रुमेंटेशन अँड कंट्रोल इंजिनिअर (Instrumentation and Control Engineer) २) रीसर्च इंजिनिअर नॅनो टेक्नॉलॉजी ३) चिप इलेक्ट्रॉनिक इंजिनियर (चिप) ४) स्पेसफाउंट इलेक्ट्रॉनिक्स इंजिनियर ५) डीझाइन अँड डेव्हलपमेंट इंजिनियर ६) रोबोटिक्स लाईटिंग डीझाइन इंजिनियर ७) मेट्रॉलॉजी इंजिनियर ८) एन सी एल (NCL) ९) इलेक्ट्रॉनिक नेटवर्क इंजिनियर १०) Radio Reserch Engineer ११) सिग्नल प्रोसेसिंग इंजिनियर १२) रडार इंजिनियर १३) डीझाइन इंजिनियर रेडीओ अँड टेलीव्हिजन ब्रॉडकास्टिंग इंजिनियर १४) प्रोटोकॉल रेल्वे इंजिनियर इत्यादी कंपन्यांमध्ये रोजगार उपलब्ध आहेत.

भविष्यातील या शाखेची प्रगती होणार आहे. विद्युत संचारण आणि दूरसंचार, ई. अँड टी.सी. इंजिनिअरिंग ही विद्या शाखा नेहमीच समकालीन आणि उभरत्या क्षेत्रांमध्ये अग्रेसर शाखा मानली जाते. या विद्याशाखे अंतर्गत इलेक्ट्रॉनिक्स डीझाईन अँड सर्कईट्स आणि दूरसंचार उपकरणा विषयी जसे की ट्रान्समिटर-रिसीवर या सर्व गोष्टी शिकवल्या जातात. त्याला लागणारे सर्व प्राथमिक विषय जसे की ट्रान्समिटर रिसीवर

मित्रांनो सीईटी व जेईई निकाल लागताच लगबग सुरू होते ती अभियांत्रिकी प्रवेशाची. अभियांत्रिकी प्रवेश प्रक्रीये दरम्यान सर्वात महत्वाचे असते ते म्हणजे योग्य महाविद्यालय आणि योग्य शाखा निवडणे. या या लेखात आपण अभियांत्रिकी अभ्यासक्रम कसा निवडावा हे जाणून घेऊयात.

हे सर्व इलेक्ट्रॉनिक्स अँड टीसी डीसीटल ट्रान्समिशन, डेटा ट्रान्समिशन आणि रिसिएन माइक्रोप्रोसेसर माइक्रोकंट्रोलर जी आपल्या स्मार्ट फोनमध्ये उपयोगी आहे.

मोबाईल कम्युनिकेशन, सॅटेलाइट कम्युनिकेशन अँटीना रडार डिटेक्शन आणि निगडीत असणारे सर्व विषय शिकविले जातात. आपल्या दैनंदिन जिवनात आपण त्यांचा उपयोग करतो. लागणाऱ्या सर्व उपकरणांची माहिती म्हणजे डीझाइन आणि ऑपरेट करून घेतली जाते. त्यामुळे विद्यार्थ्यांच्या प्रॅक्टिकल ज्ञानात चांगलीच भर पडते. 16, 28, 3G, 4G अशी वेगवेगळे वाटचाल सुरू आहे. ही वाटचाल अशीच सुरू राहणार आहे. मोबाईल टॉवर बनविणा-या कंपन्यात संधी व रोजगार उपलब्ध आहे.

मित्रांनो, इलेक्ट्रॉनिक्स आणि टेलीकम्युनिकेशन इंजिनिअर्सना टेलीकम्युनिकेशन दूरसंचार क्षेत्रात रोजगार मिळवून देणा-या कंपन्या पुढील प्रमाणे - रिलायंस जिओ, आर्यडिआ वॉडाफोन, एअरटेल त्याच बरोबर सरकारी क्षेत्रातील बी.एस.एन.एल अशा कंपन्या विलक्षण प्रगती साधत आहेत. चिनची मॅक्टेदारी मोडत डझाहून अधिक कंपन्या आता भारतात मोबाईल हॅन्डसेट बनवत आहेत. शेकडो विदेशी कंपन्या या क्षेत्रात कार्यरत आहेत.

मोबाईल जनेशनचा 4G ते 5G, 5G ते 6G असा थक करणारा प्रवास निरंतर असणार आहे.

## वस्तुस्थिती :

भारताची लोकसंख्या सुमारे १.३० कोटी आहे व त्यातील अंदाजे ४० कोटी लोक स्मार्ट फोनचा वापर करतात. सुमारे ९० कोटी लोक स्मार्ट फोन वापरत नाहीत म्हणजे अजूनही या क्षेत्रात संधी आहेत. बाजार पेठचा अजूनही विकास व्हायचा आहे. प्रत्येक मोबाईल पाच वर्षांनंतर बदलावा लागतो. ५ वर्षांनंतर फोन बदलणारे ग्राहक व स्मार्ट फोनचे नवीन ग्राहक यामुळे बाजारपेठेला वाव आहे. जगाची लोकसंख्या विचारात घेतली तर मोबाईल, सॉफ्टवेअर, गेमिंग या क्षेत्राची

व्यापारी प्रचंड मोठी व विपावणारी आहे.

त्यामुळे ई. अँड टी. सी. क्षेत्रात अमर्याद संधी उपलब्ध आहेत. आपल्या रोजच्या जिवनात/व्यवहारात लागणारी सर्व उपकरणे जसे की मोबाईल फोन, टेलीविजन, डि.टी.एच, कम्प्युटर, लॅपटॉप, वॉशिंग मशिन, माइक्रोवेव, ओव्हन इत्यादी उपकरणे ई. अँड टी. सी. च्या माध्यमातून बनवल्या गेले आहेत. या व्यतिरिक्त सॅटेलाइट, लॉन्चिंग सिस्टम, मोठ्या हॉस्पिटलमध्ये लागणारी सर्व उपकरणे ही ई. अँड टी. सी. ने डीझाइन व तयार केलेली आहेत. शेतीसाठी लागणारी सर्व ऑटोमॅटिक उपकरणे पुढील काही दिवसात आय. ओ.टी. वर आधारित असणार आहेत. येणा-या दिवसात ई. अँड टी. सी. ला प्रचंड मागणी वाढणार आहे. ह्या सर्व गोष्टी आजच्या विद्यार्थ्यांनी आणि पालकांनी लक्षात घेऊन त्याबद्दल विचार करणे जरूरी आहे.

## सॅटेलाइट कम्युनिकेशन :

मनोरंजन वाहिन्या, मोबाईलचे जाळे, संदेश वहन, हवामानाचा अंदाज, शत्रु-राष्ट्रावर नजर ठेवणे हे ज्याच्या माध्यमातून होते ते म्हणजे सॅटेलाइट कम्युनिकेशन हा (E&TC) च्या विद्यार्थ्यांचा अभ्यास क्रमाचाच भाग आहे. मिलीटरी मध्ये वापरले जाणारे रडार, रेडियो डिटेक्शन अँड रेजिंचा अभ्यासक्रम देखील या शाखेत शिकवला जातो. कॅप्युटर नेटवर्किंग, कॅप्युटर कम्युनिकेशन हे विषय देखील ई. अँड टी. सी. क्षेत्रात काही प्रमाणात शिकवले जातात.

## अभ्यासक्रमातील लवचिकता :

ई. अँड टी.सी. अभ्यासक्रम ाचे प्रमुख वैशिष्ट्य म्हणजे लवचिकता. या अभ्यासक्रमात वेगवेगळ्या अभियांत्रिकी शाखांचे महत्वाचे व संलग्न विषय ही शिकविले जातात. जर ते विषय विद्यार्थ्यांनी व्यवस्थित ग्रहण केले तर वेगवेगळ्या क्षेत्रात अमर्याद संधी मिळू शकतात. ई. अँड टी. सी.ची डिग्री शिकत असतांनाच सॉफ्टवेअर शिकून सुध्दा कॉम्प्युटर इंजिनिअरिंग क्षेत्रात म्हणजेच आय.टी. क्षेत्रात स्वतःला सिध्द करू शकता. ई. अँड टी.सी. शाखेची कम्प्युटर शाखेसोबत बरीच संलग्नता असल्यामुळे संधीची उपलब्धता अजून वाढते. C, C++, VC Java इत्यादी कोर्सस केल्यास TCS, Wipro, IBM सरख्या मोठ्या कंपन्यांमध्ये संधी मिळते.

## वैद्यकीय क्षेत्रात ई. अँड टी.सी.चा उपयोग :

वैद्यकीय क्षेत्रात तपासणीसाठी

लागणारी विविध उपकरणे - ई. सी. जी., ई. डी.जी. सी टी स्कॅन, ब्लड प्रेशर, ई.एम.जी. ही सर्व इलेक्ट्रॉनिक्स उपकरणे आहेत.



डॉ. योगेश अनागड

वैद्यकीय क्षेत्रात या शाखेचा वापर आहे. टेली मेडिसीनमध्ये होणा-या प्रगतीमुळे या शाखेचे महत्त्व अजून वाढले आहे. ई. अँड टी. सी. अभ्यासक्रमात बदल होत असल्यामुळे या शाखेतील अभियंते नव नवीन बाबी शिकविले जात असतात. रोबोटिक्स, उर्जा क्षेत्र, रिमोट सेन्सिंग, ऑटोमोटीव्ह इलेक्ट्रॉनिक्स, ऑटोमेशन, आर्टिफिशियल इंटेलिजन्स, मशीन लर्निंग, मेकॅट्रॉनिक्स, व्ही एल. एस. आय. इत्यादी क्षेत्रात या शाखेतील अभियंत्र्यांना खुप संधी उपलब्ध आहेत. ऑटोमोटीव्ह इलेक्ट्रॉनिक्समध्ये सर्व टयामध्ये इलेक्ट्रॉनिक्सचा वापर होतो. ही सर्व स्वयंचलित उपकरणे आहेत.

आपण उडल्यापासून झोपेपर्यंत इलेक्ट्रॉनिक्स उपकरणे वापरतो. दिव्ही मेट्रो रेल कॉर्पोरेशन, भारतीय रेल्वे उर्जा क्षेत्रातील जनेशन अँड डिस्ट्रिब्युशन, बीएसएनएल या शासकीय व निमशासकीय उद्योगातही ई. अँड टी. सी.ला कायम मागणी राहणार आहे. मंगळावर पाठवलेले डिस्कवरी यान, हयुमॅनॉईड रोबोट सोफिया, अंतराळात फिरत असणारे उपग्रह, स्वयंचलित उपकरणे, वॉशिंग मशीन, टी व्ही, रोबोट्स, माऊस, रिमोट कंट्रोल, मोबाईल, पी. सी., चार चाकी गाडी, विमान, रडार, पाण्यासंबंधीत उपकरणे ई. अँड टी. सी. शिवाय बनवणे अशक्य आहेत.

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लेखक जेएसपीएम भिवराबाई सावंत इन्स्टिट्यूट ऑफ टेक्नॉलॉजी अँड रीसर्च वाघोली, पुणे येथे प्रोफेसर असून ई. अँड टी.सी. विभागाचे प्रमुख आहेत. त्यांना या क्षेत्रातील २३ वर्षांचा अनुभव असून ते विद्यापीठाच्या अभ्यास मंडळाचे सचिव आहेत.

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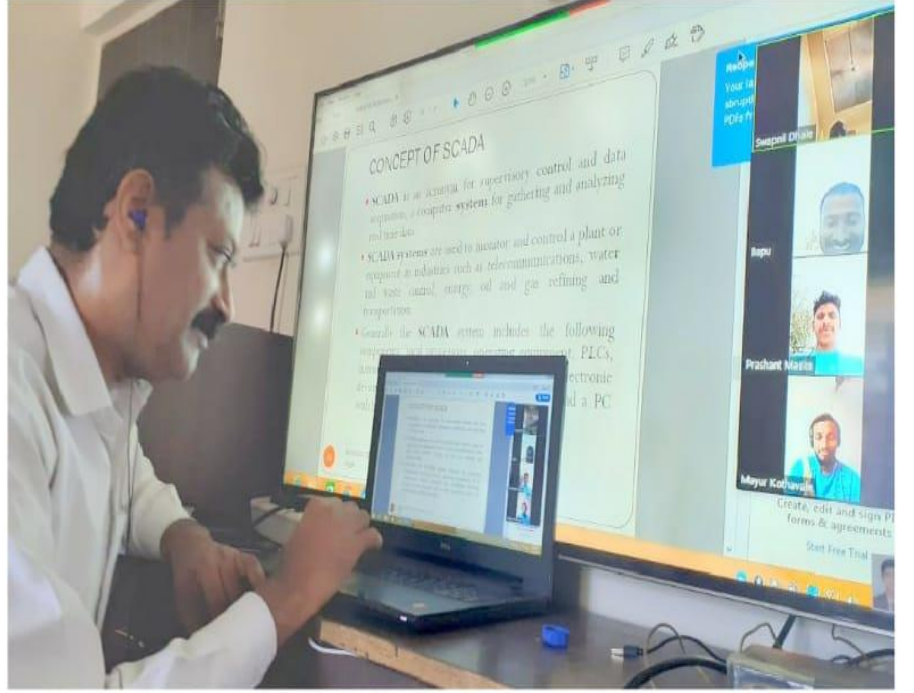
# भिवराबाई सावंत इन्स्टिट्यूट ऑफ टेक्नॉलॉजी अँड रिसर्च अभियांत्रिकी महाविद्यालयात ऑनलाईन शिक्षणाचा यशस्वी प्रयोग

वाघोली : प्रतिनिधी

वाघोली येथील जयवंत शिक्षण प्रसारक मंडळाच्या भिवराबाई सावंत इन्स्टिट्यूट ऑफ टेक्नॉलॉजी अँड रिसर्च अभियांत्रिकी महाविद्यालयात लॉकडाउनच्या कालावधीमध्ये विद्यार्थ्यांचे होणारे संभावित शैक्षणिक नुकसान टाळण्यासाठी ऑनलाईन अभ्यासक्रम यशस्वीरित्या सुरु केला असून विद्यार्थ्यांनी त्याचे स्वागत केले आहे. या नाविन्यपूर्ण उपक्रमास विद्यार्थ्यांचा उत्कृष्ट प्रतिसाद मिळत असल्याचे प्राचार्य डॉ. टी. के. नागराज यांनी सांगितले.

भारत सरकार आणि महाराष्ट्र शासन यांनी कोविड -१९ या विषाणूचा संसर्गजन्य प्रसार रोखण्यासाठी जाहीर केलेल्या लॉकडाउन तसेच सावित्रीबाई फुले पुणे विद्यापीठाच्या सूचनेनुसार मार्च महिन्याच्या दुसऱ्या आठवड्यापासूनच महाविद्यालयाचे शैक्षणिक कामकाज पूर्णपणे बंद आहे.

सदर कालावधीमध्ये विद्यार्थ्यांचे शैक्षणिक नुकसान टाळण्यासाठी आणि अपूर्ण राहिलेला अभ्यासक्रम पूर्ण करण्यासाठी अभियांत्रिकी महाविद्यालयात ऑनलाईन पद्धतीची अंमलबजावणी सर्व विभागप्रमुख यांच्या मार्गदर्शनाखाली



डॉ. योगेश अनगळ विद्यार्थ्यांशी ऑनलाईन संवाद साधताना

राबविण्यात येत आहे. सदर उपक्रमात महाविद्यालयातील प्राध्यापकांनी जयवंत शिक्षण प्रसारक मंडळाने विकसित केलेल्या मूडल (MOODLE) सॉफ्टवेअर प्रणाली, गूगल क्लासरूम, झूम क्लाऊड मीटिंग ॲप, गूगल फॉर्मस, यु ट्यूब इत्यादी अद्ययावत तंत्रज्ञानाचा उपयोग करून विद्यार्थ्यांचे ऑनलाईन विडिओ लेक्चर तसेच पॉवर पॉइंट प्रेसेंटेशन, नोट्स उपलब्ध करून दिले आहे.

लॉकडाउनच्या कालावधीमध्ये प्राध्यापकांनी तसेच विद्यार्थ्यांनी अद्ययावत राहण्यासाठी आयआयटी मधून उपलब्ध

असलेला प्रमाणपत्र अभ्यासक्रम पूर्ण करण्यासाठी विशेष प्रयत्नशील असल्याचे इ अँड टी सी विभागप्रमुख डॉ. योगेश अनगळ यांनी सांगितले. विद्यार्थ्यांची ऑनलाईन परीक्षा मूडल सॉफ्टवेअरद्वारा घेतली जात असून सदर उपक्रमाचे पालकवर्गातून सम धान व्यक्त केल्या जात असल्याचे वाघोली संकुलाचे संचालक डॉ. विवेक कायंदे व डॉ. एस एन पाटील यांनी सांगितले.

दरम्यान संस्थेचे संस्थापक डॉ. प्रा. तानाजी सावंत यांनी लॉकडाउनच्या काळातील या उपक्रमाबाबत सर्वांचे अभिनंदन केले.



# जेएसपीएमच्या बी.एस.आय.ओ.टी.आर. च्या ई. अँड टी.सी. विभागामध्ये पालक मेळावा संपन्न

**वाघोली : प्रतिनिधी**

वाघोली येथील जेएसपीएमच्या भिवराबाई सावंत इन्स्टिट्यूट ऑफ टेक्नॉलॉजी अँड रीसर्च इलेक्ट्रॉनिक्स अँड टेलिकम्युनिकेशन विभागामध्ये पालक मेळाव्याचे आयोजन करण्यात आले होते. या मेळाव्यामध्ये ७४ पालकांनी सहभाग घेतला होता.

जेएसपीएमच्या भिवराबाई सावंत इन्स्टिट्यूट ऑफ टेक्नॉलॉजी अँड रीसर्च इलेक्ट्रॉनिक्स अँड टेलिकम्युनिकेशन विभागामध्ये शनिवार (दि. १० ऑक्टोबर) रोजी इलेक्ट्रॉनिक्स अँड टेलिकम्युनिकेशन विभागामध्ये पालक मेळाव्याचे आयोजन करण्यात आले होते. मेळाव्यात ७४ पालकांनी आपला सहभाग नोंदवला होता. मेळाव्यास विद्यालयाचे प्राचार्य डॉ. टी. के. नागराज यांनी संबोधित केले. तसेच सिस्को पुणेचे प्रोजेक्ट इंजिनियर अमोल शिंदे यांनी मार्गदर्शन केले. विभाग प्रमुख डॉक्टर योगेश अनगळ यांनी उपस्थितांना विभागातील असलेल्या प्रयोग शाळा, होणारे कार्यक्रम, स्पोर्ट्स, अकॅडमिक

रिझल्ट, प्राध्यापकांचे रिसर्च प्रोजेक्ट पेटंट याबद्दल माहिती दिली. तसेच विभागातील ट्रेनिंग प्लेसमेंटचे प्रमुख प्राध्यापक ज्ञानेश्वर खैरनार यांनी डिपार्टमेंटच्या विद्यार्थ्यांच्या प्लेसमेंट इंडस्ट्रियल व्हिजिट कंपन्या सोबत केलेले एम.ओ.यु. बदल माहिती दिली. पालकांनी पाल्याच्या अभ्यास बाबत समिधान व्यक्त केले. लॉकडाऊनच्या काळामध्ये टेक्निकल कोर्सेस प्रोग्रामिंग व इंग्रजी भाषा वर आधारित कार्यक्रम घेण्याबाबत सुचवले. लॉकडाऊनच्या काळामध्ये विभागाकडून घेण्यात आलेल्या ऑनलाइन लेक्चर्स, परीक्षा याबाबत पालकवर्गाकडून कौतुक करण्यात आले व विद्यार्थी तसेच पालक यांनी समाधान व्यक्त केले.

यावेळी संकुल संचालक डॉ. एस. एन. पाटील, डॉ. विवेक कायंदे, प्राचार्य डॉ. टी. के. नागराज, विभाग प्रमुख डॉ. योगेश अनगळ, प्रा. तुषार काफरे, आकाश गायकवाड आदि उपस्थित होते. सूत्रसंचालन पायल भोर, अस्मिता जरे, धनश्री चव्हाण व अस्मिता यादव यांनी केले.



दैनिक

बातम्यांचा राजा

# जनप्रवाह



मुंबई, पुणे, सांगली, कोल्हापूर, उस्मानाबाद, रत्नागिरी, अहमदनगर येथून एकाच वेळी प्रसिध्द

RNI NO. MAHMAR/2013/57952

## भिवराबाई सावंत अभियांत्रिकीमध्ये प्रकल्प स्पर्धा संपन्न

वाघोली । प्रतिनिधी

आय.ई.टी.ई. न्यु दिल्लीचे पुणे केंद्र व जेएसपीएमच्या भिवराबाई सावंत इंस्टीट्यूट ऑफ टेक्नॉलॉजी अँड रिसर्च वाघोली यांच्या संयुक्त विद्यमाने आयोजित केलेल्या आय.ई.टी.ई. इनोव्हेशन या प्रकल्प स्पर्धेचे दि. ३० एप्रिल रोजी आयोजन करण्यात आले होते. सुमारे ४०० हून अधिक विद्यार्थ्यांनी सहभाग नोंदवला होता. या निमित्ताने पुणे व इतर विद्यापीठा अंतर्गत सुमारे १२५ प्रकल्प सादर करण्यात होते. आर्टिफिशिअल इंटेलिजन्स, एनर्जी कॉन्सर्वेशन, मशीन लर्निंग, ऑग्निकल्चर ऑटोमेशन इत्यादी अनेक विषयांचे प्रकल्प सादरीकरण करण्यात आले. स्पर्धेचे उद्घाटन डॉ. व्ही. ए. बुगडे, डॉ. विवेक कायदे, डॉ. एस. एन. पाटील, जेएसपीएम संकुल संचालक यांच्या



उपस्थितीत झाले. तर प्रमुख पाहुणे म्हणून प्रकल्प संचालक संजय पेकाम हे होते. संजय पेकाम यांनी

विद्यार्थ्यांना सर्वांगीण विकासासाठी चिकाटी, जिद्द व सकारात्मक दृष्टीकोन तसेच नोकरी व व्यवसायाच्या उपलब्ध संधी याबाबत सखोल मार्गदर्शन केले. तसेच प्राचार्य डॉ. टी. के. नागराज यांनी कॉलेजमधील विविध उपक्रमाची माहिती देवून

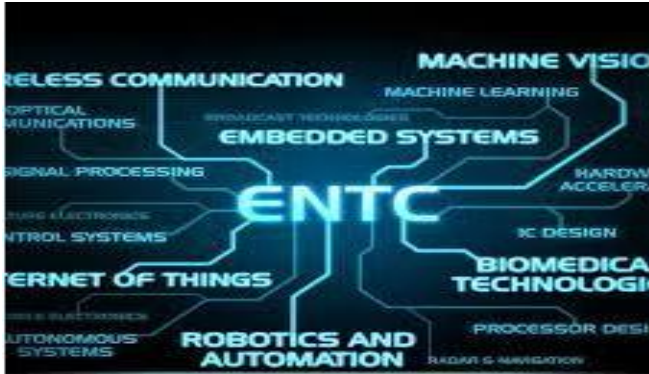
स्वतःचा व्यवसाय व निर्मिती करावी असे सांगितले. स्पर्धेमुळे विद्यार्थ्यांची उद्योगशिलता व आत्मविश्वास वाढतो असेही त्यांनी सांगितले. अत्याधुनिक तंत्रज्ञानाशी जुळवून घेऊन स्वतःची ओळख निर्माण निर्माण करावी असे आयईटीईचे पश्चिम विभाग प्रमुख एस. के. खेडकर यांनी विद्यार्थ्यांना आवाहन केले.

आयईटीई पुणे केंद्राचे

चेअरमन किशोर शेंडे, सेक्रेटरी डॉ. आर. डी. खराडकर यांनी पुणे केंद्र राबवीत असलेल्या विविध प्रकल्प स्पर्धा, शोध निबंध वाचन, जर्नल पब्लीकेशन, के. आर फडके मेमोरीयल अवॉर्ड, विशेष सभा, व्याख्यानमाला या विषयीची सविस्तर माहिती दिली. इंडस अँव्हीडेशन पुणेचे अतुल जोशी यांनी स्पर्धेच्या यशस्वीतेसाठी अंशतः प्रायोजकत्व दिले. या स्पर्धेच्या कार्यवाही पदाची जबाबदारी संभाळणारे वीएसआयओटीआर विभागाचे विभाग प्रमुख डॉ. योगेश अनगळ यांनी विद्यार्थ्यांच्या उत्सर्फुत प्रतिसादाबद्दल आभार व्यक्त केले. स्पर्धेच्या बक्षीस वितरण समारंभाचे विशेष अतिथी म्हणून आयनोलेशन रिसर्च लॅबचे संस्थापक पराग कुलकर्णी उपस्थित होते.

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