

## Innovations by the Faculty in Teaching and Learning

According to the present scenario of teaching and learning, modern techniques are adopted in the institution for better learning by student. Some of the innovative teaching techniques adopted are described below:

➤ Department Blogs

For the department a blog is created by the faculty to provide open access of materials and information about the special contents beyond the syllabus to the students. Following are the details of the blogs.

<http://mecselectrical.blogspot.com/>

<http://gravindranath.blogspot.com/>

➤ NPTEL Online Courses

- Faculty and students are encouraged to register themselves in **NPTEL** online courses, browse different internet sites to increase their knowledge base about the subject. Moreover, through these activities students acquire relevant knowledge which is beyond the syllabus as per the university curriculum.
- Faculty enrolled for various NPTEL online courses for better understanding of the subject and teaching improvements
- Faculty are also enrolled some special topics to enhance their learning.  
Following are the details of the faculty successfully completed different courses in NPTEL

S.No	Faculty	Name of the course	Course Duration	E- Certificate
1.	K.Kartheek	Power Systems engineering	12 Weeks	<a href="https://drive.google.com/open?id=1xx4H1CrQMUdZ3nc7VGUDn3ZKg92jB5NZ">https://drive.google.com/open?id=1xx4H1CrQMUdZ3nc7VGUDn3ZKg92jB5NZ</a>
		Design of Photovoltaic System	12 Weeks	
2.	P.Kishor	Power Systems Analysis	12 Weeks	
		Power Systems engineering	12 Weeks	
		Introduction to Smart Grid	8 Weeks	
3.	M.Srinivas	Electro Magnetic Theory	12 Weeks	
		Analog Circuits	8 Weeks	
		Introduction to Smart Grid	8 Weeks	
		Electrical Distribution System Analysis	8 Weeks	
		Advanced Liner Continuous Control Systems: Applications with MATLAB Programming and Simulink	8 Weeks	
		Design of Photovoltaic System	12 Weeks	

4.	MV Subramanyam	Fundamentals of Electrical Engineering	12 Weeks
		Microprocessors and Microcontrollers	12 Weeks
		Introduction to Smart Grid	8 Weeks
5.	GVSSNS Sarma	Control Engineering	12 Weeks

➤ Video Lecture by faculty

Self prepared videos are created by the faculty on some topics of electrical engineering and these are provided to the students, which helps them to recap the concepts and for better understanding.

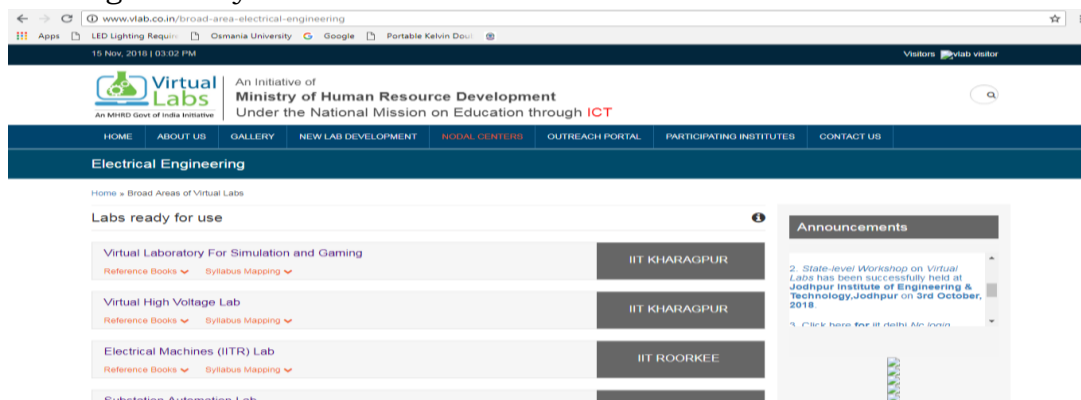
Following are YouTube links of faculty:

<https://youtu.be/NgKaWcEf8oA>

<https://youtu.be/SoYGhngcxsA>

➤ Experimental learning

- College is one Nodal center for Virtual labs (MHRD program) organized by IIIT Hyderabad which will help students of all departments for experimental learning virtually.



- Interactive classrooms to facilitate spot learning

➤ E-Learning Resources

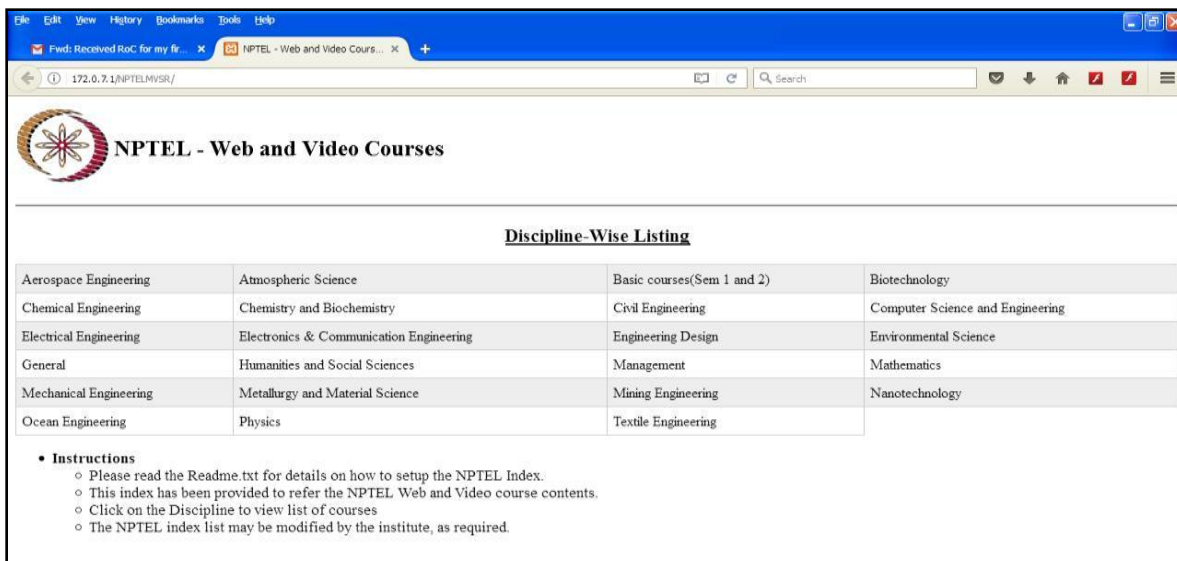
- Initiative is taken by the Department to establish **Digital Library** for the Department activities, class presentations and previous question papers for all subjects and course materials is made on Digital Library.
- The library also subscribes to a host of online and printed journals which are also made readily available to the students.

- The library also includes a computer room with internet access which is often used by students to access various forms of e-materials for their self-development.

There is a good scope for the students to have self-learning beyond curriculum through the facilities available in the Learning resource centre such as E-journals: IEEE, J-GATE, DELNET, IEI, NDL

S.No	E-Journal	Web address
1.	IEEE	<a href="https://ieeexplore.ieee.org/Xplore/home.jsp">https://ieeexplore.ieee.org/Xplore/home.jsp</a>
2.	J-GATE	<a href="https://jgateplus.com/home/">https://jgateplus.com/home/</a>
3.	DELNET	<a href="http://delnet.nic.in/">http://delnet.nic.in/</a>
4.	IEI	<a href="https://www.ieindia.org/webui/iei-home.aspx">https://www.ieindia.org/webui/iei-home.aspx</a>
5.	NDL	<a href="https://ndl.iitkgp.ac.in/">https://ndl.iitkgp.ac.in/</a>

National Programme on Technology Enhanced Learning (NPTEL) Video Lectures  
Quality Enhancement in Engineering Education (QEEE) Live Lectures from IIT Madras.



The screenshot shows a web browser window with the URL 172.0.7.1/NPTELMVSR/. The page title is "NPTEL - Web and Video Courses". Below the title is a "Discipline-Wise Listing" table with the following content:

Discipline-Wise Listing			
Aerospace Engineering	Atmospheric Science	Basic courses(Sem 1 and 2)	Biotechnology
Chemical Engineering	Chemistry and Biochemistry	Civil Engineering	Computer Science and Engineering
Electrical Engineering	Electronics & Communication Engineering	Engineering Design	Environmental Science
General	Humanities and Social Sciences	Management	Mathematics
Mechanical Engineering	Metallurgy and Material Science	Mining Engineering	Nanotechnology
Ocean Engineering	Physics	Textile Engineering	

Below the table, there are instructions:

- **Instructions**
  - Please read the Readme.txt for details on how to setup the NPTEL Index.
  - This index has been provided to refer the NPTEL Web and Video course contents.
  - Click on the Discipline to view list of courses
  - The NPTEL index list may be modified by the institute, as required.

- Faculty is using **quiz test, assignments and open book tests** as an Assessment tool to check student understanding.
  - The **Tech-Fest** organized by the college also serves to create opportunities for student's self-development based on extra-syllabus technological knowhow.
- Exclusive notes
- Exclusive notes on many subjects of Electrical and Electronics Engineering has been prepared by the faculty members of this department and distributed to the students to enable the students to learn the subjects better. These notes contain important questions, critical analysis of problems with clearly depicted solutions.

S. NO	Year	Subject/Code	Topic	Name of the faculty/ Resource Person	Web link of material
1	BE III	Digital Electronics And Logic Design	Synchronous Counters	M. Praveen	<a href="https://drive.google.com/open?id=1Qv3dPOyoLyt3W1094TqDhh4LgxhdlQvf">https://drive.google.com/open?id=1Qv3dPOyoLyt3W1094TqDhh4LgxhdlQvf</a>
2	BE III	Control systems	Stability Analysis	N.Kalpana	
3	BE II	Electrical Circuits-II	Two port Parameters	M.Saritha	
4	BE II	Electrical machines-I	Design of Lap and Wave winding	M.V.Subramanyam	
5	BE III	Power Systems-II	Power circle diagrams	K Kartheek	
6	BE II	Power Electronics	Effect of source inductance	Dr.G.Ravindranath	
7	BE III	Electrical Machines-II	Three phase transformers	P.Kishor	

➤ Design Thinking to Optimize Student Learning

- Students are assigned to design a project and its plan of work so that they can focus on developing creativity and build up confidence through hands-on projects.
- Students are given Mini projects on latest technology and are required to and submit a report under the guidance of teachers Mini Projects carried out under the guidance of faculty

S.No	Project Title	Guide	Weblink of Report
1.	Arduino based smart dust bin	K.Kartheek, P.Anil Kumar	<a href="https://drive.google.com/open?id=1qGR0LkMT3qXiPevbvYZy1ngYshjmam3N">https://drive.google.com/open?id=1qGR0LkMT3qXiPevbvYZy1ngYshjmam3N</a>
2.	IOT based smart lamp	K.Kartheek, P.Anil Kumar	

➤ Story Board

- Storyboard is a visual representation in the form of images, block diagrams or illustrations displayed for the purpose of pre-visualizing the concepts of the laboratory experiments in a single real-time application. This is presented to the students before conducting practical experiments in the laboratory to create enthusiasm among them.

➤ Training Programs and Guest Lectures

- Department organizes various seminars and workshops by internal faculty and external resource persons for students. This will enable them to acquire knowledge in current technologies and tools.

➤ Focused group study

- Students are divided into specific groups and are assigned specific topics related to latest trends in technology. These groups study the topics in detail through library books, internet, and library journals. Thereafter, the topics are discussed by individual groups in the class and the teacher further guides them about the specific topic. The participants are actively encouraged to not only express their own opinions, but also respond to other members and questions posed by the leader, focus groups offer a depth and variety to the discussion. Additionally, because focus groups are structured and directed, but also expressive, they can yield a lot of information in a relatively short time.

➤ Interactive classrooms to facilitate spot learning

- Occasionally students are made to sit and allow to interact on mobile devices, tablets and laptops where the lecture classroom turns into an active learning centre with a lively forum for thought-provoking discussion, personalized learning and engaging group activities. With the help of laptop and projector, the contents from the syllabus are explained to the students. The students thereafter are given a battery of questions to be answered on spot which facilitates better learning and understanding of the topic being taught.





➤ ICT usage

- ICT is a potentially powerful tool for offering educational opportunities. It is difficult and maybe even impossible to imagine future learning environments that are not supported, in one way or another, by Information and Communication Technologies (ICT). Students are provided with knowledge and proficiency in the usage of simulation. These softwares are available online and students use it for various analysis purpose. Special training is offered to the students in the lab on regular basis.

S.No	Name of the Faculty	Name of the Subject	Topic	Web link for Animated Videos
1.	M.Saritha	Circuit Theory	Voltage, Current Electricity, Magnetism	<a href="https://www.youtube.com/watch?v=XiHVe8U5PhU&amp;t=47s">https://www.youtube.com/watch?v=XiHVe8U5PhU&amp;t=47s</a>
2.	M.Srinivas	Linear integrated Circuits and application	Op-Amplifier	<a href="https://www.youtube.com/watch?v=_o4ScgRZtNI">https://www.youtube.com/watch?v=_o4ScgRZtNI</a>
3.	M.Praveen Reddy	Digital Logic Circuits	K' Map and Implicants	<a href="https://www.youtube.com/watch?v=J_t_7npo0CE&amp;list=PLBlNk6fEyqRjMH3mWf6kwqiTbT798eAOm&amp;index=84">https://www.youtube.com/watch?v=J_t_7npo0CE&amp;list=PLBlNk6fEyqRjMH3mWf6kwqiTbT798eAOm&amp;index=84</a>
4.	M.Srinivas	Electromagnetic Theory	coulomb's law in animation slide presentation	<a href="https://www.youtube.com/watch?v=S83JPXMGbns">https://www.youtube.com/watch?v=S83JPXMGbns</a>
			Electric Potential_ Visualizing Voltage with 3D animations	<a href="https://www.youtube.com/watch?v=-Rb9guSEeVE">https://www.youtube.com/watch?v=-Rb9guSEeVE</a>
5.	P.Anil Kumar	Electrical Machines	Working of DC motor	<a href="https://www.youtube.com/watch?v=LAtPHANefQo">https://www.youtube.com/watch?v=LAtPHANefQo</a>
			Operation of Induction motor	<a href="https://www.youtube.com/watch?v=LtJoJBUSE28">https://www.youtube.com/watch?v=LtJoJBUSE28</a>
			Principle of Operation of a DC Generator	<a href="https://www.youtube.com/watch?v=Jh167TEECBk">https://www.youtube.com/watch?v=Jh167TEECBk</a>
6.	M.Praveen Reddy	Power Plant Engineering	Working of thermal power plant	<a href="https://www.youtube.com/watch?v=NAgbKN9E2AM">https://www.youtube.com/watch?v=NAgbKN9E2AM</a>
7.	K.Kartheek	Solid State drives	Variable frequency control ( V/F) of Induction Motor 1	<a href="https://www.youtube.com/watch?v=QYYn6RCYFrk">https://www.youtube.com/watch?v=QYYn6RCYFrk</a>
			Inverter working	<a href="https://www.youtube.com/watch?v=lZ0bhRPpW_c&amp;t=180s">https://www.youtube.com/watch?v=lZ0bhRPpW_c&amp;t=180s</a>
8.	K.Kartheek	Switchgear & Protection	Circuit Breaker	<a href="https://www.youtube.com/watch?v=GSh0f94JwaA">https://www.youtube.com/watch?v=GSh0f94JwaA</a>
			Transformer Differential Protection Using Numerical Relay	<a href="https://www.youtube.com/watch?v=ahPLRc3yyow">https://www.youtube.com/watch?v=ahPLRc3yyow</a>
			Different types of Circuit Breakers	<a href="https://www.youtube.com/watch?v=uUnHSHdTSbw">https://www.youtube.com/watch?v=uUnHSHdTSbw</a>

➤ Model presentation of mechanisms for active learning of subjects

- In some subjects of Electrical and Electronics Engineering, working models on suitable scale have been displayed for the better understanding of the subject for students with the assistance of faculty members. Building such mechanisms enhances their visual understanding of the subject and promotes active learning.

S.No	Name	Model
1.	DC Machine	
2.	Transformer	
3.	Underground Cable	
4.	Insulators	
5.	Transmission model	