

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:

➤ Link of web pages /Blog/Google classroom/LMS

S.NO	NAME OF FACULTY	Web link for Google scholar
1	DR.KBVS SUBRAHMANYAM	https://scholar.google.com/citations?user=OzFNie4AAAAJ&hl=en
2	DASI JOSEPH KUMAR	https://scholar.google.com/citations?view_op=new_profile&hl=en
3	M.SRINU	https://scholar.google.com/citations?user=X0MxDOYAAAAJ&hl=en
4	G.NAGAJOTHI	https://scholar.google.com/citations?view_op=new_articles&hl=en&mq=ganeshna+naga+jyothi&authuser=1#

The screenshot displays the Google Scholar profile for kappagantula subrahmanyam. The profile includes a profile picture, a 'Verify email' button, and an 'Add co-authors' button. The profile lists several publications, including 'Effect of Coating of dielectric in a 3-phase GIB with Particle Movement' (2019), 'Dynamics Of Metallic Particle Contamination in Gas insulated Substation (GIS)' (2011), and 'Effect of chording on the efficiency of induction motor supplied by PWM inverter' (2020). The citation statistics show 31 citations, an h-index of 3, and an i10-index of 0. A bar chart shows the number of citations per year from 2016 to 2023, with a peak of 14 citations in 2020.

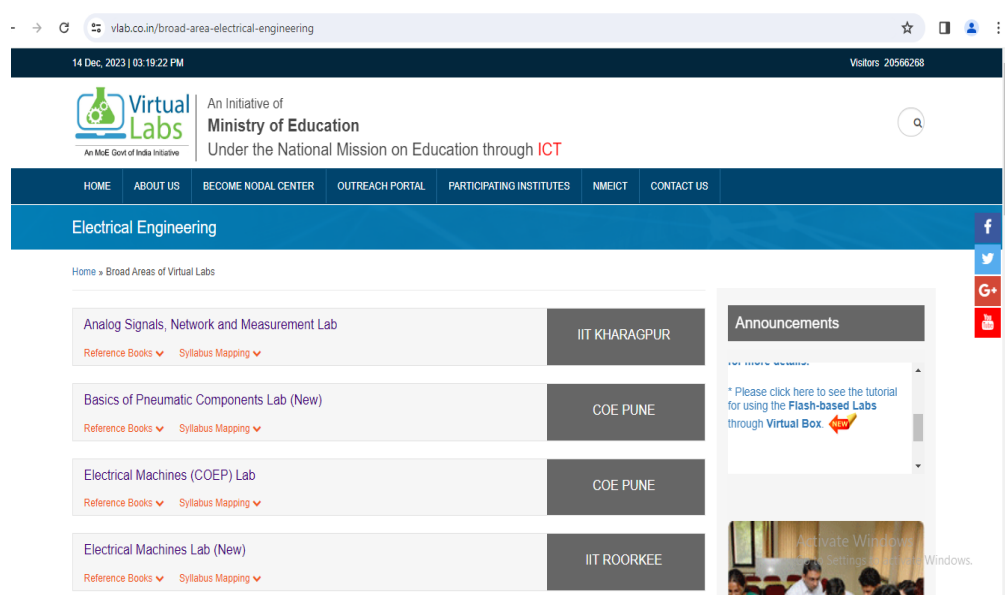
➤ NPTEL Online Courses

- 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.	DR.KBVS SUBRAHMANYAM	Solar Energy Engineering and Technology	12 Weeks	https://drive.google.com/file/d/1oxqAcntN_bHwHDtw60yUZcUzxZz7Ube2/view?usp=drive_link
		Introduction to smart grid	8 Weeks	
		Electrical distribution systems analysis	8 Weeks	
		Power systems protection and switch gear	8 Weeks	
		Recent advances in Transmission Insulators	4 Weeks	
2.	M.SRINU	Control Engineering	12 Weeks	

➤ Experimental learning

As an initiative by the MHRD, in labs, relevant experiments are displayed to students with the help of Simulations uploaded on the labs website <http://www.vlab.co.in/>



Web link: <https://ems-iitr.vlabs.ac.in/List%20of%20experiments.html>

➤ 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:

S.NO	NAME OF THE FACULTY	NAME OF THE SUBJECT	CLASS	YOU TUBE LINK
1	P.NAGARAJU	Switch Gear & Protection	IV B.TECH EEE	https://www.youtube.com/watch?v=eSi1iksDLhI&list=PLjFAEQEHhHVTnXF7rXFq31BEYFYiIf_Ot
2	S.RAJESH	Instrumentation	IV B.TECH EEE	https://www.youtube.com/watch?v=l4OM02KAzf8&list=PLjFAEQEHhHVTnXF7rXFq31BEYFYiIf_Ot&index=2
3	K.LAKSHMI	Utilization Of Electrical Energy	IV B.TECH EEE	https://www.youtube.com/watch?v=M7DSfP7qjh4&list=PLjFAEQEHhHVTnXF7rXFq31BEYFYiIf_Ot&index=4
4	G.N.D.SRINIVAS	Power Systems And Operating Control	IV B.TECH EEE	https://www.youtube.com/watch?v=ZIxMFQkIhl4&list=PLjFAEQEHhHVTnXF7rXFq31BEYFYiIf_Ot&index=15
5	G.SAI BABA	Power Electronics	III B.TECH EEE	https://www.youtube.com/watch?v=jGdo_Ik2K4s
6	K.LAKSHMI	Power Systems -II	III B.TECH EEE	https://www.youtube.com/watch?v=RR5WXMD40d4&list=PLjFAEQEHhHVT0aaDpqdwSNUwmao4vJB7H
7	G.N.D.SRINIVAS	Renewable Energy Sources & Systems	III B.TECH EEE	https://www.youtube.com/watch?v=BUH6iYRuLbU&list=PLjFAEQEHhHVT0aaDpqdwSNUwmao4vJB7H&index=18
8	P.NAGARAJU	Electrical Machines-I	II B.TECH EEE	https://www.youtube.com/watch?v=WwHq5lPfw&list=PLjFAEQEHhHVRWh4TjzQVOZdTE6P_JeKs
9	M.SRINU	Electrical Circuit Analysis-2	II B.TECH EEE	https://www.youtube.com/watch?v=4bJ25dqt2Tc&list=PLjFAEQEHhHVRWh4TjzQVOZdTE6P_JeKs&index=3
10	D.JOSEPH	Electro Motive Force	II B.TECH EEE	https://www.youtube.com/watch?v=1kVVkCvvlI4&list=PLjFAEQEHhHVRWh4TjzQVOZdTE6P_JeKs&index=8

Web link: <https://www.youtube.com/@dnrcetee38>

youtube.com/watch?v=SeOCYH06mk&list=PLFAEQEHHVHW4TjQVQZdTE6P_JeKs_rindex=11

2. Relation between line and phase voltage and currents in balanced system

In this section we will derive the relation between line and phase values of voltages and currents of 3 phase star connected and delta connected systems.

Star connection:

- Here, we supply double subscript notation to represent voltages and currents.
- The terminal corresponding to first subscript is assumed to be at a higher potential with respect to the terminal corresponding to second subscript.

Fig.1.5 Star Connected System

youtube.com/watch?v=JjJUSYAghHl

Unbiased clippers (Parallel Positive Clippers)

Without the battery, the output of the circuit below would be the negative portion of the input wave (assuming the bottom node is grounded). When $v > 0$, the diode is on (short-circuited), v is dropped across R and $v_0 = 0$. When $v < 0$, the diode is off (open-circuited), the voltage across R is zero and $v_0 = v$.

youtube.com/watch?v=I9YKIZUiyY

DISCONTINUOUS MODE

youtube.com/watch?v=RR5WXMd404&list=PLFAEQEHHVHW4TjQVQZdTE6P_JeKs_rindex=12

Let us assume magnetic flux ϕ is present within the thickness dy from D_1 to D_2 for 1 m length of the conductor as per the figure.

$$B = \frac{\mu_0 H}{2\pi} \quad \text{and} \quad H = \frac{I}{2\pi r} \Rightarrow B = \frac{\mu_0 I}{2\pi r} \quad \text{for } 1 \text{ m length}$$

So, $d\phi = B dy = \frac{\mu_0 I}{2\pi} \frac{dy}{r}$

As the total current I is assumed to flow in the surface of the conductor, so the flux linkage $d\lambda$ is equal to $d\phi$.

$$\therefore d\lambda = \frac{\mu_0 I}{2\pi} \frac{dy}{r} \Rightarrow \lambda = \int \frac{\mu_0 I}{2\pi} \frac{dy}{r} = \frac{\mu_0 I}{2\pi} \int \frac{dy}{r}$$

➤ E-Learning Resources

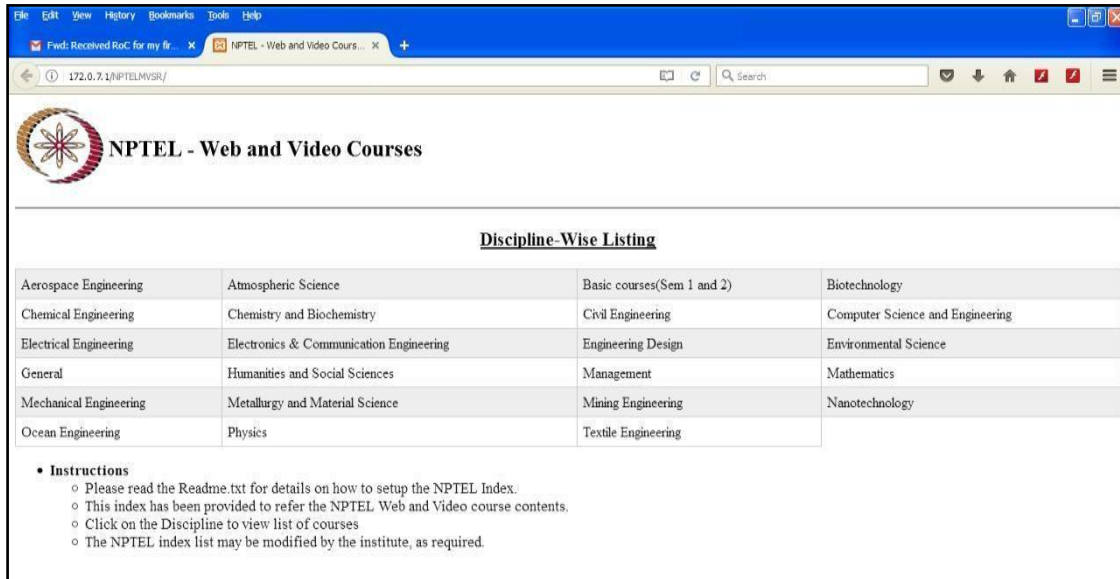
- The library also subscribes to a host of online and printed journals which are also made readily available to the students.
- The library also includes a computer room with internet access which is often used by students to access various forms of e-materials for their self-development.

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: DELNET, IEI, N.LIST

S.No	E-Journal	Web address
1.	DELNET	http://delnet.nic.in/
2.	IEI	https://www.ieindia.org/webui/iei-home.aspx
3.	NDL	https://nlist.inflibnet.ac.in/

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 displaying the NPTEL - Web and Video Courses website. The page features the NPTEL logo and the title "NPTEL - Web and Video Courses". Below the title, there is a section titled "Discipline-Wise Listing" which contains a table of various engineering and science disciplines. At the bottom of the page, there are instructions for users.

<u>Discipline-Wise Listing</u>			
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	

• **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.

➤ 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 acquired knowledge in current technologies and tools.



“Switch Gear & Protection” by Mr.G.VijayKumar “Utilization of Electrical Energy” by Mr.P.Srinivas Rao



NTTPS Industrial Visit, Vijayawada



220KV/132KV/33KV, Grid Substation

➤ 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 interacting 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.Srinu	Electrical circuit-II	Voltage, Current Electricity, Magnetism	https://www.youtube.com/watch?v=XiHVe8U5PhU&t=47s
2.	D. Joseph Kumar	Electromagnetic Theory	coulomb's law in animation slide presentation	https://www.youtube.com/watch?v=S83JPXMGbns
			Electric Potential_ Visualizing Voltage with 3D animations	https://www.youtube.com/watch?v=-Rb9guSEeVE
3.	T.V.Rao	Electrical Machines	Working of DC motor	https://www.youtube.com/watch?v=LAtPHANefQo
			Operation of Induction motor	https://www.youtube.com/watch?v=LtIoJBUSE28
			Principle of Operation of a DC Generator	https://www.youtube.com/watch?v=jh167TEECBk
4.	S.Rajesh	Power systems-I	Working of thermal power plant	https://www.youtube.com/watch?v=NAgbKN9E2AM
5.	N.Hymavathi	Electric drives	Variable frequency control (V/F) of Induction Motor1	https://www.youtube.com/watch?v=QYYn6RCYFrk
			Inverter working	https://www.youtube.com/watch?v=lZ0bhRPpW_c&t=180s
6.	P.Nagaraju	Switchgear & Protection	Circuit Breaker	https://www.youtube.com/watch?v=GSh0f94JwaA
			Transformer Differential Protection Using Numerical Relay	https://www.youtube.com/watch?v=ahPLRc3yyow
			Different types of Circuit Breakers	https://www.youtube.com/watch?v=uUnHSHdTSbw

➤ 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.	Transmissionmodel	