INNOVATIONS BY THE FACULTY IN TEACHING AND LEARNING

The department use innovative teaching and learning methods for teaching and assessment of the course. This includes software simulations for theoretical concepts, mini-projects, tutorials etc. Interactive videos are also used for assignments. Learning management software's like google classroom, class marker, quiz star, Canvas etc. are continuously used by the faculty members for teaching learning activities.

Some of the Information Communication Technology (ICT) adopted in the department is listed below:

1. Impartus (Lecture video recording facility)
2. Experiential learning: Mini-Projects, Modern Tool Usage, Term Paper
3. Participative learning: MOOCs, Case Studies
4. Flipped Classroom activity

1. IMPARTUS: (Lecture Video Recording)

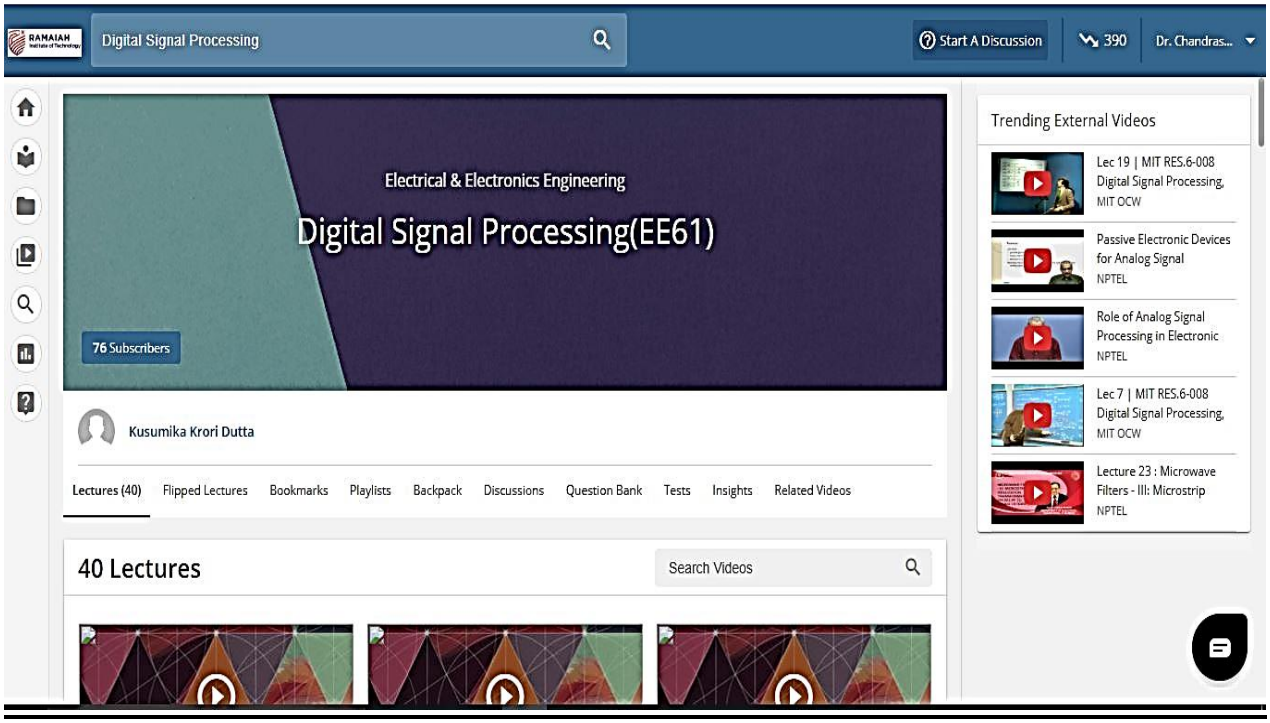
The Institution has provided classroom lecture video sharing software, "Impartus" using which classroom lectures are recorded and is available for students all the time. Impartus Web Application can be accessed through any web browser, by using the following link: URL: http://a.impartus.com/. Impartus Mobile Application is also available which can be accessed through Android or IOS Phone.

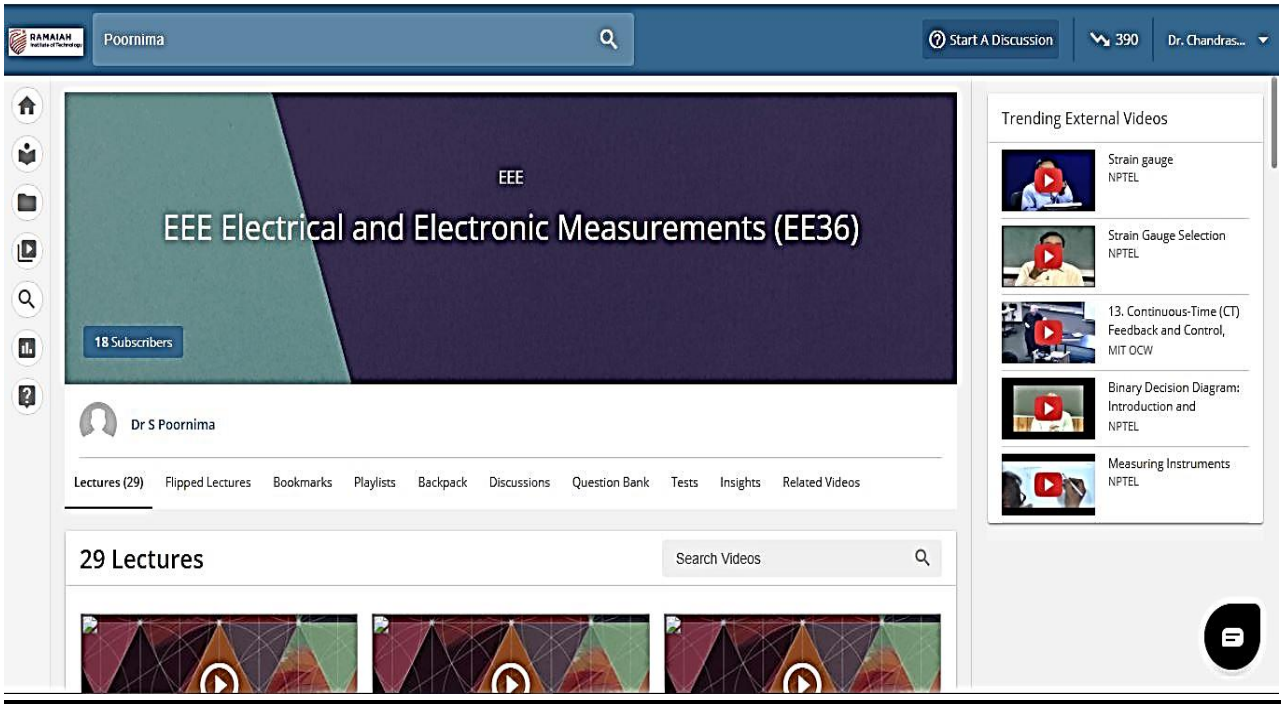
- Impartus provides a discussion platform, where students can clarify their doubts and also, a provision is available for faculty to upload course materials.
- Video lectures improves student engagement, offering the flexibility to pause, rewind, or skip throughout the video to have class discussions or review particular areas.
- The interactive sessions can be carried out by conducting polls and quiz ensuring active participation of students.
- One subject is identified for video lecture in Impartus every semester and this practice is in place since 2017. The subjects are identified based on importance and difficulty level which includes more analytical and numerical based.

Video lectures recorded for the courses are listed below:

SL No.	Faculty	Course Code	Course	Link
1.	Dr. Chandrashekhar Badachi Mr. Vinayak V Rao Ms. Archana Diwakar	EE101/201/EE15/25	Basic Electrical Engineering	https://a.impartus.com/ilc/#/course/59745/295 https://a.impartus.com/ilc/#/course/1115333/1112 https://a.impartus.com/ilc/#/course/60443/703
2.	Dr. Kodeshwara Kumaran	EE44/ EE33	MicroControllers: Programming and Interfacing	https://a.impartus.com/ilc/#/course/59753/295
3.	Mr. Victor George	EE42/ EE33	Field Theory	https://a.impartus.com/ilc/#/course/81453/295
4.	Mr. Victor George	EE43/ EE51	Signal & Systems	https://a.impartus.com/ilc/#/course/96317/452
5.	Mr. Vinayak V Rao	EE34	Electric Networks	https://a.impartus.com/ilc/#/course/81454/295
6.	Dr. Likith Kumar	EE45	Electrical Machines-II	https://a.impartus.com/ilc/#/course/96316/452
7.	Dr. Chandrashekar Badachi	EE35	Electrical Machines-I	https://a.impartus.com/ilc/#/course/132061/636
8.	Mr. Gurunayak N	EE52	Control Systems	https://a.impartus.com/ilc/#/course/107455/533
9.	Mr. Gurunayak N	EE63	Modern Control Systems	https://a.impartus.com/ilc/#/course/119854/593
10.	Dr. Janamejaya	EE62/ EE43	Power Electronics	https://a.impartus.com/ilc/#/course/270718/703
11.	Mr. Ramakrishna Murthy	EE44	Electronic Devices & Circuits	https://a.impartus.com/ilc/#/course/1253714/1112
12.	Ms. Kusumika Krori Dutta	EE61	Digital Signal Processing	https://a.impartus.com/ilc/#/course/2583740/1205
13.	Dr. Poornima S	EE36	Electrical and Electronics Measurements	https://a.impartus.com/ilc/#/course/2267122/1174

The dash board of Impartus (Lecture video recording facility) for few courses is given below.





2. Experiential learning: Mini-Projects, Modern Tool Usage, Term Paper

A. Mini-Projects:

Mini-Project is a part of the continuous internal evaluation (CIE) component for few courses

- This provides a hands-on experience to work on a model to realize the theoretical concepts.
- This helps in developing soft-skills, such as team-work, project management skills, and communication skills.

SL No.	Course	Code	Sem
1	Electrical and Electronics Measurements	EE36	3
2	Logic Design Lab	EE303L	3
3	Introduction to Product Design	EEL48	4
4	Introduction to Deep Learning	EEE51	5
5	Virtual Instrumentation	EEE25	5

Few sample projects' links are as follows:

- ✓ Hardware:https://drive.google.com/file/d/1Tg0PdeGFnn5C3wWgbHMnOgXZsLnd8FMH/view?usp=share_link
- ✓ Simulation:https://drive.google.com/file/d/1M5G8z8LyPM5jZdpWvZ68XyjzSMeuDcsY/view?usp=share_link

B. Modern Tools:

- Students are trained to use modern tools available in the department such as MATLAB, SIMULINK, MULTISIM, LABVIEW, ANSYS, COMSOL, PSCAD etc.
- Assignments using above mentioned tools are used for continuous evaluation.

SL No.	Course	Code	Sem
1	Digital Electronics	EE32	3
2	Micro Controllers: Programming and Interfacing	EE33	3
3	Electrical machines-I	EE33	3
4	Electrical machines-II	EE45	4
5	Electronic Devices and Circuits	EE44	4
6	Linear Integrated Circuits	EE54	5
7	Digital Image Processing	EEE24	7
8	High Voltage Engineering	EE73	7
9	Nanofabrication and characterization	EEE21	7

Some of the simulation-based assignments' links are as follows:

- ✓ MATLAB:https://drive.google.com/file/d/1-E3mWDAz8pUnKZwj4nDYK3wKrojQIiBA/view?usp=share_link
- ✓ Quickfield:https://drive.google.com/file/d/1wXieDPAEPdXuxwVDsvtgaNBE07xtG3J1/view?usp=share_link
- ✓ C_Programming:https://drive.google.com/file/d/1ShIDr6SklCCfyFAijOp03Od24R3JetP0/view?usp=share_link

C. Term Paper:

- Term Paper is introduced for some of the courses and evaluated based on understanding and analyzing the work presented in the paper, which is taken from the literature available.
- Students are encouraged to work individually or in a team, resulting in improving their communication and report writing skills.
- This also enables the self-learning ability in the students.

SL No.	Course	Code	Sem
1	Power Electronics	EE43	4
2	Introduction to Deep Learning	EEE551	5
3	Electric Drives	EEE11	7
4	Switchgear and Protection	EE71	7
5	High Voltage Engineering	EE73	7

Some of the Term paper assignments' links are as follows:

- ✓ https://drive.google.com/file/d/1myH7yTiGVFG9E2v_383aQBq5HaKGW73M/view?usp=share_link
- ✓ https://drive.google.com/file/d/1f2NzYjweh6Wdfzb_brFIBvTtcouFtRyT/view?usp=share_link

2. Participative learning: MOOCs, Case Studies

A. MOOCs: Massive Open Online Courses

- Students are encouraged to take MOOCs courses to supplement the regular teaching. The weightage for the same is given in Continuous Internal Evaluation.
- Students are also, encouraged to take courses from other Open Online platforms like NPTEL, SWAYAM and Coursera.
- These open online platforms offer multi-disciplinary courses, so that, students acquire advanced knowledge towards subject.

SL No.	Course	Code	Sem
1	Signals and Systems	EE51	5

✓ NPTEL:https://drive.google.com/file/d/1r1k_-BhBxBkVdItb0_v_T0v-AkIRAk8K/view?usp=share_link

B. Case Study Analysis and Discussion:

- Some courses have case studies as a supplementary learning as a part of continuous internal evaluation. At the end of the course, the students are expected to present a case study along with a report.
- Case studies helps students to analyze the societal related problems and try for an approach to arrive at a better solution.
- Students are encouraged to work in a team, resulting in improving their team work ability.
- Report writing improves communication skill.

SL No.	Course	Code	Sem
1	Intellectual Property Rights	EE54	5
2	Generation, Economics & Reliability Aspects of Power systems	EEE20	7
3	Entrepreneurship & Management	EE73	7

Some of the case study assignments' links are as follows:

- ✓ https://docs.google.com/presentation/d/1XSM6o3SZDKVWFoFKDBwWps0-LMTYtREXKaiwk6bTPYY/edit?usp=share_link
- ✓ https://drive.google.com/file/d/1-L7y8VLABg6GPSHgnAG_iCgpQnqclfQR/view?usp=share_link

4.Flipped Classroom activity (Video Assignment with Polls):

This activity involves a creation of a video lecture for a topic by the course instructor in YouTube and this video will be made available in ED puzzle platform where, in- between the lecture, polls are introduced randomly for verifying the understanding of the topic by the students. This also helps in self learning.

SL No.	Course	Code	Sem
1	Electronic Devices and Circuits	EE44	4
2	Basic Electrical Engineering	EE25	2

The sample video lecture link is made available below.

- https://www.youtube.com/watch?v=Oj9VT1qxpzg&t=3s
- https://www.youtube.com/watch?v=6YaX-DdVZag

and the screen shots for the same is available in the below links

- https://drive.google.com/file/d/1YJjhdn0fJ9bFXU_DH_lc2ehiWIZZ75-8/view?usp=share_link
- https://drive.google.com/file/d/18a-AHf56WXjmLSXYZXGxS1paYGdIc9hp/view?usp=share_link