5.6. Innovations by the Faculty in Teaching and Learning

Statement of clear goals, use of appropriate methods, significance of results, effective presentation and reflective presentation.

Goals and Usage of Appropriate Methods:

- 1. All the faculty members are required to attend one FDP per Semester.
- 2. All the faculty members are required to complete one MOOCS certificate per Year.
- 3. Doctorate faculty need to publish two papers either in indexed Journals or Conferences.
- 4. Other faculty members have to publish one paper in indexed Journals or Conferences.
- 5. Non doctorates have to register for Ph.D.
- 6. Faculty members need to use at least one innovative teaching and Learning Methodology.
- 7. Students are encouraged to attempt GATE with special coaching to the interested and merit students.
- 8. Students are encouraged to do NPTEL courses to increase their knowledge base about the subject.
- 9. Virtual labs to be included for programming subjects.
- 10. Faculty members have to see that E-content of respective subjects is available to students.
- 11. Mode of teaching in this institute is not only limited to the traditional Chalk & Talk methods, but also an amalgamation of the modern teaching aids like power point presentation, audio-visual teaching etc.

Teaching and Learning Methodologies

- 1. The use of modern teaching aids like LCD projectors, Wi-Fi enabled laptops are usually employed in classrooms and other student learning environments.
- 2. Department encourages academic discussions between faculty and students using black board and faculty members share academic study material using Moodle, What's App groups and their own blogs.
- 3. Department has introduced mini projects in the curriculum. Usage of Role play, Model Demo, Charts etc., during teaching learning process.
- 4. A team of faculty members for analytical subjects and also GATE coaching is provided to the interested and merit students.
- 5. Expert video subject lectures delivered by the various eminent resource persons are available in the digital library and it facilitates the faculty and students to utilize E- Tutorials of NPTEL, MOOCs & access to E-Journals etc.
- 6. Faculty members use department library, digital library and other Open Source platforms to enhance their teaching skills.
- 7. The faculty members are encouraged to participate in short term courses, Faculty development programs and workshops on advanced topics to keep pace with the advanced level of knowledge and skills. Over the past years the faculties have been participating /presenting papers in national/international conferences and publish their articles in national/international journals to enrich their knowledge.
- 8. The faculty members are encouraged to use online teaching tools Microsoft Teams, Zoom, Go To Meeting, Google classroom and white board Apps for giving online lectures and assignments.

Table 1: Innovations by Faculty in Teaching & Learning Methodologies

S.No	Name of the Subjects	Name of the Faculty	Innovations by Facul Learning Meth	ty in Teaching & odologies	Tools Used/Web link
			Flipped Learning	Moodle's	Basic circuit analysis-
1	Electrical Circuit	Mr K.Sabarinath		Blog spot	https://archive.nptel.ac.in/courses/1
1	Analysis		Tutorials	What's app	<u>17/106/117106108/</u>
	5		PPT	You tube	sabarinath.k329.blogspot.com
			DDT	Moodle's	Introduction to Control Systems-
2	Control Systems	Dr T.Rakesh	111	You tube	YouTube
4	Control Systems	Mrs V.Sravanthi	Seminars	Coursera	sravanthi242.blogspot.com
			Tutorials	Blog spot	
			Collaborative	Moodle's	Electrical Measuring Instruments-you
	Flectrical	Mr. Ch. Chinne Veensieh	Learning		tube eeehod.blogspot.com
3	Electrical	Mr Ch.Chinna veeralah	Seminars	Whatsapp	
	measurements	Mrs J.Susmitha	PPT	YouTube	
			Tutorials	Blogspot	
			Seminars	Blogspot	Power semiconductor devices-
4	Dower Flectronics	Mrs T.Suhasini Dr V.Sateesh	PPT	Moodle's	https://nptel.ac.in/courses/108/105
7	Power Electronics		Collaborative	Moodle's	<u>/108105066/</u>
			Learning		sonuchinnu.blogspot.com
			Virtual Labs	Moodle's	Power System I Generation,
	D	Mr P.Sai Charan	Tutorials		Transmission and Distribution
5	Power systems	Mrs B.Nagamani	Seminars	YouTube	
-			PPT	Whatsapp	<u>-you tube</u>
			Sominons	Maadla'a	Floatricel Mechines you tube
			Seminars That anis h	Mooule s	Electrical Machines-you tube
6	Electrical machines	Mr P.Venkateswara Rao		Blogspot	Venkat10ai blogspot.com
			PPI	Whatsapp	Venkatioaj.biogspot.com
			Charts	YouTube	DO Matan Drives
			Collaborative	Blogspot	DC Motor Drives-
	Power electropics	Mrs P.Revathi	Learning	M = = -11 = 2=	<u>nttps://www.youtube.com/watcn?v=</u>
7	Fower electronics	Mr B.Gopi	Seminars	WIOOGIE'S	<u>91121E1p074A</u>
	converters and drives	-		wnatsapp	halugungtigani 040 hlaganat asm
			Project Based	YouTube	balusupaugopi.940.blogspot.com
			Learning		

			PPT		
			Project based	Moodle's	PDF shaiknazeer256.blogspot.com
Q			Learning		
	Renewable energy	Dr S.Sravan kumar	Seminars	Blogspot	
0	sources	Mr SK.Nazeer	PPT	Whatsapp	
			Tutorials	YouTube	
			Virtual Labs		
			Collaborative	Moodle's	Symmetrical Components for Power
		Mr. D.Dolo	Learning		System Analysis-you tube
0	Power system	MI F Dala Subrohmonyom	Seminar	Blogspot	
9	Analysis	Mr B Naga Seshu	Flipped Learning	Whatsapp	
	5	MI D Naga Scsilu	PPT	YouTube	
			NPTEL		
		Mr P Ankama Rao	Virtual Labs	Moodle's	Ankamaraopasupulati.blogspot.com
10	HVDC & FACTS	Mr R Kishore	PPT	YouTube	
10	Controllers		Seminars	Coursera	
	Controllers		Tutorials	Blogspot	
		Mr K Siva Shankar	Collaborative	Moodle's	Active Shunt Compensation:
		Mrs RAFSAAL SHAHEEN	Learning		DSTATCOM-
11	Power Quality	SK	Seminars	Blogspot	https://onlinecourses.nptel.ac.in/
	c 5		Flipped Learning	Whatsapp	
			PPT	Youtube	shankartej.201 .blogspot.com
		Dr. Y. Sreenivasa Rao	Collaborative	Moodles	Stepper motors—You Tube
		Mr Chityala Saidaiah	Learning		chityala227.blogspot.com
			Seminars	Whatsapp	
10	Special Electrical		Flipped Learning	Youtube	
14	Machines		PPT		
			Seminars	Blogspot	
			Tutorials	Whatsapp	
				YouTube	

Table 2	2: I	nnovative	tools	used	by	the	Faculty
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S.No	INNOVATION BY FACULTY	FACULTY NAME
1.	Microsoft Teams	All Faculties
2.	Google Class Room	Dr. T.Rakesh
3.	YouTube video	Dr. K.Sabarinath
4.	Collaborative Method	Mr. B. Gopi
5.	Online Platform: Placement Season	Mr. Ch.Chinna Veeraiah
6.	Flipped Classroom	Mrs Rafsaal Shaheen Sk
7.	Virtual Labs	Mr. P.Venkateswara Rao
8	Online Test Tool: Moodle	All Faculties
9	MOOCS (NPTEL, Coursera, Udemy etc)	All Faculties
10.	Project Based Learning	Mrs T.Suhasini

Table 3: Innovative Teaching aids

S. No	Item	Description
1	Moodle	 Moodle is a learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments. The features of Moodle are <u>All-in-one learning platform</u> As Moodle provides the most flexible tool-set to support both blended learning and
		complete range of built-in features, including external collaborative tools such as
		forums, wikis, chats and blogs. Through Moodle, course materials are delivered to

		students, Quizzes are conducted, assignments are given and grading is done
		accordingly. It is an effective tool for effective teaching learning process and is being
		extensively used in our department.
		<u>Highly flexible and fully customizable</u>
		Because it is open-source, Moodle can be customized in any way and tailored to
		individual needs. Its modular set up and interoperable design allows developers to
		create plugins and integrate external applications to achieve specific functionalities.
		Hence the Faculty has got the freedom to use Moodle effectively for enhanced
		teaching learning.
		<u>Robust, secure and private</u>
		As data security and user privacy, security controls are constantly being updated
		and implemented in Moodle development processes against unauthorized access,
		data loss and misuse, Moodle provides an easy platform for continuous assessment
		of students. Moodle can be easily deployed on a private secure cloud or server for
		complete control.
		• <u>Use anytime, anywhere, on any device</u>
		Moodle is web-based and so can be accessed from anywhere in the world. With a
		default mobile- compatible interface and cross-browser compatibility, content on the
		Moodle platform is easily accessible and consistent across different web browsers
		and devices. This gives a 24x7 learning experience for the users.
		• <u>Extensive resources available</u>
		Access extensive Moodle documentation and user forums in multiple languages, free
		content and courses shared by Moodle users across the world, as well as hundreds
		of plugins contributed by a large global community.
		Engineering Education is incomplete without hands on learning of real systems. IIT
		Kharagpur having a very strong base in Theory of Engineering Systems has developed a
2	Virtual Labs	large amount of lecture material which is disseminated through the National Programme
		on Technology Enhanced Learning (NPTEL) in the form of Video or Web based content for
		each theory course in Engineering Sciences. NPTEL facilitates the Information and

		Communications technology (ICT) based distribution to a large audience in the world the
		lecture materials using the Internet as a medium.
		Massive Open Online Courses (MOOCs) are free online courses available for anyone to
		enroll. MOOCs provide an affordable and flexible way to learn new skills, advance your
		career and deliver quality educational experiences at scale.
		Millions of people around the world use MOOCs to learn for a variety of reasons, including:
		career development, changing careers, college preparations, supplemental learning,
		lifelong learning, corporate eLearning & training, and more.
		Faculty members are motivated to students to take up online courses for their subjects
		from various eminent platforms like NPTEL, Coursera, Edex,.
		NPTEL:
	MOOCS	The main objective of the National Program on Technology Enhanced Learning (NPTEL) is
	(NPTEL,	to enhance the quality of engineering and science education in the country by developing
3	Coursera,	content for undergraduate and postgraduate curricula using video and web-based courses.
	Udemy etc)	These courses cover the syllabi prescribed by universities and approved by AICTE.
		NPTEL Local Chapter:
		Our college is having NPTEL Local Chapter: It is a partnership between the college and
		NPTEL. Many students and faculty members in the department enroll for courses and get
		certified after the successful completion of the course.
		Coursera:
		Many faculty members and students in the department have completed online courses
		based upon their area of interest. These courses also help the faculty to advance their
		skills for career development.
		https://www.coursera.org/
	Project	Project Based Learning is a teaching method in which students gains knowledge and skills
4	Based	by working for an extended period of time to investigate and respond to an authentic,

Learning engaging, and complex question, problem, or challenge. Students work on a project over an extended period of time – from a week up to a semester – that engages them in solving a real-world problem or answering a complex question. They demonstrate their knowledge and skills by developing a public product or presentation. As a result, students develop deep content knowledge as well as critical thinking, creativity, and communication skills in the context of doing an authentic, meaningful project. Project Based Learning unleashes a contagious, creative energy among students and teachers.

The department has made it a mandatory requirement for every student to design and conduct a project, right from the fifth semester onwards which is beyond the regular curriculum for the semester. This helps the student to have a hands-on approach to the engineering design process and utilize the theoretical aspects they have learnt to develop prototypes and design experiments on what they have learnt.

• During the fifth semester, the students conduct a mini-project that focuses on the fundamental software design aspects of computer Science and Engineering. A project group consisting of a maximum of four members under the guidance of a faculty member explores a scientific principle related to their area of interest. The learning process is given more weightage during the assessment and not the results obtained.

• Students in their sixth semester are encouraged to do a project which will help them to learn new technical skills with guidance from an allotted faculty member. They are encouraged to explore a problem and develop a simple prototype or working model that can solve it. This introduces them to the concept of the Engineering design process method.

The group of students is also mentored by their allotted guides in preparing a wellstructured report. To assist this process, the institution has published a scientific format in which each project group is required to submit the report. This practice helps the students to understand and improve their scientific writing skills. The prepared report is archived in both soft and hard copy and is made available in the department library for peer reference.

		A flipped classroom is an instructional strategy and a type of blended learning that			
F	Flipped	reverses the traditional learning environment by delivering instructional content, often			
5	Classroom	online, outside of the classroom. It moves activities, including those that may have			
		traditionally been considered homework, into the classroom			
	It helps students to think individually about a topic or answer to a question.				
		students to share ideas with classmates and builds oral communication skills. It helps			
		focus attention and engage students in comprehending the reading material. The			
		Procedure to use this method is			
		• Decide upon the text to be read and develop the set of questions or prompts that			
		target key content concepts.			
6	Think-Pair-	• Describe the purpose of the strategy and provide guidelines for discussions.			
°,	Share	• Model the procedure to ensure that students understand how to use the strategy.			
		• Monitor and support students as they work through the following:			
		\mathbf{T} : (Think) Teachers begin by asking a specific question about the text. Students "think"			
		about what they know or have learned about the topic.			
		P : (Pair) Each student should be paired with another student or a small group.			
		S: (Share) Students share their thinking with their partner. Teachers expand the "share"			
		into a whole-class discussion.			

Alumni Interaction:



In ASIST, we have Alumni Association in which every year all the alumni's will have get together. Alumni will interact with their juniors and give them guidance to have betterment in their academics as well as the opportunities in advanced technologies and also path for higher studies.

Figure1: Mr. N.Narendra Gopi (14AJ1A0219) interacting with III- year and IV-year students

Table 4: Innovative Teaching by Activity Based Teaching

	Collaborative Learning	It involves encouraging student collaboration for various projects. We live in a globalized world and collaboration is an essential life skill that is important for all careers and enterprises. Teachers can help foster this skill in the classroom by allowing students to learn, study and work in groups.
Activity Based Teaching	Flipped Class Room	It involves encouraging student for presentation of different concepts from the syllabus as a part of revision. Flipping the classroom is an effective teaching method. In this technique, the students are made active participants of the learning process by passing the onus of learning on them, it requires the teachers to relegate to the role of resource providers and the students take the responsibility of gathering concepts information. Using various tools of technology, the students are encouraged to constructing knowledge, fill in the information gaps and make inferences on their own as and when needed
	Group discussions	To make students develop communication skills
	Seminars	To make students develop communication skills and reduce the stage fear in them.
	Blended Learning	It is a style of training in which students learn via electronic and online mode as well as traditional face to face training.
	Social Responsibility	To inculcate the social responsibility by participating students in NSS programmes
	Role Play	The results reveal that participants are more enthusiastic to engage in class activities. They also develop social and communication skills through group activities associated with the teaching of ADA. Role

	play can be a very useful strategy to teach concepts that are perceived as abstract.
Learning by Doing	Student can learn the skills and apply in the laboratory in presence of the faculty.
Mind Map	For better understanding and learning of concepts, new technology provides various tools. A student understands how using digital technology tools could help in boosting task efficiency. By using new tools and technology like hive for extracting important insights from huge data in no time can benefit the user in many ways.

Collaborative Learning



Figure 2: Collaborative Learning

Technical Seminars:



Figure 3: Technical Seminars

Project based Learning:



ASIST is having Digital Library facility. ASIST is registered as a NDLI Club under the National Digital Library of India.

So, students can access the contents available on National Digital Library website anytime.

Department also holding digital library contents of current subjects from NPTEL, Swayam, You tube and other platforms.

Content Delivery by Video Lectures: Study materials related to any subject of EEE department Course has made available for students. It helps as a remedial material for the absentees and helps those who have any doubt.

What's app Groups: Section wise what's app groups have been created for all EEE subjects. Subject specialized faculty members have been added in groups in order to upgrade relevant course materials including recent advances in the area.

Extension of Ph.D works: Ph.D. holders of EEE department motivate students and staff for brainstorming future ideas on the existing Ph.D. works.

Type of Innovation in Teaching & Learning Method	The Objective of the Innovation	Significance Results Observed		Template
	In order to overcome the gap	The students were very much	S.No	E-Journal Web address
	between the theoretical	involved and learned students to		IEEE
	knowledge and Practical	have self-learning beyond		https://ieeexplore.ieee.org/Xplore/home
	knowledge, The Digital	curriculum through the facilities		.jsp
Department	Library is very helpful for	available in the Learning resource	2	J-GATE https://jgateplus.com/home/
Digital Library	Faculty and Students to	centre such as National	3	DELNET http://delnet in/index html
	access the class	Programme on Technology	5	
	presentations, previous	Enhanced Learning (NPTEL) Video		IEI https://www.ieindia.org/webui/iei-
	question papers, course	Lectures and E-journals: IEEE, J-		nome.aspx
	Materials and E-journal.	GATE, DELNET, IEI, NDL		NDL https://ndl.iitkgp.ac.in/