



Viswam Engineering College

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu

Accredited by NAAC with A-Grade

Recognized under 2(f) by UGC - An ISO 9001:2015 Certified Institution

Angallu, Madanapalle-517325, Annamayya Dist., A. P

Electronics & Communication Engineering

5.5. Innovations by the Faculty in Teaching and Learning (20)

The Electronics & Communication Engineering faculty strives to improve teaching and learning experiences through new techniques. These are clearly stated in both our Department Records and on the Institute website. The faculty's innovations in teaching and learning are outlined as follows.

i. App based learning

Teaching using applications on students' smartphones. Apps on the Play Store improve learning by providing answers to complex issues with various variables. The apps, their features, topic benefits, and associated links are listed below:

S. No	App details	Courses benefited	Link to install the app
1	Pals v lab	Analog Circuits, Control Systems	https://www.vlab.co.in/broad-area-electronics-and-communications
2	Electronics	Electronic Measurements & Instrumentation	https://electronics.wisc-online.com/
3	Class Central	Signals and Systems	https://www.classcentral.com/course/swayam-principles-of-signals-and-systems-9900

PALS V LAB & Virtual Labs App

→ vlab.co.in/broad-area-electronics-and-communications

28 Mar, 2024 | 04:24:17 PM


Visitors: 22391254

Virtual Labs
An Initiative of
Ministry of Education
Under the National Mission on Education through ICT

HOME ABOUT US OUTREACH PORTAL PARTICIPATING INSTITUTES NMEICT CONTACT US

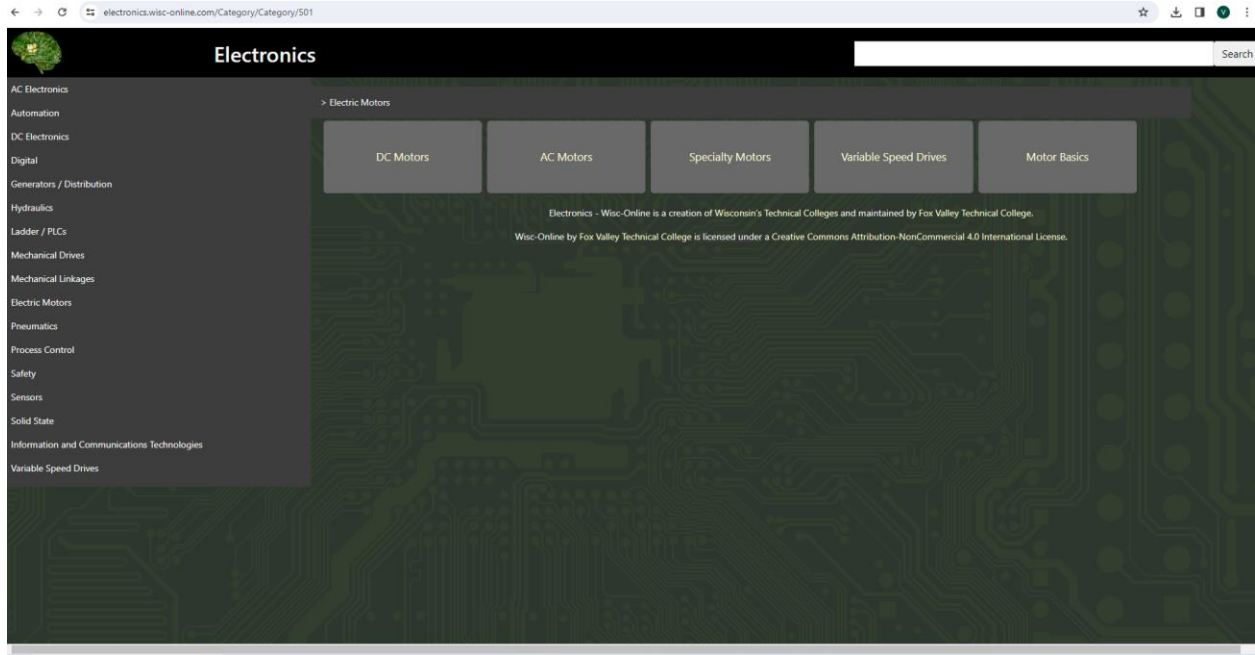
Electronics & Communications

Home » Broad Areas of Virtual Labs

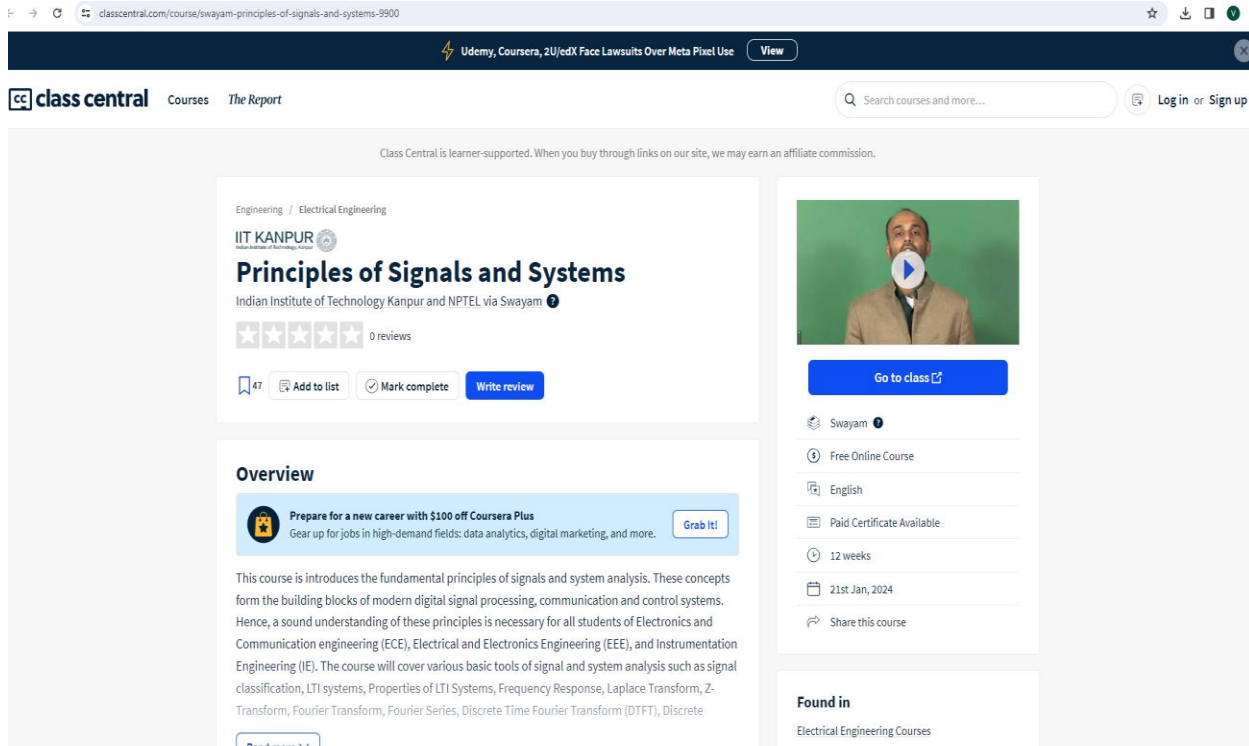
Analog Electronics Lab (New) Reference Books ▾ Syllabus Mapping ▾	IIT ROORKEE	Announcements * Various projects/ICT initiatives of the Ministry of Education are available on the link given here. Please click here for more details. * Please click here to see the tutorial for using the Flash-based labs through 
Basic Electronics Lab Reference Books ▴ Syllabus Mapping ▴ Reference Books 1. Integrated Electronics: Milman & Halkias; McGrawHill 2. Electronic circuit analysis and design (Second edition): D.A. Neamen, TMH 3. Electronics Principles: Malvino; McGrawHill 4. Electronics Circuits: Donald L. Schilling & Charles Belove; McGrawHill Syllabus Mapping 1. IPU, MDU, KUK, UPTU, RTU, UTU, PTU (UG)	IIT KHARAGPUR	
Digital Applications Lab (New) Reference Books ▾ Syllabus Mapping ▾	IIT BOMBAY	
Digital Electronic Circuits Lab Reference Books ▴ Syllabus Mapping ▴ Reference Books 1. DIGITAL DESIGN ? Third Edition, M.Morris Mano, Pearson Education/PHI 2. Digital Principles and Design ? Donald D Olivone, Tata McGraw Hill, Edition 3. John F Walkerly, ?Digital Design Principles and Practices 3/e?, Pearson Education 2001 4. J.P. Hayes, ?Introduction to Digital Logic Design?, Addison-Wesley Publishing Co 5. Charles H. Roth, Jr, Fundamentals of logic design, Cengage Learning, New Delhi	IIT KHARAGPUR	



Electronics App



Class Central App

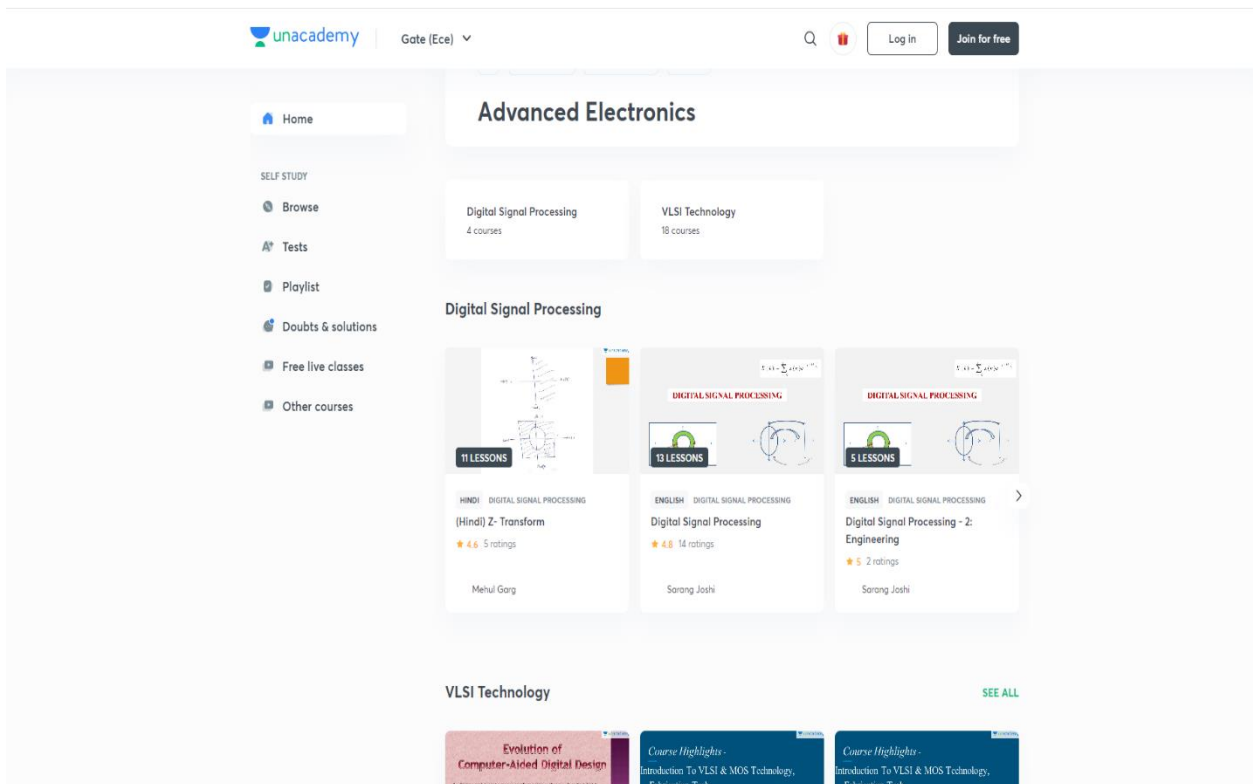


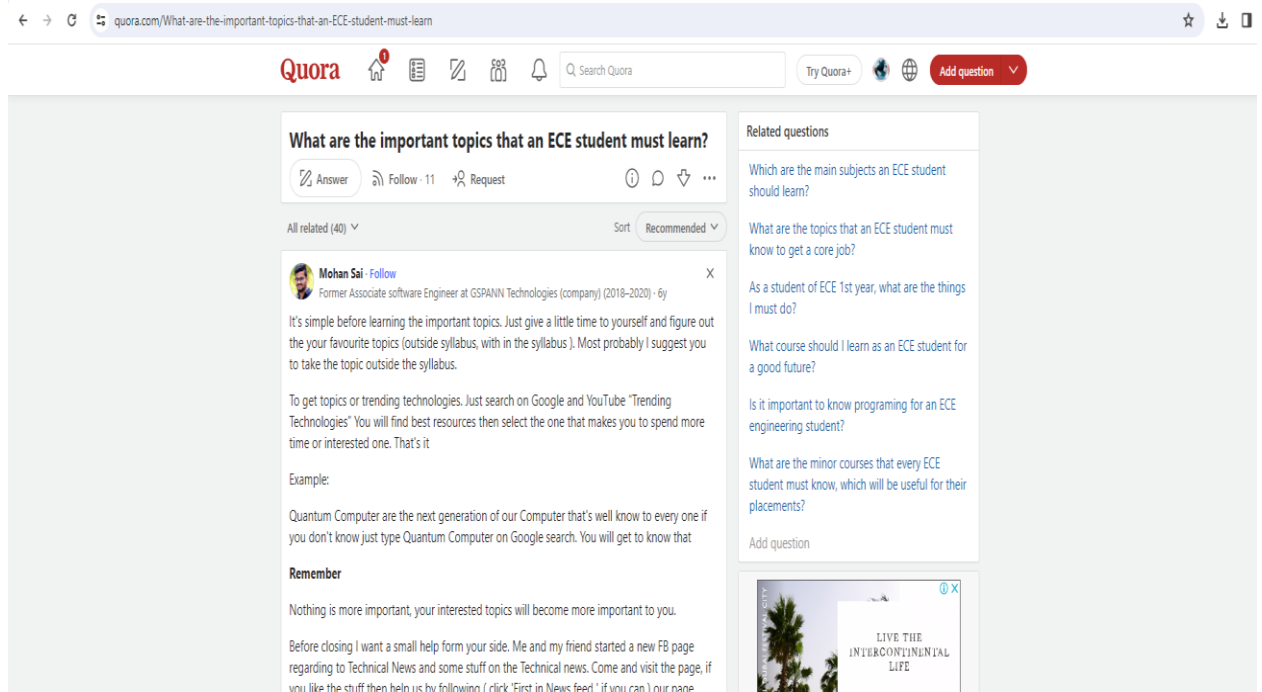
ii. Solution Bank

Exam questions are typically offered by topic experts and can help clarify concepts. Solutions to these papers might help students understand the many approaches to analyzing and solving concepts.

S. No	Innovative Teaching Method & Features provided	Courses benefited	Link
1	Quora, Unacademy	Cellular & Mobile Communications, Communication Networks	https://unacademy.com/goal/gate-graduate-aptitude-test-in-engineering-preparation-electronics-communication-engineering/TYZBK/free-platform/advanced-electronics/ADOWP https://www.quora.com/What-are-the-important-topics-that-an-ECE-student-must-learn

Unacademy





iii. Collaborative Tools

Engineering requires a collaborative effort between management and ground-level workers to execute a strategy developed by a few individuals.

Nowadays, students can use collaborative platforms to collect and synthesize knowledge from various resources, unlike in the past.

S.No	Name of the Tool	Courses benefited	Relevant Link
1	Google docs for notes sharing. Important Links to additional material i.e. apps, websites, videos, journals.	Electronic Devices & Circuits Digital signal Processing, Digital Logic Design	https://docs.google.com/document/create?addon_store

Google Docs

docs.google.com/document/d/1PbCEYfYkqz0u0XZp37a3_AIHuFGppsa/edit

DIGITAL LOGIC DESIGN

Request edit access

Share

Outline

- INTRODUCTIONABOUTDIGIT...
- Characteristics of Digital syste...
- Disadvantages of Digital syste...
- NUMBERSYSTEM
- Binary numbers system:
- Decimal Numbers system
- Octal Number System
- HexaDecimal Number System
- Number Base conversions
- = 5637.534
- Representation of signed no. sb...
- Representation of signed no. su...
- Special case in 2's comp repres...
- Characteristics of 2's complim...
- Signed binary numbers:
- 2's complement Arithmetic:
- 1's complement of n number:
- Binary codes
- Reflective Code
- Sequential Codes
- Non-weighted codes
- Excess-3 Code
- Gray Code
- Binary to Gray Conversion
- 8421 BCD Code (Natural BCD coo...

VISWAM COLLEGE OF ENGINEERING

UNIT -1
NUMBERSYSTEMS&BOOLEANALGEBRA

- Introduction about digital system
- Philosophy of numbers systems
- Complement representation of the given numbers
- Binary arithmetic
- Binary codes
- Error detecting & error correcting codes
- Hamming codes

INTRODUCTION ABOUT DIGITAL SYSTEM

A Digital system is an interconnection of digital modules and it is a system that manipulates discrete elements of information that is represented internally in the binary form.

Now a day's digital systems are used in wide variety of industrial and consumer products such as automated industrial machinery, pocket calculators, microprocessors, digital computers, digital watches, TV games and signal processing and so on.

Characteristics of Digital systems

- Digital systems manipulate discrete elements of information.
- Discrete elements are nothing but the digits such as 10 decimal digits or 26 letters of alphabets and so on.
- Digital systems use physical quantities called digital to represent discrete elements.
- In digital systems, the signals have two discrete levels and are therefore said to be binary.
- A signal in digital system represents a binary digit called bit. The bit has a value either 0 or 1.

Analog systems vs Digital systems

Analog system process information that varies continuously i.e., they process time varying signals that can take on any values across a continuous range of voltage, current or any physical parameter.

Digital systems use digital circuits that can process digital signals which can take either 0 or 1 for binary system.

EC3492- DIGITAL SIGNAL PROCESSING-87969481-DIGITAL SIGNAL PROCESSING (1).pdf

Open with Google Docs

DSP

UNIT I: INTRODUCTION TO DIGITAL SIGNAL PROCESSING

1.1 INTRODUCTION

Signals constitute an important part of our daily life. Anything that carries some information is called a signal. A signal is defined as a single-valued function of one or more independent variables which contain some information. A signal is also defined as a physical quantity that varies with time, space or any other independent variable. A signal may be represented in time domain or frequency domain. Human speech is a familiar example of a signal. Electric current and voltage are also examples of signals. A signal can be a function of one or more independent variables. A signal may be a function of time, temperature, position, pressure, distance etc. If a signal depends on only one independent variable, it is called a one-dimensional signal, and if a signal depends on two independent variables, it is called a two-dimensional signal.

A system is defined as an entity that acts on an input signal and transforms it into an output signal. A system is also defined as a set of elements or fundamental blocks which are connected together and produces an output in response to an input signal. It is a cause-and-effect relation between two or more signals. The actual physical structure of the system determines the exact relation between the input $x(n)$ and the output $y(n)$, and specifies the output for every input. Systems may be single-input and single-output systems or multi-input and multi-output systems.

Signal processing is a method of extracting information from the signal which in turn depends on the type of signal and the nature of information it carries. This signal processing is concerned with representing signals in the mathematical terms and extracting information by carrying out algorithmic operations on the signal. Digital signal processing has many advantages over analog signal processing. Some of these are as follows.

Digital circuits do not depend on precise values of digital signals for their operation. Digital circuits are less sensitive to changes in component values. They are also less sensitive to variations in temperature, aging and other external parameters.

In a digital processor, the signals and system coefficients are represented as binary words. This enables one to choose any accuracy by increasing or decreasing the number of bits in the binary word.

Digital processing of a signal facilitates the sharing of a single processor among a number of signals by time sharing. This reduces the processing cost per signal.

Digital implementation of a system allows easy adjustment of the processor characteristics during processing.

Linear phase characteristics can be achieved only with digital filters. Also multirate processing is possible only in the digital domain. Digital circuits can be connected in cascade without any loading problems, whereas analog circuits cannot.

Storage of digital data is much easier than storage of analog data. Analog storage media such as magnetic tapes, disks and optical disks without any loss for the other hand, stored analog signals

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iv. Internet for distribution of notes & academic information

S. No.	Name of the Tool	Courses benefited	Relevant Link
1	<ul style="list-style-type: none"> • Word press Blog for academic activities Department events • MCQ tests & Feedback • Notes & Assignments • Solutions to previous papers • Discussion Forum 	VLSI, Embedded Sytem Designs Linear & Digital IC Applications	https://maheshelectronics.wordpress.com/iii-rd-year-text-books/

WordPress Blog

<https://maheshelectronics.wordpress.com/iii-rd-year-text-books/>

WELCOME TO DEPARTMENT OF ECE(..WE BORN TO INVENT)

Inspiration starts HERE~ Motivation Is FREE~ Freedom Is FREE~ Your soul does not have a Credit Report ~All dreams start with taking Action ~The best thing you can do in life is to better Yourself. Life begins with imagination.....imagination tends to innovation*****(...Umamaheswara reddy)

III RD YEAR TEXT BOOKS


Op-amps for Everyone by Ron Mancini

Linear Integrated Circuit 2nd Edition – D. Roy Choudhary

microprocessors...and...interfacing...by...godse (1)

0471025909Antenna_TheoryB(ANTENNAS)

MPMC ONLINE VIDEOS



iv & Cookies: This site uses cookies. By continuing to use this website, you agree to their use.

v. Flipped Class

Students are provided with videos and study materials to help them with problem-solving, advanced applications, debates, conversations, and clarifying doubts.

S. No	Innovative Method & Teaching Features provided	Courses benefited	Link
1	YouTube Channel for screen recorded videos explaining the concept	Digital Logic Design, Signals & Systems	https://github.com/Developer-Y/engineering-video-courses https://www.youtube.com/watch?v=xLetJpcjHS0 https://www.youtube.com/c/SimplilearnOfficial/videos https://www.youtube.com/watch?app=desktop&v=EUG3rgkBG8E

Github

The screenshot shows the GitHub repository page for 'Developer-Y/engineering-video-courses'. The repository is public and has 17 commits, 40 forks, and 136 stars. The README file is visible, titled 'Engineering courses with video lectures'. It lists several courses under 'General' and 'Aerospace Engineering' categories.

Engineering courses with video lectures

General

- [ENGR 110: The Engineering Profession - University of Michigan](#)
- [Engineering CEE 20: Engineering Problem Solving - UCI Open](#)
- [Delft University: Management and Technology/Agent Based Modeling of Complex Adaptive](#)
- [Delft University: Applied Sciences/Process Intensification](#)
- [Innovation in Product Development - DTU](#)

Aerospace Engineering

- [Introduction to Aerospace Engineering I - Delft University of Technology](#)
- [Introduction to Aerospace Engineering II - Delft University of Technology](#)
- [Flight and Orbital Mechanics - Delft University of Technology](#)
- [Vibrations of Aerospace Structures - Delft University of Technology \(YouTube\)](#)
- [16.90 Computational Methods in Aerospace Engineering - MIT OCW](#)

YOU TUBE

The screenshot shows a YouTube playlist titled "Fundamental of Electronics Engineering" with 38 videos and 20,249 views. The playlist is organized into 8 numbered lectures. The first lecture is "Fundamental of Electronics Engineering (Lecture 1)" with 8.8K views. The video player shows a thumbnail for the first lecture with a play button and a duration of 48:54. The playlist description states: "This video lecture series consists of thirty-eight video lectures on Fundamental of Electronics Engineering for UG students of Electrical & Electronics Engineering, Electronics & Communication Engineering, Electrical Engineering, Computer Science & Engineering, and other Departments also."

Lecture Number	Lecture Title	Views	Duration
1	Fundamental of Electronics Engineering (Lecture 1)	8.8K	48:54
2	Fundamental of Electronics Engineering (Lecture 2)	2.2K	48:24
3	Fundamental of Electronics Engineering (Lecture 3)	1.5K	44:21
4	Fundamental of Electronics Engineering (Lecture 4)	1.1K	49:21
5	Fundamental of Electronics Engineering (Lecture 5)	813	48:22
6	Fundamental of Electronics Engineering (Lecture 6)	602	47:21
7	Fundamental of Electronics Engineering (Lecture 7)	469	41:41
8	Fundamental of Electronics Engineering (Lecture 8)	440	51:56

NPTEL LINKS

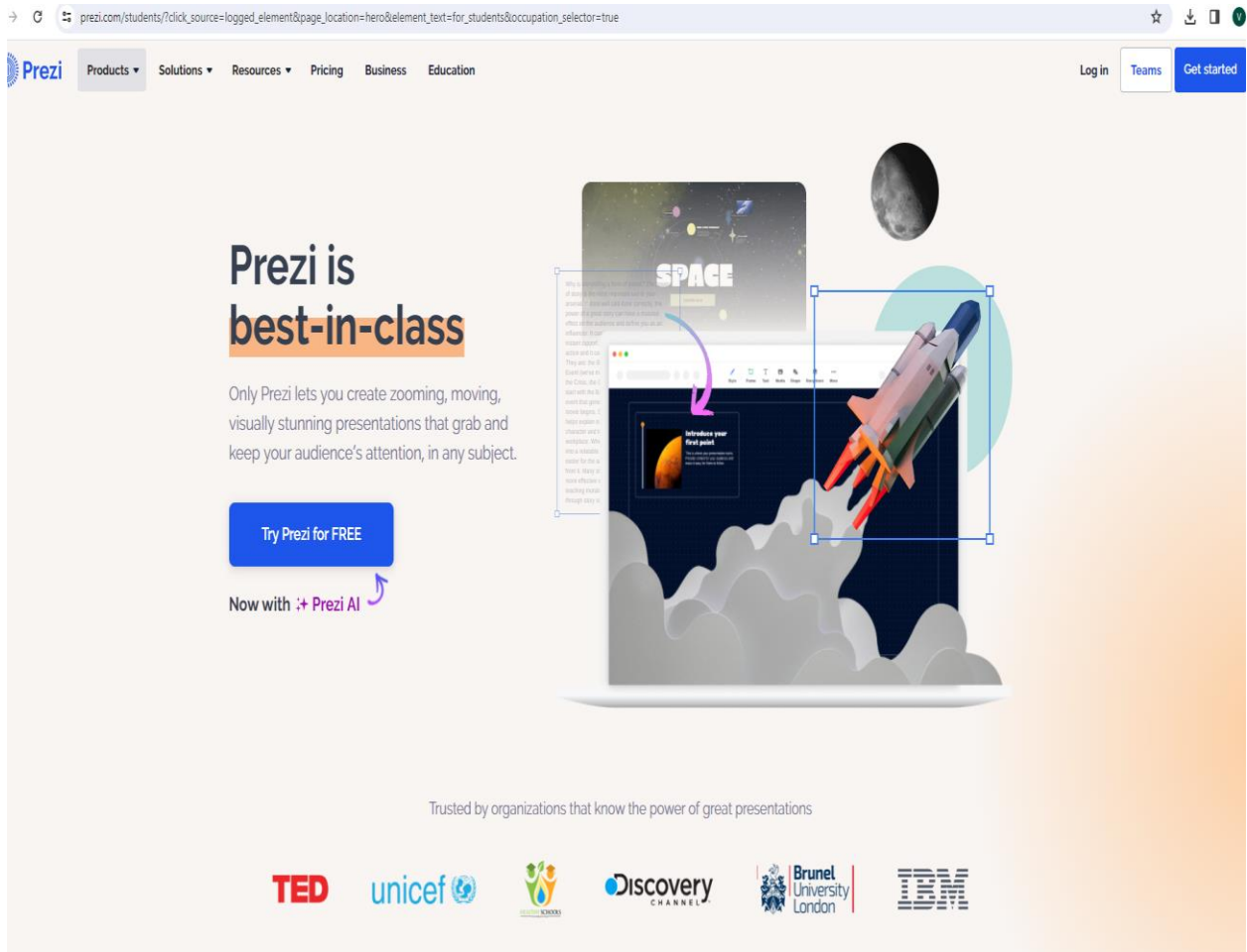
The screenshot shows the NPTEL website interface for the course "NOC: Modern digital communication techniques (Video)". The course is co-ordinated by IIT Kharagpur and is available from 2017-06-08. The course is divided into 8 weeks. The first week includes five lectures: "Lecture 1 : Introduction of Digital Communication System", "Lecture 2 : Introduction of Digital Communication System (Contd.)", "Lecture 3 : Introduction of Digital Communication System (Contd.)", "Lecture 4 : Introduction of Digital Communication System (Contd.)", and "Lecture 5 : Introduction of Digital Communication System (Contd.)". The video player shows a lecture by Prof. Suvera Sekhar Das with a play button and a "Watch on YouTube" link.

Week	Lecture
Intro Video	
Week 1	Lecture 1 : Introduction of Digital Communication System
	Lecture 2 : Introduction of Digital Communication System (Contd.)
	Lecture 3 : Introduction of Digital Communication System (Contd.)
	Lecture 4 : Introduction of Digital Communication System (Contd.)
	Lecture 5 : Introduction of Digital Communication System (Contd.)
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

vi. PowerPoint Presentation (Prezi):

Students are provided with videos and study materials to help them with problem-solving, advanced applications, debates, conversations, and clarifying doubts.

S. No	Innovative Teaching Method & Features provided	Courses benefited	Link
1	Prezi - It is an online platform that provides infinite canvas on which all the data can be placed with suitable scaling. Then a sequence can be planned that zooms in to relevant parts of that infinite canvas. It is a presentation tool that's more engaging, persuasive, and effective than PowerPoint.	EMTL, Micro Processors & Micro Controllers	https://prezi.com/ https://prezi.com/presentation-template/lesson-plan-template-business-presentation-chalk/



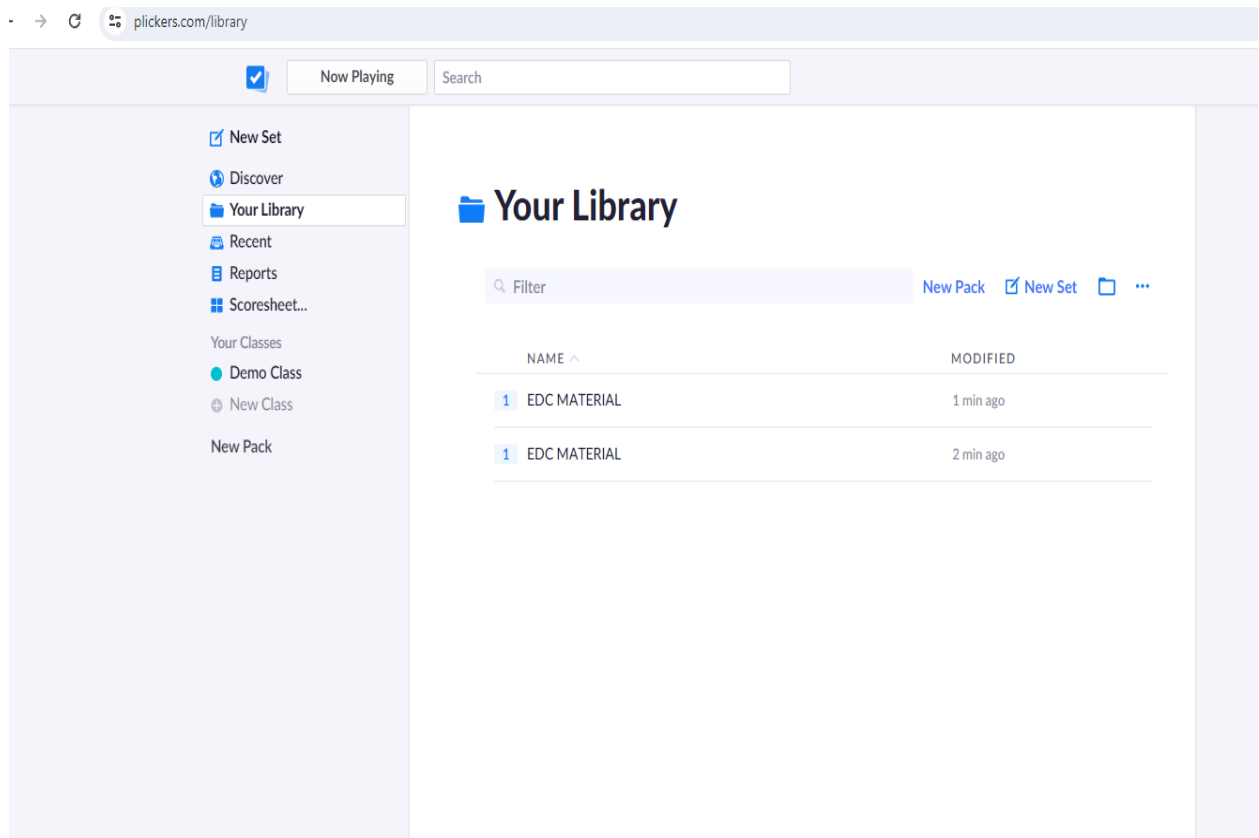
vii. Plickers:

The previously created Objective quiz is exhibited on the projector via plickers.com.

Each student's unique bar code will be scanned with an internet-connected smartphone using the Plickers app. This feedback system ensures students understand class subjects accurately. If a class receives a high number of incorrect responses, further classes may be scheduled.

S. No	Innovative Teaching Method & Features provided	Courses benefited	Link
1	Plickers: It is the free card activity that millions of educators use to do a formative assessment within the classroom.	Electronic Measurement & Instrumentation, Radar Engineering	https://www.plickers.com/

Plickers Overview



The screenshot shows the Plickers.com library interface. The browser address bar displays "plickers.com/library". The page features a navigation sidebar on the left with options: "New Set", "Discover", "Your Library" (selected), "Recent", "Reports", "Score sheet...", "Your Classes" (containing "Demo Class" and "New Class"), and "New Pack". The main content area is titled "Your Library" and includes a search filter, "New Pack", "New Set", and a menu icon. A table lists items in the library:

	NAME ^	MODIFIED
1	EDC MATERIAL	1 min ago
1	EDC MATERIAL	2 min ago

viii. Google forms for Quiz

Conducting objective quizzes might be challenging due to the high volume of papers and time-consuming corrections required. Automated solutions on the internet reduce time and make materials more reusable.

S. No	Innovative Teaching Method & Features provided	Courses benefited	Link
1	Google forms for MCQ / Objective tests	Advanced Micro Controllers, Embedded Real time operating systems	https://docs.google.com/forms/d/e/1FAIpQLScwXj5tbvMCE2-WdrkYaDkF0819EYU1CUB0I-BVQ5Mkb6kxKA/viewform

Google Forms

The screenshot shows a Google Form titled "QUIZ 2" created by viswamba2024@gmail.com. The form is not shared. It contains three multiple-choice questions, each worth 1 point:

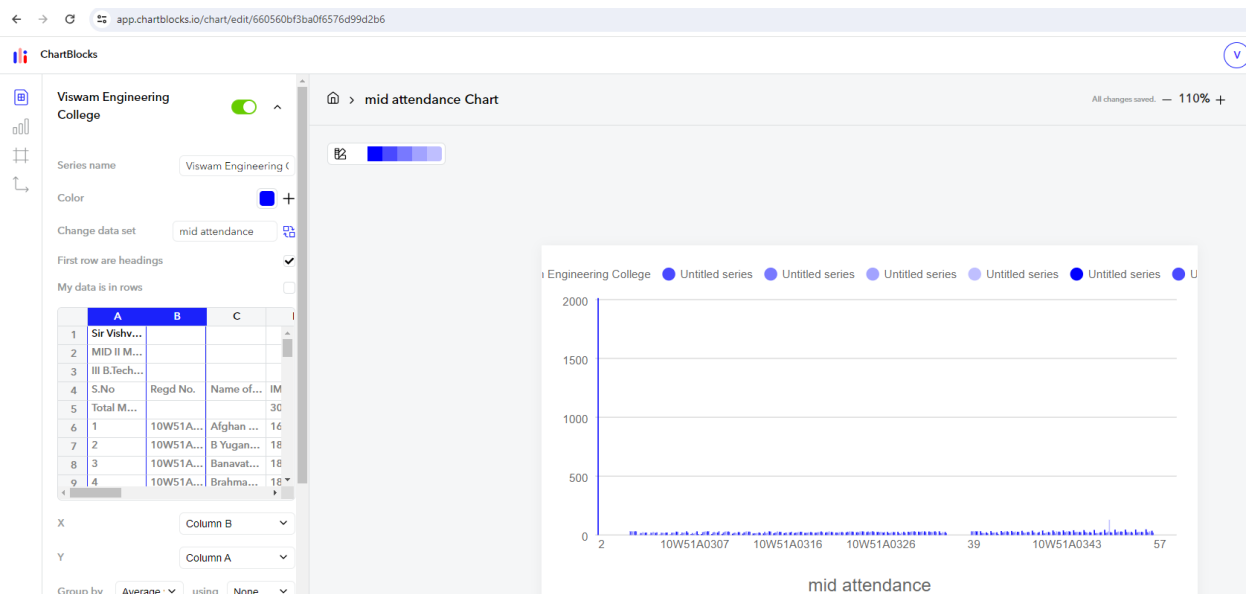
- Question 1: "Which of the following is correct about BRNE instruction in avr microcontrollers?"
 - a) it is used to jump to the given mentioned label when the zero flag accounts to 0
 - b) it is used to check the zero flag
 - c) it is used to compare two registers
 - d) it is used to compare two values
- Question 2: "In AVR, which of the following registers are there for the I/O programming of ports?"
 - a) PIN
 - b) DDR
 - c) PORT
 - d) All of the mentioned
- Question 3: "What will happen in that condition, if an interrupt occurs while the microcontroller is serving any other interrupt?"
 - a) the interrupt that is more priority in the interrupt vector table will be served first
 - b) both the interrupts will be handled simultaneously
 - c) the interrupt having low priority in the interrupt vector table will be served first

ix. Charts / Models

Charts are used in labs to better comprehend machine and operation. Students gain a better understanding of functions when subjects are linked together. Charts assist students grasp the practical relevance of several topics, as a single part may require knowledge from multiple subjects.

S. No	Innovative Teaching Method & Features provided	Courses benefited	Link
1	Google Charts, Chart blocks	Embedded Sytem Design, ERTOS, Embedded System Protocols	https://developers.google.com/chart https://chartblocks.io/

Google Charts & Chart Blocks



x. Virtual Labs

Virtual laboratories are another technique to overcome the restrictions of physical labs.

Students can do experiments in a simulated environment created by software engineers, providing a nearly equivalent experience to those conducted in the lab. The institute has applied to vlabs to become a nodal centre.



PALS H INAUGURATION AND ORIENTATION IN IITH ON 18-08-2023



In addition to traditional teaching methods such as chalk and talk, faculty members uses

- The digital library offers expert video lectures from famous resource persons, allowing professors and students to access NPTEL e-Tutorials, e-Journals, and video conference rooms.
- Modern teaching aids such as LCD projectors, Internet-enabled computers, and Wi-Fi laptops are commonly used in classrooms and other learning environments.
- Faculty members use Open-Source tools such as the digital library, MATLAB, and P-Spice to grasp course content.
- Faculty members are encouraged to participate in short-term courses, webinars, staff development programs, and seminars to maintain advanced knowledge and abilities. power point presentations in all classes.
 - Use Role play in the classroom is an excellent technique to push pupils outside of their comfort zone and improve their interpersonal skills. The role-playing strategy will help a student grasp how academic material will apply to his daily tasks. Role play is a simulation in which each player is assigned a specific role. After reading their job descriptions, the participants act out their roles by engaging with one another. Examples of roles assigned to students include teacher, interviewer, and entrepreneur.
- Use seminars and interactive conversations. This strategy requires students to give presentations on specific themes. During the session, students can engage in interactive discussions by asking questions.
- Lab manuals with sample readings are accessible in the laboratories for students' use. Every year, when the syllabus changes, all lab guides are changed and updated.



Figure 4: CSE ICT ENABLED CLASSROOMS

Courses Electronics & Communication Engineering NOC:Modern digital communication techniques (Video) Syllabus

Co-ordinated by : IIT Kharagpur Available from : 2017-06-08 Lec :1

Modules / Lectures

Intro Video

Week 1

- Lecture 1 : Introduction of Digital Communication System
- Lecture 2 : Introduction of Digital Communication System (Contd.)
- Lecture 3 : Introduction of Digital Communication System (Contd.)
- Lecture 4 : Introduction of Digital Communication System (Contd.)
- Lecture 5 : Introduction of Digital Communication System (Contd.)

Week 2

Week 3

Week 4

Week 5

Week 6

Week 7

Week 8


Watch on YouTube Video Assignments Download Videos Transcripts Books

Watch on YouTube

Prof. Suvra Sekhar Das

Watch later Share

Watch on YouTube



PALS RESIDENTIAL STUDENT WORKSHOP-IITM FROM DECEMBER 12-14,2023

The RSW in the conventional format is a three-day residential program conducted at IIT Madras.

The main objective of the program is to encourage students to think of creative solutions to problems. They are encouraged to understand a problem, develop solutions and create a working prototype, which is then judged on its ability to meet set criteria. The solutions should also accommodate for the limited resources that are made available in constructing the prototype.

The program includes several lectures by Design personnel from industry and Professors from IIT, Madras covering a wide range of topics such as Design Thinking, Engineering sense, Techniques in innovation and many more, which aid the students in their search for the optimal solution.

Team building, understanding the skills each of them bring to the table and the confidence of building a working model are additional learnings from this program.

The following faculty and students have attended the program from December 12-14,2023

Participation @Residential Student workshop in IIT.Madras

Viswam Engineering College has got two prizes on below projects.

1. Airport Passenger feedback system.
2. Standards to smart Doors.



**ఆలోచించు, సృష్టించు, విమోచనం అనే అంశంపై.. .
విశ్వం ఇంజనీరింగ్ విద్యార్థుల ప్రతిభకు ఫార్ట్ అవార్డులు...
అభినందించిన చైర్మన్ ప్రభాకర్ రెడ్డి, ప్రిన్సిపల్ రమణారెడ్డి.**



మదనపల్లి (గరుడ ఛాత్ర)
ఇంటి మెట్రాస్ పూర్వ విద్యార్థుల ఆధ్వర్యంలో క్యాంపస్ నందు గత మూడు రోజులుగా ఇంజనీరింగ్ విద్యార్థులకు ఆలోచించు, సృష్టించు, విమోచనం అనే అంశంపై అవగాహన సదస్సు నిర్వహించారు. ఈ కార్యక్రమానికి నాలుగు రాష్ట్రాల నుండి 50 ఇంజనీరింగ్ కళాశాలలను ఎంపిక చేసి, వారందరికీ డిసెంబర్ 12



ఈ కార్యక్రమంలో పాల్గొన్నారు. మొదటి రెండు రోజులు విద్యార్థులకు విమోచనమైన టెక్నాలజీ ఆలోచించి సృష్టించడం ఎలా అనే అంశంపై అవగాహన సదస్సు నిర్వహించారు . తరువాత మూడవరోజు వారి ద్వారా ఒక మినీ ప్రాజెక్టు తయారు చేయించి, ఆ ప్రాజెక్టును వివిధ ఇంజనీరింగ్ కాలేజీల ఆలోచనలతో తయారు చేయబడిన ప్రాజెక్టులను, ఇటీ మెట్రాస్ క్యాంపస్ నందు ప్రదర్శించారు. ఈ మినీ ప్రాజెక్టు ప్రదర్శన నందు విశ్వం ఇంజనీరింగ్ కాలేజీలో మూడవ సంవత్సరం చదువుతున్న కంప్యూటర్ సైన్స్ ఇంజనీరింగ్ విద్యార్థులకు రెండు విభాగాలలో రెండు ప్రైజులు సాధించారు. ఈ సదస్సుకు వీరం సాయి సుధీర్ రెడ్డి, డీవీక, గాయత్రీ , లాస్య, క్రీయ కలిసి పాల్గొని మినీ ప్రాజెక్టు ప్రదర్శన నందు మొదటి విజేతలుగా నిలిచారు. ఈ సందర్భంగా విశ్వం ఇంజనీరింగ్ కాలేజీ చైర్మన్ ప్రభాకర్ రెడ్డి విద్యార్థులను అభినందించారు. ప్రిన్సిపల్ దాక్షర్ డి రమణారెడ్డి మాట్లాడుతూ ఇలాంటి మరెన్నో కార్యక్రమాలకు విశ్వం ఇంజనీరింగ్ విద్యార్థులను పంపుటకు మేము సమాయత్తం చేస్తున్నామని తెలియజేశారు. ఈ అవకాశాలను విద్యార్థులందరూ సద్వినియోగపరచుకోవాలని కోరారు.

నుంచి 14 తేదీలలో థింక్ ట్రియేట్ ఇంజనీర్ అవగాహన సదస్సు నిర్వహించారు. ఈ ఈ సదస్సుకు మదనపల్లికి దగ్గరలో ఉన్న విశ్వం ఇంజనీరింగ్ కాలేజీ నుండి నలుగురు విద్యార్థులు ఎంపికై