|| Jai Sri Gurudev ||
Sri Adichunchanagiri Shikshana Trust (R)

SJC INSTITUTE OF TECHNOLOGY

VTU Affiliated, AICTE Approved, Accredited by NAAC & NBA, Gold Rated by QS I-Guage

Chickballapur - 562 101, Karnataka

Estd:1986

www.sjcit.ac.in

7.2 BEST PRACTICES

CONTENTS

Principal
S.J.C. Institute of Technology
Chickballapur - 562 101.

EVIDENCE OF BEST PRACTICE-I

1. FUNCTIONS OF VARIOUS BODIES AND POSITIONS

POSITION	FUNCTIONS
Governing Council	• Frame directive principles and policies. • Amend and approve policies from time to time. • Approve Budgets.
Principal	• Head of the Institution. • Academic and administrative management of theinstitution. • Policy planning and providing academic andadministrative leadership. • Monitoring and Evaluation of academic andresearch activities. • Promotion of industry-institution interaction. • Providing Consultancy services. • Participation in policy planning at the regional/National level for development of technical education. • Allocation of budget and budget monitoring. • Managing the Quality Management System of theInstitution. • Teaching. • Student and stakeholders' satisfaction. • Monitoring the Implementation of ISO 9001-2015 systems and standards across the organization. • Approval of Master timetable, Quality Manual and Quality System Procedures and changes to the same, Calendar of Events, Institution related documents.
Director [Research and Incubation Centre for Entrepreneurship]	• Create Awareness about Entrepreneurship and Intellectual Property Rights • Initiate new ideas to solve local problems through IDEATHON & HECKATHON process and convert ideas into proof of concept. • Establish collaboration with government and non-government funding agencies to enhance research,

	innovation and entrepreneurial related activities. • Guide & motivate the students to becomeEntrepreneurs. • Research & Development, Publications andFunding
Registrar	• Preparing regular financial and administrative reports. • Administration of Institution databases. • Managing office supplies stock and placing orders. • Prepare reports and presentations with statistical data, as assigned. • Organize a filing system for important andconfidential Institute documents. • Office Administration. • Administration of the Institution as per thedirections of Management and Principal. • Co-Ordinate with the MR in the Institution relatedmatters. • Manages the financial matters of the college. • Budget monitoring. • Liaising administrative activities with Management, University, Central and State Government and Bodies, Local administration and Authorities, Principal, Staff, Students and Parents. • Managing and Monitoring the Purchase and Stock Verification activities. • Co-Ordination with the Supporting Sections Staff in organizing Extra/Co-Curricular activities. • Monitoring the Admission, Examination, Establishment and Recruitment Activities of the Institution. • Monitoring the Security activities & General Amenities across the Institution. • Monitoring the Implementation of ISO 9001-2015 Systems & Standards in the Office and its related area. • Approval of Office related work instruction. • Housekeeping.

Head of the Department	• Head of Department/Teaching/Research/Training. • Academic and administrative management of the department. • Teaching and research activities. • Implementation of ISO 9001-2015 Systems & Standards Review of Lesson Planning, Review of Test Question papers. • Providing leadership in both post-graduate and undergraduate courses in relevant field of specialization. • Consultancy services. • Policy planning, Monitoring and Evaluation and Promotional activities both at departmental and institutional level. • Curriculum development and developing resource materials. • Design and development of new programmes. • Continuing education activities. • Interaction with industry and society. • Students counselling and interaction. • Administration both at Departmental andinstitutional levels. • Student and stakeholders' satisfaction. • Housekeeping.
Librarian	• Library Head. • General administration of library. • Budgeting, Planning and developing the library. • Books, periodicals, videotapes selection, acquisition & Storage. • Supervising of cataloguing and indexing.Automation aspects. • Maintenance of library books, periodicals,videotapes, catalogues etc. • E learning resources. • Student satisfaction. • Implementation of ISO 9001 -2015 systems and standards. • Approval of Library work instruction. • Housekeeping, Development of Digital Library.

Placement Officer	• Industry Interaction. • Organizing the Campus Recruitment. • Interaction with Industries and arrange Industrial visits, Technical Seminars. • Organizing Career Guidance and PersonalityDevelopment Programs. • Organizing General Aptitude Tests. • Assisting the academic departments to get projects. • Organizing for Training as per academic department's requirements. • Implementation of ISO 9001-2015 systems and standards. • Approval of Placement work instruction andLetters.

Warden	• Hostel Activities. • Overall Monitoring of Hostel Activities. • Implementation of ISO 9001-2015 systems and standards. • Approval Routine Hostel Documents. • Maintenance of Discipline in the Hostel, Housekeeping.
Professors/ Associate/ Assistant Professors	• Teaching /Laboratory Maintenance. • Conduction of theory and practical classes. • Planning laboratory work & Maintenance of Laboratories. • Support HOD/Professor in Lab / Workshop Maintenance. • Preparation of lesson planning and test question papers. • Student Counselling and Interaction by the Proctors. • Support department in organizing curricular and extracurricular activities. • Implementation of ISO 9001-2015 systems and standards. • Awarding Internal Assessment Marks. • Housekeeping.
Foreman, Lab instructors, System programmers	• Laboratory Maintenance. • General Maintenance of Laboratory and equipment. • Maintenance of Computer Hardware & Software in the lab. • Maintenance of Problem and Maintenance Registers. • Updating of Stock Registers. • Supervising the activities of supporting lab Staff. • Assisting in the conduction of the Laboratory classes. • Student satisfaction. • Implementation of ISO 9001 -2015systems and standards. • Updating Stock Registers and Maintenance Registers. • Housekeeping.

Principal
S.J.C. Institute of Technology
Chickballapur-562101.

2. FUNCTIONAL COMMITTEES

Sl.No	Name of the Committee	Chairman
1.	Discipline Committee	Dr. Srinivas Reddy Perla, Maths
2.	Anti-Ragging Committee	Dr. G Narayana, CED
3.	Anti-Ragging Flying Squad	Prof. Ravindra M V, CED
4.	Internal Quality Assurance Cell (IQAC)	Dr. B N Shobha, ECE
5.	Students Grievance Redressal Cell	Dr. G T Raju, Principal
6.	Anti- Sexual Harassment Committee	Dr. Bharathi M, CSE
7.	Alumni Association Committee	Prof. Satheesh Chandra Reddy, ISE
8.	Committee of Wardens	Sri J Suresha, Registrar
9.	Library Committee	Dr. Nataraj S N, AED
10.	Canteen Committee	Dr. G. Narayana, CED
11.	Career Guidance Cell	Prof. Shashi Kumar N V, TPO
12.	Student Welfare Committee	Prof. Satheesh Chandra Reddy, ISE
13.	Transportation Committee	Dr. P. Rukmangadha, MED
14.	College Internal Complaints Committee (CICC)	Dr. Deepa M S, AED
15.	Central Mentoring-Cum-Counselling Committee at College/Departments under VTU	Dr. Ranganath R, MED
16.	Internal Committee for the Students with disabilities in Universities/College	Dr. Ravi Kumar M, ASE
17.	Accreditation (NBA/NAAC) Committee	Dr. Ranganath R, MED Dr. Ravi Kumar M, ASE

18.	College Website and Internet Maintenance Committee	Dr. Manjunath Kumar B H, CSE
19.	Central Computing Facility and Computer Maintenance Committee	Prof. Abdul Khadar, ISE
20.	University Examination Committee	Dr. Suresha Gowda M V, ASE
21.	Internal Examination Committee	Dr. B N Shobha, IQAC
22.	Signboard In charge/Power supply, Generator, UPS, A/Cs Maintenance Committee & Estate Maintenance Committee	Dr. G Narayana, CED
23.	Publicity and College News Promotion Committee	Prof. Narendra Babu C, CSE
24.	Purchase Committee	Secretary, Sri Adichunchanagiri Shakha Math, Chickballapur branch
25.	Central Time Table Committee	Dr. Bharathi M, CSE
26.	Security Committee	Sri J Suresha, Registrar
27.	Professional Societies Activities Committee	Dr. Manjunath Kumar B H, CSE
28.	AICTE – Approval and VTU – Affiliation Process Committee	Prof. Nagaraj G, ISE
29.	Research Council	Dr. T Munikenche Gowda, R & D
30.	Academic Calendar Committee	Dr. Ranganath R, MED
31.	College Magazine Committee	Dr. I G Srikanth, MBA
32.	NSS/NCC Committee	Prof, Shashi Kumar N V, CED Prof. Ashok, CSE
33.	Institute Innovation Council, IPR & Entrepreneur Development Cell	Dr. Bhaskar S, ECE
34.	Cultural Activities Committee	Dr. Nagendra Kumar, ECE
35.	Sports Committee	Dr. Madhusudhana S V, ASE Mr. Chandan T, PED
36.	Planning Committee	Dr. Madhusudhana S V, ASE
37.	Admission Committee	Sri J Suresha, Registrar
38.	SEED	Prof. Vikas Reddy S, CSE
39.	SC & ST Cell	Dr. G T Raju, Principal

Chief Coordinator
SJCIT-IQAC

Principal
S.J.C. Institute of Technology
Chickballapur-562101

Evidence of Documents for Best Practice-2

a) Admission Statistics	View Document

b) Faculty appraisal/feedback from the students

S.J.C Institute of Technology
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Summary of Course-Wise - Feedback

Class Strength:121 Branch Name:Electronics and Communication Engineering Semester:7 Academic Year:2019-20 Date:07 Jun 2022

Sl No	Name of the Course	Course Code	Section	Faculty	Feedback 1		Performance Gap (+ or -)	Average Percentage (a)/1	Remarks
					Present / Strength	Percentage 1 Appraisal (a)			
1	MICROWAVES AND ANTENNAS	15EC71	A	Mr Ravi Kiran .R	60 / 61	89%	+89%	89%	
2	MICROWAVES AND ANTENNAS	15EC71	B	Mr Prasanna Kumar D. C	59 / 60	88.3%	+88.3%	88.3%	
3	DIGITAL IMAGE PROCESSING	15EC72	A	Mr J. B. Kalaiah	60 / 61	86.8%	+86.8%	86.8%	
4	DIGITAL IMAGE PROCESSING	15EC72	B	Mr Khadar Basha S K	58 / 60	85.4%	+85.4%	85.4%	
5	POWER ELECTRONICS	15EC73	A	Mr Bhaskar .S	59 / 61	90.2%	+90.2%	90.2%	
6	POWER ELECTRONICS	15EC73	B	Ms Roopa M	58 / 60	88.3%	+88.3%	88.3%	
7	REAL TIME SYSTEMS	15EC743	A	Ms Chaitra N	30 / 32	87.7%	+87.7%	87.7%	
8	REAL TIME SYSTEMS	15EC743	B	Ms Chaitra N	40 / 40	84.6%	+84.6%	84.6%	
9	CRYPTOGRAPHY	15EC744	A	Ms Swetha T N	31 / 31	84.7%	+84.7%	84.7%	
10	CRYPTOGRAPHY	15EC744	B	Ms Swetha T N	19 / 19	87.1%	+87.1%	87.1%	
11	DSP ALGORITHMS AND ARCHITECTURE	15EC751	A	Ms Vishala I. L	38 / 40	83.2%	+83.2%	83.2%	
12	DSP ALGORITHMS AND ARCHITECTURE	15EC751	B	Ms Vishala I. L	8 / 10	86.2%	+86.2%	86.2%	
13	IOT WIRELESS SENSOR NETWORKS	15EC752	A	Mr Yogaraja GSR	21 / 21	87.6%	+87.6%	87.6%	
14	IOT WIRELESS SENSOR NETWORKS	15EC752	B	Mr Yogaraja GSR	50 / 50	83.8%	+83.8%	83.8%	
15	ADVANCED COMMUNICATION LAB	15ECL76	A	Mr Ravi Kiran .R	18 / 20	84.7%	+84.7%	84.7%	
16	ADVANCED COMMUNICATION LAB	15ECL76	A	Ms Roopa M	20 / 20	89.6%	+89.6%	89.6%	
17	ADVANCED COMMUNICATION LAB	15ECL76	A	Mr J. B. Kalaiah	20 / 21	80%	+80%	80%	
18	ADVANCED COMMUNICATION LAB	15ECL76	B	Mr J. B. Kalaiah	16 / 20	78.1%	+78.1%	78.1%	
19	ADVANCED COMMUNICATION LAB	15ECL76	B	Ms Varamahalakshmi O	20 / 21	85.5%	+85.5%	85.5%	
20	ADVANCED COMMUNICATION LAB	15ECL76	B	Mr Mohan Babu C	19 / 19	92.8%	+92.8%	92.8%	
21	VLSI LAB	15ECL77	A	Mr Khadar Basha S K	19 / 21	85.1%	+85.1%	85.1%	
22	VLSI LAB	15ECL77	A	Mr Khadar Basha S K	17 / 20	89.1%	+89.1%	89.1%	
23	VLSI LAB	15ECL77	A	Mr Y. R. Manjunatha	20 / 20	86%	+86%	86%	
24	VLSI LAB	15ECL77	B	Ms Roopa M	16 / 20	85.3%	+85.3%	85.3%	

c) List of Innovative Teaching Methods

Computer Science & Engineering Department

Sl No	Subject	Subject Code	Faculty	Innovative Teaching Method
1.	Computer Organization	18CS34	Prof. Rashmi K A	Think Pair Share
2.	Computer Organization	18CS34	Prof. Rashmi K A	Think of it?
3.	Database Management Systems	18CS53	Prof. Pradeep	Group activity
4.	Cryptography	18CS744	Prof. Ajay N	Group activity

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Mechanical Engineering Department				
Sl No	**Subject**	**Subject Code**	**Faculty**	**Innovative Teaching Method**
1.	Finite Element Analysis	17ME61	Dr. Thyagaraj N R	Video based learning
2.	Kinematic of Machinery	18ME44	Dr. H K Chandra Mohan	Flipped Class
3.	Kinematic of Machinery	18ME44	Dr. H K Chandra Mohan	Video based learning

Information Science Department				
Sl No	**Subject**	**Subject Code**	**Faculty**	**Innovative Teaching Method**
1.	Data Structures	18CS32	Prof. Ambika L G	Pratibhodhitam
2.	Design and analysis of algorithms	18CS42	Prof. Ambika L G	Pratidhwani
3.	Cloud computing and its application	18CS643	Prof. Ambika L G	Peer-to-Peer Teaching
4.	File Structures	18CS32	Nandini S	Peer-to-Peer Teaching

Aeronautical Engineering Department				
Sl No	**Subject**	**Subject Code**	**Faculty**	**Innovative Teaching Method**
1.	UNMANNED AERIAL VEHICLES	18AE753	Dr. Nagesh.D	Demonstration Of Mini Drones

Aerospace Engineering Department				
Sl No	**Subject**	**Subject Code**	**Faculty**	**Innovative Teaching Method**
1.	Introduction to Aerospace Engg	18AS34	Prof. Naresh D C	Teach Back Activity
2.	Aerospace Propulsion	18AS53	Prof. Naresh D C	Teach Back Activity

Civil Engineering Department

Sl No	Subject	Subject Code	Faculty	Innovative Teaching Method
1.	Solid waste management	18CV642	Mr. Ravindra. M.V	Flipped Classroom
2.	Strength Of Materials (SOM)	18 CV 32	Mr. Shashikumar.A	Think Pair Share
3.	Design of RCC	18CV53	Mr. Manjunath.K.A	Think Pair share.
4.	Design of RCC	18CV53	Mr. Manjunath.K.A	Model Making
5.	Elements of civil engineering	21CIV14	Smt. Bhavya S	Flipped Classroom
6.	Elements of civil engineering	21CIV14	Adarsha	Flipped Classroom
7.	Urban Transport Planning	18CV743	Mr. Manjunath N	Flipped class

Electronics and Communication Engineering Department

Sl No	Subject	Subject Code	Faculty	Innovative Teaching Method
1.	Embedded Systems	18EC62	Dr. S Bhargavi	One Minute Activity
2.	Embedded Systems	18EC62	Dr. S Bhargavi	Think Pair Share
3.	Embedded Systems	18EC62	Dr. S Bhargavi	Coding
4.	Embedded Systems	18EC62	Dr. S Bhargavi	Flipped class
5.	Embedded Systems	18EC62	Dr. S Bhargavi	Chart Making
6.	Embedded Systems	18EC62	Dr. S Bhargavi	Who Am I
7.	Embedded Systems	18EC62	Dr. S Bhargavi	Crossword
8.	Wireless Communication	18EC621	Ravi M V	Flipped Class
9.	Computer Organization and Architecture	18EC35	Chandini A G	“On Spot- Quick Two”
10.	Network Security	18EC821	Anitha C	Flipped Class
11.	Basic Electronics	21ELN25	Pranjala Tiwari	Hands on project-based introduction to electronics
12.	Embedded Systems	18EC62	Sri Hari H S	Innovate Think and Create
13.	Embedded Systems	18EC62	Sri Hari H S	Real Time knowledge-Use of ECU in Cars
14.	Embedded Systems	18EC62	Sri Hari H S	Simulation based Learning
15.	Signals and Systems	18EC45	Manjula K	Student Team Achievement Division
16.	Signals and Systems	18EC45	Manjula K	Crossword Puzzle
17.	Network Theory	18EC32	Dr. Sudir P	Simulation Approach of Teaching Network Theory

18.	Engineering Statistics and Linear Algebra	18EC44	Dr. Sudir P	Online and coding Approach of understanding linear algebra concepts
19.	Analog Circuits	18EC42	Nirmala Devi A C	Chart Making

Innovative Teaching Methods Description

Innovative teaching methods and approaches significantly enhance the student learning process. Experimenting new methods and strategies **improves student engagement, motivation and attainment.**

The Innovative Teaching methods practiced by the institution are listed below:

I. Chart Making
II. Coding
III. Crossword Puzzle
IV. Demonstration Of Mini Drones
V. Flipped Class
VI. Group Concept Gauge
VII. Group Activity
VIII. Hands on Project Based introduction to Electronics
IX. Innovate, Think & Create
X. Model Making
XI. One Minute Activity
XII. On Spot Quick two
XIII. Online Coding Approach of Understating Linear Algebra Concepts
XIV. Pratibhodhitam
XV. Pratidhwani
XVI. Peer To Peer Learning
XVII. Problem Based Learning
XVIII. Real Time knowledge- Use of ECU in Cars
XIX. Simulation **Approach** of Teaching Network Theory
XX. Student Team Division Activity
XXI. Think Pair Share
XXII. Thinking Aloud Pair Problem Solving (TAPPS)
XXIII. Think of it
XXIV. Video Based Learning

I. Chart Making

A chart is a group of related facts presented in the form of a diagram, table, graph or other visually organized model. A chart is a useful way to present and display information.

Process:

- Assign different kinds of charts making on the topics completed in the class.
- Ask students to create a chart related to the topic assigned.
- The best chart is presented in the class and awarded with a token of appreciation as a small gift.

Outcomes:

- Students will be able to organize data and present ideas visually
- Students will be able to remember the major points of the modules taught.
- It gives a visual impression to the students and help in remembering the contents more clearly.
- It fosters teamwork, creativity and presentation ideas.

Fig 1: Chart Making

II. Crossword Puzzle

Activity based methods like crossword Puzzle help Kindle interest in students to learn topics which are very elaborate, in a quick manner.

Process:

- A crossword was prepared on the topic; topic was informed to students in advance.
- Each student has to solve the crossword in the stipulated time.
- Words across and down should be guessed by the students based on the hints given.

Outcomes:

- These activities will help students to remember the key words of the various topics, upon which they can further elaborate and answer questions well in the exams
- It helps involve them actively during the sessions.
- The key words can be remembered and recapitulated whenever required.

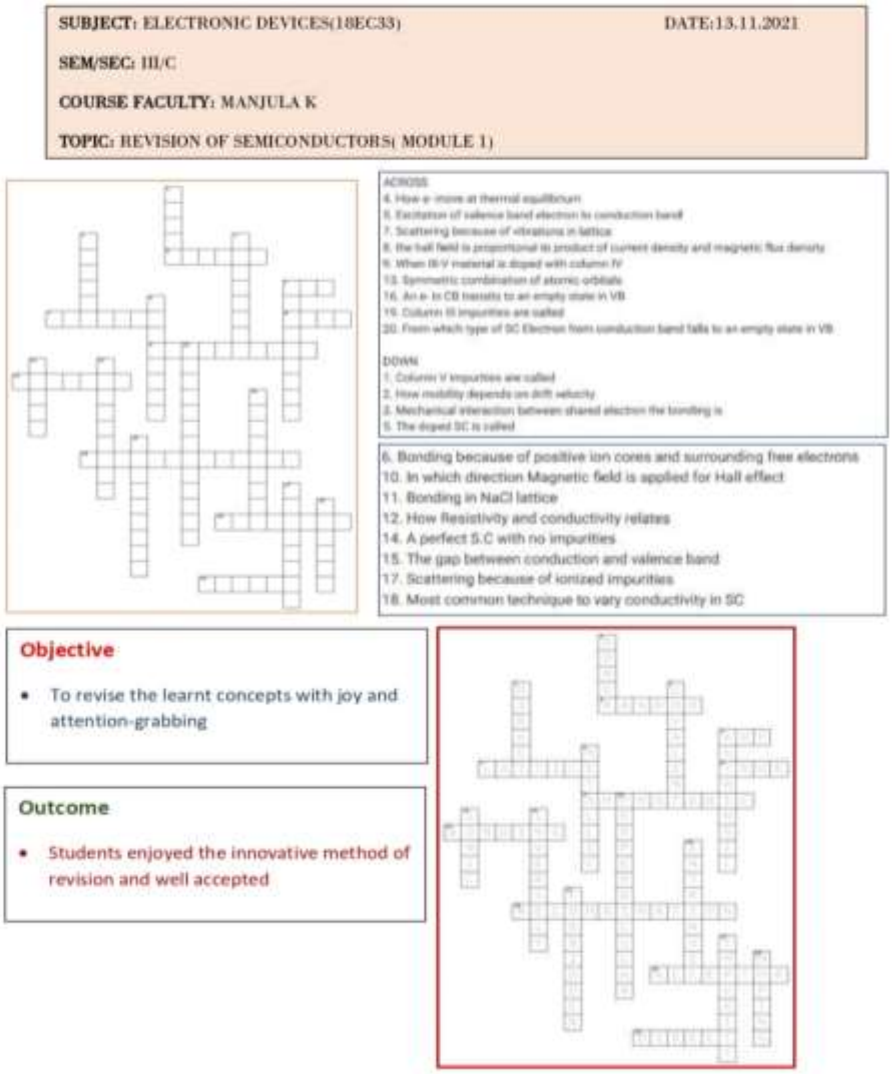

Fig 2: Crossword Puzzle

III. Coding

Coding is the process of transforming ideas, solutions and instructions into the language that the computer can understand.

Process:

- Instructions/ programming concepts are explained in the class.
- Assign a topic and ask students write a code using the instructions/programming skill taught in the class.

Outcomes:

- Better understanding of different instructions that are taught in the class.
- Correlating instructions to their functionalities and features.

- Improve the decision-making ability to choose a better instruction in a given problem.

Fig 3: Coding

IV. Demonstration of Mini Drones

A method demonstration is a teaching method used to communicate a concept with the aid of visuals such as flip charts, posters, power point, working model etc.

Process:

- Working drones are demonstrated

Outcomes:

- It improves the understanding of complex topics and principles.
- It helps in the creation of interest among students and imparts maximum learning. It leads to permanent learning.

- Knowledge gained during the demonstration method becomes permanent because it requires different senses.
- It keeps students engaged and active throughout the teaching-learning process.
- It also helps in arousing the spirit of discovery among students.

Fig 4: Demonstration of Mini Drones

V. Flipped Classroom

Flipped classrooms provide a good alternative teaching platform. The term is widely used to describe almost any class structure that provides pre-recorded lectures followed by in-class exercises.

Process:

- Teacher provides the content to the students in form of videos, references to websites, digital content, etc.
- The learners are asked to go through a few lecture videos that create the platform for discussion in the next class.
- The class room is reserved for discussions on the topic and to enhance in-depth understanding of the topic, by the students. Classroom is open for discussions, where the topics are explored further, with students contributing significantly to the discussions.

Outcomes:

- The students will be able to learn at their own pace with more one-to-one interaction between teacher and student.
- Arrange for an opportunity for students to gain first exposure prior to class.
- Offer an incentive for students to prepare for class.

- Provide a mechanism to assess student understanding
- Run in-class activities that focus on higher level cognitive activities.
- Moreover, flipped classroom changes the traditional learning culture into a learner-centric class.

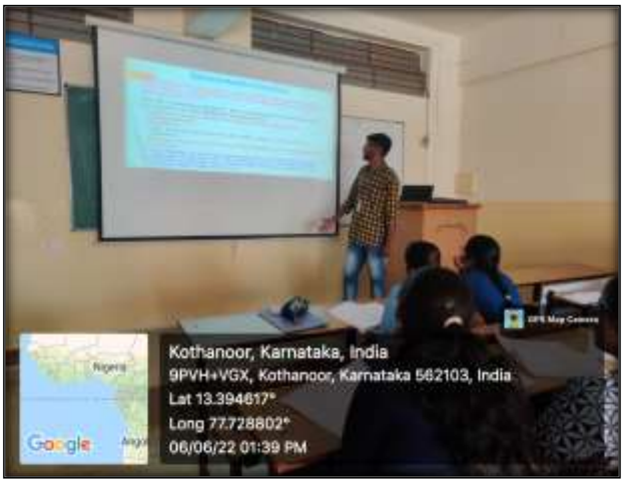

Fig 5: Flipped class

VI. Group Concept Gauge

Process:

- Students are made into groups as per the strength of the class.
- Each group is named by some name or alphabet or number.
- Each group is given a question/ concept to explain on a slip of paper.
- In each group, each member needs to explain the concept efficiently in 2 minutes.
- Other Groups are allowed to ask questions and doubts.
- The group in which all members explained concept efficiently and answered the queries of folk well will be complemented.

Outcomes:

- Students were able to understand the concept well.
- Can learn effectively by teaching to their classmates.
- Application of concept can be utilized by doing innovative projects.
- Designing of electronic circuits can be learnt.


Fig 6: Group Concept Gauge

VII. Group Activity

Process:

- Student should frame team of 4 members and discuss about their own real-world scenario for designing ER diagram.
- Specifying the requirements and identify the Entities, relationships and other constructs of ER diagram.
- Use the appropriate symbols of ER diagram.

Outcomes:

The students will be able to

- Collect the requirements of a real world by communicating and sharing different ideas and concepts they analysed with each other.
- Identify the different construct of ER diagram.
- Construct the ER diagram using appropriate symbols.
- Present the ER diagram in front of the students and accepting the changes to be made.


Fig 7: Group Activity

VIII. Hands on Project Based introduction to Electronics

This method introduces the students, basic electronics components (resistor, capacitor, batteries, LEDs, temperature sensor, voltage regulator, basic breadboard) and teach them how to use each one of them effectively in a circuit.

Process: Discussed about

1. Basic architecture of breadboard and its usage in making circuits.
2. Explanation on color coding of resistors and a small quiz on the same.
3. Discussion on series and parallel connections on breadboard.
4. Brief discussion on making a circuit diagram before implementing the breadboard connections.
5. Some basic experiments with LEDs and Zener diodes

Outcome:

- Students participated with all interest and the session was completely interactive learning process.

Fig 8: Hands on Project Based introduction to Electronics

IX. Innovate, Think & Create

The main objective of this innovative teaching method is to make the students understand the concept of the **3-pipeline system (fetch, decode and execute)** and also challenge them to **"think out of the box"**, an activity was conducted and the outcome of the activity turned out fruitful.

Process:

- Students were taken out of the class to the nearest open space and made into five small groups.
- They were asked to create a new product with the available waste material (stones, grass, wood, plastic bottles) within 15 minutes (5 minutes for raw material collection and 10 minutes for building the product).

- After 15 minutes, the students were asked to present the innovative product they had built.

Outcomes:

- Each team presented their ideas and most of them were brilliantly executed and excellently crafted.
- One of the teams performed excellently well and built a "Double-decker" bus using two plastic bottles, and fencing wires, and also surprisingly used a piece of glass to cut the plastic bottle with precise measurements.
- Finally, the aim of the activity was explained to the students and they were made to understand that the CORTEX M3 processor works the same way how a human brain works. The students were made to realize the importance of the concept of the **3 pipeline systems (fetch, decode and execute)** as they had just implemented the above concept (the human brain does it in the background).

Figure 9: Innovate Create & Think Winner group – A double-decker bus model built by a team of students.

X. Model Making

Process:

- Students are provided the problem statement.
- In a time, bound event, the students compete to develop models which are evaluated on the basis of functionality, usability and stability.

Outcomes:

- The aim is to check the understanding and concept clarity of the students through a 360-degree knowledge test, where they have to conceptualize idea, design, get involved in resource management and exhibit the models.

- These events develop critical thinking skills in the students, by providing them with a fun filled activity-based learning time.

Fig 10: Model Making

XI. One Minute Activity

The minute paper is a formative assessment strategy whereby students are asked to take one minute (or more) to answer or a question. The minute paper refers to a fast information evaluation of the knowledge of students.

Process

- This activity is performed after completion of a topic or a chapter.
- Students are asked to summarize or answer a question related to the topic within a minute.

Outcomes:

- It provides a quick and extremely simple way to collect written feedback on student learning.
- It is a very adaptable tool.
- It improves the quality of class discussion.
- It promotes class attentiveness.

Fig 11: One Minute activity

XII. On Spot Quick two

On Spot - Quick Two' is one of the Quick Problem-Solving assessment methods.

Process

- Students are given a set of questions on Shift and rotate operations of digital data.
- Every student needs to work on the given questions.
- On the spot two students should come up with a solution to solve the problem correctly.
- Only the first two students will be given the opportunity to solve with minimal time.
- Two students who come first and solve the problem on board will be complemented.

Outcomes:

- Students were able to understand the operation and solve it correctly.
- Can learn effectively by teaching their classmates.
- Arithmetic and logical shift operations, Rotate right (ROR), Rotate left (ROL) operations can be learned effectively.
- Application of concept can be utilized by doing innovative projects on software integrated designs.

Fig 12: On Spot Quick two

XIII. Online Coding Approach of Understating Linear Algebra Concepts

The aim of this study is to develop an innovative teaching and learning module in Linear Algebra assisted by Python. The challenge in teaching this particular linear algebra course lies in the problem of balancing applications and theory within the time allotted for class meetings

Process:

- Linear problem is widespread in all areas of science and technology, and programming using Python to achieve by means of numerical calculation is inseparable from the linear method.
- Basic linear algebra problems, such as matrix inversion, solving linear equations, find the rank of the matrix and vector group, the largest independent group, the matrix of eigenvectors etc.

can be used to solve elementary transformations, elementary transformation to solve simple steps to a single, easy to compile program.

- Python software can be widely used in teaching linear algebra and can help in focus of teaching students of computing power from the transition to train students to apply mathematical knowledge to analyse and solve problems up.

Outcomes:

- Some aspects of the modified lecture with activities format have been successful in terms of both student learning and student attitudes.
- Based on student opinion surveys and informal interviews, students have responded favourably to the python programming concept.
- Based on feedback it found to be effective in improving the students' basic linear algebra terminology.

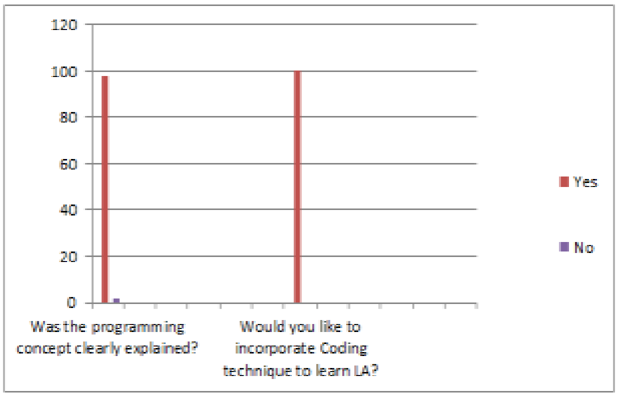

Fig 13: Online Coding Approach of Understating Linear Algebra Concepts and feedback

XIV. Pratibhodhitam

A Learner Centric One-To-One Teaching-Learning Practice

Process: The Course Teacher - Learner

- The Learner approaches the teacher with an intention of knowing
- The Teacher interacts and understands the learner
- The teacher and learner identify the topic to learn
- An interactive iterative Teaching Learning happens with the Learner "asking" questions and the Teacher teaching or answering

Expected Outcome:

- Instigate Inquiry Based Learning

- Leads to deep understanding of the subject
- Leads to Better learning outcome
- Leads to better relationship with teachers

Fig 14: Pratibhodhitam

XV. Pratidhwani

5-10 minutes Voice Summary, Short restatement reflecting the important points of a lecture.

Process:

- Randomly selects a student from the class to give 5 – 10 minutes voice summary for the content delivered in the class.
- Instruct the student to record voice summary after the class hours up to 10 minutes using any of the standard recording tools/devices
- Ascertain the summary of the topic delivered and document the activity
- Share the recorded voice summary with the entire class group.

Outcome:

- Better attention and focus in the Class
- Improves Presentation and communication skills
- Leads to revision and retention of the topic
- Engage students beyond class hours

Fig 15: Pratidhwani

XVI. Peer to Peer Learning

An educational practice in which students interact with other students to attain learning outcomes. Peer learning can be in small groups or as a lecture to the entire class

Process: The Course Teacher

- Shall assess and identify the most difficult topics under a module
- Shall identify bright students who have adequate understanding of the topic
- Shall identify one or two students to teach the topic to their peers
- Shall carry the activity in Tutorial or free hours
- Shall document the entire Peer Teaching Learning activity

Outcome:

- Leads to collaborative learning environment
- Leads to Active learning
- Better understanding of the topics
- Improves presentation and communication skills

Fig 16: Peer to Peer Learning

XVII. Problem Based Learning

Process:

- Identify The Problem
- Define The Main Elements of The Problem
- Finding possible solutions by analysing the problem
- Developing a step-by-step execution plan and acting effectively and decisively is the final touch in the problem-solving process.

Outcomes:

- Engage the imagination to explore new possibilities.
- Analyze and draw inferences from numerical models.
- Determine the extent of information needed.
- Access the needed information effectively and efficiently.

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DEPARTMENT OF ELECTRONICS & COMMUNICATION
Basic Electrical Engineering
(21ELE13)
I SEMESTER

Name: HADIYA AMBER
USN NO:
Branch: CSE
Year and Semester: I st

29/11/21

COLLEGE VISION

Preparing Competent Engineering and Management Professional to Serve the Society

COLLEGE MISSION

- Providing Students with a Sound Knowledge in Fundamentals of their branch of Study.
- Promoting Excellence in Teaching, Training, Research and Consultancy.
- Exposing Students to Emerging Frontiers in various domains enabling Continuous Learning.
- Developing Entrepreneurial acumen to venture into Innovative areas.
- Imparting Value based Professional Education with a sense of Social Responsibility.

DEPARTMENT OF
ELECTRONICS & COMMUNICATION ENGINEERING

DEPARTMENT VISION

- To Achieve Academic Excellence in Electronics and Communication Engineering by Imparting Quality Technical Education and Facilitating Research Activities.

DEPARTMENT MISSION

- Establishing State of the Art Laboratory Facilities and Infrastructure to Develop the Spirit of Innovation and Entrepreneurship
- Nurturing the Students with Technical Expertise along with Professional Ethics to Provide Solutions for Societal Needs
- Encourage Lifelong Learning and Research among the Students and Faculty

COURSE OUTCOME:

At the end of the course students should be able to:

C103.1	Apply ohm's law and Kirchhoff's laws to various combinations of DC circuits.
C103.2	Infer fundamental laws of DC of electromagnetic induction. For AC and DC machines.
C103.3	Analyze Combinations of R, L, C electrical components.
C103.4	Interpret the concepts of electric power transmission, distribution and safety measures.
C103.5	Engage students in self study through practical exposure to industries.

CO-PO Mapping:

CO – PO MAPPING												
CO/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C103.1	3	2	2									
C103.2	2	2										
C103.3		3		2								
C103.4	2											
C103.5												2
Average	1.4	1.4	2	0.5								0.5

CO-PSO Mapping:

CO – PSO MAPPING		
CO	PSO1	PSO2
C103.1	3	3
C103.2	2	2
C103.3	3	-
C103.4	2	-
C103.5	2	-
Average	2.4	1

19/01/2022

1. State Ohm's law and mention its limitations.

Solution: At constant temperature, the current flowing through any conductor is directly proportional to the potential difference between the ends of the conductor.

$$\boxed{I = \frac{V}{R}} \Rightarrow \boxed{V = IR}$$

Limitations

- It doesnot holds good for non-metallic conductors like such as silicon carbide
- It doesnot holds good for non-linear devices such as zener diodes, voltage regulators
- It doesnot holds good for arc-lamps because of the non-linear characteristics of arc produced.

Marks: 10

2. State and explain Kirchhoff's laws as applied to D.C circuits.

Solution: ① Kirchoff's current law

It states that, the algebraic sum of all currents meeting at a junction in circuit is zero.

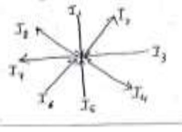
$$\Sigma I = 0$$

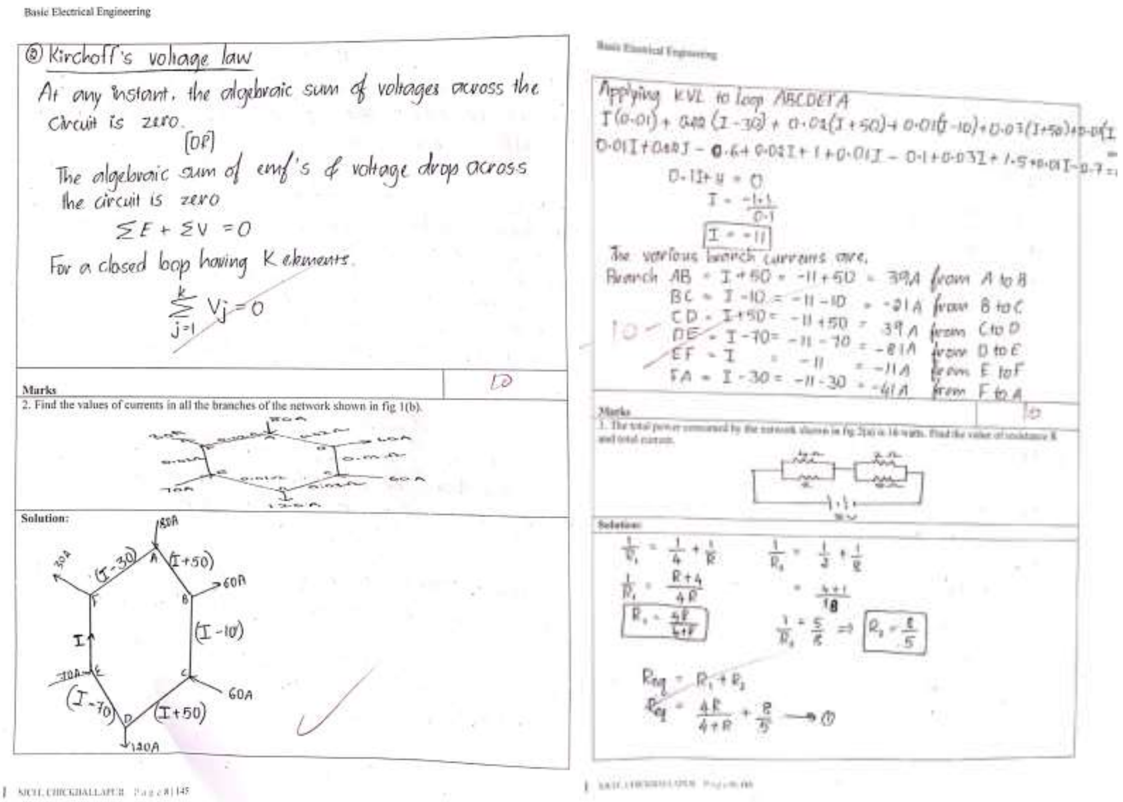
(OR)

The sum of currents entering the node in the circuit is equal to the sum of currents leaving the node

$$I_1 - I_2 + I_3 - I_4 + I_5 + I_6 - I_7 - I_8 = 0$$

$$I_1 + I_3 + I_5 + I_6 = I_2 + I_4 + I_7 + I_8$$





Basic Electrical Engineering

② Kirchoff's voltage law

At any instant, the algebraic sum of voltages across the circuit is zero.

(OR)

The algebraic sum of emf's & voltage drop across the circuit is zero

$\sum E + \sum V = 0$

For a closed loop having K elements

$\sum_{j=1}^{k} V_j = 0$

Marks | 10

2. Find the values of currents in all the branches of the network shown in fig 1(b).

Solution:

Applying KVL to loop ABCDEFA

The various branch currents are,

Branch AB = I + 50 = −11 + 50 = 39A from A to B

BC = I − 10 = −11 − 10 = −21A from B to C

CD = I + 50 = −11 + 50 = 39A from C to D

DE = I − 70 = −11 − 70 = −81A from D to E

EF = I = −11 = −11A from E to F

FA = I − 30 = −11 − 30 = −41A from F to A

$\boxed{I = -11}$

Marks | 10

Solution:

$R_{eq} = R_1 + R_2$

$R_{eq} = \frac{4R}{4+R} + \frac{8}{5}$ → ①

Fig 17: Problem Based Learning

XVIII. Real Time knowledge- Use of ECU in Cars

Process

- To make students understand the concept of Electronic Control Unit (ECU) and the working model, the real time ECU usage was shown and makes them understand how communication interface in cars occur in real time.

Outcomes

- Gives the real time knowledge of working of ECU

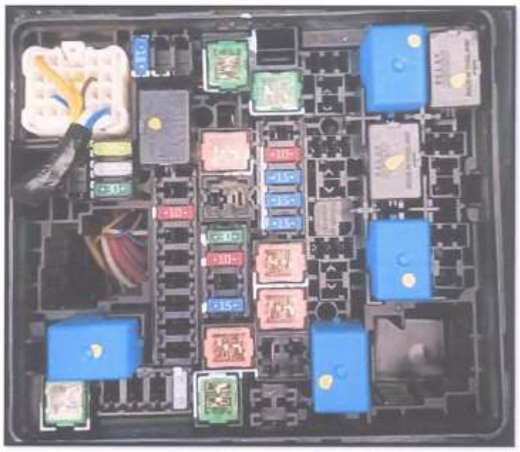


Fig 18: ECU in car

XIX. Simulation Approach of Teaching Network Theory

The Hands-on Session was conducted on Topic "Simulation Approach of Teaching Network Theory" which was all about the Learning Multisim simulation software for solving Circuit theory problems.

Process:

Topics discussed during the Hands-on Session:

- Simulation of Basic circuits.
- Verification of Network Theorems.
- Source Transformation and Star Delta Transformation Simulation.
- Initial Conditions & Transient behaviour simulation.
- Simulation of Network parameter circuits and deriving the Network parameters.

Outcomes:

- Students will be able to understand the concept of usage of Multisim for circuit analysis.
- Students will be able to use Multisim for verification of Network Theorems.
- Students will be able to use Multisim for simplifying Source Transformation and Star Delta Transformation.
- Students will be able to use Multisim to understand Initial and Transient Behaviour of RL and RC circuits.
- Students will be able to use Multisim to Simulate and derive the Network parameters.

Fig 19: Simulation Approach of Teaching Network Theory

XX. Student Team Division Activity

Process:

- Make group 4 students.
- A chart or report on the topic is prepared on the assigned topic within allocated time (20 Minutes).
- For activity assessment will be taken as group grade.
- The group with highest grade will be awarded.

Outcomes:

- Encourages creativity among students
- Increases classroom dynamics

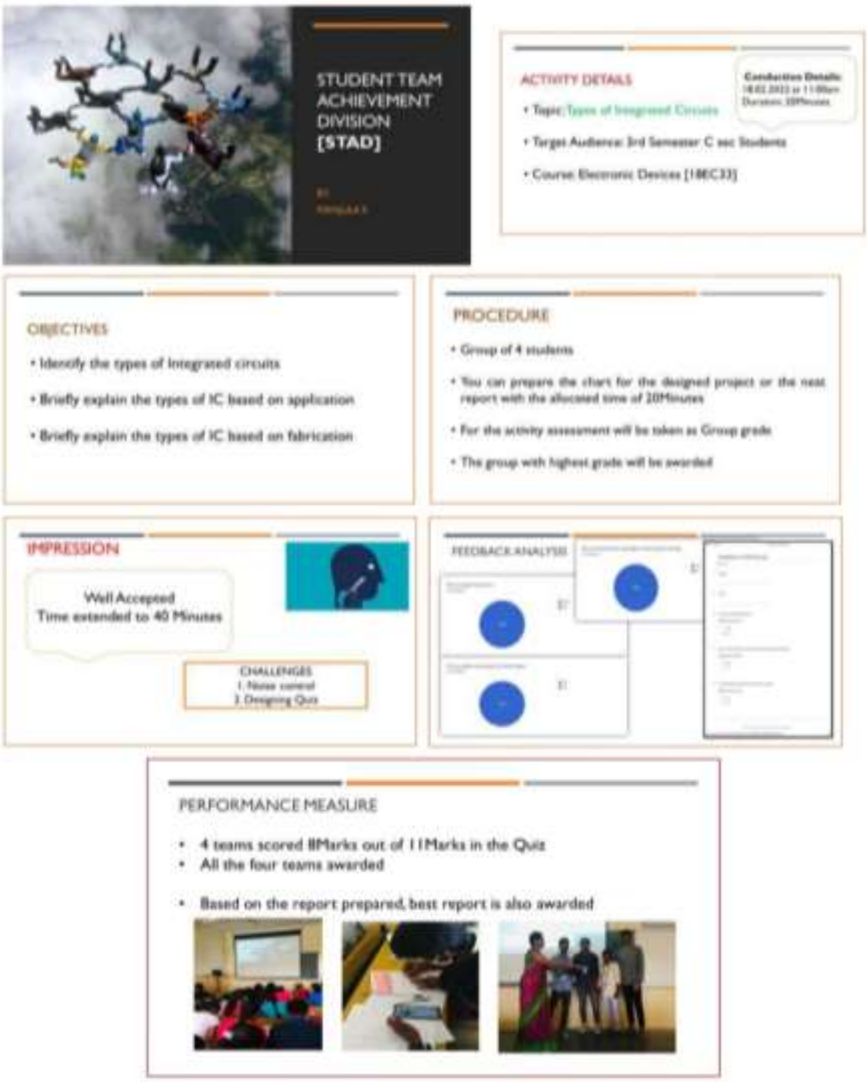


Fig 20: Student Team Division Activity

XXI. Think Pair Share

Think Pair Share is a Collaborative Strategy where students work together to solve a problem or answer a question about an assigned topic.

Process:

- Students will be given a topic for discussion
- Student thinks individually and documents their response on their own.
- Then students are allowed to pair with their neighbours, and asked them to share the answer, among them.
- The student's presents very well will be awarded with a token of appreciation as a small gift.

Outcome:

- It enhances student's critical thinking skills; improve listening, reading and comprehension.
- It helps students get collaboration and presentation skills
- It benefits the students who are typically shy may feel more comfortable sharing with the class after sharing with a partner.
- It promotes students who are outspoken to get benefit from first listening to others before sharing their own opinion.
-

Fig 21: Think Pair Share

XXII. Thinking Aloud Pair Problem Solving (TAPPS)

: involves presenting a problem or question and then observing people think aloud—talk about what they are thinking as they work through the problem. In Think Aloud Pair Problem Solving students pair up with one in the role of problem solver and the other as listener. For each new problem, students switch roles.

Process:

- In TAPPS learning technique, students are divided into pairs, one acts as a problem solver, and the other acts as a listener.
- For the next question there will be a change of role.
- With TAPPS learning techniques each student has responsibility for the task given so that each student to take an active role in learning.

Outcome

- With TAPPS method, learning process becomes interesting.
- With TAPPS, Peer teaching also becomes possible and hence the method is effective

Fig 22: Thinking Aloud Pair Problem Solving (TAPPS)

XXIII. Think of it/ Who Am I

Who AM I is the method to identify the components studied in previous class.

Process:

- Components/Diagrams of the concepts studied in the class are displayed in the class.
- Students are asked to identify the components in the stipulated period.
- Marks will be awarded for each correct answer.

Outcomes:

- Students will be able to define the word identity.
- Students will be able to identify various design components.
- It gives a visual impression to the students and help in remembering the components more clearly.

SL. No.	Sections	No of Students
1	Class Strength	66
2	Attended	50
3	Answered within given time	49

Fig 23: Think of it/ Who Am I activity

XXIV. Video Based Learning

Video-based learning refers to the learning experiences facilitated through video.

Process:

- Videos are played in the class room on specific topics.
- Learning process is assessed using quiz.

Outcome:

- With its ability to combine animation, graphics, text, and audio, videos create a multisensory learning experience, unlike any other e-learning format.

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Designation: Assistant Professor
Department: Mechanical Engineering
Program outcomes: PO1, PO2, PO3, PSO1

Subject: Kinematic of Machinery (18ME44)

Sec: 4th -A

Date	Module	Topic Discussed	Mode of communication/Proof(links)	No of Students Present
29-08-2021	Module 4: Cams	Types of followers and cams, Velicity and Acceleration diagrams, constructions of Cams profiles at different conditions.	https://youtube.be/fCzw9s2rsKU https://youtube.be/3evnxHFLWyg https://youtube.be/DjeJSkrqxZ4 etc.	46
Conducted quiz type questions discussion in the class room after the flipped class.				

Sample of set of quiz questions:

1. An offset provided in radial cam translating follower mechanism serves to
   a. **Decrease the pressure angle during ascent of the follower**
   b. Increase the pressure angle during ascent of the follower
   c. avoid possible obstruction due to some machine parts
   d. none of the above

2. A cam in which the follower reciprocates or oscillates in a plane parallel to the axis of the cam is known as
   a. **cylinder cam**
   b. circular cam
   c. reciprocating cam
   d. tangent cam

3. Which of the following displacement diagram is chosen for better dynamic performance of a cam follower mechanism
   a. SHM
   b. Parabolic motion
   c. **cycloidal motion**
   d. hyperbolic motion

4. For a follower moving with cycloidal motion the velocity of the follower is maximum at the
   a. beginning of the outstroke
   b. end of outstroke
   c. **middle of outstroke**
   d. none of the above

5. Which among the following cam follower is extensively used in an aircraft engine?
   a. spherical follower
   b. **roller follower**
   c. flat faced follower
   d. knife edge follower

6. For SHM of a cam follower a cosine curve represents
   a. displacement diagram
   b. velocity diagram
   c. **Acceleration diagram**
   d. all the above

7. Which one of the follower is widely used and has a cylindrical roller free to rotate about a pin joint?
   a. knife edge follower
   b. **roller follower**
   c. mushroom follower
   d. all the above

8. Normally cam moves with
   a. **constant velocity**
   b. variable acceleration
   c. variable velocity
   d. none of these

Fig 24: Video based learning