Department of Electrical and Electronics Engineering
Academic Year 2022 – 2023 (Even Semester)

Degree, Semester & Branch: IV Semester B.E. EEE
Course Code & Title: EE3402 Linear Integrated Circuits
Name of the Faculty member (s): Mr. A.S.Vigneshwar

Innovative Practice Description

- **Unit / Topic:** Unit I / Fabrication of FET's
- **Course Outcome:** CO 1
- **Topic Learning Outcome:** TLO 3
- **Activity Chosen:** Strip Sequence
- **Justification:**

  This activity helps students apply what they have learned through reading or didactic teaching. This approach can strengthen students' logical thinking processes and test their mental model of a process. The activity can be done in pairs or groups.

- **Time Allotted for the Activity:** 05 minutes

- **Details of the Implementation:**

  Strip Sequence activities require students to actively engage in their learning, often by connecting their prior knowledge to new information. When creating a Strip Sequence, a student frequently interacts with a textbook, notes from class, an instructor, classmate, or study group.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	1	-	-	-	-	-	1	-	-	1	-	-	-

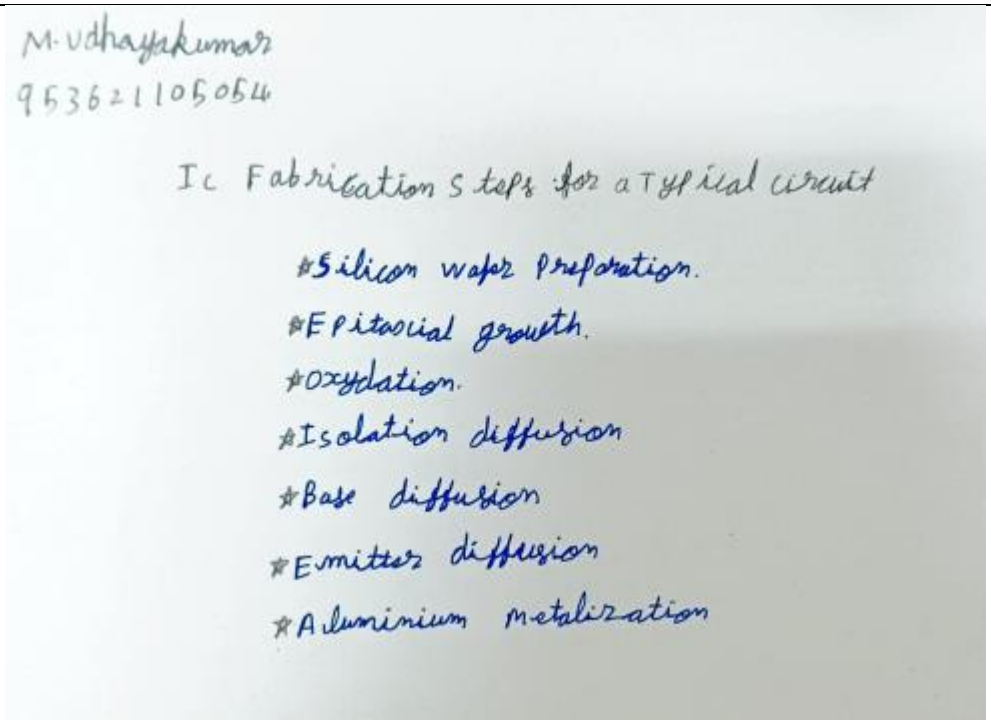
(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	**PO9**
	1
Justification for correlation	The students can Function effectively as an individual

- **Images / Screenshot of the practice:**

Innovative Teaching Method Execution
Fabrication of FET's – Strip Sequence



- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***

    Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

  - ***Benefit of the practice:***

    The benefits of Strip Sequence are a great way for students to make notes on all of the information they receive. It made the students the general steps involved in the process and make the students to implement the procedure for the particular topic.

  - ***Challenges faced in implementation:***

    Normally teachers will give longer explanations in the notes section of the topic. The students are made into groups and to arrange the strip of fabrication process for the topic of fabrication of FET. I planned the activity for 05 minutes only. But in real scenario it takes 10 minutes

References:

1. David A. Bell, 'Op-amp & Linear ICs', Oxford, 2013.
2. D. Roy Choudhary, Sheil B. Jani, 'Linear Integrated Circuits', II edition, New Age, 2003.
3. RamakantA.Gayakward, 'Op-amps and Linear Integrated Circuits', IV edition, Pearson Education, 2003 / PHI. 2000.

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Innovative Practice Description

- **Unit / Topic:** Unit II / Basic Application of op-amp – Inverting amplifier & Non-inverting amplifier
- **Course Outcome:** CO 2
- **Topic Learning Outcome:** TLO 6
- **Activity Chosen:** Demonstration
- **Justification:**

  After teaching the concept of characteristics of Basic Application of op-amp – Inverting amplifier & Non-inverting amplifier, I thought of conducting demonstration for easy and better understanding of the concept.

- **Time Allotted for the Activity:** 10 minutes
- **Details of the Implementation:**

  Demonstration of inverting and non-inverting amplifier using op-amp using Multisim software. The students can able to understand the difference between the concept of inverting and non-inverting amplifier.

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO2	2	1	1	-	1	-	-	-	-	-	-	1	1	1	-

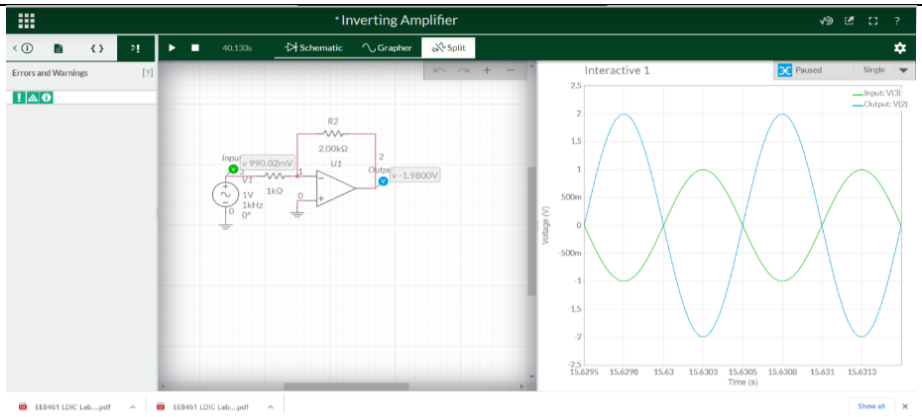
(1 – Low 2 – Moderate 3 – High)

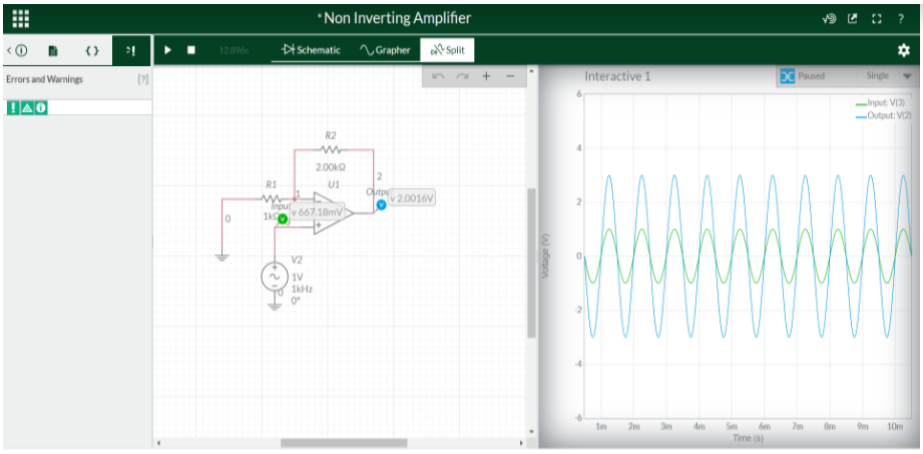
- **PO / PSO mapped:**

Innovative practice	**PO5**
	1
Justification for correlation	The student can effectively use the software MULTISIM

- **Images / Screenshot of the practice:**

Innovative Teaching Method Execution
Basic Application of op-amp – Inverting amplifier & Non-inverting amplifier – Demonstration





- **Reflective Critique:**
  - ❖ ***Feedback of practice from students and other stakeholders:***

    Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.

  - ❖ ***Benefit of the practice:***
    - ✓ Students can able to attend the question even in the questions are in indirect form.
    - ✓ Students can able to explain the concepts in examination without any confusion.
  - ❖ ***Challenges faced in implementation:***

    I planned the activity for 10 minutes only. But in real scenario it takes 20 minutes.

References:

1. David A. Bell, ‘Op-amp & Linear ICs’, Oxford, 2013.
2. D. Roy Choudhary, Sheil B. Jani, ‘Linear Integrated Circuits’, II edition, New Age, 2003.
3. Ramakant A.Gayakward, ‘Op-amps and Linear Integrated Circuits’, IV edition, Pearson Education, 2003 / PHI. 2000.

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Course Code & Title: EE3402 Linear Integrated Circuits

Name of the Faculty member (s): Mr.A.S.Vigneshwar

Innovative Practice Description

- **Unit / Topic:** Unit III / D/A converter- Weighted resistor & R-2R ladder, A/D converter- Flash type, Counter type
- **Course Outcome:** CO 3
- **Topic Learning Outcome:** TLO 10
- **Activity Chosen:** One minute paper
- **Justification:**

  One minute paper activity provides a conceptual bridge between successive class periods. Improve the quality of class discussion by having students write briefly about a concept what they understand in the class.

  Time Allotted for the Activity: 02 minutes

- **Details of the Implementation:**

  At the end of the class, students were asked to write about the topic discussed in the class. The students expressed the understood content and the content which were not clear in that particular topic. This activity shows whether the students can able to understand the specific topic and their involvement the particular class.

CO – PO / PSO mapping:

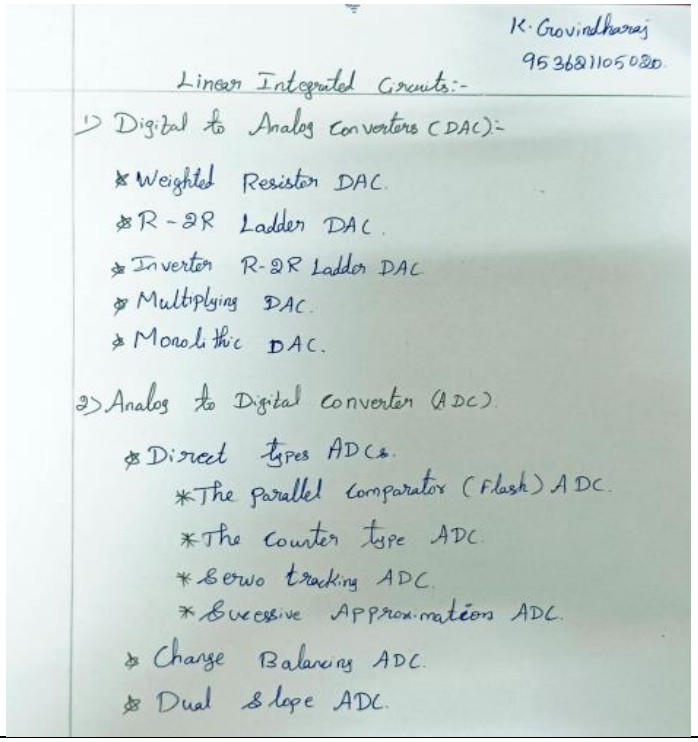
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO3	2	1	1	-	1	-	-	-	1	-	-	1	1	-	-

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	**PO9**
	1
Justification for correlation	The students can Function effectively as an individual

- **Images / Screenshot of the practice:**

Innovative Teaching Method Execution
D/A converter- Weighted resistor & R-2R ladder, A/D converter- Flash type, Counter type – One minute paper


K. Govindharaj
953682105020

Linear Integrated Circuits:-

1) Digital to Analog converters (DAC):-
- Weighted Resistor DAC.
- R-2R Ladder DAC.
- Inverter R-2R Ladder DAC
- Multiplying DAC.
- Monolithic DAC.

2) Analog to Digital converter (ADC).
- Direct types ADCs.
  - The parallel comparator (Flash) ADC.
  - The Counter type ADC.
  - Servo tracking ADC.
  - Sucessive Approximation ADC.
- Charge Balancing ADC.
- Dual slope ADC.

- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***
    - ✓ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.
  - ***Benefit of the practice:***
    - ✓ Students can able to attend the question even in the questions are in indirect form.
    - ✓ Students can able to explain the concepts in examination without any confusion.
  - ***Challenges faced in implementation:***
    - ✓ Time utilization for conducting activity.

References:

1. David A. Bell, 'Op-amp & Linear ICs', Oxford, 2013.
2. D. Roy Choudhary, Sheil B. Jani, 'Linear Integrated Circuits', II edition, New Age, 2003.
3. RamakantA.Gayakward, 'Op-amps and Linear Integrated Circuits', IV edition, Pearson Education, 2003 / PHI. 2000.

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Innovative Practice Description

- **Unit / Topic:** Unit IV / PWM Application of IC555 timer
- **Course Outcome:** CO 4
- **Topic Learning Outcome:** TLO 11
- **Activity Chosen:** Sage and Scribe
- **Justification:**
  - ✓ The chosen topic will have the concepts related to design of various controllers for motor drive. Hence if the students are doing co-operative learning, then it is easier for them to understand the concepts. Sage and Scribe is one such cooperative learning activity.
  - ✓ The expected outcome is like a review process of learned concepts / points, Sage and Scribe is suitable activity.
- **Time Allotted for the Activity:** 10 minutes
- **Details of the Implementation:**
  - ✓ The two students sitting adjacent are made to do the activity together. One student (Sage) will explain the concept for a while and other student (Scribe) will answer for the questions.
  - ✓ For the next question, the students will change their role. Likewise it will be repeated for all the questions.
  - ✓ The students will share the same piece of paper for doing this activity.
  - ✓ I clearly explained them that, since it is a cooperative activity both is responsible for the outcome.
  - ✓ At the end of the lecture hour, the students are made to explain their answers to the class. I have given the correct answers for the questions with explanation.

CO – PO / PSO mapping:

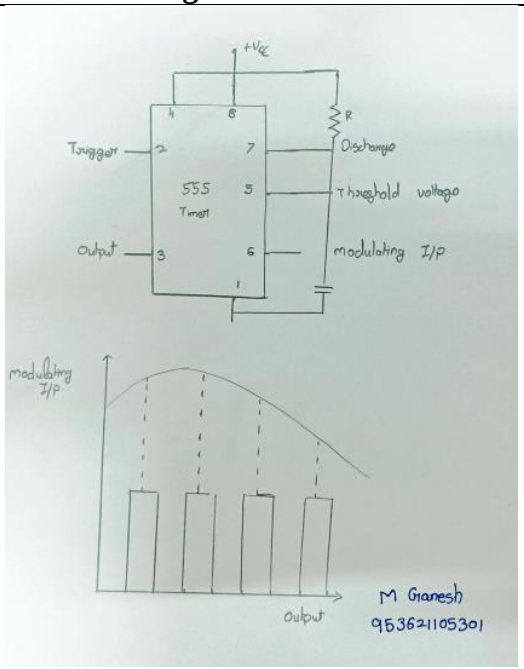
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO4	2	1	1	-	1	-	-	-	1	-	-	1	1	1	-

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	**PO9**
	1
Justification for correlation	The students can Function effectively as a team

- **Images / Screenshot of the practice:**

Innovative Teaching Method Execution
PWM Application of IC555 timer – Sage and Scribe


Reflective Critique:

- **Feedback of practice from students and other stakeholders:**
  - ✓ The students have liked the session and they felt comfortable in doing this activity, since they are interacting with their neighbor. They did the work easily.
  - ✓ They conveyed that more such activity will help them in understanding the concepts clearly and easily.
- **Benefit of the practice:**
  - ✓ The students have understood the concepts clearly and it has been evident from the answers they have written on the answer paper.
  - ✓ The students have presented the answers to the class. It cleared any doubt in understanding the important points in the chosen topic.
- **Challenges faced in implementation:**
  - ✓ In few groups, both the students were slow learners; hence they find it very difficult to answer the questions. I helped them in answering the questions by providing them with simple hints.
  - ✓ In the next time, while doing this activity, I should properly pair the students.

References:

1. David A. Bell, 'Op-amp & Linear ICs', Oxford, 2013.
2. D. Roy Choudhary, Sheil B. Jani, 'Linear Integrated Circuits', II edition, New Age, 2003.
3. RamakantA.Gayakward, 'Op-amps and Linear Integrated Circuits', IV edition, Pearson Education, 2003 / PHI. 2000.

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Innovative Practice Description

- **Unit / Topic:** Unit V / Switching regulator, Switched Mode Power Supply (SMPS)
- **Course Outcome:** CO 5
- **Topic Learning Outcome:** TLO 17
- **Activity Chosen:** Think pair share
- **Justification:**
  - ✓ It helps students to think individually about a topic or answer to a question.
  - ✓ It teaches students to share ideas with classmates and builds oral communication skills.
  - ✓ It helps focus attention and engage students in comprehending the reading material.
- **Time Allotted for the Activity:** 10 minutes
- **Details of the Implementation:**

  Think-Pair-Share innovative practice conducted for III year EEE students, after explained the concept of voltage source inverter and current source inverter fed synchronous motor. First, I asked the students to think about the comparison between Switching regulator and Switched Mode Power Supply (SMPS) for 2 minutes. Then I make them as a pair to discuss their neighbour's and asked the students to discuss about pros and cons of Switching regulator and Switched Mode Power Supply (SMPS) for 3 minutes. Finally, I asked the one of the team to explain the concept to whole class for further discussion. The students from group share their points and participated in the discussion for 10 minutes.

- **CO – PO / PSO mapping:**

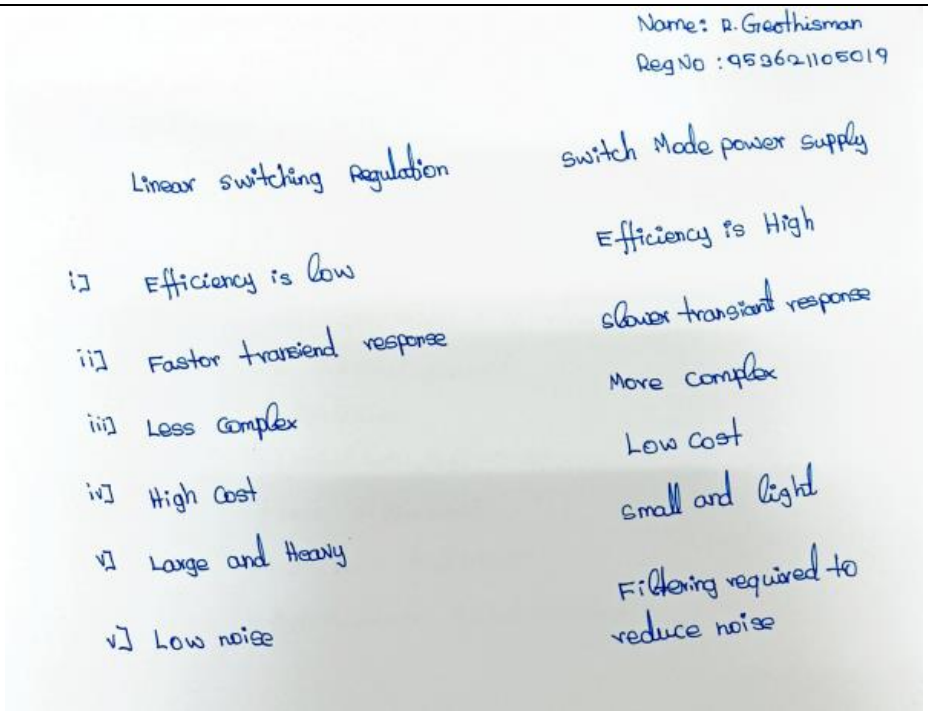
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO5	2	1	1	-	-	-	-	-	1	-	-	1	1	-	-

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	**PO9**
	1
Justification for correlation	The students can Function effectively as a team

- **Images / Screenshot of the practice:**

Innovative Teaching Method Execution
Switching regulator, Switched Mode Power Supply (SMPS) – Think Pair Share


- **Reflective Critique:**
  - ***Feedback of practice from students and other stakeholders:***
    - ✓ Students understood the concept which was reflected from their answers for the questions I have asked during discussion session.
  - ***Benefit of the practice:***

    Think-pair-sharing forces all students to attempt an initial response to the question, which they can then clarify and expand as they collaborate. It also gives them a chance to validate their ideas in a small group before mentioning them to the large group, which may help shy students feel more confident participating.
  - ***Challenges faced in implementation:***

    I planned the activity for 10 minutes. But in Class room it takes 15 minutes.

References:

1. David A. Bell, 'Op-amp & Linear ICs', Oxford, 2013.
2. D. Roy Choudhary, Sheil B. Jani, 'Linear Integrated Circuits', II edition, New Age, 2003.
3. RamakantA.Gayakward, 'Op-amps and Linear Integrated Circuits', IV edition, Pearson Education, 2003 / PHI. 2000.