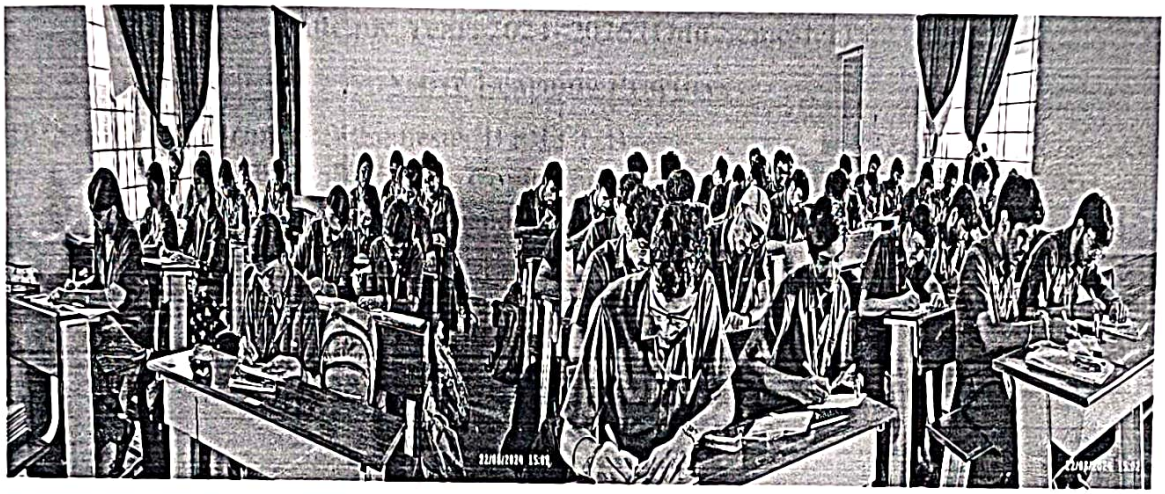
RAMCO INSTITUTE OF TECHNOLOGY

Department of Electronics and Communication Engineering

Academic Year: 2024- 2025 (Odd Semester)

Active Learning Practices

Degree, Semester& Branch: V Semester B.E.ECE B
Course Code & Title: CEC352 Satellite Communication
Name of the Faculty member: Ms.R.Chandralekha

Active Learning Practices Execution
UNIT I SATELLITE ORBITS
Activity: One Minute Paper **Topic:** Look Angle Determination


20/8/24

Signature of the Faculty

HOD

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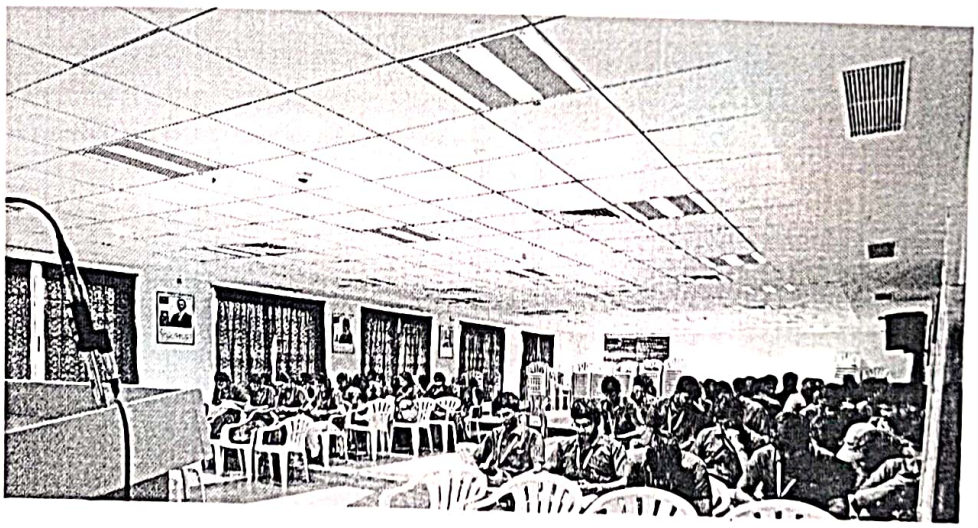
Active Learning Practices Execution
UNIT III SATELLITE LINK DESIGN
Activity: Class Poll **Topic:** Rain induced attenuation and interference



25/9/24

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Department of Electronics and Communication Engineering
Academic Year 2024-2025 (Odd Semester)
Planning Document

Degree, Semester & Branch: V Semester B.E. ECE B
Course Code & Title: CEC352 Satellite Communication
Name of the Faculty member: Ms.R.Chandralekha, AP/ECE

- **Unit/Topic: Unit- II / SPACE SEGMENT**
- **Course Outcome:** CO2
- **Topic Learning Outcome:** TLO 6
- **Activity Chosen:** Jigsaw

Learning Outcomes:
The Student will be able to:

- Understanding TT&C Systems
- Telemetry Principles
- Tracking Techniques
- Command Operations
- Communication Links
- Ground Station Systems
- System Integration and Testing
- Applications and Case Studies
- Explore advancements in TT&C technologies, such as software-defined radios (SDRs), autonomous operations, and laser communication.
- Understand the ethical responsibilities in managing spacecraft TT&C systems.

Justification:

- The **Jigsaw activity**, a cooperative learning strategy, is particularly effective for teaching **Telemetry, Tracking, and Command (TT&C)** concepts because it leverages peer teaching, collaboration, and active learning. TT&C involves a multidisciplinary understanding of telemetry data processing, tracking systems, and command operations, which can be complex to learn. Here's why a Jigsaw activity is well-suited:
  - **Enhanced Understanding**: Students learn each TT&C component in detail and see the bigger picture.
  - **Teamwork Skills**: Students develop collaboration and teaching skills.
  - **Real-World Application**: The activity simulates the multidisciplinary nature of TT&C systems in space missions.
- **Time Allotted for the Activity:** 45 Minutes
- **Details of the Implementation:**
  (i) Materials for the Activity:

The materials for the preparation of the students will be shared one week before through LMS Canvas. Including the material, students were asked to refer to the web content also.

References:

Book Title/ Author/ Publisher/ Edition	Page No.
1. Dennis Roddy, "Satellite Communication", 4th Edition, Tata McGraw Hill International, 2006.	472-483
Websites	
1. https://www.acsce.edu.in/acsce/wp-content/uploads/2020/03/Satellite-TTC-Module-4.pdf 2. https://link.springer.com/referenceworkentry/10.1007/978-1-4419-7671-0_69 3. https://www.jigsaw.org/ 4. https://www.newcastle.edu.au/data/assets/pdf_file/0016/109600/Jigsaw-learningactivity.pdf	

(ii) Formation of Groups:

Student groups were created as below:

- Class Strength: 61
- Number of groups: 06
- Members per group: 06(6) + 05(1) + 04(5)

- **Plan for Implementing this Activity:**
  - 6 groups are formed with 4 or 5 members
  - Each group is allotted with a name and its known as Home group.
  - Each expert group is allotted with one topic
    - **Introduction to TT&C**
    - **Telemetry Systems**
    - **Tracking Systems**
    - **Command Systems**
    - **Communication Links in TT&C**
    - **Ground Segment Systems**
    - **System Integration and Testing**
    - **Applications of TT&C**
    - **Emerging Trends in TT&C**
    - **Case Studies and Practical Examples**
  - The expert group members discuss the topic in detail for 15 minutes with the learning materials already posted in the course website – canvas.
  - The Expert group members should go to their original shape group and discuss the points (15 Minutes) to the other members.
  - All the members in home group learnt about all the topics through expert group members.
  - Finally one from each group should summarize the points of the topic Fixed and Floating point representation to the class (10 Minutes).
  - Review of points and conclusion of the activity (5 minutes)
  - Thus the concept of TT&C is known to all by involving the students actively

Expected Difficulties:

- Lack of preparation: Making the students to learn the materials is the challenging task.

- Each student has to read the material posted in the course website.
- Non participation in the activity: All the students should be made involve in the activity
- Time management: The Jigsaw activity should be able to complete in the planned duration.

Plan for preventing these difficulties:

- Making each student accountable by making formative and summative assessment for individual and group performance.
- Including the assessment mark for final internal mark calculation makes each student to participate actively in the Jigsaw activity.
- Each student contribution mark in the assessment will be based on the discussions in the course website and whatsapp group through which all the students will participate in the activity.
- Posting announcements periodically for learning and preparing the presentation.
- The Time management will be avoided by using timer clock for 10 minutes duration.

- **Student Feedback: Written Feedback**

1. How do you rate the activity for learning the concept? Give tick mark (✓)			
Excellent	**Good**	**Satisfactory**	**Poor**
	✓		
2. How do you rate the reference material provided related to the topic? Give tick mark (✓)			
Excellent	**Good**	**Satisfactory**	**Poor**
	✓		
3. Have you enjoyed the activity? Give tick mark (✓)		**Yes:** ✓	**No:**
4. Challenges faced during activity/presentation. Give tick mark (✓)		**Yes:**	**No:** ✓
If yes what?:			
B. Sankara Gomathi B Sc 12/9/24			
Name & Signature of the Student with date			

12/9/24

Signature of Faculty Member

HOD