**Lesson Plan Form**

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| Title: **IIR filter design.** | | | Ref. No: **ETE 321/19** | |
| Target Population: **25** | | | Duration : **90 minutes** | |
| Aims/Rationale: **The aim of the course is to make students familiar with several types of the modern digital filters, and to teach them how to design the digital filter.** | | | | |
| **Learning Outcomes: At the end of the session participant will be able to :**   1. **Understand the basic concepts about Design Filter and mathematical representation and its properties.** 2. **Design IIR Filter by Approximation of Derivatives.** 3. **Design IIR Filter by Impulse Invariance.** 4. **Determine the characteristics of commonly used Analog Filters.** | | | | |
| **Content** | Method or Technique | Resource or Aid | | Time |
| Introduction: **Welcome address**  **Rapport building**  **Bridging topic**  **Layout/ content outline**  **Attendance**  **Pre-assessment** | **Lecture**  **Q/A** | **W/B** | | **15 minutes** |
| Development:  Section-A:  **Basic theory of Digital Theory and mathematical function.**  **Design IIR Filter by Approximation of Derivatives.**  Section-B  **Design IIR Filter by Impulse Invariance.**  **IIR Filter Design by the Bilinear Transformation.**  Section-C  **Characteristics of commonly used Analog Filters**.  **Some Examples of Digital Filter Designs Based on Bilinear Transformation.** | **Lecture**  **Discussion**  **Do**  **Do** | **W/B**  **MMP**  **Video** | | **20 minutes**  **25 minutes**  **25 minutes** |
| Conclusion:  **Recap main points**  **Feedback & answer**  **Assessment of LOs**  **Reference**  **Forward plan** | **Lecture**  **Discussion**  **Q/A** |  | | **10 minutes** |
| Equipment & aids: **Optional** | | | | |