

**Shri Sant Gajanan Maharaj College of Engineering Shegaon**  
**Department of Electronics and Telecommunication Engineering**

**Link of Video:** <https://www.youtube.com/playlist?list=PLe24xZhacjBYj-EKXFLO49RcQ-DZaFDa>

**Course Title & Course Code:** Network Theory (4ETC02)

**Class:** Second Year (2U1)

**Semester:** IV

**Name of the Course Teacher:** Mr. S. P. Badar

**Title of the innovative practice:** Utilizing YouTube-Based Video Lectures for Enhanced Learning of Graph Theory in Network Theory Subject

**Objectives/Goals of the practice:**

The primary goal of this innovative teaching practice is:

1. To enhance the understanding of complex concepts in Graph Theory, a key topic in the subject Network Theory.
2. To support diverse learning styles through multimedia content.
3. To make learning accessible beyond the classroom environment.

**Use of Appropriate Methods:**

To achieve the stated goals, the following methods were implemented:

1. **Digital Content Delivery:** YouTube allowed students to access content anytime, anywhere, promoting flexibility and self-paced learning.
2. **Topic-wise Modular Approach:** Each video focuses on a single subtopic such as types of graphs, incidence matrix, or tree and co-tree, enabling targeted and focused learning.
3. **Conceptual Explanation with Visual Tools:** Graphical representations, circuit diagrams, and flowcharts were used extensively to illustrate the relationship between graph theory and network elements.
4. **Problem-Solving Demonstrations:** Worked examples and step-by-step problem-solving sessions were included in the videos to help students understand the application of concepts in real scenarios.

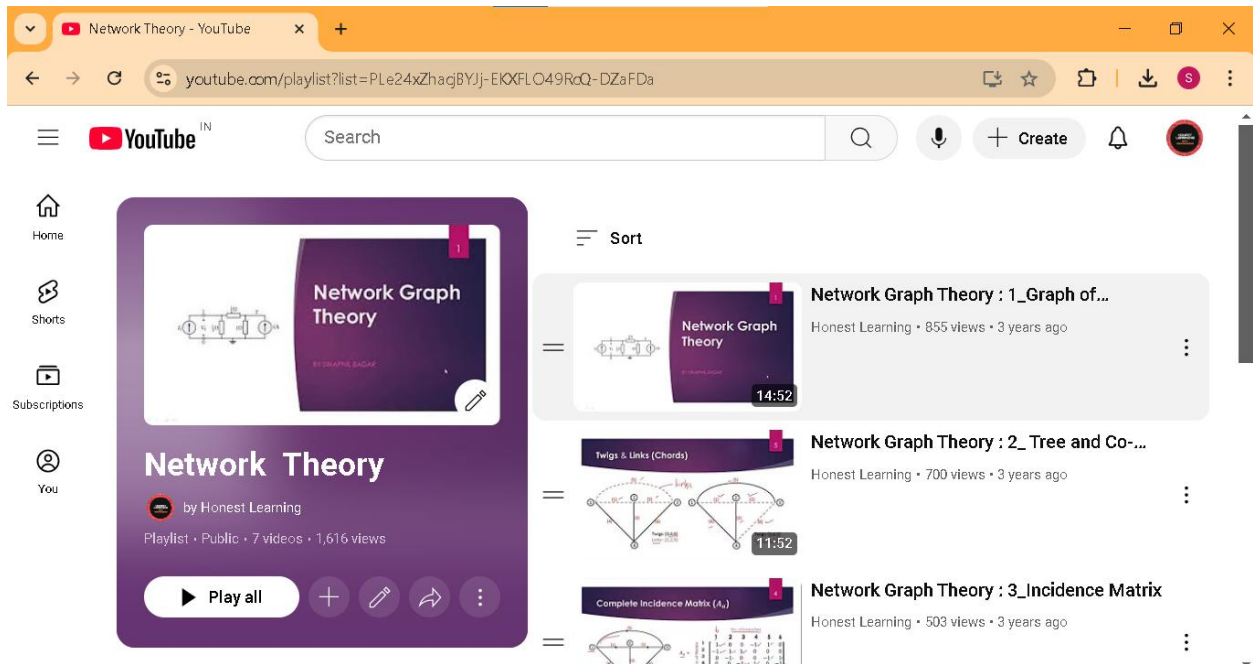
5. **Blended Learning Approach:** The videos complemented regular classroom teaching, reinforcing concepts already introduced during lectures and providing revision support.
6. **Interactive Elements (Future Scope):** Plans are in place to include quizzes, comment-based discussions, and interactive activities to increase learner participation and feedback.

### **Effective Presentation:**

To ensure that the YouTube-based learning content is not only informative but also engaging, the following strategies were adopted for effective presentation:

1. **Well-structured Delivery:** Concepts were broken down into simple, easy-to-understand segments. Each topic was explained using step-by-step narration to cater to diverse learning levels.
2. **Use of Visual Aids:** Graphs, circuit diagrams, and animated illustrations were incorporated to enhance understanding of key terms like nodes, branches, loops, and trees.
3. **Concise and Focused Videos:** Each video is short (15–20 minutes), ensuring higher attention span and effective learning.
4. **On-Screen Annotations:** Key points, formulas, and definitions were highlighted during the video to reinforce important concepts.
5. **Encouragement of Self-Paced Learning:** The video format allows students to pause, replay, and revisit topics, enabling better retention and personalized learning.

### **Photo of the activity**



### PO's & PSO's Mapped:

PO1, PO2, PO3, PO4, PO5, PO12, PSO1

### Reflective Critique:

The link of video was shared with other faculty members.

- Prof. Ms. B. P. Harne suggested for short quizzes or reflective questions at the end of each video to assess learning
- Prof. H. B. Patil suggested mentioning a short introduction video outlining the learning objectives and scope of the series

### Evidences of success:

- **Increased Student Engagement:** Students actively viewed and shared feedback on the videos. The view count, likes, and comments on the playlist indicate consistent usage and interest.
- **Improved Conceptual Understanding:** Classroom interactions and assessments showed that students were able to grasp complex Graph Theory concepts more easily, as reflected in higher accuracy during tutorials and improved participation in discussions.

### **Challenges faced during implementation:**

- **Technical Constraints:** Recording high-quality videos required familiarity with video editing tools, screen recording software, and sound equipment. Initial trials involved a learning curve to ensure clear visuals and audio.
- **Content Delivery Adjustment:** Unlike live teaching, recording a video required adjustments in teaching style—maintaining clarity, and engagement without real-time student interaction was challenging.
- **Time-Intensive Preparation:** Scripting, recording, editing, and uploading videos consumed significant time in addition to regular teaching responsibilities
- **Limited Student Feedback Loop:** Since students watch the videos asynchronously, immediate feedback or clarification of doubts wasn't possible unless followed up in class or through discussion forums.

**Link for peer review :** <https://forms.gle/mAvqxPzN8oRYnbPD7>

