Lesson Plan: Bipolar Junction Transistor (BJT)

✅ Lesson Plan Overview

Topic: Bipolar Junction Transistor (BJT) – Structure, Working, Configurations & Applications
Class Duration: 1 Hour
Target Audience: Undergraduate Engineering Students (ECE/EEE)
AI Tools Used:
- ChatGPT (Q&A, concept reinforcement)
- PhET Simulation (BJT working visualization)
- Canva AI (infographics & visual aids)
- Google Forms (AI-generated assessment)
- YouTube (AI-curated content)
- Google Slides (presentation)

✅ SMART Learning Objectives (Aligned with Bloom's Taxonomy)

Domain	Objective
Remember	Define the structure and basic working of BJT.
Understand	Explain the difference between NPN and PNP transistors.
Apply	Demonstrate the current flow and behavior of a BJT through a simulation.
Analyze	Differentiate between CB, CE, and CC configurations with characteristics.
Evaluate	Assess the usage of BJT as a switch and amplifier in real-life applications.
Create	Design a simple real-world circuit example using BJT.

🕐 Time-Structured Activities with Bloom's Level & Tools

Time	Activity Description	Bloom's Level	AI Tools / Support
0–5 min	Brief overview of semiconductor devices, role of BJT in electronics	Remember	Google Slides
5–15 min	Structure, symbols, and working of NPN/PNP transistors with animation	Understand	ChatGPT (Q&A), Canva AI visuals
15–25 min	Hands-on simulation of BJT working using PhET; students observe current flow	Apply	PhET Simulation, projector
25–35 min	Discuss CB, CE, CC configurations with I/P-O/P characteristics and use cases	Analyze	Canva Infographics, Whiteboard
35–40 min	Students pair up and compare two configurations – share pros/cons	Evaluate	Peer discussion (Prompt from ChatGPT)
40–50 min	Show real-world examples (amplifier, switch); brief group discussion on practical importance	Evaluate	YouTube (AI-suggested content)
50–55 min	5-question multiple choice quiz to check conceptual understanding	Apply/Evaluate	Google Form (AI-generated)
55–60 min	Exit Ticket: "Name one configuration of BJT and one real-world application"	Create	Canva Summary Slide, Exit Ticket (paper)

🧠 Homework Task

Write a short note (200 words) on how a BJT can be used as a switch. Include at least two real-world examples (e.g., LED switching, Relay driver). Use ChatGPT if you get stuck or need clarification.

✅ Exit Ticket (Prompt)

In one sentence, describe a key difference between NPN and PNP transistors, and name one configuration of BJT. (Collect responses before students leave to assess immediate understanding.)

https://docs.google.com/document/d/1y_lG0amcPutxdWw2OdqlnUJRS_qFtO4SU19zT4h173U/edit?usp=sharing