

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - Electronic materials, devices, and fabrication

Subject Co-ordinator - Prof. Parasuraman S

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Metals, semiconductors and insulators  
Lecture 2 - Introduction to semiconductors  
Lecture 3 - Density of states and Fermi-Dirac statistics  
Lecture 4 - Assignment 1 - Bonding, DOS, and Fermi statistics  
Lecture 5 - Intrinsic semiconductors  
Lecture 6 - Intrinsic semiconductors - conductivity  
Lecture 7 - Assignment 2 - Intrinsic semiconductors  
Lecture 8 - Extrinsic semiconductors  
Lecture 9 - Extrinsic semiconductors - Fermi level  
Lecture 10 - Extrinsic semiconductors - conductivity  
Lecture 11 - Assignment 3 - Extrinsic semiconductors  
Lecture 12 - Metal-semiconductor junctions  
Lecture 13 - Assignment 4 - Metal-semiconductor junctions  
Lecture 14 - pn junctions in equilibrium  
Lecture 15 - pn junctions under bias  
Lecture 16 - pn junction breakdown and heterojunctions  
Lecture 17 - Assignment 5 - pn junctions  
Lecture 18 - Transistors  
Lecture 19 - MOSFETs  
Lecture 20 - Assignment 6 - transistors  
Lecture 21 - Optoelectronic devices  
Lecture 22 - Optoelectronic devices  
Lecture 23 - Optoelectronic devices  
Lecture 24 - Optoelectronic devices  
Lecture 25 - Optoelectronic devices  
Lecture 26 - Assignment 7 - optical properties  
Lecture 27 - Assignment 8 - optoelectronic devices  
Lecture 28 - Semiconductor manufacturing  
Lecture 29 - Si wafer manufacturing

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- Lecture 30 - IC device manufacturing
- Lecture 31 - Layering
- Lecture 32 - Doping
- Lecture 33 - Lithography
- Lecture 34 - Etching and deposition (growth)
- Lecture 35 - Metallization and polishing
- Lecture 36 - Process and device evaluation
- Lecture 37 - Productivity and process yield
- Lecture 38 - Clean room design and contamination control
- Lecture 39 - Devices and IC formation
- Lecture 40 - IC circuit logic and packaging