Indian Institute of Technology, Kanpur
Department of Electrical Engineer

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EE 311A Microelectronics II

Lectures: Monday, Friday – 12 noon to 1 PM; and Thursday – 9 AM to 10:00 AM at L-12
Website: http://home.iitk.ac.in/~sskiyer/EE311A

Teaching Assistant: **Office Hours: 5:00-6:00 PM in WL-119**
Kapil Sethi (eekapil@iitk.ac.in) office hours on Mondays
Shubham Yadav (shyadav@iitk.ac.in) office hours on Wednesdays
Manoj Nomeshwar Naik (manojnai@iitk.ac.in) office hours on Thursdays
Vipan Goyal (vipan@iitk.ac.in) office hours on Fridays

Course Objective:
1. To introduce the basics semiconductor physics and devices
2. To grasp the functioning of classic devices and be able to extend it to latest devices

Course Plan:
- Semiconductor Lattice and the ir basic properties
- Energy band and charge carriers in semiconductors
- Junctions: *p-n* junctions and metal-semiconductor
- Field effect transistors
- Bipolar junction transistors
- *Other devices and latest development*

References Books:
- *B.G. Streetman and S. Banerjee*, "Solid State Electronic Devices"; Sixth Edition, Prentice Hall (Good reference book for beginners. Makes good reading. **The main reference for this course**)
- *R.S. Muller, T.I. Kamins and M. Chan*, "Device Electronics for Integrated Circuits"; John Wiley (Text book for PG level course)
- *S.M.Sze*, "Physics of Semiconductor Devices"; John Wiley (An excellent reference book to possess for those continuing to work in semiconductor devices)
- *Aloke K. Dutta*, "Semiconductor Devices and Circuits", Oxford University Press (A good reference book from written by a professor from IIT Kanpur)
- *M.K. Achuthan and K.N. Bhat,* "Fundamentals of Semiconductor Devices"; Tata McGraw Hill (An easy to read and well written book)
- *Michael S. Shur*, "Introduction to Electronic Devices"; John Wiley & Sons (A popular text book)
- *R.F. Pierret, G.W. Neudeck, and others* "Modular Series on Solid State Devices", Vol. 1,2,3,4,7; Addison-Wesley (A well written series of introductory books)

Grading:
Mini Quiz (10%); Homework (10%); Quiz (10%); Midterm II (30%); and Final Exam (40%)