EECS 598-2: Nanocircuits and Nanoarchitectures (3 Credits)
Instructor: Prof. Pinaki Mazumder

<u>Lecture 1:</u> Introduction to Nanoelectronics

<u>Lectures 2</u>: ITRS Road Map: Revolutionary v. Evolutionary Devices and Architectures

<u>Lecture 3:</u> Nanoelectronic Device Technologies (Guest Lecture)

<u>Lectures 4 & 5:</u> Quantum Device Modeling and Quantum SPICE Simulator

<u>Lectures 6-8:</u> RTD and Quantum-MOS Based Digital Circuit Design

<u>Lectures 9 & 10:</u> Cellular Nonlinear Network (CNN) Nanoarchitectures

<u>Lectures 11 & 12:</u> Quantum-Dot Based Computational Models

<u>Lectures 13-15:</u> Memristive Crossbar Memory & FPGA Architectures

<u>Lecture 16:</u> Molecular Electronics: Devices and Circuits

<u>Lectures 17 & 18:</u> DNA and Protein Based Computing

<u>Lectures 19 & 20:</u> Spintronics and Spin Torque Transfer Memory and Logic

<u>Lecture 21:</u> Nano Tube/Nano Wire Based Digital Logic Design

<u>Lectures 22 & 23:</u> Quantum Cellular Array Based Logic Circuits

<u>Lecture 24:</u> Overview of Photonics Devices (Guest Lecture)

<u>Lectures 25 & 26:</u> Plasmonics, Slow EM Devices, and Biosensing

Class Project Presentation by Students

References: Archival papers on above topics and chapters written by the instructor for an upcoming book.