

## **EECS 598: Topics in Optoexcitonic Engineering**

Instructor: Parag B Deotare

Term: Winter 2016

Meeting time: TR; 10:30 am – 12 pm

Progress of the current hybridized photon-electron communication technology has been slowed down by the limited efficiency of electrical interconnects. While optical interconnects is a viable solution, it falls short to offer an efficient long term solution, since logic operations will be performed using electrons. Optical interconnects in conjunction with excitonic circuits offer a plausible solution since it not only overcomes the losses and delays experienced by electrons but also benefits from seamless transformation between an exciton and a photon. This seminar course will review recent research and developments on topics in Nanophotonics and Excitonic Engineering with potential applications in data communication and processing. Topics covered will be related to engineering interaction of light with nanoscale systems, optical interactions between nanosystems and resonance phenomenon. Students read research papers followed by a brief lecture introducing the important related concepts before the papers are open for discussion in the class. Students/teams will also spend last 4 weeks investigating a current research problem posed by a faculty member. This will entail reading and spending time in the faculty lab and will be followed by a presentation to the full class.

This course is suitable for graduate and undergraduate senior students with concentrations in engineering, physics or chemistry having present or potential research interests in this field.

Prerequisites: Introductory electromagnetics and solid state physics or approval of the instructor.