



Course Syllabus: Special Topics in Solid State Devices - EE 390B

Division	Computer, Electrical and Mathematical Sciences & Engineering
Course Number	EE 390B
Course Title	Special Topics in Solid State Devices
Academic Semester	Spring
Academic Year	2017/2018
Semester Start Date	01/28/2018
Semester End Date	05/24/2018
Class Schedule (Days & Time)	01:00 PM - 04:00 PM Sun

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Xiaohang Li	xiaohang.li@kaust.edu.sa		3335, 3, Ibn Sina (bldg. 3)	8am-12pm, Saturday. Please email me before coming since I am typically around the lab instead of being in the office.

Teaching Assistant(s)	
Name	Email

Course Information	
Comprehensive Course Description	<p>The wide-bandgap semiconductor, also known as the third-generation semiconductor, is among the most invested and active research fields around the globe. Because of its superior optical and electronic properties as well as high stability, it has been deployed in almost every product that runs on electricity. As a result, hundreds of billions of dollars of economy and massive employment opportunities have been created. The Nobel Prize in Physics 2014 awarded to the inventors of blue LED is a direct result of the wide-bandgap semiconductor research. However, the research is still at its infancy with numerous unexplored territories and enormous opportunities ahead.</p> <p>This course will focus on cutting-edge research of wide bandgap semiconductor optical and electronic devices. Each student would have the opportunity of diving deep into one sub research topic and strive to become an expert. The course study will be closely related to the ongoing research of Advanced Semiconductor Laboratory at KAUST. Thus, the students will be able to contribute to a research project and potentially co-author scientific papers. The course teaching will implement active learning to cultivate students' enthusiasm, higher-order thinking ability, and intellectual agility, which are critical for becoming a successful scientist or engineer.</p>
Course Description from Program Guide	
Goals and Objectives	Students will develop a strong background in the wide bandgap semiconductor device research and even coauthor journal papers. Equally important, the students will possess necessary 'soft skills' to excel in future career.
Required Knowledge	Knowledge of device physics and quantum mechanics
Reference Texts	Updated references comprising mostly journal papers would be handed out.

Method of evaluation	75.00% - Research Project 25.00% - Active participation
Nature of the assignments	There will be no assignment or homework.
Course Policies	There is no policy or punishment for absence, assignment or late work. The students are adults and are expected to make decisions for their best interest.
Additional Information	

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Sun 01/28/2018	Introduction
2	Sun 02/04/2018	Research project study and discussion
3	Sun 02/11/2018	Research project study and discussion
4	Sun 02/18/2018	Research project study and discussion
5	Sun 02/25/2018	Research project study and discussion
6	Sun 03/04/2018	Research project study and discussion
7	Sun 03/11/2018	Research project study and discussion
8	Sun 03/18/2018	Research project study and discussion
9	Sun 03/25/2018	Research project study and discussion
10	Sun 04/01/2018	Research project study and discussion
11	Sun 04/08/2018	Research project study and discussion
12	Sun 04/15/2018	Research project study and discussion
13	Sun 04/22/2018	Research project study and discussion
14	Sun 04/29/2018	Research project study and discussion
15	Sun 05/06/2018	Research project study and discussion
16	Sun 05/13/2018	Research project study and discussion
17	Sun 05/20/2018	Research project conclusion
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Note

The instructor reserves the right to make changes to this syllabus as necessary.