



Course Syllabus: Integrated Microsystems - EE 304

Division	Computer, Electrical and Mathematical Sciences & Engineering
Course Number	EE 304
Course Title	Integrated Microsystems
Academic Semester	Spring
Academic Year	2016/2017
Semester Start Date	01/22/2017
Semester End Date	05/18/2017
Class Schedule (Days & Time)	02:30 PM - 04:00 PM Sun Thu

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Muhammad Mustafa Hussain	MuhammadMustafa.Hussain@Kaust.edu.sa	+966128084450		Sunday: 1:00 - 2:00 pm

Teaching Assistant(s)	
Name	Email
TBD	TBD

Course Information	
Comprehensive Course Description	Advanced system level integration of interactive systems. Lets assume you have put together a start-up. Now you have to come up with an idea on an integrated microsystems focusing on a novel application where Do It Yourself (DIY) electronics must play a pivotal role. Survey - Idea - Planning - Execution - Testing - Optimization - Demo Form the team, choose leader, distribute tasks and update me on progress. While this is a group work, independently each of you will produce a review paper based on last two years of research articles, patents and products.
Course Description from Program Guide	Review of interface electronics for sense and drive and their influence on device performance, interface standards, MEMS and circuit noise sources, packaging and assembly techniques, testing and calibration approaches and communication in integrated microsystems.Applications, including RF MEMS, optical MEMS, bioMEMS and microfluidics. Design project using CAD and report preparation.
Goals and Objectives	Goals and objectives of this course is to instill sense and methodology of integration of interactive electronic systems. Students will be encouraged to innovate and make.
Required Knowledge	Pre-requisite: EE 203: Solid State Device Lab
Reference Texts	Scientific papers.
Method of evaluation	40.00% - Scientific review article presentation 60.00% - Group Project(s)

Nature of the assignments	Hands-on, study, survey, research, group project, written assignment, presentation, assigned reading. Potential topics for review paper: Review paper submission is an independent individual task and needs to be of the caliber matches with those seminal review papers published in top journals (Nature, Science, Adv. Mater. ACS Nano, Adv. Funct. Mater. Lab-on-Chip, IEEE T-ED, etc.) 1. Integrated microsystems for harsh environment applications 2. Implantable microsystems 3. CMOS based microfluidic systems 4. Wearable technologies which are not intended for health monitoring or fitness tracking 5. Paper based integrated electronic systems 6. Textile based integrated electronic systems 7. Integrated wearable systems for defense applications
Course Policies	Mandatory update hours.
Additional Information	N/A

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Sun 01/22/2017 Thu 01/26/2017	Introduction Survey
2	Sun 01/29/2017 Thu 02/02/2017	Survey Idea
3	Sun 02/05/2017 Thu 02/09/2017	Idea Planning
4	Sun 02/12/2017 Thu 02/16/2017	Idea Execution
5	Sun 02/19/2017 Thu 02/23/2017	Idea Execution
6	Sun 02/26/2017 Thu 03/02/2017	Idea Execution
7	Sun 03/05/2017 Thu 03/09/2017	Idea Execution
8	Sun 03/12/2017 Thu 03/16/2017	Testing
9	Sun 03/19/2017 Thu 03/23/2017	Optimization
10	Sun 03/26/2017 Thu 03/30/2017	Optimization
11	Sun 04/02/2017 Thu 04/06/2017	Spring Break No Class.
12	Sun 04/09/2017 Thu 04/13/2017	Optimization
13	Sun 04/16/2017 Thu 04/20/2017	Testing
14	Sun 04/23/2017 Thu 04/27/2017	Testing
15	Sun 04/30/2017 Thu 05/04/2017	Demo
16	Sun 05/07/2017 Thu 05/11/2017	Review paper submission Group Presentation
17	Sun 05/14/2017 Thu 05/18/2017	
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Note

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