



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	2017/2018
Semester Start Date	01/28/2018
Semester End Date	05/24/2018
Class Schedule (Days & Time)	02:30 PM - 04:00 PM Mon Wed

Instructor(s)				
Name	Email	Phone	Office Location	Office Hours
Muhammad Mustafa Hussain	MuhammadMustafa.Hussain@Kaust.edu.sa	+966128084450	3274, 3, Ibn Sina (bldg. 3)	Monday: 1:15 - 2:15 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. Start-up projects. US Patents.
Method of evaluation	25.00% - Written report 20.00% - Research Project 10.00% - Presentation 10.00% - Oral presentation 20.00% - Group Project(s) 15.00% - Attendance and Participation

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. Organ-on-chip 2. Bio-robotics 3. Reconfigurable systems 4. Role of AI in microsystems 5. Internet of Defense Things 6. Smart textile
Course Policies	Mandatory update hours.
Additional Information	N/A

Tentative Course Schedule

(Time, topic/emphasis & resources)

Week	Lectures	Topic
1	Mon 01/29/2018 Wed 01/31/2018	Survey
2	Mon 02/05/2018 Wed 02/07/2018	Introduction Idea
3	Mon 02/12/2018 Wed 02/14/2018	Team building Survey and planning
4	Mon 02/19/2018 Wed 02/21/2018	Idea optimization Task organization
5	Mon 02/26/2018 Wed 02/28/2018	Idea Execution
6	Mon 03/05/2018 Wed 03/07/2018	Idea Execution
7	Mon 03/12/2018 Wed 03/14/2018	Idea Execution
8	Mon 03/19/2018 Wed 03/21/2018	Idea Execution
9	Mon 03/26/2018 Wed 03/28/2018	First Trial (Testing)
10	Mon 04/02/2018 Wed 04/04/2018	Spring break No class
11	Mon 04/09/2018 Wed 04/11/2018	Optimization
12	Mon 04/16/2018 Wed 04/18/2018	Optimization
13	Mon 04/23/2018 Wed 04/25/2018	Testing
14	Mon 04/30/2018 Wed 05/02/2018	Testing
15	Mon 05/07/2018 Wed 05/09/2018	Demo and Group Presentation on 09 May 2018
16	Mon 05/14/2018 Wed 05/16/2018	Review paper submission
17	Mon 05/21/2018 Wed 05/23/2018	Exam week. No final exam.
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Note

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