UMassAmherst

Senior Design Project – SDP16

Introduction

10 September 2015

C.V. Hollot
Professor and Head

SDP16 Clock has been Ticking

SDP16 Demo Day

22nd April 2016

~~**~356 days**~~

~240 days

Students OWN SDP16

CSE 14-18

_____ , _____ Date: _____

Last Name *First Name*

Curriculum Worksheet for the Computer Systems Engineering Classes of 2014 through 2018

First Year		Second Year		Third Year		Fourth Year	
Fall [15cr]	Spring [16cr]	Fall [18-19cr]	Spring [19cr]	Fall [15cr]	Spring [15cr]	Fall [12-14cr]	Spring [13-15cr]
ENGIN 112 Intro. to ECE [3 cr] [Note 1]	CMPSCI 121 Intro. Problem Solving w/Comp (Java) [4 cr]	ECE 211 Circuit Analysis I [4 cr]	ECE 212 Circuit Analysis II [4 cr]	ECE 313 Signals & Systems [4 cr]	ECE 314 Intro. Prob. & Random Procs. [4 cr]	ECE 415 Senior Design Project I [3 cr] (GenEd-IE)	ECE 416 Senior Design Project II [3 cr]
PHYSICS 151 Gen. Physics I – Mechanics [4 cr]	PHYSICS 152 Gen. Physics II – Thermo., E&M [4 cr]	ECE 242 Data Structures & Algorithms (w/Java) [4 cr]	ECE 232 Hardware Organization & Design [4 cr]	ECE 323 Electronics I [4 cr]	ECE 374 Computer Networks & the Internet [3 cr]	CSE [redacted] [3 or 4 cr] [Note 6]	CSE [redacted] [3 or 4 cr] [Note 6]
MATH 131 Calculus I [4 cr]	MATH 132 Calculus II [4 cr]	MATH 331 Differential Equations [3 cr]	MATH 235 Linear Algebra [3 cr]	ECE 353 Computer Systems Lab I [3 cr]	ECE 354 Computer Systems Lab II [4 cr]	CSE Elective [3 or 4 cr] [Note 6]	CSE Elective [3 or 4 cr] [Note 6]
Social World Elective [4 cr] [Note 2]	ENGLWRIT 112 College Writing [3cr]	Social World Elective [4 cr] [Note 2]	CMPSCI 250 Intro. Computaton [4 cr]	ECE 373 Software Intensive Engineering [4 cr]	ECE 303 Junior Seminar [1 cr]	Social World Elective [4 cr] [Note 2]	Social World Elective [4 cr] [Note 2]
		Thematic Elective [3 or 4 cr] [Note 3]	BIOLOGY 110 [4 cr] [Note 5]		ENGIN 351 Writing in Engineering [3 cr]		
		(Take ECE 221, Digital Systems, unless ENGIN 112 was taken in Fall 2014 or earlier. [4 cr] [Note 4])				5-yr B.S. / M.S. Graduate Course [3 or 4 cr] (Cannot be used for B.S. degree) [Note 7]	5-yr B.S. / M.S. Graduate Course [3 or 4 cr] (Cannot be used for B.S. degree) [Note 7]

The curriculum notes can be found on the reverse side of this worksheet.

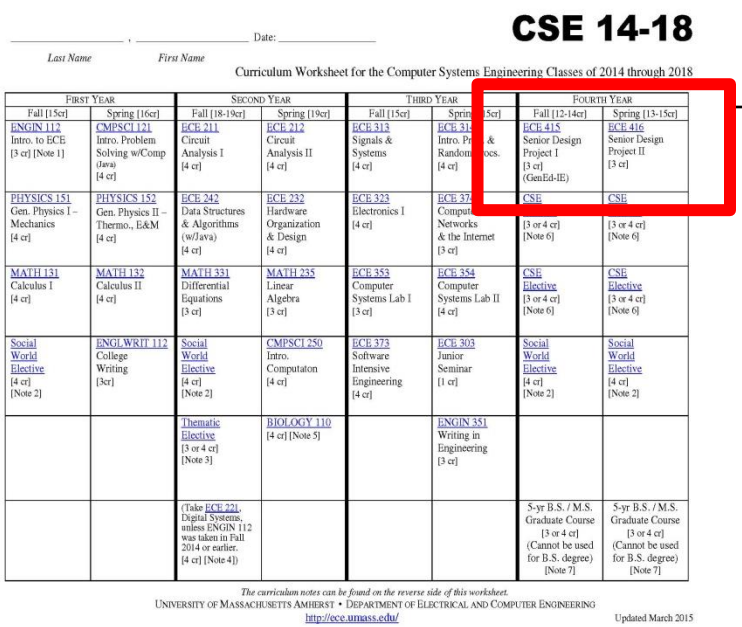
UNIVERSITY OF MASSACHUSETTS AMHERST • DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

http://ece.umass.edu/

Updated March 2015

Students Empowered

- Select your own team
- Select your own project
- Select your own advisor
- Empowerment
- Responsibility



CSE 14-18

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University of Massachusetts Amherst • Department of Electrical and Computer Engineering

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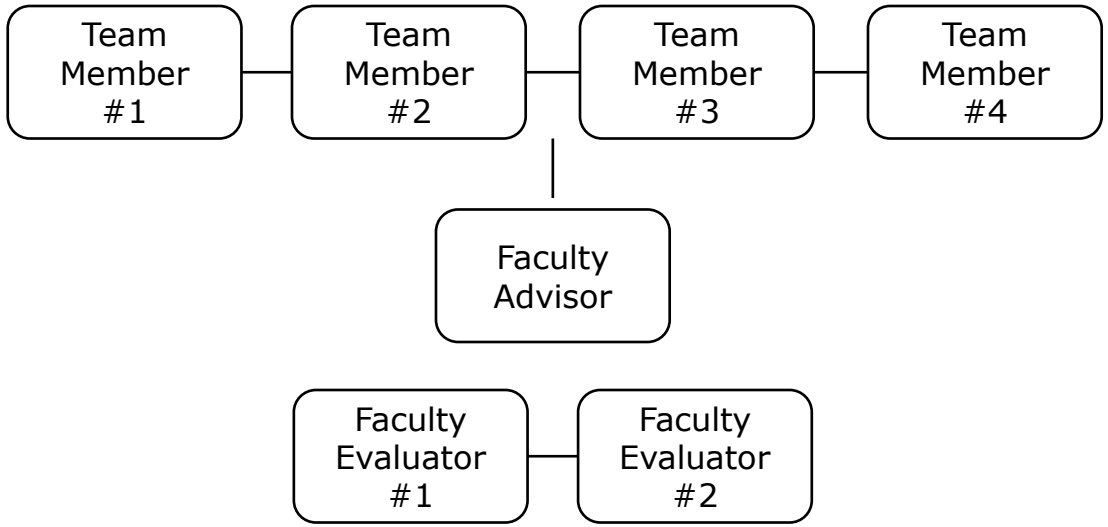
Updated March 2015

Course attributes

- Idea → prototype (year-long hackathon)
- Ideas self-generated
- Teams self-form
- Self-learning opportunities
- Impact on society
- Pre-professional experience in engineering design
- Minimal classroom interactions
  - Weekly team/advisor meetings
  - Reviews before faculty evaluators

Takes a Department to do SDP



SDP16 Reviews (the drumbeat)

- Problem statement
- System specifications
- Design alternatives
- Block diagram

Preliminary Design Review (PDR) **Oct**

- Subsystem prototyping

Midway Design Review (MDR) **Nov**

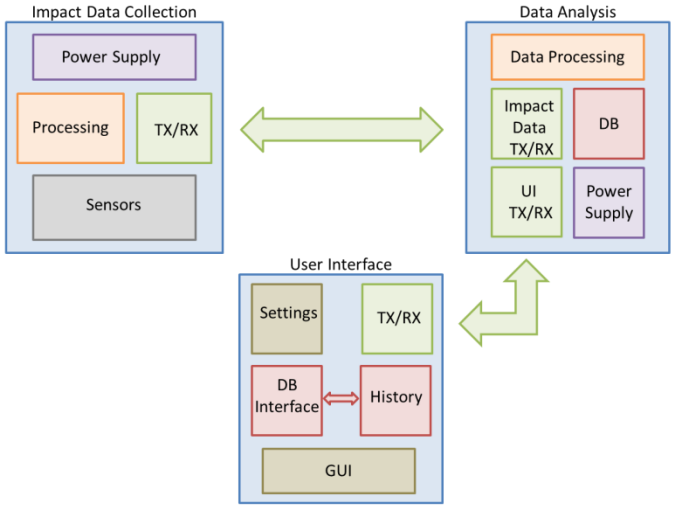
- System Integration

Comprehensive Design Review (CDR) **Feb**

Final Product
- Functionality
- Specifications
- Integration

Final Project Review (FPR) **April**

Block Diagram



SDP Day **22th April**

ECE Projects Showcase **23rd April**

SDP16 Course Deliverables

- Review Presentations
  (PDR/MDR/CDR/FPR slide decks)
- Project Website
- Written report
- Demo Poster
- System Prototype

Projects

- What do you want to learn?
- Choose an area – become an expert
- Explore past SDP projects
  - UMass
  - Other ECE departments
- SDP projects are:
  - differentiators at job interviews
  - not PhD dissertations

Must contain a "Hardware Design Component"

Good

- Raspberry Pi
- Smart sensor board (custom, PCB)

Bad

- Arduino
  - + Wi-fi shield
  - + plug-in sensor

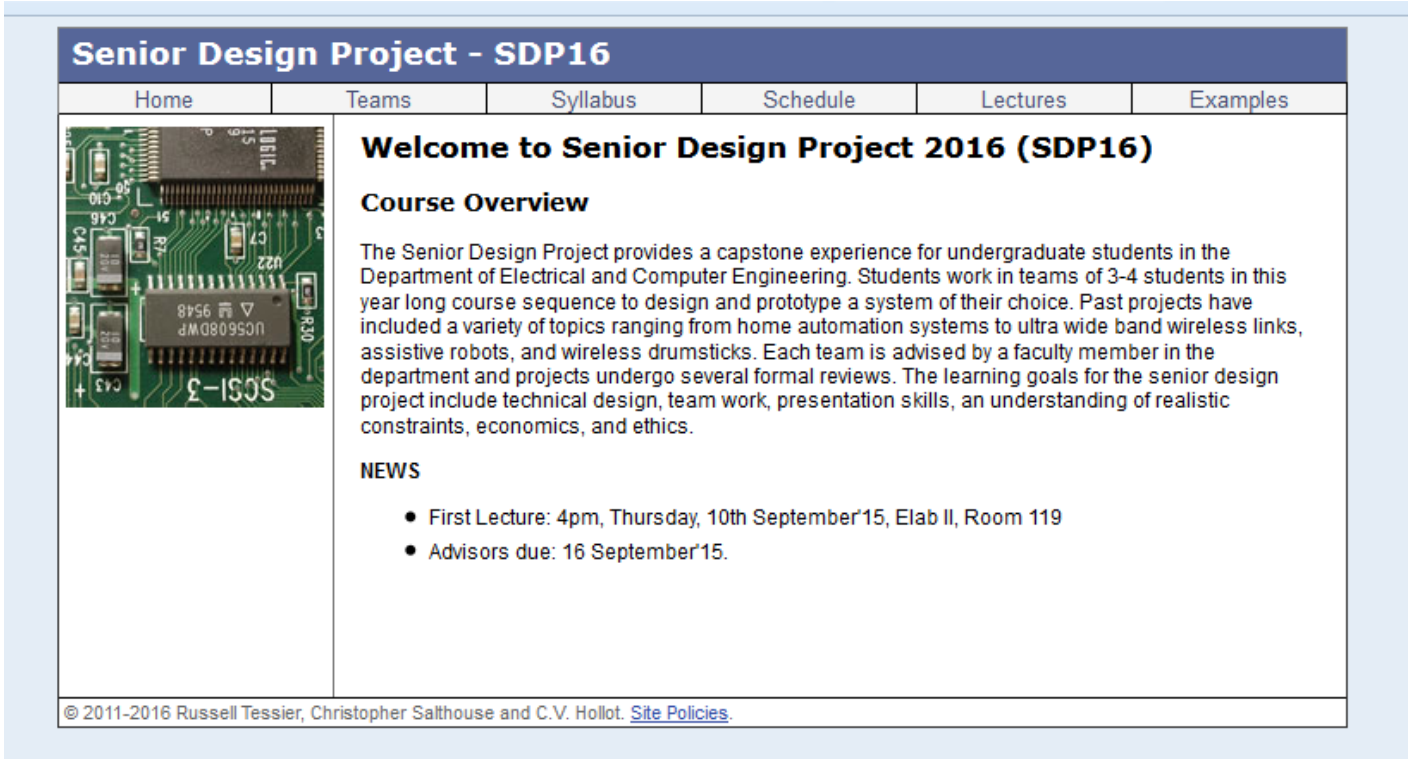
SDP15 Process

- Teams of 4 students
  - Choose one team manager
- Advisor
  - Each team chooses its own ECE faculty advisor
- Meetings
  - Weekly team meetings
  - Weekly advisor meetings
  - Course meetings
- Project budget: $500
  - Some parts available in SDP lab or M5

Review and Grading Process

- Review panels (PDR, MDR, CDR, FPR)
  - Panels consist of several professors from our department
  - 20/30 min presentation by team + 20 min Q&A
- The final grade for ECE 415 (and ECE 416):
  - Advisor grade (50%): Given at the discretion of the advisor
  - Review Board grade (30%): Average of review panel grades
  - Course Coordinator grade (20%): Based on attendance, project documents and performance
  - Each team member graded individually.

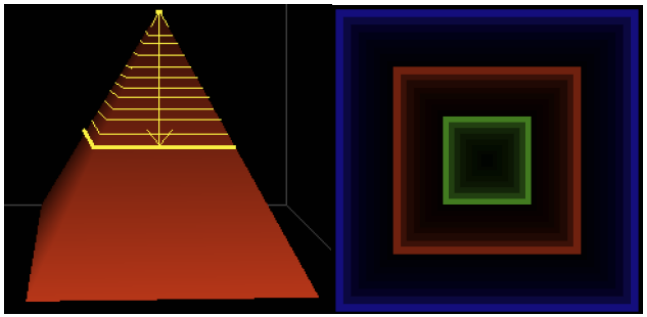
SDP16 website http://www.ecs.umass.edu/ece/sdp/sdp16/

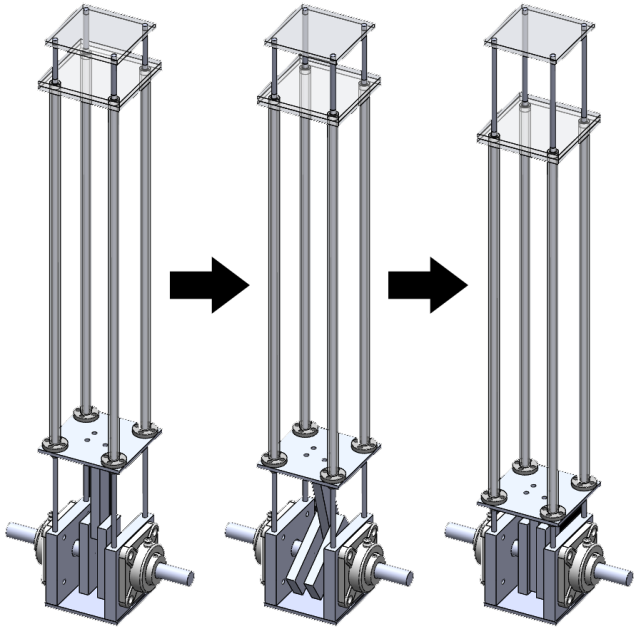


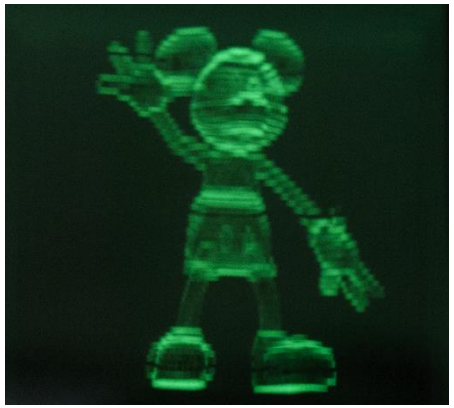
http://www.ecs.umass.edu/ece/sdp/sdpxx/

Real-Time Concussion Analyzer (SDP13)

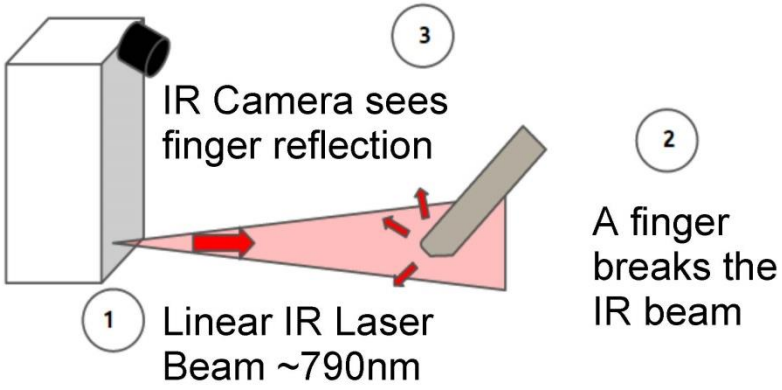
Hologram Machine (SDP14)

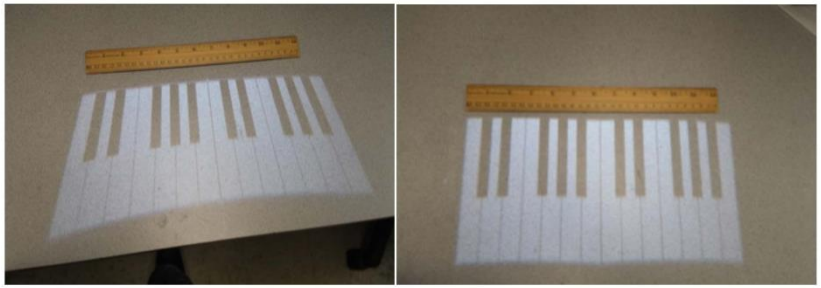






Viano (SDP15)





Before After

Assignment

- Project concept/ develop problem statement (elevator pitch, abstract)
- Confirm faculty adviser by Tuesday, 22nd September'15

Career planning

- Engineering Career Center (Cheryl Brooks), Marston 114
- Resume & Career Fair Prep Workshop 15th & 21st September'15
- Career Fair, 30th September'15