

# SDP22

## Lecture 1

### 1 September 2022

### Course Organization



**Jack DeGuglielmo** · 2nd  
Radar System Engineer at Raytheon Missiles & Defense



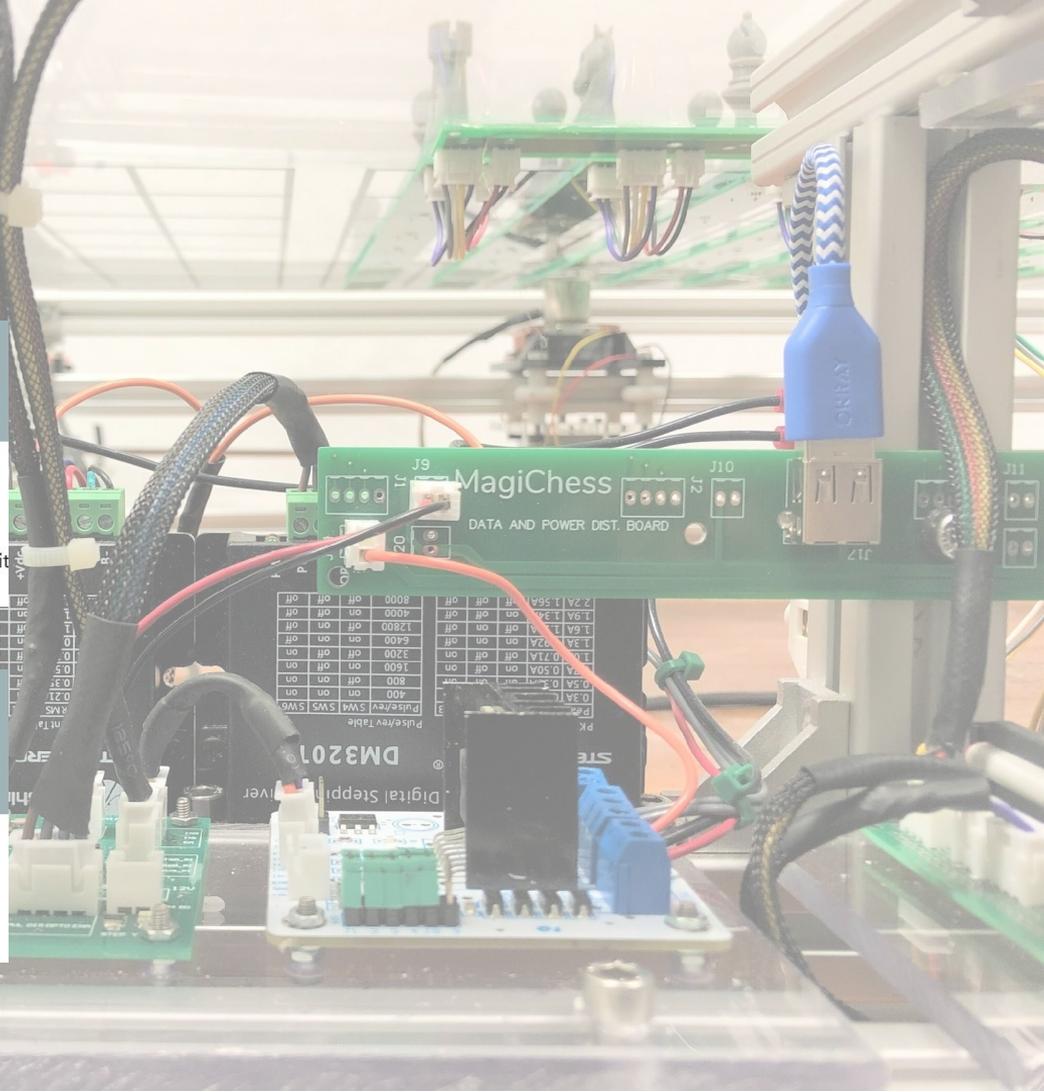
**Samantha Klein** · 2nd  
Graduate Research Assistant at University of Massachusetts Amherst



**Weishan Li** · 2nd  
Associate Engineer at L&T Technology Services  
Springfield, Massachusetts Metropolitan Area



**Sai Thuta Kyaw** (He/Him) · 1st  
Junior Electrical Engineer at Geophysical Survey Systems, Inc. (GSSI)





# UMass Amherst Electrical and Computer Engineering Alumni & Friends

 Listed group

# Looking Ahead

SDP22 Demo Days  
29<sup>th</sup> – 30<sup>th</sup> April'22

~~392 days~~

**240 days**

# Agenda

- **Course format**
- **Expectations**
- **Communications**
- **Logistics**
- **Skills to learn**
- **Team to-do list**
- **PDR**

# Course Format

- Instructional Team
- SDP Reviews
- ECE 415 Calendar
- Grading

# SDP22 Instructional Team



Chris  
Caron



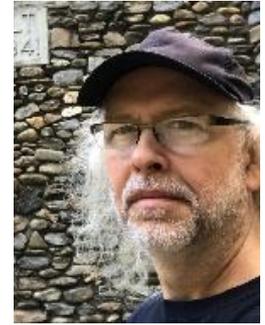
Shira  
Epstein



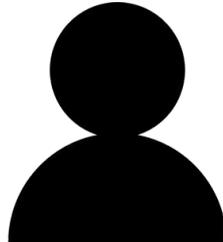
Kris  
Hollot



Chuck  
Malloch



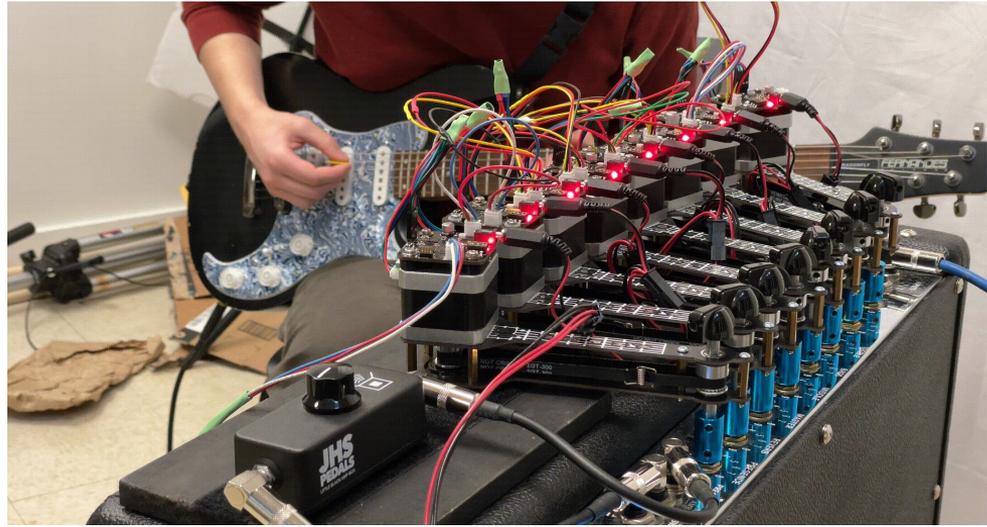
Baird  
Soules



Wouter Schievink  
Marcus 09A



Keith Shimeld  
Marcus 08A



## Chris Caron

BSEE'21, BS Physics'21

CHC

SDP21, Team 4 (Amped-Up)

MSECE

# SDP22 Reviews

Preliminary Design

Preliminary  
Design Review  
(**PDR**)  
**Sept**

Functioning Integrated  
System

Midway Design  
Review  
(**MDR**)  
**Nov**

Functioning Prototype

Comprehensive  
Design Review  
(**CDR**)  
**March**

Refined Prototype

Final Project  
Review  
(**FPR**)  
**April**



SDP  
Demo  
Days  
**29<sup>th</sup>, 30<sup>th</sup>**  
**April**

# ECE 415 Calendar

Senior Design Project - SDP22					
Home	Teams	Syllabus	Schedule	Lectures	Examples
		<h2>Welcome to Senior Design Project 2022 (SDP22)</h2> <p><b>Course Overview:</b> The Senior Design Project provides a capstone experience for undergraduate students in the Department of Electrical and Computer Engineering. Students work in teams of 3-4 students in this year long course sequence to design and prototype a system of their choice. Past projects have included a variety of topics ranging from home automation systems to ultra wide band wireless links, assistive robots, and wireless drumsticks. Each team is advised by a faculty member in the department and projects undergo several formal reviews. The learning goals for the senior design project include technical design, team work, presentation skills, an understanding of realistic constraints, economics, and ethics.</p>			
<div style="border: 1px solid black; padding: 10px; display: inline-block;"><a href="http://www.ecs.umass.edu/sdp/sdp22/schedule.html">http://www.ecs.umass.edu/sdp/sdp22/schedule.html</a></div>					
<small>© 2011-2021 Russell Tessier, Christopher Salthouse and C.V. Hollot. <a href="#">Site Policies</a>.</small>					

**August/September 2021**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
22	23 Check-in 1	24 Check-in 1	25 Check-in 1	26 Check-in 1	27	28
29	30	31	1 Classes start Lecture 1, 7pm	2	3	4
5	6 Holiday - Labor Day	7	8 Mon class schedule, Lecture 2, Advisors due	9	10 Project proposals due	11 Evaluator nominations (7) due
12	13 Lecture 3 Check-in 2	14 Check-in 2	15 Check-in 2	16 Check-in 2	17	18
19	20 Lecture 4	21	22	23	24	25
26	27 PDR	28 PDR	29 PDR	30 PDR	1 PDR	2

**October 2021**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4 Lecture 5	5	6	7	8	9
10	11 Holiday - Columbus Day	12	13	14	15	16
17	18 Lecture 6 Check-in 3	19 Check-in 3	20 Check-in 3	21 Check-in 3	22 Check-in 3	23
24	25	26	27	28	29	30
31						

**November 2021**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Lecture 7	2	3	4	5	6
7	8 Lecture 8	9	10	11 Holiday - Veteran's Day	12	13
14	15 Lecture 9	16	17	18	19	20
21	22 Lecture 10	23	24 Thanksging Recess	25 Thanksging Recess	26 Thanksging Recess	27
28	29 MDR	30 MDR	1 MDR	2 MDR	3 MDR	

**December 2021**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6 Lecture 11	7	8 Last day of classes	9	10 Finals begin	11
12	13	14	15	16 Finals end	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August/September 2021						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
22	23 Check-in 1	24 Check-in 1	25 Check-in 1	26 Check-in 1	27	28
29	30	31	1 Classes start Lecture 1, 7pm	2	3	4
5	6 Holiday - Labor Day	7	8 Mon class schedule, Lecture 2, Advisors due	9	10 Project proposals due  Evaluator nominations (7) due	11
12	13 Lecture 3 Check-in 2	14 Check-in 2	15 Check-in 2	16 Check-in 2	17	18
19	20 Lecture 4	21	22	23	24	25
26	27 PDR	28 PDR	29 PDR	30 PDR	1 PDR	2

- Faculty Advisors: due 8 Sep
  - advisors assigned after this date
- Project proposal for “green light”: due 10 Sep
  - “describes what you will demonstrate in April’22”
- Evaluator nominations (7), due 10 Sep
- Check-In 2, 13-16 Sep
- PDR, 27 Sep – 1 Oct

October 2021						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4 Lecture 5	5	6	7	8	9
10	11 Holiday - Columbus Day	12	13	14	15	16
17	18 Lecture 6 Check-in 3	19 Check-in 3	20 Check-in 3	21 Check-in 3	22 Check-in 3	23
24	25	26	27	28	29	30
31						

November 2021						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 Lecture 7	2	3	4	5	6
7	8 Lecture 8	9	10	11 Holiday - Veteran's Day	12	13
14	15 Lecture 9	16	17	18	19	20
21	22 Lecture 10	23	24 Thanksgiving Recess	25 Thanksgiving Recess	26 Thanksgiving Recess	27
28	29 MDR	30 MDR	1 MDR	2 MDR	3 MDR	

**December 2021**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6 Lecture 11	7	8 Last day of classes	9	10 Finals begin	11
12	13	14	15	16 Finals end	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

# Course Grading

- Faculty Advisor (50%)
  - Weekly meetings
  - Teamliness
  - PDR, MDR
  - Individual grading
- Evaluators (15% PDR, 15% MDR)
- Course coordinators (20%)
  - Check-Ins
  - PDR, MDR
  - Teamliness

# Expectations

- Each team member spends -- 6-12 hr/wk
  - weekly (individual) progress report
- Team meeting/wk
- Advisor meeting/wk
- Team responsibilities
  - “like a startup”
  - CompEs do hardware, EEs do software
- Team roles
  - Manager (logistics)
  - Budget lead
  - PCB lead (logistics)

# Weekly Progress Report

- Fill out progress in Google Form
  - Link: <https://forms.gle/coEdivPmemJrFSeV6>
- Each team member completes 1 report each week
- Due dates are tracked separately for each student
- You'll receive an automated email when another response is due

# Communications

- Slack
  - main channel: general, all-course communication
  - team channels: team-to-course coordinators
- M5 Discord
  - chat with M5 staff and other ECE students in a community setting
- We recommend AGAINST email for intra-team communication.
- hollot@ecs.umass.edu: private, sensitive SDP22 communications
- ECE 415 moodle: lecture slides and videos
- SDP22 website ([www.ecs.umass.edu/sdp/sdp22](http://www.ecs.umass.edu/sdp/sdp22))

# Team Communication Example

AMPED UP! ▾ # daughterboard-pcb

# general

ONGOING WORK +

# mechanical-design

# daughterboard-pcb 🧑🏻 ⚙️

# mainboard-pcb

# software

# user-interface

# website

# precision-testing

LOGISTICS, ETC +

# contact-info

# parts-and-supplies

# weekly-meeting-agenda

ARCHIVE +

# trinamic-pcb

# helpful-links

# mdr-media

5:19 PM **Dynamic0823** but like there are multiple from other pins, so should I jsut do all of them or 1?

5:19 PM **ElectroMaster** If they are power cap then just do 1

5:20 PM **Dynamic0823** kk

5:20 PM **ElectroMaster** I'll double check now because I don't understand what other pins you are talking about but try it and if it no work then we mod it

5:20 PM **Dynamic0823**

**Dynamic0823** Specifically right ehre

**Dynamic0823** there are 2 10 uf that essentially go from 3.3V to gnd

5:21 PM **ElectroMaster** Ah yeah they don't need to be there

5:21 PM **Dynamic0823** oki

8:42 PM **ElectroMaster** @ChrisCaron I'm guessing the daughter board is now ready to route and pushed to github?

8:45 PM **ChrisCaron** Yeah we can continue with routing everything I did is pushed

**ChrisCaron** Feel free to use 90 degree angles if they make any of the traces easier 😊👍 we're new age now

11:37 PM **Dynamic0823** Just a quick status update. I assembled M0 breadboard today, will be doing testing tomorrow, along with some more trinamic tests on register settings

February 11, 2021

ONLINE — 4

ChrisCaron

Dynamic0823

ElectroMaster 🏆  
Playing Blender

Rythm 🤖 BOT

OFFLINE — 2

Casey

TG-Techie

# Logistics

- Lab bench/basic tools
  - 28 lab benches Marcus 10-12 (SDP lab)
  - Sign up: Keith Shimeld, Marcus 08A, 9am-4pm, M-F
- Parts/tools/equipment
- Budget: \$500/team.
  - NO out-of-pocket reimbursement
  - Purchases will be managed over Slack team channels (more to come on this)

# Practical skills to be developed

- Finding parts/software online
- Learning about parts/software online - reading datasheets
- YouTube tutorials
- Troubleshooting
- Soldering

# Team To-Do List

1. Sign-up for lab bench (Keith Shimeld, Marcus 08A)
2. Set day/time for weekly team meetings (team only)
3. Set day/time for faculty advisor meetings (team + adviser)
4. Faculty Advisors: due Wed, 8 Sep
5. Project proposal: due Fri, 10 Sep
  - use slack team channel to communicate with course coordinators
6. Evaluator nominations (7 names): due Fri, 10 Sep
7. Prepare for Check-in 2, sign-up & deliverables

# Submit project proposal for green light

- Propose your idea as soon as possible to get approval as soon as possible
  - Final deadline: Friday Sep 10th 11:59PM
  - Teams will receive a response by their scheduled Check-in 2 at the latest
- Get a formal green light from the course coordinators and start your design!

Template:

<https://docs.google.com/document/d/12EixBdJhVvPchTZiIKNPscBFC2s-9qNkMxOjGuDWikk/edit?usp=sharing>

# Looking Ahead: PDR

- PDR structure
  - 30 min presentation by team (uninterrupted)
  - 20 min Q&A by evaluators
  - Grading/feedback from evaluators

# PDR Rubric

- 10% Presentation
- 10% Survey of Similar Existing Solutions
- 20% Preliminary Goals, Specifications & Testing Plan
- 40% Preliminary Design
- 10% MDR Deliverables
- 5% Project Expenditures
- 5% Project Management

# PDR Coming Soon

PDR  
27 Sep – 1 Oct

**27 days**

# Next Course Meeting

- Lecture 2 (Preliminary Design)
  - 4pm, Wed, 8 Sep
  - Elab II, Rm 119

## **PDR**

10% Presentation

10% Survey of Similar Existing Solutions

20% Preliminary Goals, Specifications & Testing Plan

40% Preliminary Design

10% MDR Deliverables

5% Project Expenditures

5% Project Management