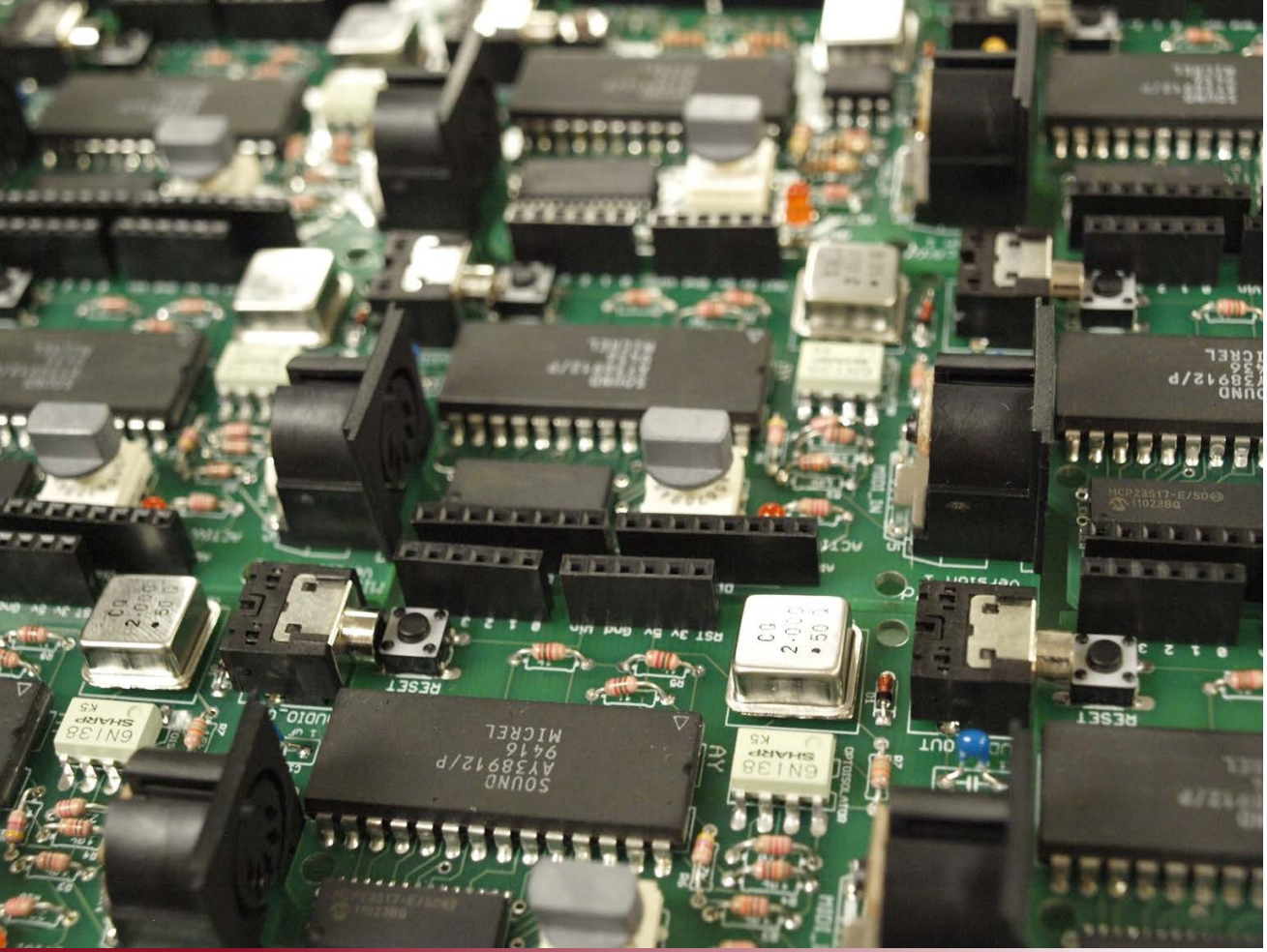


ECE Senior Design Project

SDP21

Lecture 6

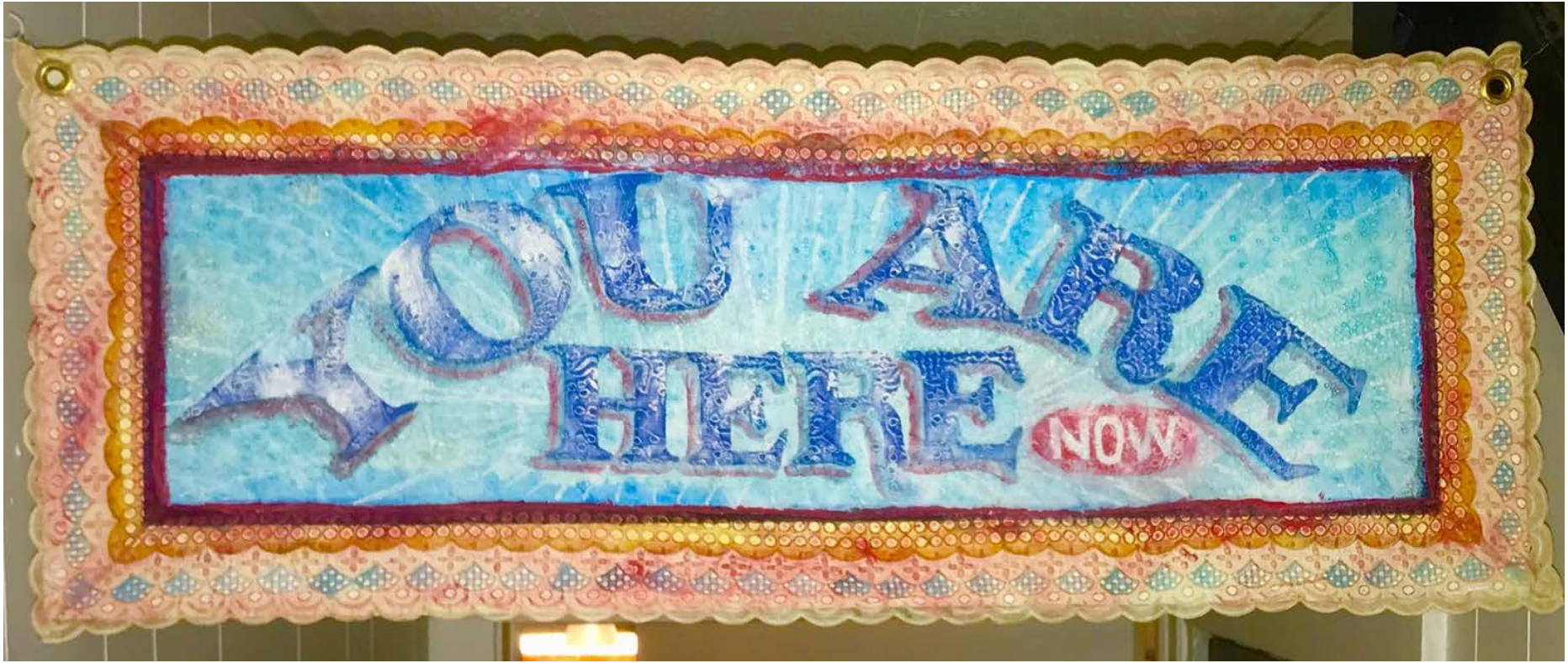
Monday, 2 November 2020

Outline of Lecture 6, 2 November 2020

- You are here, now (on the SDP schedule)
- Reminders
- M5 vs. SDP lab, when to use each
- Lab safety protocol
- Policy on the Use of Off-The-Shelf PCBAs
- Github
- Wires and soldering
- MDR Rubric
- Preparing for MDR

Check-In #3 Complete. Congratulations.

14 days until MDR Week



November 2020						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2 Lecture 6 	3	4	5	6	7
8	9	10	11	12	13	14
15	16 MDR	17 MDR	18 MDR	19 MDR	20 MDR	21
22	23	24	25	26	27 Reading Day	28 Reading Day
29	30 Exams begin					

CDR Week begins March 8, 2021

FPR Week begins April 19, 2021

SDP21 Consultant: Dr. Charles Malloch
Tuesdays and Wednesdays, 7-9 PM
(The Zoom number is posted in Slack #main-channel)

Reminders regarding ordering parts

- The pre-approved vendor list: tinyurl.com/sdp21ven
- Keith Shimeld is back this week.
- Share the cart or form with @Keith Shimeld, in the Slack channel named "**teamxy-purchasing" (See detailed slide in lecture 4 regarding procedure to follow with sites that do not offer shareable carts.)**
- Specify the shipping speed (next day, two days, two or three days, ground, etc) (Your team will be changed for shipping. Fast delivery can be very expensive.)
- Keith Shimeld will share confirmation/tracking numbers and let you know when items are ready for pickup in Marcus 8
- If you need something that is not sold through any pre-approved vendor website, tag @Shira Epstein in a message on the same channel "**teamxy-purchasing"** & explain why this item is unique/cannot be obtained from pre-approved vendors.
- News regarding taxes with out-of-state deliveries.

Picking up the team toolkit

Did you accidentally take another team's kit? Please check and get in contact with that team ASAP!

Breadboard, breadboard power supply, handheld digital multimeter, 2 sets wire strippers/cutters, 6 pc tweezer set, 8 piece screwdriver set, 4 pc pliers set.

There is wire in SDP Lab, help yourself.

One toolkit per team. Toolkit lives in your locker (you will get a combination).

A team member will sign out the toolkit and locker access from Fran Caron in Marcus 9 between 9AM and 3PM, Monday through Friday

More of you are using the labs. That's good!

Here are reminders regarding lab usage.

M5 vs. SDP lab, when to use each

SDP Lab

- General project meeting/work
- Picking up parts that Shira has located for you
- Power supply, oscilloscope, multimeter
- Get some breadboard wire from the spools
- “Raspberry Pi station” (monitor and keyboard you can hook up to if you need. Bring your own micro-HDMI for RPi4 models)

M5

- You need to solder something and you’ve already spoken with Shira about training
- Shira specifically told you to go in to M5 for certain parts you need (she told you how to find them)
- You need workspace but SDP lab has reached capacity (15 persons), while M5 has NOT yet reached capacity

Use the Reservation System for SDP Lab: tinyurl.com/sdp21res

Contact Shira via Slack for M5 requests

Why? To help you find things, to get you the training you need.

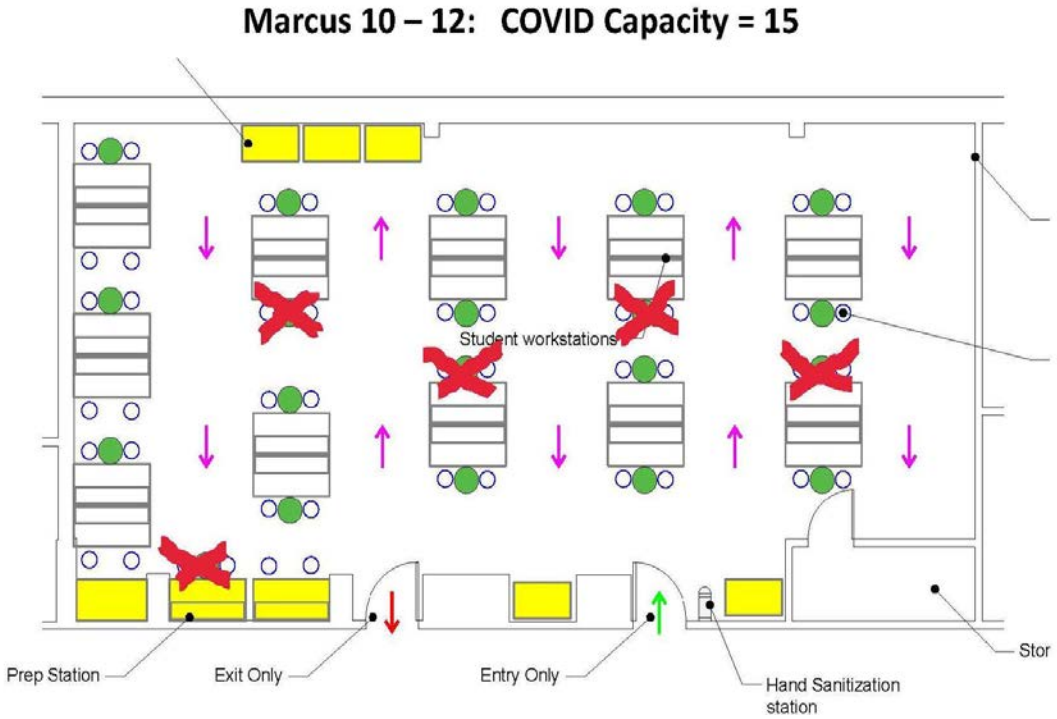
M5 vs. SDP lab, when to use each

Name	Team #	Visit Date	Visit Time	SDP Lab or M5?	Duration
IMPORTANT: Read this section first.					
No more than 15 users may be concurrently in SDP Lab (Marcus 10&12). Max 2 per bench (only if working on the same thing; otherwise 1 per bench)					
Before you make a reservation, check the other signups for the same date to ensure the lab is not full.					
YOU MUST BE IN THE TESTING PROGRAM https://www.umass.edu/coronavirus/news/update-covid-19-asymptomatic-testing-program					
Plan your visits during the hours of 8am to 8pm M-F; Marcus Hall may be locked outside these hours					
You must wear a face mask AND face shield while in the lab.					

Reserving lab time: more detail

CAPACITY FOR
Marcus 10-12

15

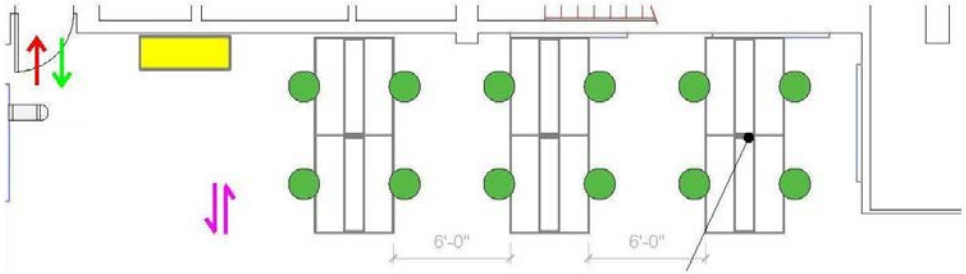


Reserving lab time: more detail

CAPACITY FOR
M5 Great Room

12

Marcus 5 (Great Room): COVID Capacity = 12

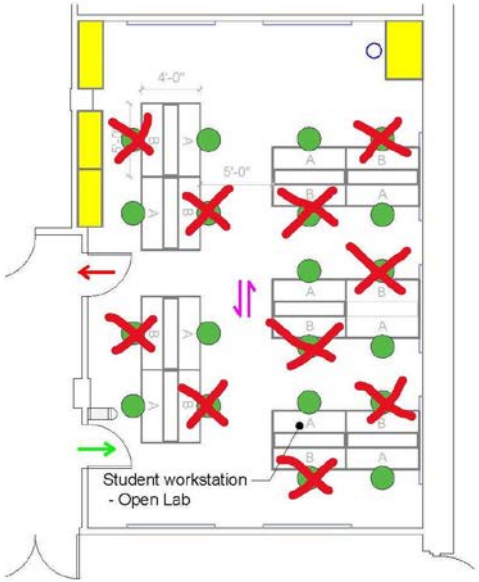


Reserving lab time: more detail

CAPACITY FOR
M5 Good Room

10

Marcus 5 (Good Room): COVID Capacity = 10



Policy on the Use of Off-The-Shelf PCBAs

All off-the-shelf electronic hardware that your team hopes to use in your April demos must be submitted to the course coordinators for review. Only approved hardware can be used in April. Submit queries ASAP so you can move forward with confidence. Use your **teamxy-and-course-coordinator** channel for your queries.

Examples of hardware likely to receive approval:

- Single-board Linux Computers (Raspberry Pi, Beagle, etc.) (but ONLY if there is a demonstrated need for that level of computing power.)

Examples of hardware unlikely to receive approval:

- Arduinos & Arduino clones, mbed boards
- A breakout board with low level of complexity (count the pins!)

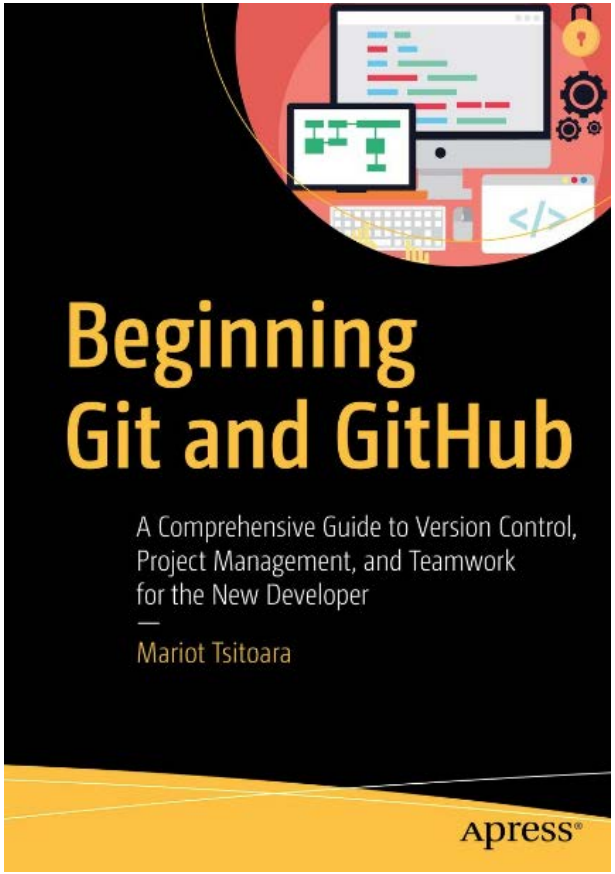
Getting started with GitHub

Git is the free and open source distributed version control system

GitHub is the popular platform/service built around Git owned by Microsoft

https://guides.github.com/activities/hello-world/

Go make an account and follow a tutorial. Get familiar. You can use the command line OR the GUI Desktop client.



One of many resources:
Beginning Git and GitHub: A Comprehensive Guide to Version Control, Project Management, and Teamwork for the New Developer

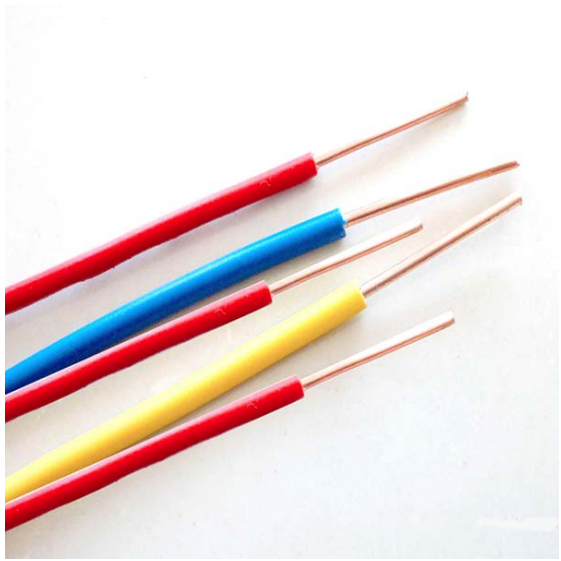
by Mariot Tsitoara

Many more books and videos:
UMass Amherst Library
>> O'Reilly Safari Learning Platform

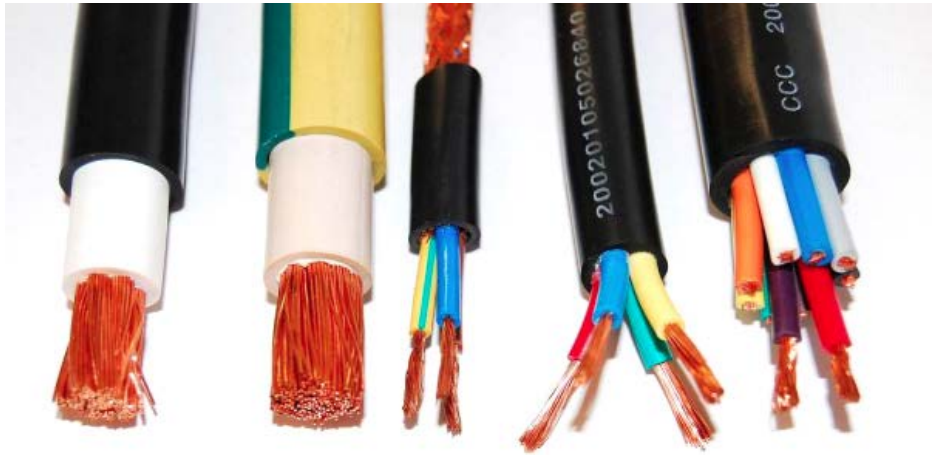
Solid core vs. stranded wire!

Resource: learn.sparkfun.com/tutorials/working-with-wire/all

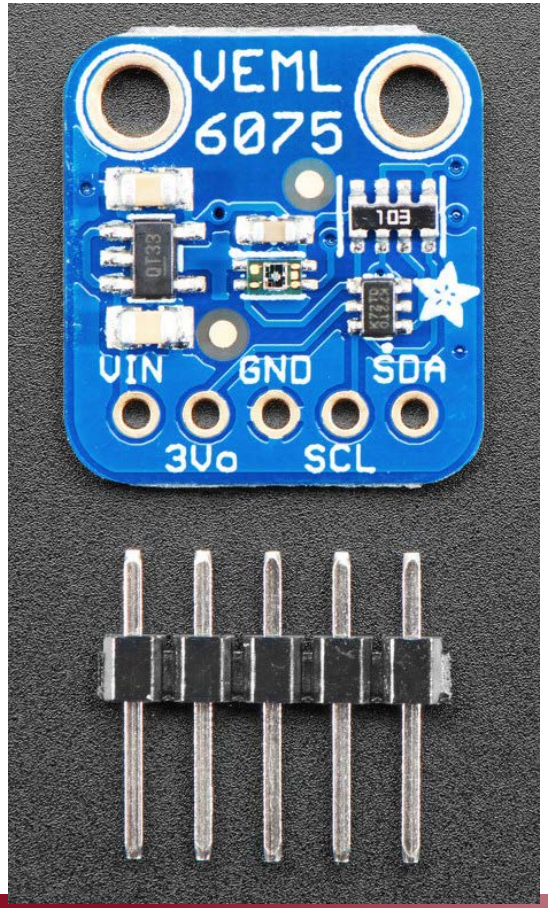
Resource: learn.adafruit.com/wires-and-connections



solid core wire



stranded wire



Header pins must be soldered!

MDR Presentation Sections and Grading Weights

5%	Presentation
5%	Problem Statement & System Specifications
15%	Updated System Design (Software & Hardware)
55%	MDR Accomplishments
5%	Hardware Plan for FPR
5%	List of hardware and software
5%	Project Expenditures (Current and Projected)
5%	Project Management

Presentation (5%)
- Begins on time
- Rehearsed
- Teamliness

(4.0) A professional presentation that demonstrates knowledge and practice.
(3.0) The presentation should have been practiced more.
(2.0) The presentation was confusing.
(1.0) The presentation was unsatisfactory.

Problem Statement & System Specifications (5%)

- Updated problem statement
- Updated system specifications

(4.0) The problem statement is described concisely and in layperson's terms. System specifications are clear, complete, quantitative, and design-agnostic.
(3.0) The problem statement is a little confusing or overly technical. One or two system specifications are unclear and/or missing.

(2.0) The problem statement is confusing. More than two system specifications are unclear and/or missing.
(1.0) The problem statement and system specifications are unsatisfactory.

Updated System Design (Software & Hardware) (15%)

- Updated system block diagram and descriptions
- Updated software diagram(s) and descriptions

(4.0) A clear and compelling updated design was presented via the diagrams and descriptions.
(3.0) One major aspect of the updated design is unclear or missing.

(2.0) More than one major aspect of the updated design is unclear or missing.
(1.0) Updated design is unsatisfactory.

MDR Accomplishments (Individual Subsystems) (55%)

- Demonstration of essential portions of project
- Fulfills PDR commitments
- Individually graded

(4.0) MDR deliverables are successfully accomplished with a clear and compelling demonstration.
(3.0) MDR deliverables are mostly accomplished and demonstrated.
(2.0) MDR deliverables are only partially complete. Significant aspects were not demonstrated.
(1.0) MDR accomplishments are unsatisfactory.

Hardware Plan for FPR (5%)

- Updated plan for the custom PCB
- List any single board computers/breakout boards the team plans to use at FPR

(4.0) The updated plan for the custom hardware design is meaningful to the project and is of appropriate complexity.
(3.0) The proposed hardware design is not appropriately complex.
(2.0) The proposed hardware design is not meaningful to the project. (1.0) The proposed hardware design is unsatisfactory.

List of hardware and software (5%)

(4.0) A comprehensive list of all hardware and software modules used to date and proposed for the next stages of the project

(3.0) A partially complete list; a list lacking in detail

(2.0) A largely incomplete list
(1.0) An unsatisfactory list

Project Expenditures (Current and Projected) (5%)
List all expenditures so far
Estimate all future expenditures

(4.0) The project expenditures (current and projected) are well-described and complete.
(3.0) The project expenditures (current and projected) are missing some detail.
(2.0) The project expenditures (current and projected) are missing significant detail.
(1.0) The project expenditures (current and projected) are unsatisfactory.

Note: 1K pricing will be required at CDR and FPR

Project Management (5%)

- Gantt Chart for spring semester
- Team Responsibilities
  - Team coordinator
  - Altium Lead
  - Budget Management Lead
  - Technical responsibilities

(4.0) The team has created a comprehensive plan specifying milestones and primary responsibilities.

(3.0) The team's plan is missing some detail on milestones and/or responsibilities.
(2.0) The team's plan is missing significant details on milestones and/or responsibilities.
(1.0) The team's plan is unsatisfactory.

Preparing for the Midway Design Review (MDR)

- Keep the grading rubric in mind
- Time your presentation so that it fits the 30 minutes allotted for your presentation and live demos
- Have video recordings of your demos ready in case you have trouble in your live demo
- Practice your presentation with your advisor
- 20 minutes for Q&A with faculty evaluators

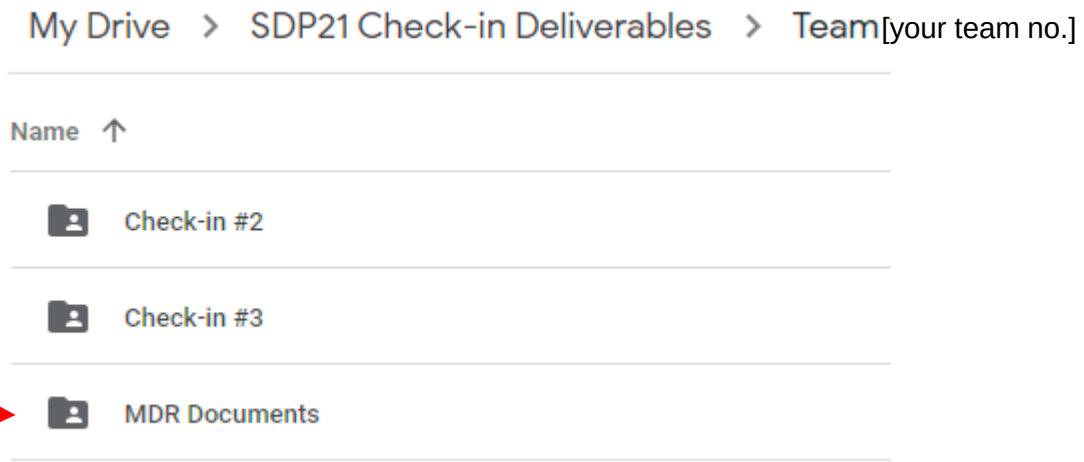
MDR Presentation Tips

- All figures and screenshots must be very clear. If need be, use multiple images that are zoomed in.
- Never photograph screens!
- All members should participate via video cameras. (Use phone if your desktop has no camera.)
- You may use Zoom's video recording feature to record your demos.

Upload the following documents to the same shared Google Drive folder no later than 30 minutes prior to your MDR presentation:

1. MDR slides (PDF)
2. Video demonstration (more than one if needed) of MDR deliverables (these will serve as back-ups to your live demos)
3. Individual statement by each team member:
    - Restate the MDR deliverable for which you were responsible, as presented at PDR
    - Status report on that MDR deliverable
    - Summary of post-PDR accomplishments

1. MDR slides (PDF)
2. Video demonstration(s)
3. Individual statements by each team member



Scheduling your MDR:

1. Team determines a generous number of hour-long time slots in which they are all available during MDR Week (A mix of times in the Mon-Fri, 9 AM - 9 PM time block)
2. Team uses the Doodle or when2meet service to survey the two evaluators and their advisor regarding the time when all are available
3. Team Coordinator informs all parties of the selected day, date, time and Zoom info.
4. Team Coordinator sends another email as a reminder the day before the MDR

Making the Most of the Longest Intersession Ever

- Reading
- Testing, Debugging
- Documentation
- Github
- Team web site
- Altium

CDR deliverables:

Fully working prototype
Full functionality even if still using breakout boards and single-board computers (Arduinos etc)
At least a blank PCB

M5 staff-produced Altium videos

Questions?