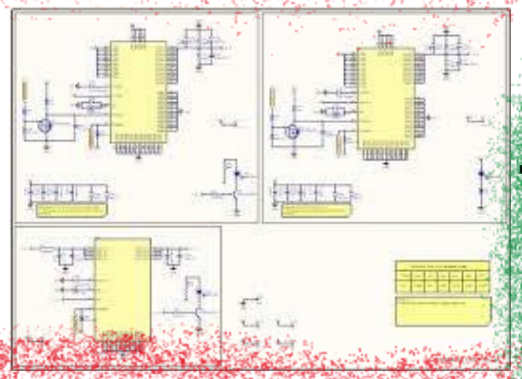
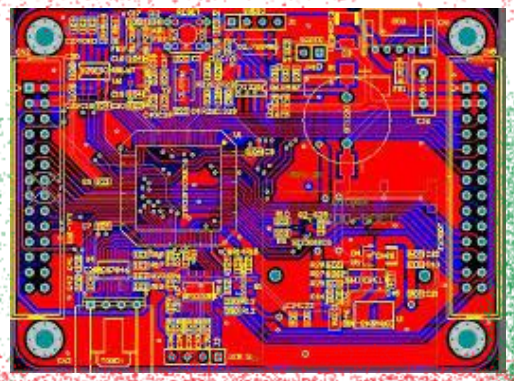
Printed Circuit Board Assignment

Process Flow



Schematic

Design Review



Layout

Layout Review

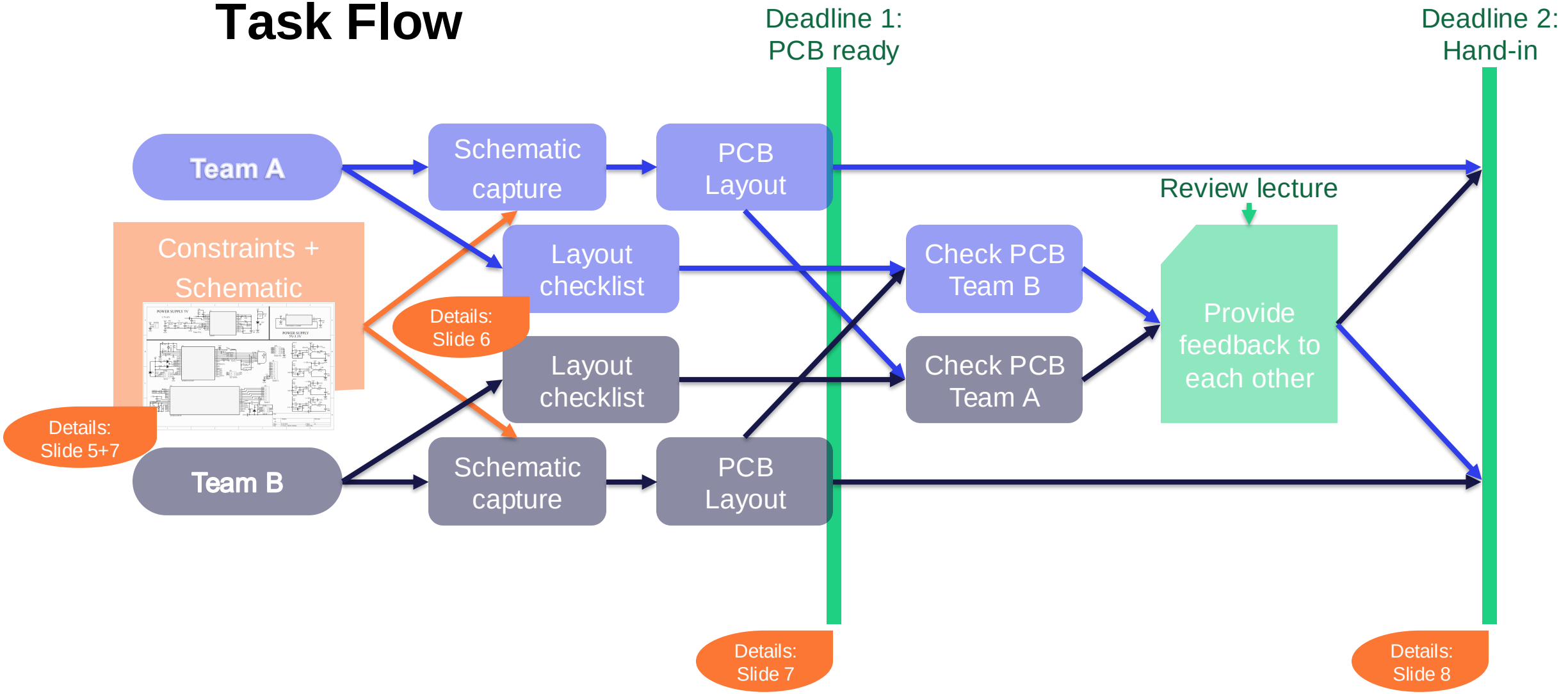
Bill of Material (BOM)

PCB Order

input to assignment

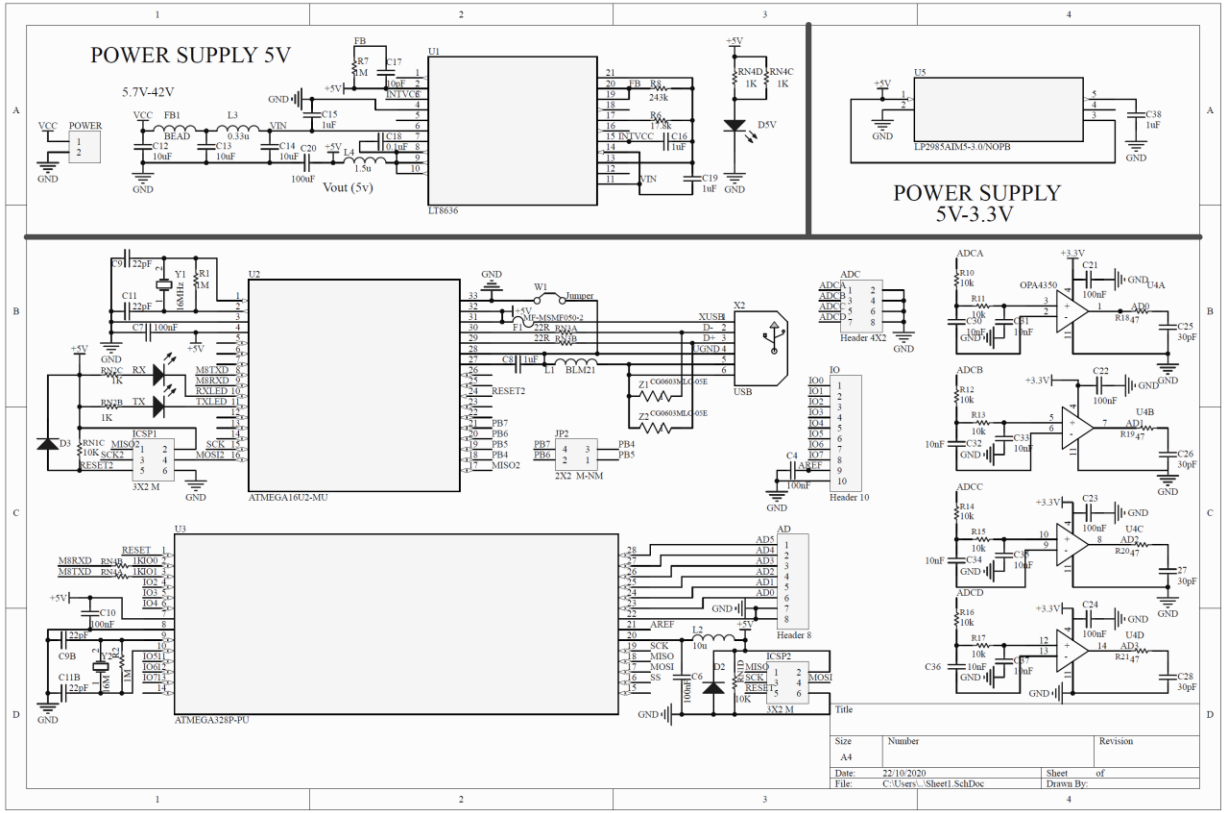
part of assignment

Task Flow

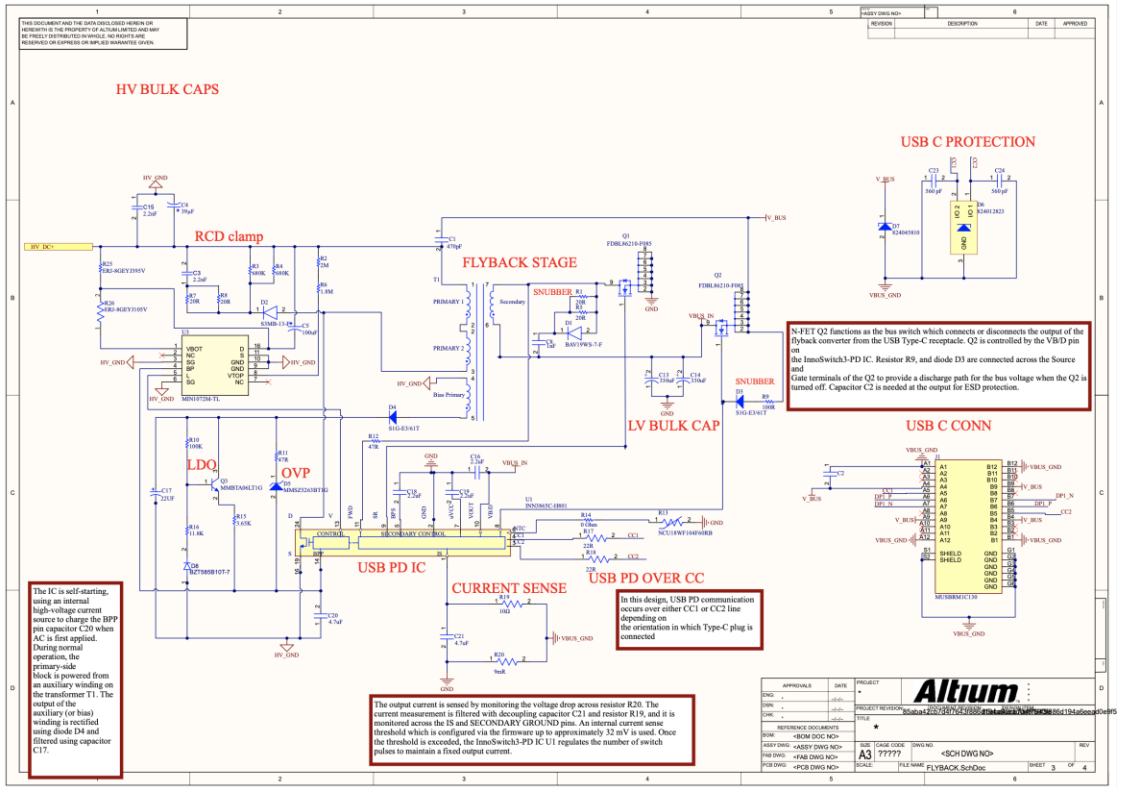

Deadline 1:
PCB ready
Deadline 2:
Hand-in
Team A
Schematic capture
PCB Layout
Review lecture
Constraints + Schematic
Layout checklist
Check PCB Team B
Details: Slide 6
Layout checklist
Check PCB Team A
Provide feedback to each other
Details: Slide 5+7
Team B
Schematic capture
PCB Layout
Details: Slide 7
Details: Slide 8

Choose one of the two schematics to work with:

Microcontroller



Power Supply



Layout Review

- Make a “PCB Design Review Checklist” (inspiration on the internet) and review another group

- Major topics:
  - Part placement
  - Routing (signal / power; analog/digital)
  - Mechanical (dimensions / mounting)
  - Electromagnetic compatiblity
  - Production
  - Bill of Material
  - …

Design Constraints

- Analyze and describe the different functions of the circuit
- Put a layout strategy in place, add necessary filter components for electromagnetic compatibility
- Design for Electromagnetic Compatibility (EMC) by shortening loops and avoiding coupling.
- Use passive components with SMD footprints or packages
- Maximum 4 layers PCB
- Minimize size of the PCB, and height of PCB (if 3D model of components are available)
- Minimize the price of the PCB
  (here's an online calculator: https://www.pcbway.com/orderonline.aspx)
- Prepare for mounting in a chasis

Hand-in

- Description (max 1 page):
  - Address the design constraints

- Layout review (max 2 pages):
  - Attach the PCB design review, that you got from your reviewer group (not part of your evaluation)
  - Create a to-do list with necessary improvements based on this checklist

- Design files (1 page per layer):
  - Component placement (for the used layers) including silkscreen annotation
  - Routing layers
  - Bill of material incl. values, packages, price, voltage/power ratings, etc.