

EE 4BI6 2010

Lecture 5 Product Design

Prior Stages

- Phase 0 - Product Planning
 - Set target specifications
- Phase 1 – Concept development
 - Investigate Concepts
 - Select Final Concept(s)
 - If more than one test competitors and rank
 - Settle on final concept (approach)
 - Test concept or acquire initial data

System Level Design

- Break product into large functional blocks (e.g. sensor design and holders, analog signal processing, wireless, computer interfacing, data acquisition, signal or data processing, data displays, power)
- Determine input/output requirements for each block (part of specification process)
- Create milestones for each block (time limit and performance)

Detailed Design

- Break each large functional block into subsystems
- Determine specs for each subsystem
- Determine approach for each subsystem (e.g. what transducers/sensors, ICs, motors, special hardware)
- Identify hard to acquire components and order/acquire early (always order extra)

Detailed Design (cont'd)

- Design necessary hardware or subsystem (can simulate first using pSpice, Labview, etc.)
- Test each subsystem using breadboard, software packages etc.
- Assemble subsystems into system functional block and test
- Fabricate final functional block (circuit board with point to point solder or backplane)
- Test functional blocks together

Design Considerations

- Cost
- Noise immunity
- Sustainability
- Ergonomics (ease of use, human interface whether sensor or viewing computer screen)
- Time required
- Reliability/robustness

Documentation

- Keep records (notebook)
- Document fully when a block (milestone is finished)
- Record test results (numerical, graphical) for each block
- Keep track of costs
- Identify and document suggested future changes, approaches, additions