Sample Design Requirements

ABET (A-K) Criterion 3. Program Outcomes and Assessment Engineering programs must demonstrate that their graduates have:

(a) an ability to apply knowledge of mathematics, science, and engineering
(b) an ability to design and conduct experiments, as well as to analyze and interpret data
(c) an ability to design a system, component, or process to meet desired needs
(d) an ability to function on multi-disciplinary teams
(e) an ability to identify, formulate, and solve engineering problems
(f) an understanding of professional and ethical responsibility
(g) an ability to communicate effectively
(h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) a recognition of the need for, and an ability to engage in life-long learning
(j) a knowledge of contemporary issues
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Feedback and concerns

- Designing the course
  - Just give me the facts / rules
  - "Too abstract", design is not "teachable"
  - Consideration of all the stakeholders
- Challenges of group work
  - Different levels of motivation
  - Coordination and scheduling
  - Peer evaluation
- Class interaction
  - Guests
  - Engagement and sharing experiences

P2 – Product assessment project

- Limited use of the data gathered during the disassembly in the product assessment
  - " 17 different types of screws"
- Groups need to decide on content, format and all need to review and endorse the output
- Figures/tables/photos/schematics usually need titles and numbers for reference in the text and need to be placed near where they are cited
- Most of the BOM were randomly organized
  - Group by subsystems or functions?

P2 – Product assessment project

- Most did not relate the disassembly process to the decomposition of the system (or at least that wasn't apparent in the report)
  - Decomposition concept maps lacked differentiation between out-sourced and in-house fabricated parts (not specifically required but could have been useful)
  - Usually hierarchic and didn't recognize the couplings in the system, e.g. power sources
  - Didn't need to fit on a single piece of paper!
- Group needs to decide on content and presentation - don't just assign parts and paste together
- Limited use of sub-section heading and topical organization in sections

P2 – Product assessment project

- Avoid using vague, qualitative statements
  - " excessive numbers of …" (how many?)
  - "should have been easier.." (why?)
  - "the quality was above average" (how did you define average?)
  - "although a <u>few</u> components were without purpose <u>extra</u> were found… and <u>some</u> seemed excessive"

Some very effective contributions

- Selected project work with be posted on the web
- Group 2 – Strengths and Weaknesses
  - Rationale as well as items, some organization into functions or subsystems was useful
- Group 6 – Part Quality Assessment
  - developed a part classification scheme – very useful