Guidelines--Tasks for Concept Design (Phase 2)

2.1 Decomposition
   a. **Goal State**--The design problem has been broken down into subsystems or subproblems.
   b. **Documentation**--Document in log books or team binder.
   c. **Methods**--Apply knowledge from your text, p. 97 to 104.

2.2 Project Learning
   a. **Goal State**--Team has located and learned key knowledge that will lead to project success (that is, the team will build upon existing knowledge & will not reinvent the wheel). Team has completed a 1st draft (approximately 4-page) literature review.
   b. **Documentation**--Document individual learning in log books. Post literature review on team website.
   c. **Methods**--Brainstorm to identify all relevant knowledge areas. Assign specific areas to team members. Brainstorm to identify sources of information (both people & written sources). Select best sources of info. Acquire printed information. Learn the information. Interview experts after you have done foundational learning. Apply benchmarking to inventory knowledge of existing products. Also, see p. 107 of your text.

2.3 Internal Search
   a. **Goal State**--Team has generated & documented 100+ ideas for reaching the project goal state.
   b. **Documentation**--Use log books or team binder.
   c. **Methods**--Do internal search after project learning is nearly done. Use a brainstorming process (follow IDEO process). Use digital camera to record ideas.

2.4 Concept Sketches
   a. **Goal State**--Team has created 5-7 sketches of proposed final designs--see p. 126 for concrete examples.
   b. **Documentation**--Use log books or team binder.
   c. **Methods**--Follow your textbook pp. 110-120. See p. 126 for concrete examples.

2.5 Prototyping
   a. **Goal State**--Team has built, tested and learned from 4 to 10 focused prototypes.
   b. **Documentation**--Use log books or team binder.
   c. **Methods**--Read and apply the knowledge in Chapter 12 of your text. Use focused prototypes, not comprehensive prototypes. Seek advice from your project advisor.

2.6 Final Design Concepts
   a. **Goal State**--Team has selected 3 to 4 final design concepts and documented these with enough detail to present at a design review. Team has established through prototyping & project learning that each concept will work (no major issues for implementation).
   b. **Documentation**--Document on website for pre-review by those who attend your design review.
   c. **Methods**--Read and apply the knowledge in Chapters 7 & 8 of your text.

2.7 DESIGN REVIEW--COMPLETE BY NOV 18.
   a. **Goal State**--Team presents 3 to 4 final design concepts, dialogues with client to find killer ideas, and selects a final concept design. Team receives green light to proceed with system level design.
   b. **Documentation**--Document final concept design on website.
   c. **Methods**--Schedule your design review early. Give client ample time to review final design concepts. Plan and schedule your design review. After final design concept is posted, follow up with client to ensure that interests have been met.
Conceptual Design Review

What is the purpose?
This is where you present your “design in progress” to the customer and other interested parties for assessment. The goal of this review is (a) to validate your problem definition, (b) dialogue about three or more viable design concepts, and (c) agree on the final design. Your first design review is also an opportunity to impress the client with your competence and professionalism, building confidence and credibility in your team.

What should be covered?
- Present your needs, specifications, constraints, and deliverables.
- Summarize results from project learning.
- Present at least three viable designs, giving pros and cons of each.
- Provide a well-founded estimate of project costs.
- Outline a project schedule that produces needed deliverables with ample time for product validation (phase 6).
- Honestly identify all potential problems or risks, and describe how you plan to deal with them.

Who should present?
- Not all team members have to speak.
- The team members chosen to speak should be competent and well-versed in the project, and able to field questions.
- For multi-disciplinary projects, a topic from a particular discipline should be presented by someone from that discipline: ME, EE or Comp E.

How should you dress?
Dress professionally. “Business casual” is typical, but depending on your customer’s “corporate culture” you might want to be a little more formal.
How to schedule? (reserve a one-hour time block)

a) One week ahead - verify that customer, instructor, and mentors can attend and have a specific time reserved on their calendars.
b) One week ahead – secure room location and/or make travel arrangements.
c) Three days ahead – have instructor and/or mentors review your slides.
d) Three days ahead – email reminder to all participants.
e) Plan to attend at least two other design review in addition to your own.

Presentation Tips

• Be prepared to receive assessment from design review participants.
• Ask participants to forward deep and challenging questions.
• Plan to speak for 15-20 minutes, allowing up to 40 minutes for dialogue.
• Make a nice Power Point or web page presentation.
• Try to make the presentation flow logically.
• Avoid long lists of bullets (like this one!). Your slides should emphasize non-textual aspects of the presentation:
  o Pictures
  o Schematics
  o Block diagrams
  o Flow charts
  o Equations
  o Tables
• Put in just enough text to summarize important points and make the slides self-explanatory. (Detailed textual description of your project will go into your end of semester report).
• Be sure your slides are readable from all locations in the room you will use to present. Otherwise, they are useless, and create a bad impression.
• Print out handouts from your slides for the audience to refer to and make notes on. Two or three per page is a good number.
• Assign numbers to your slides so people can refer to them easily, especially if some of the audience members are connected by telephone.
## ABET ASSESSMENT OF ORAL COMMUNICATION – CONCEPTUAL DESIGN REVIEW

<table>
<thead>
<tr>
<th>Your Score</th>
<th>Scoring Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Order and flow unclear, may be confusing; time usage ineffective</td>
<td>Order and flow clear, parts fit into whole; time used well in general</td>
</tr>
<tr>
<td>3</td>
<td>Order and flow smooth, clear; time usage very good to achieve purposes</td>
<td>Order and flow clear, parts fit into whole; time used well in general</td>
</tr>
</tbody>
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### Organization and Flow

**Comments:**

### Language

**Comments:**

### Content Completeness

**Comments:**

### Content Reliability

**Comments:**

### Visual Aids

**Comments:**

### Listening/ Responding

**Comments:**

### Confidentiality

**Comments:**

### Team Credibility

**Comments:**

### Concept Quality

**Comments:**

### Economic Issues

**Comments:**

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* Incorporate engineering standards and realistic constraints that include most of the following considerations: economic; environmental; sustainability; manufacturability; ethical; health and safety; social; and political.