

### Three Engineering Design Processes

Review these three Engineering Design processes –  
 Can you find similar steps in different processes (one step from one may be multiple steps in another)?  
 What is different about these three?

1. Needs Assessment
2. Problem Definition
3. Abstraction and Synthesis
4. Analysis
5. Implementation

1. Identify and define the problem
2. Assemble a design team
3. Identify constraints and criteria for success
4. Search for solutions
5. Analyze each potential solution
6. Choose the “best” solution
7. Document the solution
8. Communicate the solution to management
9. Construct the solution
10. Verify and evaluate the performance

1. Identify the need or problem
2. Research the need or problem
3. Develop possible solution(s)
4. Select the best possible solution(s)
5. Construct a prototype Test and evaluate the solution(s)
6. Communicate the solution(s)
7. Redesign

From  
 Voland, G., *Engineering by Design*,  
 2<sup>nd</sup> Ed., Pearson-Prentice Hall (2004)

From  
 Holtzapple-Reece, *Foundations of  
 Engineering*, McGraw-Hill

From  
 Massachusetts Department of Education, “Science  
 and Technology/Engineering Curriculum  
 Framework – Strand 4: Technology/Engineering,”  
<http://www.doe.mass.edu/frameworks/scitech/2001/standards/strand4.html>, Spring 2001,  
 accessed: June 2006.