

## **Notes from the 'Top 5 Lessons from Course Outcome 12-13 Readings' group Assignment ME345: Modeling and Simulation**

### **Engineering Tools**

Understanding manufacturing/construction feasibility when making CAD; just because one can draw it on the computer doesn't mean that it can be manufactured

CAD software can make designing faster and easier, but it can create new problems and doesn't always take into account real-life factors that may impact a design (manufacturability)

The use of CAD can over-inflate the confidence of engineers in their designs, and reduce the use of appropriate safety factors which should be implemented

Even though computer may do most of the number crunching, the engineer must have an understanding and idea of what the logical solution would be

Over-reliance on (computer) technology can cause a loss of focus on engineering fundamentals

There are great engineering tools available, but the user needs to take the responsibility to ensure that they are being used correctly

Over-reliance on technology (CAD, FEA, simulations) can lead new engineers to not grasp the relevance of the computer results to the task at hand, which can ultimately lead to project failures

Don't underestimate the utility of 'pen and paper' brainstorming sessions (and back of the envelope calculations) to generate new/better ideas

### **Lifelong Learning**

"the time spent in college is only a small fraction of the time that most engineers will spend in the workplace, but the habits they are developed as students play a large role in whether engineers are effective, successful, and satisfied with their careers"

Do not underestimate the importance of informal learning (not just 'formal learning' in a classroom setting and in non-technical areas like communications, etc)

Engineering is becoming more interdisciplinary... need to be able to work with and communicate with other disciplines (technical and non-technical)

The field of engineering is always changing and updating in order to stay relevant with current problems

Because the field of engineering (and technology) is not stagnant, need to continue learning throughout career

Be irreplaceable, not adequate in your career