Conversations on the Art and Science of Engineering Modeling

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Motivation: Desire to present advanced engineering concepts to lower-division students

Problem: Traditional approaches geared to more experienced learners

Approach: Engaging in conversations vs. presenting lectures

Goal: Teaching lower-division students how to understand and apply the art and science of modeling

Exposure to various mathematical concepts before encountered in class

Preparatory mathematical framework

Development of analytical skills

Practice searching for information on their own

Simulation of the “real world”

Conclusions: Beneficial Effects

Has high potential to encourage student engagement in acquisition of knowledge

Enhances students’ research interest

Provides friendly environment for learning useful mathematical approaches for engineering problems encountered in other courses

Develops appreciation of artistic elements of engineering modeling

References

Edwards D. 2018. Creating Things that Matter


Note: Please note that all uncited images are the authors’ own.

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Current Approaches

Qualitative Outcomes/Results

Our Pilot Effort

Exposure to various mathematical concepts before encountered in class

Preparatory mathematical framework

Development of analytical skills

Practice searching for information on their own

Simulation of the “real world”