Revolutionizing Mechanical Engineering Undergraduate Curriculum

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INTRODUCTION

Described in this poster are the motivations, targets, and constraints that were developed by faculty at Boise State University to revolutionize the pre-existing Mechanical Engineering curriculum. The implementation of these results will serve future students for years to come.

CURRICULUM OUTLINE

Dividing Program Outline into 3 Topics

- Thermal and Fluids
- Solid Mechanics
- Dynamics and Controls

Elimination and Implementation

- Faculty made the decision to eliminate unrelated courses within the three topics and instead implement levels of understanding.
- For example, thermal and fluids requirements dropped from 12 to 6 credits (this alteration is shown in the figure below).

LITERATURE REVIEW

ASME’s Vision 2030

- This piece of academic literature served as the primary motivator and model for Boise State’s revolutionized ME curriculum.
- The following six aspects described in ASME’s Vision 2030 were used as an umbrella over further research:
  1. Valuable Hands-On Experience
  2. Focus of Professional Integrity
  3. Opportunities for Innovation
  4. Curriculum Flexibility
  5. Technical Specialization
  6. Faculty Skill Adjustment

OTHER CONSIDERATIONS

Without the relentless support and drive of BSU’s Mechanical Engineering Department faculty and administration, educational revolutionization would not be fathomable. Most universities shy away from such an overwhelming task, but here in Boise the staff would be reminded before each meeting of BSU’s shared values ultimately served as the initiators of the revolutionized curriculum.

CONCLUSION

The twenty-first century has borne witness to profound technological advancements, some taking the world by storm overnight. While companies have done their best to adjust to their ever-transforming surroundings, undergraduate level mechanical engineering education has fallen behind. In simplest terms, colleges are producing students underprepared for future challenges. In order to bridge this divide, industry and education must serve as one another’s primary stakeholders, and work closely together in expressing their individual needs.

With motivations, research, and constraints carefully considered, Boise State University’s Mechanical Engineering Department strongly believes that they are on the right track to providing their students with the skills and experiences needed to be successful and valuable in their future careers.