MODEL FOR CONSISTENT CONTENT & DYNAMIC DELIVERY ACROSS SECTIONS
EPICS 151, DESIGN EPICS PROGRAM
MIRNA MATTJIK & YOSEF ALLAM

CONTEXT

Drivers of Change
Based on students’ survey responses, there is dissatisfaction due to inconsistency across sections in EPICS in terms of coverage, grades, scoring an A, organization, and fairness.

Based on anecdotal evidence, instructors are not comfortable with teaching from the “slides dump” provided every week by the curriculum design task force at EPICS.

EPICS is content heavy—but has many active, collaborative and interactive learning activities.

Students are engaged, but the direction of the course and the learning objectives need to be clarified and clearly connected with the learning activities and assessments.

Students desire more resources, organization, and time per topic in SolidWorks and Sketching and Technical Graphics.

WHAT WE ARE CHANGING

1. Procedural and program discipline
   • Eliminate redundant documentation
   • No new non-curriculum during semester
   • Instructional team (UTAs too)
   • Buy-in, consistency, training
   • Reference materials for all topics

2. Curriculum design and development approach
   • Backwards-designed curriculum with course outcomes & lesson objectives
   • All objectives align with assessments
   • All objectives and assessments align with activities
   • All content aligns with an activity and objective
   • More formative with completion credit
   • Simple & explicit rubrics, align proficiency
   • Activities feature designated in-class and pre-class prep

Byproducts of Changes:
• Remove learning activities that do not relate to Course Learning Outcomes and Lesson Level
• Outcomes and create learning activity completion times
• Full course mapping
• Recognize and familiarize others of our “Core Competencies” in EPICS 151
• Train instructors but also empower instructors to have individuality in their delivery (still in accordance to the Core Competencies)
• Periodic survey and use feedback from the surveys to build improvements for Spring 2017 semester

INTENDED OUTCOMES

Students attain learning objectives via learning activities as measured by assessments, per course map.

Increase student satisfaction of perceived course consistency in organization, curriculum, activities, and grading.

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This course redesign is intended for students to have a richer learning experience through delivery of streamlined concepts, impactful activities, relevant assessments and an engaging environment, to enable students to take ownership of their learning, while promoting consistency in organization, curriculum, activities, and grading.

Mirna Mattijik is a Teaching Associate Professor in the EPICS program and Program Coordinator for Humanitarian Engineering. Mirna is also faculty in the Thorson First Year Honors Program and will be teaching the program’s first cohort in the 2016/2017 school year. Equipped with a B.S. in Industrial Technology, a Master’s in Project Management & Leadership from Regis University and a Master’s in International Political Economy of Resources from Mines, Mirna’s special interests are design thinking, pedagogy in engineering education and community driven development. In the classroom, Mirna strives to create richer teaching and learning opportunities where students are empowered and held accountable for their learning.

Yosef Allam is a Teaching Associate Professor in the EPICS Program at the Colorado School of Mines. Prior to joining Mines, Dr. Allam served as an Assistant Professor in the Engineering Fundamentals Department at Embry-Riddle Aeronautical University and as Affiliate Director for Project Lead The Way in Florida. He taught as an instructor for two years at The Ohio State University, where he graduated with B.S. and M.S. degrees in Industrial and Systems Engineering, and a Ph.D. in Engineering Education. Dr. Allam is interested in spatial visualization, diffusion of evidence-based teaching practices, student applications of the design process, and fulfilling the needs of an integrated, multi-disciplinary first-year engineering educational environment through active and collaborative learning.

June 2016 Cohort

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