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Course Re-Design: What's New on Campus

Jim Gigantino
University of Arkansas, Fayetteville

David Jensen
University of Arkansas, Fayetteville

Kathryn Zawisza
University of Arkansas, Fayetteville

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Course Re-Design

Not so New Faculty Lunch – February 2023

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Course Delivery Modes

Academic Policy 1622.12

Campus Course: Face to Face

- Traditional face to face
- Faculty can teach up to 25% distance instruction with department approval
  - Distance instruction should align with course objectives, pedagogical rationale, or the need for remote work (ie conference attendance)
- Should use Blackboard

Campus Course: Campus Mixed Mode

- Pilot Summer 2023 and Fall 2023
- Combination of in-person and distance instruction. Distance instruction is more than 25% but less than 50%
  - All students attend class together more than 50% of time
  - NOT hybrid…all students and faculty member attend together
  - Distance instruction can be Synchronous or Asynchronous
- Must use Blackboard; can use Zoom for synchronous
- Approved through Courseleaf (minor change)
- Meeting pattern must be disclosed prior to registration

Online Courses: 100% Online Asynchronous

- Traditional online class
- Must be asynchronous—can offer synchronous sessions but cannot be required
- Use Blackboard
- Adhere to all federal and state regulations regarding distance education
- Approved through Courseleaf (minor change)

Online Courses: 100% Online Synchronous

- Delivered 100% at a distance but all students attend synchronously via Zoom or other conferencing software
- Must use Blackboard
- Like remote but not…must adhere to all federal and state regulations regarding distance education
- Approved through Courseleaf (minor change)

Online Courses: 100% Online, Primarily Asynchronous but with some synchronous meetings

- Delivered 100% at a distance with most asynchronous assignments
- But all students required to attend some sessions synchronously via Zoom or other conferencing software---must be disclosed at registration time
- Must use Blackboard
- Adhere to all federal and state regulations regarding distance education
- Approved through Courseleaf (minor change)

Online Courses: Online Mixed Mode

- 50-99% of instruction done at a distance
- Distance instruction can be synchronous or asynchronous
  - All students attend class together at some times
  - NOT hybrid…all students and faculty member attend together when on -campus
- Must use Blackboard; can use Zoom for synchronous
- Approved through Courseleaf (minor change)
- Meeting pattern must be disclosed prior to registration
- Adhere to all federal and state regulations regarding distance education

Experience with Hybrid Course Development

David Jensen | Mechanical Engineering
Adam Brown | Global Campus
Ken Muessig | Global Campus

UNIVERSITY OF ARKANSAS
College of Engineering

Class Background and Motivation

Motivation:

- High DFW rate
- Math-centric course (particle and rigid body dynamics)
- Offered Fall and Spring, typical 60-100 enrollment each, Sophomore
- Utilize a guided and structured approach to mixed mode implementation and data gathering for research

Goals:

- Team-based learning
- Application-based, in-class work
- Focused on intuition and fundamentals rather than pattern matching
- No significant change to instructor grading time

The New Mixed-Mode Course

Mixed-Mode

Course Concept Videos and Example Videos - Asynchronous

Team-Based Design Problems Solved - Synchronous

Physical Experiments Demonstrations - Synchronous

Assessments: Video Quizzes, In-Class Work, Pre-Tests, Topic Exams

Traditional

- Traditional in-class lectures and example problems
- Textbook-based weekly homework problems
- Drill session with TA for homework “help”
- In-class module exams

Preparing to Make the Change

Identify high-level learning outcomes

EX: Conservation of energy for rigid bodies (concept)

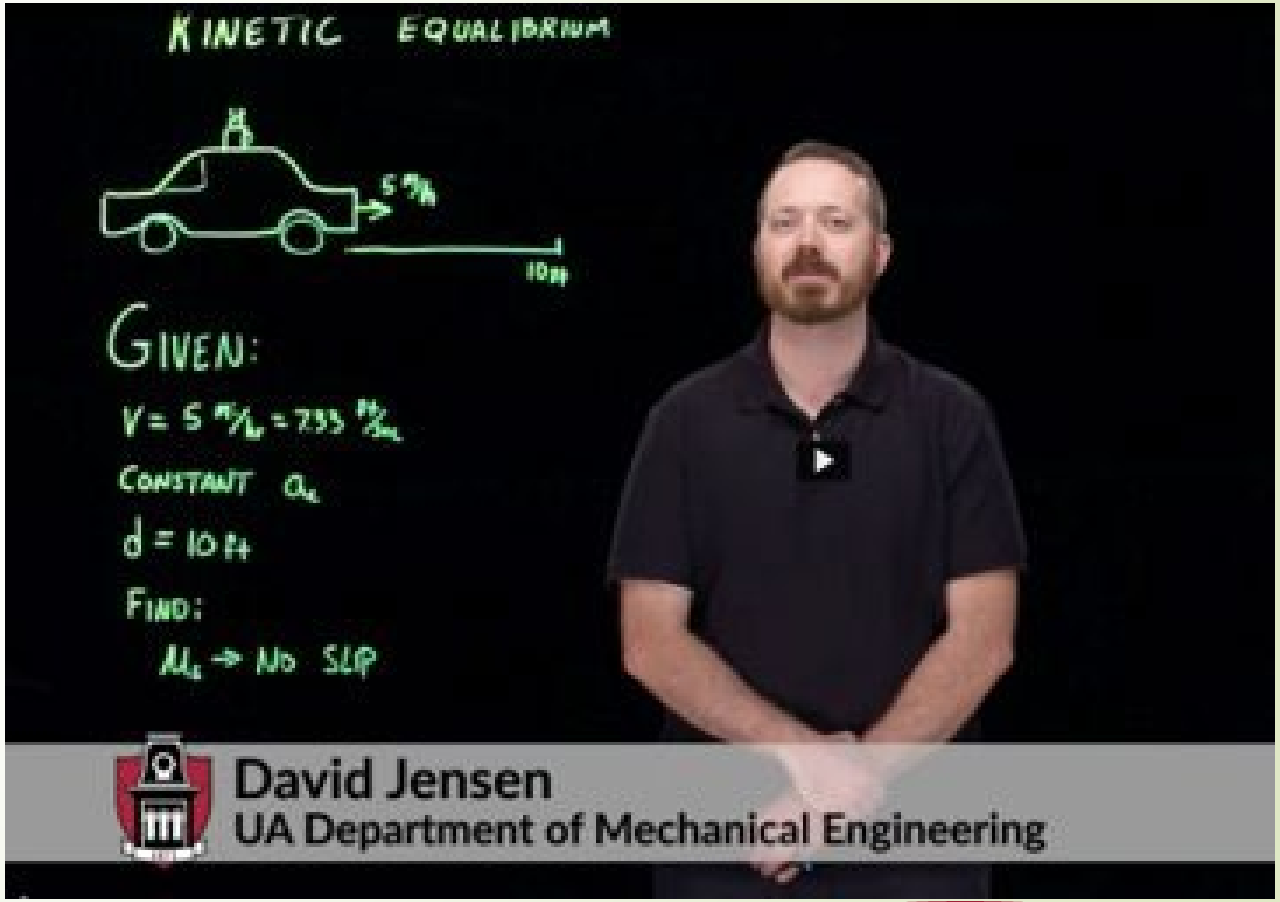
Identify specific learning outcomes per lesson and assigned assessment method/s

EX: Changing coordinate systems (technique)

Calendar planning approach – plan each day lesson and assessment

Concept Videos & Applied Example Videos

- Simplify lectures to core concepts - Aim for 10-15 minutes
- Some portions drawn before video recordings
- Developed separate example problems (approx. 5 min)
- Recorded 2-4 per session (based on what I had finished)
- Video quizzes to support engagement

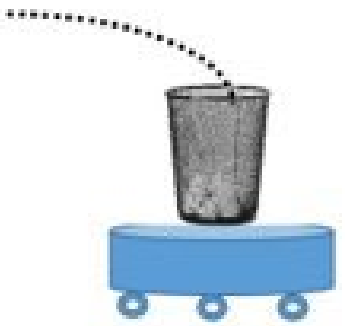


In-Class Team-Based Work

- Team-based work with structure and direction
- Require skill implementation from previous video
- All “design” problems – no exact answer only a correct process
- One team member scans the file for submission on Blackboard

MEEG 2013 – Auto-Trash Design Challenge

EGO-ECO- ROBOT



Goal: Determine the underlying dynamics to describe the control algorithm for the robot. The robot must move to the correct position so that user never misses a shot.

Assume:

1. Exact position, velocity, and acceleration of tossed trashed can be determined.
2. Exact location of robot at the instant trash is tossed can be determined.
3. Trash acts like a particle and air resistance is negligible.

End Deliverable: 2 dimensions of distance that the robot must travel in terms of known initial throw variables (angles with respect to a reference frame, initial height, initial velocity).

Hands-On Experimental Synthesis of Concepts

- Demonstration intended for hands-on and in-class
- Students compare multiple skill techniques
- Get a feel for the difference in real world versus text-based

Student Response and Lessons Learned

- Results on student test performance was mixed – both approaches were at least equivalent
- Student perception of efficacy: 1) Concept videos, 2) In-class hands on, all other activities much lower
- Some students seem to perceive themselves as doing more work and instructor doing less
- Unstructured in-class time was wasted – needed both an activity and direction
- This change took significant up-front time and a different type of energy during the semester (professing versus hosting)