

# “Other” EdTech “Stuff” at MIT

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## “Other” EdTech “Stuff” at MIT

Modularity Experiments

Concept-based Approaches

Embedded Assessment

## MIT Office of Educational Innovation and Technology

- ▣ *Partners* with *faculty* across MIT
- ▣ Leads *experiments* in *innovative* approaches to learning and teaching
- ▣ *Scales up* projects from individual faculty to departments and the university
- ▣ Partners with other campus entities to *sustain* innovations long-term

# MIT Council on Educational Technology

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- MITCET's "mission...is to enhance the quality of MIT education by encouraging the appropriate application of technology, both on and off campus."
- Representation from across campus

# Modularity Experiments

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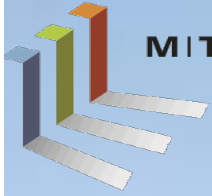
- Experiments to explore:
  - *Deeper learning experiences*
  - *Flexibility* in time (not always organized into one-semester chunks) and *geography* (not always on campus)
- Call for participation
  - Aero/Astro, Chemistry, Mechanical Engineering

# i2.002 in Mechanical Engineering

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- The department is interested in experimenting with it's curriculum, perfect candidate
- 2.002 Mechanics and Materials II is a typical MIT engineering class:
  - ▣ Traditional lectures, lots of equations using blackboards *\*gasp\**
  - ▣ Problem sets, labs
  - ▣ “MIT Hard”
- Set of experiments beginning in Spring 2012





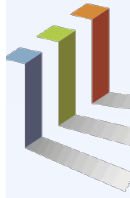
MITMECHE

# i2.002

## Mechanics & Materials II

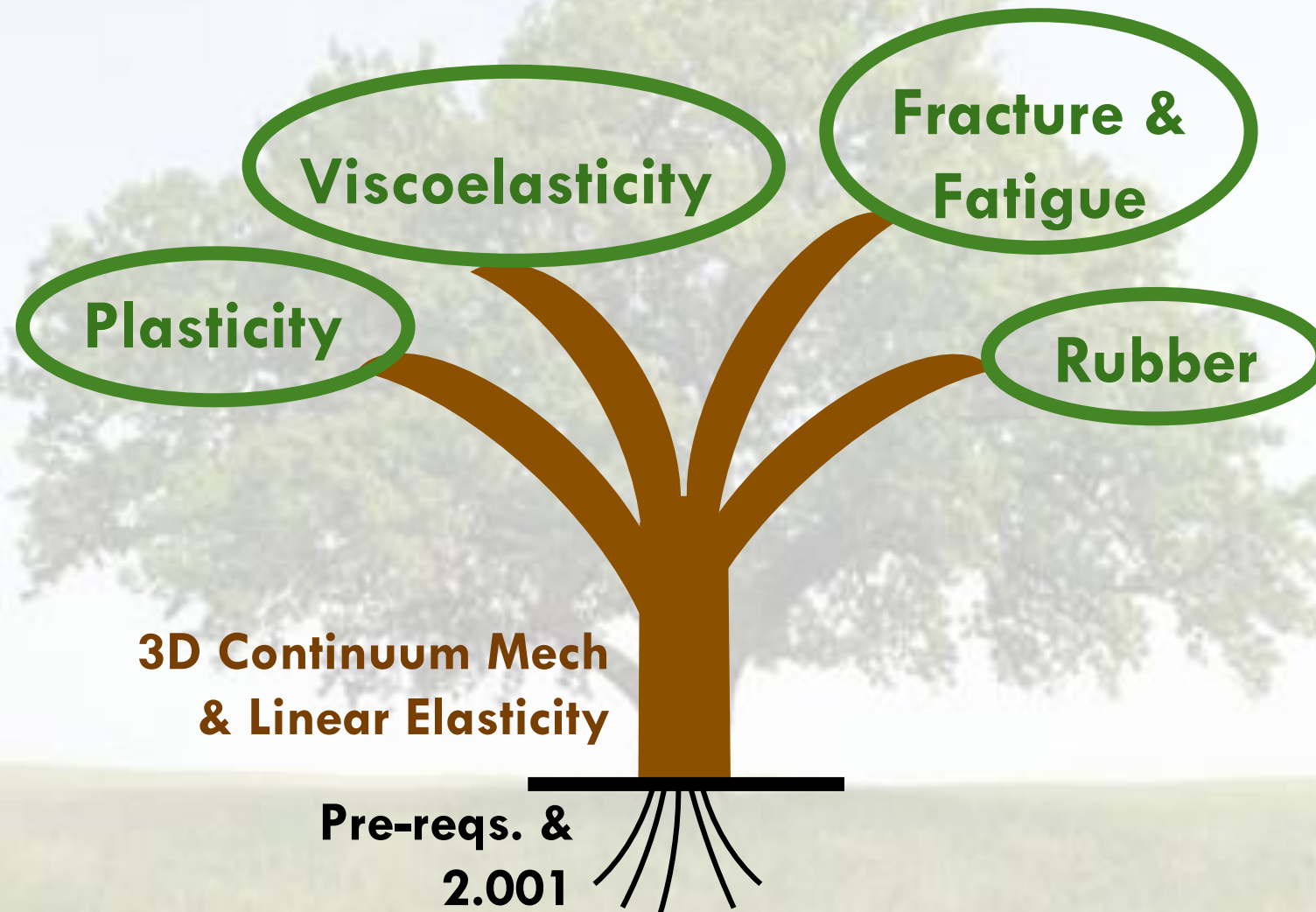
Department of Mechanical Engineering  
Office of Educational Innovation and Technology  
Teaching & Learning Laboratory  
(with funds from MIT Council on Education Technology,  
Class of 1960 and the Office of Digital Learning)





**MITMECHE**

i2.002: Mechanics and Materials II



# i2.002 Spring 2012 Experiment

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- MIT students took i2.002 online and at a distance **Online and In-Person Students Performed the Same**
  - ▣ Students in Spain, Puerto Rico and California
  - ▣ Same course, same lectures, same p-sets (homework), same labs and same exams
- Lecture videos
  - ▣ Traditional classroom videos
  - ▣ But... we had a TA divide the video into segments by concepts

**Added about 10 minutes per lecture, that's it!**

# i2.002 Spring 2013 Experiment

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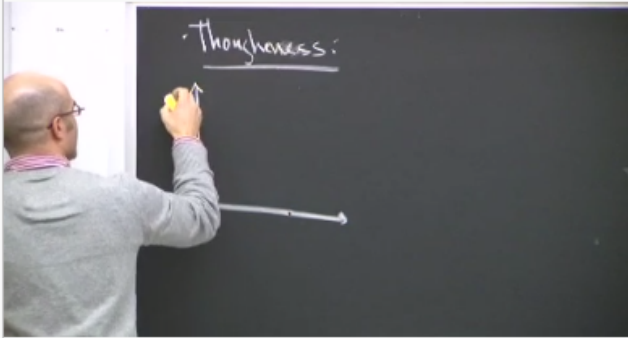
- Linked “typical” online course content with concept-based tools
  - ▣ Video browsable by concepts
- Virtual TA’s
  - ▣ Help students get started with p-sets, similar to the help they’d get in office hours

**On-going Experiments**  
**Continuous Innovation**

# 2.002 Spring 2013 - Mechanics and Materials II

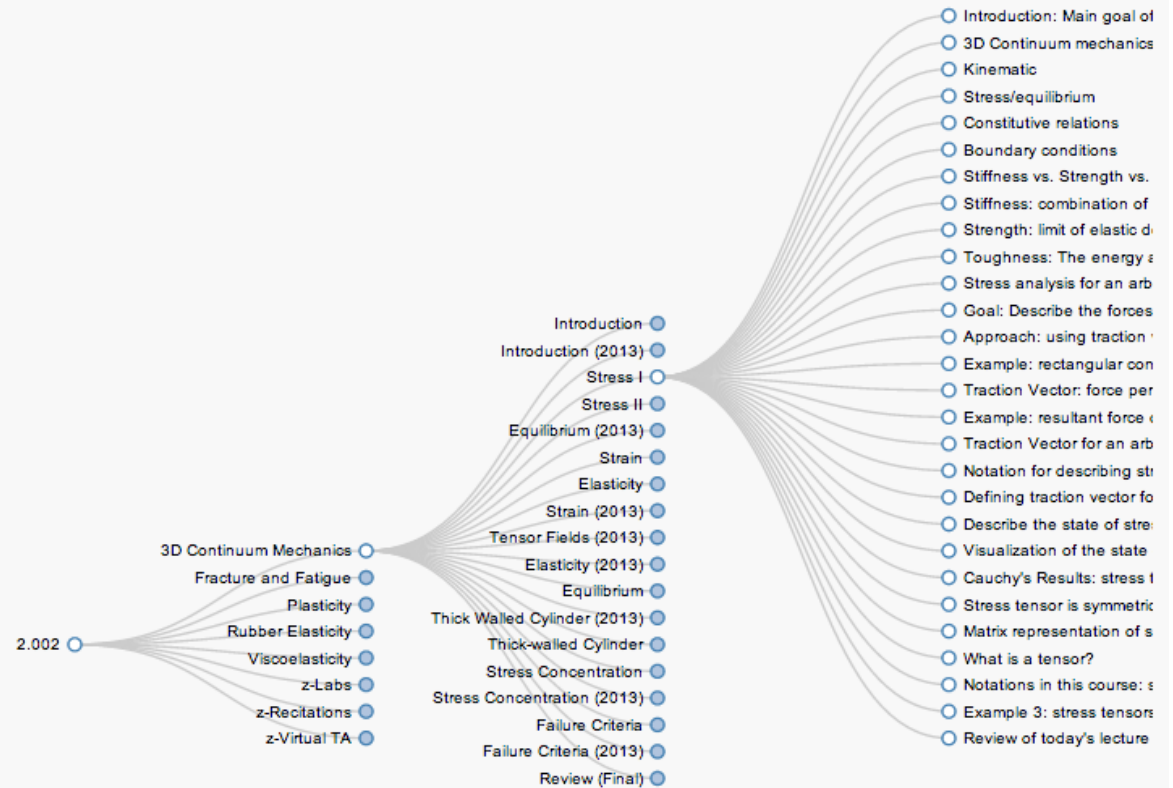
[Home - By Concept](#)[By Class Session](#)[Statistics](#)[Help](#)Search Video Concepts: 

## You Are Watching



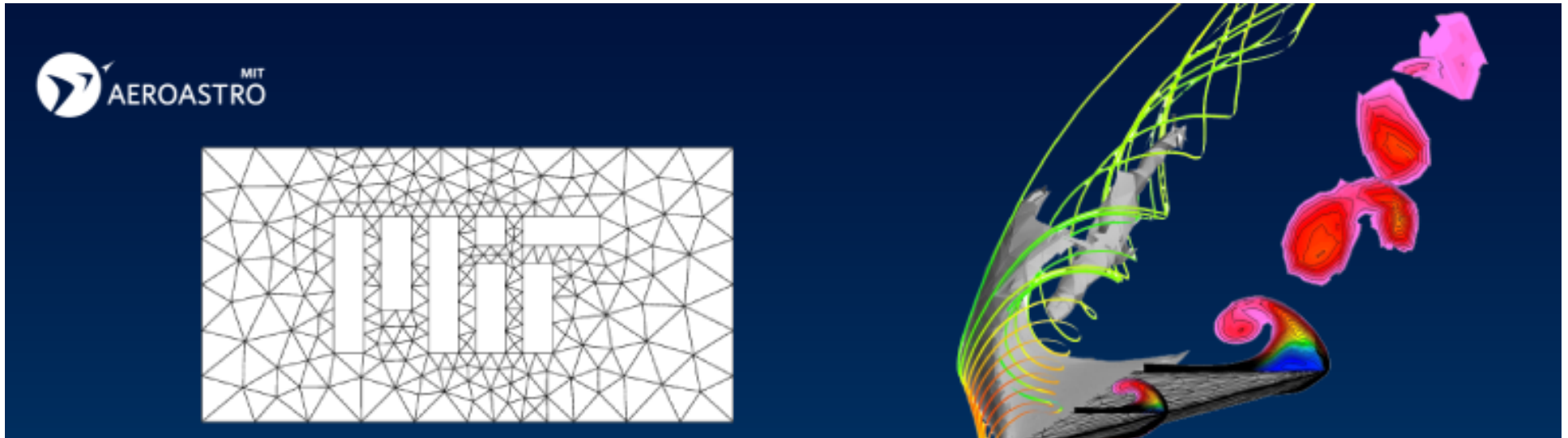
## Video Information

Class Date	2013-02-11
Class Number	Lecture 2
Branch	3D Continuum Mechanics (B41)
Sub-Branch	Stress I
Subject	Toughness: The energy absorption of material before it fails
Speaker	Pedro
Recorded Date	2012-02-13
Views	9



Application development and website support provided by the MIT Office of Educational Innovation and Technology.

# 16.20/16.90 Aero/Astro



- Flipped classroom with embedded assessment
  - ▣ Students review materials ahead of time
  - ▣ Including answering questions embedded in content
  - ▣ Quick feedback loop allowing faculty to address items in class, with examples

# Open Embedded Assessment

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- edX presents content and embedded assessment tightly linked
  - ▣ Quick feedback loops
  - ▣ Lots of opportunity to practice/apply
  
- OEIT New Project: Embed formative assessment in any web-based content
  - ▣ Overcome limitations of current approaches



# Open Embedded Assessment

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## Question 1

$$\frac{5}{12} ? \frac{3}{5}$$

- ☐ Greater than (>)
- ☐ Less than (<)
- ☐ Equivalent (=)

Check Answer

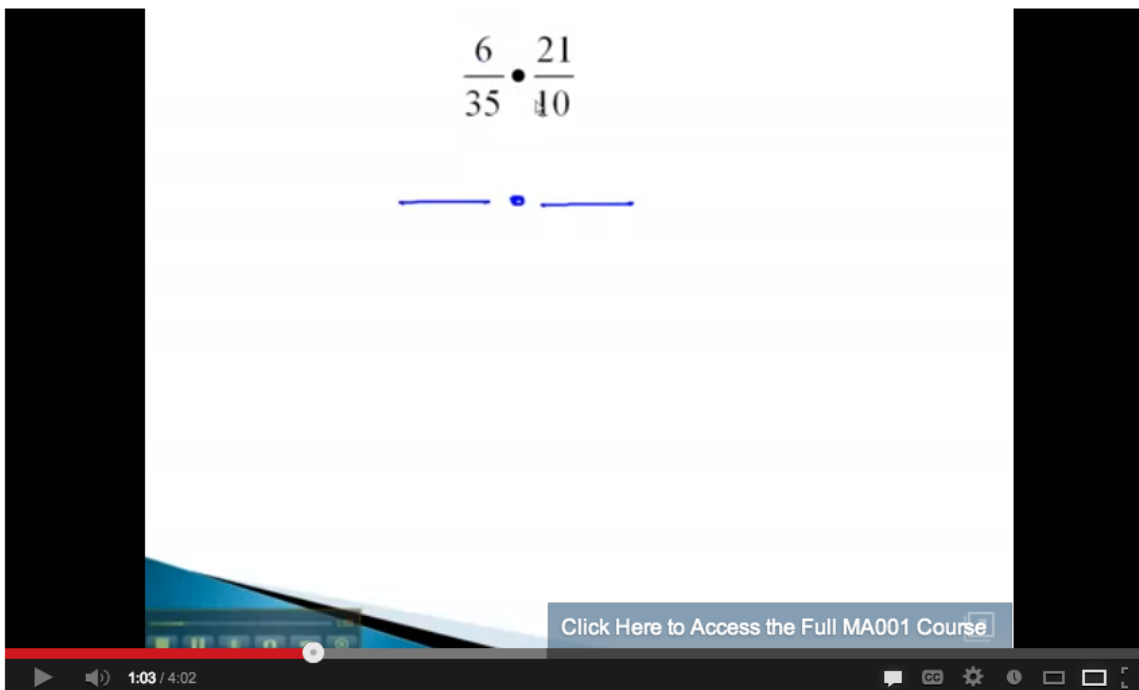
stats



embed



```
<iframe src='//oea/items/1' frameborder='0' width='300'  
height='371' ></iframe>
```



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### Question 1

$$\frac{5}{12} ? \frac{3}{5}$$



Greater than (>)



Less than (<)



Equivalent (=)

Check Answer



Saylor.org MA001: Tyler Wallace's "Multiply and Divide - Monomials"

by saylorfoundation

11 views

4:50



Saylor.org MA001: Tyler Wallace's "Multiply and Divide - Polynomials"

by saylorfoundation

10 views

5:01



Saylor.org MA001: Tyler Wallace's "Multiply and Divide - Both at Once (part 1)"

by saylorfoundation

6 views

5:01



Saylor.org MA001: Tyler Wallace's "Add and Subtract - Different Denominator"

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5:01



Japanese Multiplication Trick

by tecmath

30,872 views

7:11



MULTIPLICACION Y DIVISION DE FRACCIONES PARTE 2 3º prim

by iecamapplied

115,583 views

4:57

# “More” EdTech Stuff in OEIT

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- Collaborations in Online Teacher Education and Professional Development
  - ▣ MIT-Haiti Initiative & EDC-Pakistan
- Interactive software, visualizations
  - ▣ StarGenetics, StarBiochem
- Infrastructure software development
  - ▣ MIT Core Concept Catalog & Repositories
- Collaborations with Community Colleges

## Contact Me

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