Undergraduate Special Subject 16.S688 -- "Crosslinks Seminar"

Credit: U Level 6 Units

Prereq: Permission of Instructor

Units: 1-0-5

Schedule: Wednesdays 1-2pm, Room 33-422

Instructors: Professor Karen Willcox, Chad Lieberman

Announcement

Have you ever noticed the similar mathematical concepts underlying the natural modes of vibration of a beam and the directions of principal stresses in a material? Have you noticed that derivatives show up with different physical meaning in almost every engineering, science, and business class you have taken? The Crosslinks Seminar is an opportunity to reflect on your past classes and identify their connections through the fundamental concepts and principles that are common among different fields. Students will study the technical history and modern application of several concepts and principles, focusing on linkages among different applications in science, engineering, and business. Student projects will create interactive media that highlights the connections among core concepts and MIT classes.

Syllabus Outline

Seminar sessions are a combination of discussion, student presentation, and technical instruction regarding the presentation of discovered crosslinks in various media.

Weeks 1-2: Student introductions and discussion of concepts of interest. Students create a map of their MIT classes and identify some common concepts. Crosslinks wiki pages are created and linked.

Weeks 3-11: Students will identify three concepts to study in further depth, (i) investigating technical history of the concept (e.g., who first discovered it and in what context, first applications in different areas, etc.), (ii) providing some mathematical/scientific review of the concept, (iii) exploring modern applications of the concept, and (iv) creating interactive media (e.g., videos, webpages, etc.) to highlight the shared connections between various disciplines based on the concept.

Weeks 3-5: Study Concept 1.

Weeks 6-8: Study Concept 2.

Weeks 9-11: Study Concept 3.

Weeks 12-13: Final presentations.