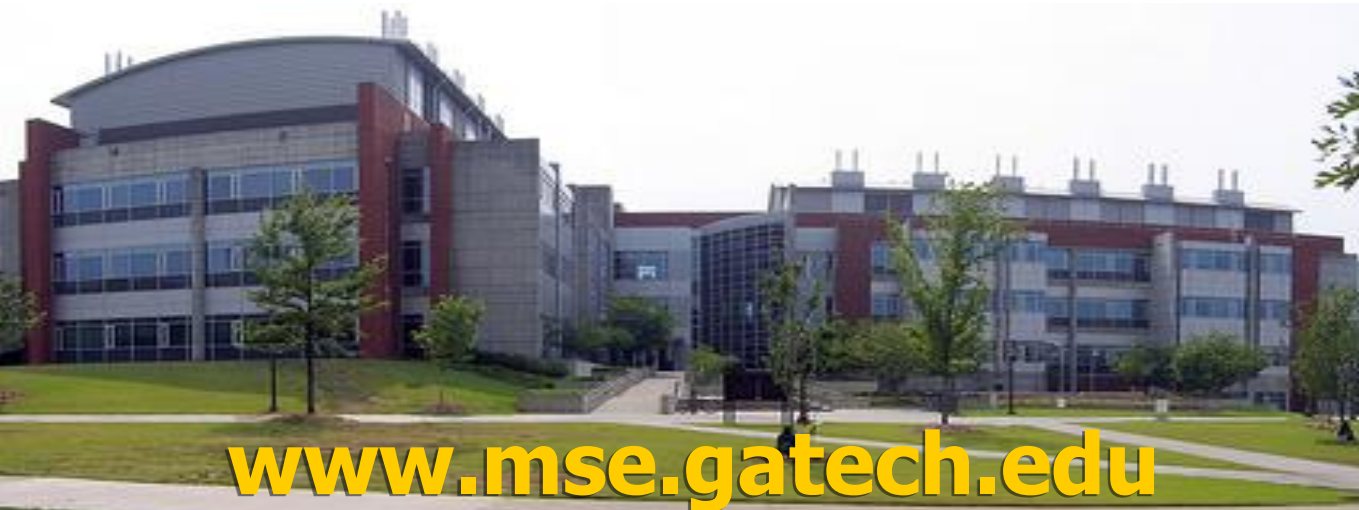


Senior Capstone Design in MSE at Georgia Tech

Naresh Thadhani, Chair



www.mse.gatech.edu

Materials Science & Engineering at Georgia Tech

- **Faculty**: 33.8 FTE; Headcount of 38 with 4 minor appts; + 16 Courtesy, 8 Adjunct, and 8 Emeritus faculty
- **Research Focus**: Metals, Ceramics, Polymers, Fibers, Textiles, Composites, and Nano-, Bio-, and Energy Materials
- **Enrollment**: 344 B.S., 17 M.S., and 168 Ph.D. Students
- **B.S. MSE Degree Program**: 132 total credit hours
 - **Concentrations**: 15-16 hrs of concentration specific courses
Bio-Materials, Polymer & Fiber Materials, and
Structural & Functional Materials (~49%)
 - **Capstone design**: Two 3-credit hour courses (Design I & II)

Capstone Design I (MSE 4410) & II (MSE 4420)

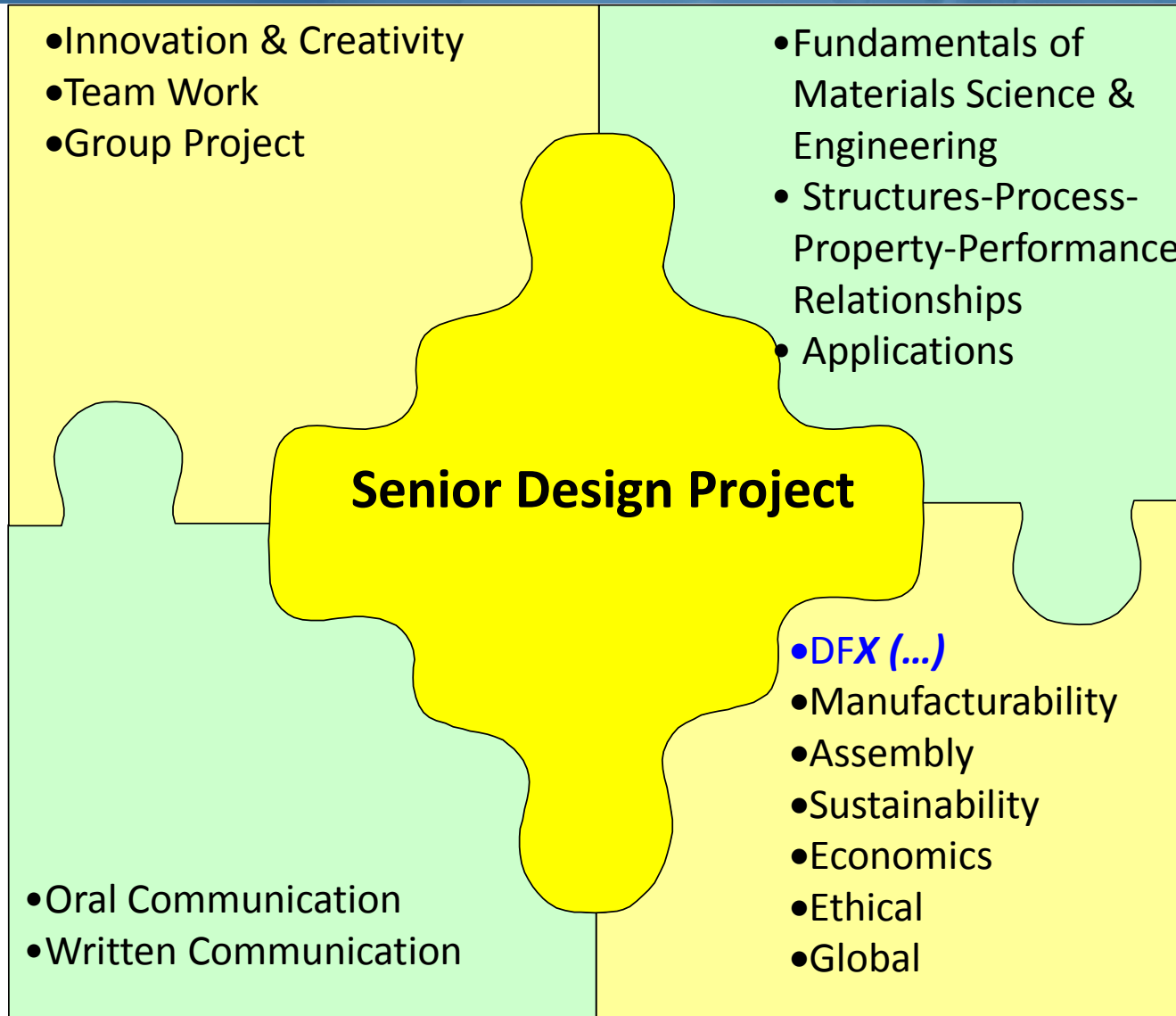
- Accomplished through two 3-credit hour courses
 - MSE 4410 - Fall Semester of Senior Year - Students learn the engineering design methodology and work in teams on short-term open-ended projects of their choosing.
 - MSE 4420 - Spring Semester of Senior Year - Students apply the learned engineering design methodology to real-world problems/projects sponsored by industry
- OR
- GT 4803- Multidisciplinary Capstone Design course – MSE students work along with those from other schools at Georgia Tech on multi-disciplinary team projects.
- Both options end with students participating in Georgia Tech Capstone Design Expo (a campus-wide program)*

MSE 4410: Design I – Fall (Prof. Sundaresan Jayaraman)

LEARNING OBJECTIVES

- Learn concepts of design, including integrated material-product-process development, QFD - Quality Function Deployment, and DF..X - Design for *manufacturability, quality, affordability*, etc.).
- Apply analysis and synthesis skills, plus process-structure-property-performance relationship in *open-ended conceptual design* project.
- **“Design” applies to a product, process, system, or material.**
- Gain appreciation for team activities in exploring product/process design relevant to all forms of traditional and advanced materials.
- Learn issues related to commercialization & intellectual property.
- Develop oral/written communication of technical information.
- Learn the importance of ethics in practice of the profession.

MSE 4410: Design I – FACETS OF DESIGN PROJECT



MSE 4420: Design II - Spring (Prof. Meisha Shofner)

Design Project Requirements

Problem Statement

- Articulate the problem defined by the project and impact of solving it
- Define the design objectives

Project Proposal

- Fully define user needs
- Specify the anticipated technical approach for the design project

Final Report & Poster at Expo

- Discuss concepts/material candidates and their evaluation
- Give clear recommendation for design solution based on work that can be accomplished in one semester

Project Assignment & Team Formation

- Projects announced
- 4-5 student self-selected teams assembled
- Individual roles, responsibilities, and expectations articulated in written contract
- Students encouraged to take Myers-Briggs type personality test and discuss the results within their teams; results not shared with instructor

RECENT PROJECT SPONSORS



SOLVAY SPECIALTY POLYMERS
More Products with More Performance



Environmental Health & Safety

Georgia Tech Invention Studio

DESIGN-BUILD-PLAY FOR ALL GEORGIA TECH STUDENTS



The Invention Studio is student-run design-build-play space. It is staffed by University Lab Instructors (ULIs), student volunteers who are on hand to train you and help with your projects. Use of the studio is free for all students, faculty and staff of Georgia Tech, regardless of year, major, or prior experience.



Georgia Tech Capstone Design Expo - McCamish Pavilion

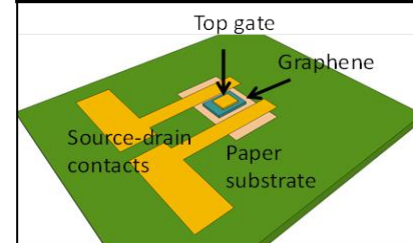
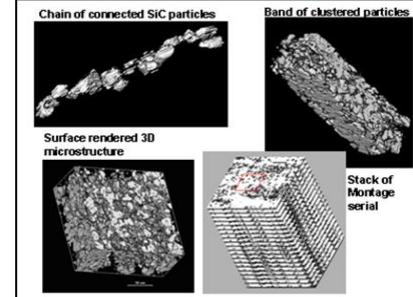
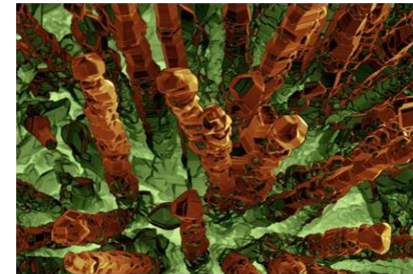
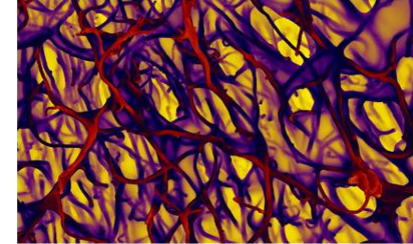


More than 900 students and 170 teams from eight schools and three colleges participated in 2014 Capstone Design Expo held on April 24 in McCamish Pavilion.

MSE4420: Capstone Design Course focused on Materials
Unique opportunity for your company to become an Industrial Partner and sponsor capstone design project

Recent flyer soliciting Capstone Design projects from Sponsors

- ✓ **Explore new & out-of-the-box project ideas:** A team of 4-5 Materials Science & Engineering students & a faculty mentor at Georgia Tech will explore your project ideas so that you don't need to distract your team. Any project focusing on metals, ceramics, polymers, fibers, textiles, composites, or nano-/bio-materials is welcome – from identifying material formulations or compounds for desired functionality to designing a new process to produce materials to conducting failure analysis or developing new characterization methodology. NDA is an option.
- ✓ **Bring new expertise & a fresh look:** The team will identify experts among Georgia Tech faculty to advise on the project. Their expertise may help you in other projects as well.
- ✓ **Engage with the top engineering brains:** Georgia Tech is ranked top 4 Engineering College in the U.S. Have the brightest students work on your project!
- ✓ **Excellent recruitment tool:** By seeing the students in action & directly interacting with them you will gain a unique opportunity to attract those who will strengthen your company's success in the future
- ✓ **Positive Public Relationship:** Reach out to the academic community and spread the word and excitement about your company within the largest engineering college in the US
- ✓ **Low Cost:** Donation of only \$3k to cover project costs.



- ATTENTION:**
- (1) Number of projects is limited to **18 only**
 - (2) Project selection will be completed by early November
 - (3) Submit sponsor application by October 31, 2014

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