

PRGR 632
Sustainable Building Materials (2 credits)

Catalog description:

Description of sustainable building materials and products: categories and types; factors and criteria for evaluation and selection; specifications and standards; life cycle assessment concepts and tools; integration into projects.

Textbook:

Spiegel, Ross, and Meadows, Dru; Green Building Materials: A Guide to Product Selection and Specification, John Wiley and Sons, Third Edition, 2012, ISBN: 978-0-470-53804-3.

References:

- Halliday, Sandy; Sustainable Construction, Gaia Research, First Edition, 2008, ISBN: 978-0-7506-6394-6.
- Meisel, Ari; LEED Materials, a Resource Guide to Green Building, Princeton Architectural Press; First Edition, 2010, ISBN: 978-1-56898-885-6.

Coordinator:

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Prerequisite by Topic:

No pre-requisite courses are required for this course.

Educational Objectives/Learning Outcomes

Students that successfully complete this course will:

- Become familiar with various building materials and products.
- Become cognizant about the impact of materials and criteria for evaluating its level of sustainability.
- Get familiar with concepts and tools for life cycle assessment of materials.
- Be aware of various standards, codes, building specifications, and sustainability rating systems as they apply to materials.
- Gain know-how of integration of sustainable materials into projects.

Topics covered

- Introduction to building construction, materials, and sustainability
- Categories and types of building materials
- Socio-economic and environmental impact of materials
- Renewable, reused, and recycled materials

- Materials properties, performance and durability
- Life Cycle Assessment: Methods and tools
- Building codes, standards, specifications and rating systems
- Integration of sustainable materials in projects: challenges and opportunities

Lab experiments

Demonstration experiments will be conducted in the Materials Lab

Assessment and grades

- Class Participation (5%)
- Assignments (15%)
- Term Project: Report and Presentation (40%)
- Term Exam (40%)

Resources for the course

- Course handouts and slides
- Research publications and reports
- Software packages
- Case studies

Computer usage

• Computers will be needed in performing certain assignments using downloadable Software.