

**ME 472**  
Materials Selection for Design

**Fall, 2013**

Text: Materials Selection for Mechanical Design, M. F. Ashby, Elsevier, MA 01803

Course Description: Interaction of material design process with material selection criteria. Comparison of material properties, processes and fabrication. Project work includes design models, materials selection, rationale, oral presentation of projects, construction of mock-up models and theoretical design problems in the area of student's specialization.

Course objectives: To introduce the student to the materials selection for design, engineering materials used to fabricate components, their properties and applications.  
To provide an understanding of materials selection in design, relationship of property-fabrication=properties, design stages and selection methods\To give the student the basic knowledge of the materials selection by using functions, performance requirements and properties of engineering materials for design

Staff: Lecturer: J. Don, E14, phone: 453-7004, email: jdon@siu.edu  
TA: Hong, Jia-Huey

Lecture: T, R 9:35 – 10:50 am  
A222

Projects: 1. Beverage container selection and design  
2. LED phosphor selection and design  
3. Materials for various selected products  
4. Failed material analysis and selection

Grading Policy: Exam 40 %  
Projects 50 %  
Homework 10 %

Last day to withdraw: 10/27/2013 (Salukinet)  
<http://registrar.siu.edu/calendars/registration13fa.html>

Topics covered:

- Introduction
- Design Process and Materials selection
- Problem Identification and Solution
- Electrical Properties
- Physical Properties
- Mechanical Properties
- Strength of materials – test methods
- Design, selection and failure
- Ferrous and non ferrous materials
- Ceramics and glasses
- Plastics
- Case studies

*Emergency Procedures.* Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at [www.bert.siu.edu](http://www.bert.siu.edu), Department of Safety's website [www.dps.siu.edu](http://www.dps.siu.edu) (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

*Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.*

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