MAT 314 Mechanical Properties of Materials

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Guest Lecturers: Dr. Ani Yazlalı
Dr. Kaan Bilge

References Mechanical Behavior of Materials, by William F. Hosford (primary-online)
Mechanical Properties of Materials, by Joshua Pelleg (primary-online)
Mechanical Behavior of Materials, by Norman E. Dowling (primary)

Mechanical Behavior of Materials, by Marc André Meyers, Krishan K. Chawla
Mechanical Properties of Engineered Material, by Wolé Soboyejo (e-book)
Mechanical Behavior of Materials, by Thomas H. Courtney

Class online Link: https://sabanciuniv.zoom.us/j/3953158169
Tuesday 15:40 – 17:30
Friday 12:40 – 13:30

Course Web page: Lecture notes are being posted/updated in SUCourse+

Office Hours: TBD

Course Description

Understanding of basic mechanical properties and responses of engineering materials via studying deformation and fracture. Stress, strain, and the basic concepts of deformation and fracture for metals, polymers, and ceramics; analysis of important mechanical properties such as yielding, plastic defromation, creep, fatigue and fracture toughness. Application of these principles to the design of improved materials and engineering structures. Various mechanical tests to provide hands-on/virtual experience about the structure, properties, and processing of engineering materials and their applications and how to interpret the results.

Course Content

Introduction
Mechanical Testing
Elasticity
Review of Stress-Strain Relations

Plasticity

Yielding and Fracture under combined Stresses (Failure Criteria)

Fracture Mechanics (by guest lecturer Dr. Ani Yazlalı)

Fracture Analysis (failure surfaces, by guest lecturer Dr. Kaan Bilge)

Time-Dependent Behavior: Creep, Viscoelasticity

Grading

MT1	25%
MT2	25%
MT3/Final	25%
Assignments	25%