

445.310 Mechanical Behavior of Materials (재료의 기계적거동)

Lecturer: Myoung-Gyu Lee, Professor of MSE

Email: myounglee@snu.ac.kr

Class hour: Mon/Wed, 15:30-16:45

Course objective:

This course introduces the atomic bonding, the continuum mechanics for elastic and plastic deformation, the dislocation theory, the creep and the fracture mechanics in order to understand crystalline material behavior under stress field. The course also addresses the relationship between the strengthening mechanism and the microstructure of the materials. In addition, mechanical behavior of polymers will be briefly addressed in the course.

Text book and ref:

Presentation slides will be used. No text book is required.

Evaluation:

Class attendance 10%; Homework 10%; Mid-term exam: 40%; Final term exam: 40%

Students who are absent for over 1/3 of the class will receive a grade of 'F' or 'U' for the course. (Exceptions can be made when the cause of absence is deemed unavoidable by the course instructor.) In case of online class, the rule can be changeable.

Weekly class schedule:

- Week 1: Basic knowledge for mechanical behavior analysis (stress, strain, yield condition, etc.)
- Weeks 2 & 3: Elastic / plastic deformation behavior and constitutive equation of materials
- Weeks 4 & 5: Dislocation theory for explaining plastic deformation of crystalline Materials
- Week 6: Plastic deformation of single-crystalline and polycrystalline materials
- Weeks 7 & 8: Strengthening mechanisms of crystalline materials
- Week 9: High temperature deformation Behavior of materials (Creep)
- Week 10: Deformation behavior of composite materials (equal strain, equistress conditions, etc.)
- Weeks 11 and 12: Fracture and fatigue behavior of materials

-Weeks 13 and 14: Deformation behavior of polymer materials

Ref:

Final scores of those who repeat this course will be only 90% of their total scores.

This is a theory based course, and online class will be provided. If we need face-to-face class, we will discuss it in advance.

Students who take this course can get appropriate level of support service including the support listed above depending on the students' individual characteristics and needs through consultation with professors and the Support Center for Students with Disabilities. If you have any questions concerning support service for students with disabilities you can contact Professor Myoung-Gyu Lee) or Support Center for Students with Disabilities (02-880-8787).