

Course Number: 28064**Course Name: Plasticity**

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| Course Type: Theory |
| Prerequisite: Continuum Mechanics |
| Level: Graduate |
| Group: Applied mechanics |

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| Type & Max Unit: Constant 3 |
| Corequisite: Nothing. |
| First Presentation: 2013-2 |
| Last Edition: 2017-1. |

Objectives:

For analysis of structure under loads beyond their elastic limit as well as different forming processes, inelastic behavior of materials should be considered. Undergraduate courses as well as several graduate courses assume elastic behavior. The main goal of this course is to investigate plastic behavior of materials and discuss their constitutive modeling. It is the aim of this course to present theory of plasticity, physics of plastic deformations, approaches for constitutive modeling, an introduction to computational plasticity and large plastic deformations.

Topics:

- Introduction
- Physics of plastic deformations
- One-dimensional plasticity
- Classical theory of plasticity (perfect plasticity)
- Classical theory of plasticity (hardening plasticity)
- Introduction to computational plasticity
- Large deformation Plasticity

References:

1. W. F. Chen, H. Zhang, "Structural Plasticity", Springer, 1991.
2. S. Khan, S. Huang, "Continuum Theory of Plasticity", John Wiley and Sons, 1995.
3. E. de Souza Neto, D. Peric, D. Owen "Computational methods for plasticity: theory and applications", John Wiley and Sons, 2008.
4. J. Lubliner, "Plasticity theory", Dover Publications, 2008.