Aerospace Engineering

Course Title: Aerospace structural stability **Number of Credits: 3**

Course Topics:

- Basic concepts of equilibrium and stability
- Introduction of different buckling modes
- Analyzing the buckling of beam and column using equilibrium equations
- Analyzing the buckling of plates using equilibrium equations
- Energy method in stability analysis
- Buckling analysis using Rayleigh-Ritz method
- Analyzing the torsional-bending buckling of sections under axial loading
- Other methods of buckling analysis
- Geometric nonlinear analysis of post-buckling behavior of plates with different boundary conditions
- Stability as a failure mode
- Selected topics

Reading Resources:

- Theory of Elastic Stability, S.P. Timoshenko, J.M. Gere, McGraw-Hill, 1961.
- Background to Buckling, H. G. Allen, P. S. Bulson, McGraw-Hill, 1980.
- Buckling of Bars, Plates and Shells,D. O. Brush, B. O. Almorth, McGraw-Hill, 1975.
- Stability of structures, Z. Bazant, World Scientific, 2010.
- Buckling and Postbuckling of Beams, Plates, and Shells, M.R. Eslami, Springer, 2017.