

Module BIW-MA-AC-O-02: CONTINUUM MECHANICS, TENSOR CALCULUS

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- Tensor Algebra – General (Second-Order) Tensors
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- Tensor Algebra – Simple (Second-Order) Tensors
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- Analysis of Tensor-Valued Tensor Functions
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- Tensor Fields on Euclidean Point Spaces
Three-Dimensional Euclidean Point Space, Scalar Fields, Vector Fields, Second-Order Tensor Fields
- Tensor Analysis in Euclidean Point Spaces
Gradient, Divergence, Rotation (Curl), Examples and Applications
- Applications in Continuum Mechanics

Prerequisite Knowledge

Basic knowledge in the fields of linear algebra and multidimensional analysis as well as knowledge of engineering mechanics, especially in the fields of linear elasticity theory and strength of materials theory at the bachelor's level are required.

Literature

A. Bertram – Elasticity and Plasticity of Large Deformations, Springer-Verlag
G.A. Holzapfel – Nonlinear Solid Mechanics, John Wiley & Sons, Inc.
P. Wriggers – Nonlinear Finite Element Methods, Springer-Verlag

Project and Master Thesis

Please contact the Institute of Mechanics and Shell Structures for possible topics.