

CT5141	Theory of Elasticity	3
Instructor	Pierre Hoogenboom	
Education Period	1st Education Period	
Exam Period	1st Exam Period, 2nd Exam Period	
Course Language	English	
Course Contents	<p>Direct Methods Discussion of two fundamental strategies; displacement method and the force method. Application to the following structural systems; coupled shear walls; thick wall tubes; curved beams; solution of Boussinesq; Brazilian splitting test; flexure of axisymmetric plates; elasticity theory in three dimensions; torsion properties of bars of any cross-section (analytical and numerical). Vlasov's theory for calculating torsion moment distributions and bi moment distributions.</p> <p>Energy Principles Derivation of the principles of virtual work and virtual complementary work; principles of minimum potential energy and minimum complementary energy; both laws of Castigliano; reciprocal theorem of Maxwell-Betti.</p>	
Study Goals	After completing this course you will have extended your skills of scientific problem solving in structural mechanics. You will understand the general features of elastic systems. You will have an overview of elastic analysis methods and know analytical solutions to typical structural problems. Finally, you will have mastered methods to derive approximation formulas.	
Education Method	Lectures	
Course Relations	CT3110, CT3130, CT5123, CT5143	
Literature and Study Materials	Two books, both are available at www.nextstore.nl	
	Blaauwendraad, J. "Theory of Elasticity, Direct Methods", Lecture Book Delft University of Technology, 2002.	
	Blaauwendraad, J. "Theory of Elasticity, Energy Principles and Variational Methods", Lecture Book Delft University of Technology, 2002.	
Assessment	Written exam, The exam mark is the final mark. It is allowed to use books and notes during the exam.	