

Course code Type and description ECTS credit Course name Course name in Polish Language of instruction Course level Course coordinator Course instructors Delivery methods and course duration	Background Course							
	2							
	Computational methods in non-linear solid mechanics							
	Podstawy metod obliczeniowych nieliniowej mechaniki ciała stałego							
	English							
	8 PRK							
	Ł. Domagalski							
	Ł. Domagalski, P. Ostrowski							
		Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester
	Contact hours	15					0	15
	E-learning	Yes	No	No	No	No	No	
	Assessment criteria (weightage)	1,00					0,00	
Course objective	To present current knowledge on computational methods of non-linear solid mechanics.							
Learning outcomes	After completing the course, a student will be able to: 1. recognize and formulate the problems of non-linear mechanics (W1 W4, U3, K1, K2); 2. understand the basic iterative procedures of solving non-linear problems (W1 W4, U3, K1, K2); 3. understand the computational methods applied to problems of non-linear solid mechanics (W1 W4, U3, K1, K2).							
Assessment methods	W1 W4, U3, K1, K2 – exam  The final evaluation is based on: Exam - 100%							
Prerequisites								
Course content with delivery methods	LECTURE: Variational formulation of non-linear solid mechanics problems: geometrical non-linearities, physical non-linearities: e.g. plasticity and frictional contact problems. Basic and advanced procedures of solving non-linear problems. Application of the finite element method to non-linear engineering problems							
Basic reference materials	1. O. C. Zienkiewicz and R. L. Taylor, The Finite Element Method, volume I, McGraw-Hill, London, 5th edition, 2000. 2. O. C. Zienkiewicz and R. L. Taylor, The Finite Element Method, volume II. McGraw-Hill, London, 5th edition, 2000. 3. K-J. Bathe, Finite Element Procedures in Engineering Analysis, Prentice-Hall, Englewood Cliffs, 1982. 4. G. Dhatt and G. Touzot, The Finite Element Method Displayed, John Wiley & Sons, Chichester, 1984. 5. T. J. R. Hughes, The Finite Element Method: Linear Static and Dynamic Finite Element Analysis, Prentice-Hall International, Inc., New Jersey, 1987.							
Other reference materials								
Average student workload outside classroom	35							
Comments								
Last update	2025							