

<b>Mathematics for Economics</b>				<b>Code:</b> 11.1.0615
<b>ECTS points:</b> 6	<b>Hours:</b> 60	<b>Semester:</b> winter	<b>Status:</b> Elective	<b>Language:</b> English
<b>Lecturer:</b> prof. Ewa Majerowska <b>Email:</b> ewa.majerowska@ug.edu.pl				
<p style="text-align: center;"><b>Course description:</b></p> <ol style="list-style-type: none"> <li>1. Matrix algebra: Matrices and Vectors, Matrix Operations, Commutative, Associative and Distributive Laws, Identity and Null Matrices, Transposes and Inverses, Conditions for Nonsingularity of a Matrix, Basic Properties of Determinants</li> <li>2. Linear Models and Matrix Algebra: Finding the Inverse Matrix, Cramer's Rule, Application to Market and National-Income Models, Limitations of Static Analysis</li> <li>3. Functions, Graphs, and Models: Functions and Models, Finding Domain and Range, Slope and Linear Functions, Nonlinear Functions and Models, Mathematical Modeling and Curve Fitting</li> <li>4. Differentiation: Limits: A Numerical and Graphical Approach, Algebraic Limits and Continuity, Average Rates of Change, Differentiation Using Limits of Difference Quotients, Differentiation Techniques: The Power and Sum-Difference Rules, Differentiation Techniques: The Product and Quotient Rules, The Chain Rule, Higher-Order Derivative</li> <li>5. Applications of Differentiation: Using First Derivatives to Find Maximum and Minimum Values and Sketch Graphs, Using Second Derivatives to Find Maximum and Minimum Values and Sketch Graphs, Graph Sketching: Asymptotes and Rational Functions, Using Derivatives to Find Absolute Maximum and Minimum Values, Maximum-Minimum Problems, Business and Economics Applications, Marginals and Differentials, Implicit Differentiation and Related Rates</li> <li>6. Integration: Antidifferentiation, Antiderivatives as Areas, Area and Definite Integrals, Properties of Definite Integrals, Integration Techniques Substitution and by Parts</li> <li>7. Applications of Integration: Consumer Surplus and Producer Surplus, Integrating Growth and Decay Models, Improper Integrals, Probability and Expected Value, The Normal Distribution</li> </ol>				
<p style="text-align: center;"><b>Reading list:</b></p> Bittinger M.L., Ellenbogen D.J., Surgent S.A., Calculus and its applications, Pearson Addison-Wesley, 2012 Gruber M.H.J., Matrix Algebra for Linear Models, Wiley, 2013				
<p style="text-align: center;"><b>Grading:</b></p> The final grades are based on the score according the University terms of study: 50% or less - 2,0 (fail) >50% - 3,0 (pass) >60% - 3,5 (pass +) >70% - 4,0 (good) >80% - 4,5 (good+) >90% - 5,0 (very good)				
<p style="text-align: center;"><b>Prerequisites:</b></p> There are no pre-requisites for this course				