



Engineering studies in IT - międzynarodowy program studiów
prowadzonych przez Wydział Matematyki i Informatyki UAM w Poznaniu
Nr projektu POWR.03.03.00-IP.08-00-MPK/16

INTRODUCTION TO MATHEMATICS

Learning module description

GENERAL INFORMATION

1. Module title: Introduction to mathematics
2. Module code: DPMA LI0-E
3. Term: winter
4. Duration: 60h exercises
5. ECTS: 6
6. Module lecturer: Bartosz Naskręcki
7. E-mail: bartnas@amu.edu.pl
8. Language: English

DETAILED INFORMATION

1. Module aim is to develop basic mathematical culture, especially regarding the topics which will be needed while studying computer science
2. Pre-requisites in terms of knowledge, skills and social competences (where relevant):

SYLLABUS:

Week 1: Basic mathematical notions (definitions, theorems, necessary and sufficient conditions).

Week 2: Complex numbers (algebraic and trigonometric form, de Moivre's formulas, roots of unity, simple equations).

Week 3: Basic logical operators. Sets and operations on them. Sequences: types and properties, limits.

Week 4: Functions: definitions, examples, basic properties.

Week 5: Properties of function graphs. Polynomials.

Week 6: Polynomial equations and inequalities. Rational functions, equations and inequalities.

Week 7: Equations and inequalities involving the absolute value.

Week 8: Exponential and logarithmic functions.

Week 9: Exponential and logarithmic equations and inequalities.

Week 10: Basics of calculus: limits, derivatives and extrema of functions.

Week 11: Planar geometry, the intercept theorem. Trigonometric functions, sine and cosine rules.

Week 12: Trigonometric equations and inequalities. Basics of analytical geometry: equations of a line and of a circle, distance from a point to a line.

Week 13: Basic notions of combinatorics: permutations, variations, combinations.

Week 14: Basic notions of probability: definition of probability, conditional probability, the law of total probability.

Week 15: Basic notions of statistics: weighted average, standard deviation.

