



Course catalogue

TTF-PB108 Mathematics 2

Programme	Food Technology and Biotechnology
Level	Bachelor's programme
Academic year	1 year
Semester	Spring Semester
ECTS credits	6 credits
Lecturers	Assoc. Prof. Dr.sc Vesna Knights
Language	Macedonian/English
Objective	The course objectives are for the student to have a necessary knowledge of the required mathematical skills, the ability to solve examples and tasks that illustrate various concepts presented in the theoretical lectures as well as their mutual relations and apply the correct applications of mathematical models in to the problems of technical-technology science. Differential equations are by far the most important tool for modelling and are therefore a main focus of both of these courses.
Content	<ul style="list-style-type: none">• Integral mean value theorem. Newton-Leibniz formula, Substitution and integration by parts in the definite integral, Application of the definite integral. Area of planar figures, arc length, volume of rotational bodies.• Multivariable Differential Calculus: functions of several variables, partial differentiation, curves and surfaces in space, scalar and vector fields, gradient, curl and divergence.• Multivariable Integral Calculus: multiple integrals, line and surface integrals, work and flow, Gauss and Stokes theorems, applications.• Differential equations, Ordinary differential equations of the first order. Separation of variables, Homogenous differential equations, Linear and Bernoulli's differential equation. Exact differential equations, Order reduction for some second order differential equations, Linear differential equations of the second order with constant coefficients.
Learning materials	Reading from the primary literature are referenced in class and posted to the course website. <ol style="list-style-type: none">1. Bill Cox, Understanding Engineering Mathematics, 2001, ISBN: 0-7506-5098-22. Thomas, G. B.: Thomas' Calculus, Part 2, Pearson Addison-Wesley.3. Kreyszig, E.: Advanced Engineering Mathematics, John Wiley & Sons.