

MODULE DESCRIPTION (SYLLABUS)

1.	Module: Mathematics
2.	Language of instruction: English
3.	Faculty: Faculty of Biotechnology
4.	Course/module code: 29-BT-S1-E1-EnMATE (Lect.) 29-BT-S1-E1-EnMATEc (Tut.)
5.	Course/module type (<i>mandatory or elective</i>): mandatory
6.	Programme: Biotechnology
7.	Study cycle (<i>1st/2nd</i>): 1st cycle
8.	Year: 1st
9.	Semester (<i>autumn or spring</i>): autumn
10.	Form of tuition and number of hours Lecture: 30 h Tutorial: 30 h
11.	Coordinator(s): Biswarup Das, PhD
12.	Initial requirements (<i>knowledge, skills, social competences</i>): Basic knowledge of mathematics (secondary school level)
13.	Objectives: Knowledge and understanding are fundamental to studying mathematics and form the base from which to explore concepts and develop problem-solving skills. Through knowledge and understanding students develop mathematical reasoning to make deductions and solve problems. At the end of the course, students should: <ul style="list-style-type: none"> • know and be able to use selected concepts and theorems of calculus, algebra and differential equations, • use appropriate mathematical concepts and skills to solve problems in both familiar

	<p>and unfamiliar situations including those in real-life contexts,</p> <ul style="list-style-type: none"> select and apply general rules correctly to solve problems including those in real-life contexts. 	
14.	<p>Content:</p> <ul style="list-style-type: none"> Preliminaries: Algebraic equations, Graphs of functions. Vectors, matrices and complex numbers. Differential equations in one variable. Introduction to system of two differential equations. Equilibrium types in systems of two differential equations. Linear approximations of non-linear 2D systems. 	
15.	<p>Learning outcomes:</p> <p>The student understands the importance of mathematical methods required for description and interpretation of biological phenomena and processes, as well as biological experiments. He/she knows and is able to use main mathematical methods required in biological sciences.</p>	<p>Outcome symbols</p> <p>K1_W02, K1_W03, K1_U08</p>
16.	<p>Recommended literature:</p> <p>R. Barnett, M. Ziegler, „Applied mathematics”, MacMillan 1989</p>	
17.	<p>Methods of verification of the assumed learning outcomes</p> <ul style="list-style-type: none"> Lect.: written exam; Tut.: written tests, solving mathematical problems. 	
18.	<p>Conditions of earning credits:</p> <ul style="list-style-type: none"> Active participation in tutorial classes; Completion of the tutorial classes is based on a written test; Completion of the lecture is based on a written exam. 	
19.	Student's workload	
	Activity	Number of hours for the activity
	Hours of instruction (as stipulated in study programme) :	
	<ul style="list-style-type: none"> Lect.: 30 h Tut.: 30 h 	60 h
	Student's own work:	
	<ul style="list-style-type: none"> preparation before classes: 20 h preparation for the test and final exam: 40 h 	60 h
Total number of hours:	120 h	
Number of ECTS:		
<ul style="list-style-type: none"> Lect.: 3 ECTS Tut.: 2 ECTS 	5 ECTS	