

Syllabus

Basic data of the subject	
University	University of Applied Sciences in Ferizaj
Academic unit	Faculty of Engineering and Informatics
Program	Industrial Engineering with Informatics
Title of the subject:	Calculus
Level:	Bachelor
Course Status:	Core
Year of studies:	I, Semester II
Number of hours per week:	3
Value of Credits - ECTS:	5
Time / location:	
Course lecturer:	
Contact details:	
Course Description	<i>This course includes the concept of functions with one variable. Understanding the function with one variable, the properties of the function and its graphical representation. Elementary functions and their graphical presentation. Numerical strings, the meaning of the numerical string and its properties. Limit of series and convergent series. Limit of function and some forms of limits. Continuity of function. Understanding the derivative of a function. Rules of derivation of functions and table of derivatives of elementary functions. The differential of the function. Fundamental theorems of derivatives. The application of derivatives in the graphical representation of functions.</i>
Objectives of the course:	<i>The purpose of this course is to equip students with basic knowledge in the field of higher mathematics and their application in industrial engineering and beyond.</i>
Expected learning outcomes:	<p><i>After completing this module, students will be able to:</i></p> <ul style="list-style-type: none"> • <i>To understand the basic concepts about functions</i> • <i>To know the basic meanings related to numerical ranges and their limits</i> • <i>To have knowledge about the limits of functions and their continuity</i> • <i>To know how to use derivatives of functions in examining different problems, both theoretically and practically</i> • <i>Solve tasks related to differential calculus</i> <p><i>This module should also develop the following skills in students:</i></p> <p><i>This module should also develop the following skills in students:</i></p> <ul style="list-style-type: none"> • <i>Communication and presentation skills,</i> • <i>Team work skills,</i> • <i>Skills of interpreting numbers, tables and graphs,</i> • <i>Writing skills.</i>
Prerequisite	<i>This subject does not requires any predisposition</i>

Contribution to the student load (which must correspond with learning outcomes)			
Activity	Hour	Day/Week	In total
Lectures with numerical exercises	3	15	45
Internship			
Contacts with teacher / consultations			
Field exercises			
Midterm, seminars and projects.	3	2	6
Homework			
Self-learning time student (at the library or at home)	3	15	45
Final preparation for the exam	7	2	14
Time spent on evaluation (tests, quiz and final exam)			
Projects and presentations.	3	5	15
Total			125
Teaching methodology:	<p><i>The course lasts 15 weeks with 2 hours of lectures and 1 hour of weekly individual and group exercises. The exercises will be held in the form of individual and group work in which concrete examples will be discussed. Active participation is extremely important, so students are encouraged to regularly attend lectures and exercises and contribute to the discussions that take place in the lectures. Lectures, individual work, discussions and group work.</i></p>		
Assessment methods:	<p><i>Within the semester, it is planned to organize two periodic tests from lectures and exercises with 45 points each (assignment - open/alternative questions), or the student has the right to undergo only the final exam which has 90 points (test from the part of exercises and lectures), the test contains tasks and open/alternative questions. The student passes the exam if he collects 50 points from all evaluation criteria, 10 points - activity and attendance in lectures and exercises, 90 points – from two Periodic Tests from lectures and exercises, or Final Exam. Evaluation is done according to this scheme</i></p> <p><i>0-50 points-grade (five)</i> <i>51-60 points- grade 6 (six)</i> <i>61-70 points- grade 7 (seven)</i> <i>71-80 points- grade 8 (eight)</i> <i>81-90 points- grade 9 (nine)</i> <i>91-100 points- grade 10 (ten)</i></p>		
The ratio of theory and practice	60% theory with exercises and 40% laboratory work.		
Literature			
Basic Literature:	<p><i>Dr.sc.Razim Hoxha, Matematikë II, 2015, Prishtinë.</i> <i>Dr.sc.Sadri Shkodra, Matematikë II. 2004, Prishtinë.</i></p>		

Additional Literature:	<i>E.Ademaj, E.Gashi , Algjebra e përgjithshme,1986,Prishtinë</i>
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Designed learning plan	
Week:	Lectures and exercises to be held
Week one:	Functions with one variable, meaning and properties, Some classes of functions.
Week two:	Elementary functions and their graph. Exponential and logarithmic functions.
Week three:	Trigonometric functions, their properties and graph.
Week four:	Numerical sequences. Properties of the numerical sequences. Arithmetic and geometric sequences.
Week five:	Limit of sequences, some limits of sequences and convergent sequences
Week six:	The limit of the function, their definitions and properties
Week seven:	Test I
Week eight:	Some forms of limits of functions. Continuity of functions and some of their properties
Week nine:	The derivative of a function, its definition and applications. Derivative of elementary functions. Table of derivatives.
Week ten:	The derivative of the composite function and their properties
Week eleven:	The differential of the function. Table of differentials of elementary functions.
Week twelve:	Basic derivative theorems
Week thirteen:	Application of derivatives of functions, monotonicity and extreme values of the function.
Week fourteen:	Concavity, convexity, points of inflection and applications. Scheme for graphical representation of functions.
Week fifteen:	Test II

Commented [NB1]: It is of

Academic policies and rules of conduct
<i>Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.</i>