Program	Level	Schort cycle
	Name of the program	Infomation Technologies

COURSE

Course title	**Mathematics**			
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)
IT 140	I	Mandatory course	8	3+3+0
Lecturer				
Course Goals	The main goal of this course is to: - learn the notation of the limit value of a real function, - learn notation of continuity, - learn differential calculus of a real function of one variable and its application. - learn integral calculus and its applications. -learn the basic concept of the real functions of two real variables.			
Learning Outcomes	After the course, the student will: - know the basic techniques of the differential calculus of functions of a real variable, - through examples, feel the potential of the differential calculus when solving problems, - know the techniques of finding the indefinite integral			

COURSE CONTENT

Real numbers; Sequences; Limit ; Geomerica sequence; monotone sequence; number e, - Real functions of one real variable; limit of the real functions; continuity of monotone functions; overview of elementary functions, - Differential calculus; concept of derivatives and differentials; basic rules of differentiation; derivative of a complex function; derivative of the inverse function; table of derivatives of basic elementary functions; L'Hospital's rule; Taylor's formula; examination of the properties of functions: monotonicity, extrema, convexity, turning points, asymptotes, - Sketching graphs of functions; selected examples of application of differential calculus, - Primitive function and indefinite integral; table of integrals of elementary functions, Integration methods; partial integration; method of substitution, - Integrals that cannot be expressed by elementary functions; integration of rational functions; integration of trigonometric functions; - Definite integral; partial integration in a definite integral; change of variable in a definite integral; - Applications of the definite integral; volumes of rotating bodies; arc length of the curve; area of the rotating body. - Differential equations of the first order. The concept of a function of several variables. Extremes values.

LITERATURE

[1] V. A. Zorich, Mathematical analysis I, Universitext, Springer, Berlin, 2003.
[2] B.P. Demidovič: Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke, Tehnička knjiga, Zagreb, 1980
[3] Ljaško i dr., Zbirka zadataka iz matematičke analize, IBC '98, 2002.
[4] B.P. Demidovič: Zadaci i riješeni primjeri iz više matematike s primjenom na tehničke nauke, Tehnička knjiga, Zagreb, 1980.

STUDENT WORKLOAD (hours in a semester)

Lectures	45	Tutorial	30	Individual work	75	T o t a l	175

GRADING

Criterion	Maximum points	Minimum points
Midterm exams	50	25
Homework assignment	-	-
Project	-	-
Laboratory assignments	-	-
Final exam	50	30

REMARKS

Midterm exam: only once in semester (end of November or first week of December). Students altogether write 120 minutes long test. This test is evaluated by max 50 points. The minimal score of the test is 25 points.

Final exam: Students who do not reach the midterm exam minimal score must take the entire course in the

T o t a l	100	55	final exam. In this case, the final exam is evaluated by max 100 points. The final exam's minimal score is 55 points. Students who reach the midterm exam minimal score take only the part of the final exam that is not covered by the midterm test. In this case, the final exam is evaluated by max 50 points. The minimal score is 30 points.