Nabídka předmětů v cizím jazyku pro výměnné studenty v akademickém roce 2017/2018

WINTER TERM:

KMT/ ECAL1 Calculus 1

Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Jitka Laitochova
Semester in which the course is taught:		winter	

Description:

Differential calculus of real functions of a real variable and its applications. It is focused at basic terms of the theory like real functions of a real variable, limits, continuity, derivatives, maxima and minima and graph sketching.
Content: Basic terms and concepts; limits; derivatives; transcendental functions; application of derivatives; curve sketching with derivatives; approximations of functions (differentials, Taylor's theorem); derivatives of implicit functions; sequences.

KMT/ ECAL3 Calculus 3

Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Jitka Laitochova
Semester in which the course is taught:		winter	

Description:

Differential calculus of functions of two or more variables. Applications of partial derivatives are demonstrated.
Main topics:
n-dimensional space, metric space, Euclidean space. Neighbourhood of n-dimensional space.
Function of several variables. Domain and range. Geometric meaning of the function z = f (x, y).
Limit of a function of several variables. Improper limit.
Continuity of functions of several variables. Composite functions of several variables. Theorem on the continuity of composite functions.
Partial derivatives of functions of several variables. Geometrical meaning of partial derivative of a function f (x, y). Higher partial derivatives. Schwarz theorem.
Differentiable function. Complete differential. Geometrical meaning of the complete differential df(x, y). Complete differentials of higher orders.
Partial derivatives of composite functions. Higher derivatives of a composite function.
Taylor and Maclaurin's formula.
Maxima, Minima, and Saddle Points. Fermat's theorem
Sufficient conditions for local extrema.
Implicit functions and their derivatives. Theorems on the existence of a derivative of an implicit function expressed by the equation F (x, y) = 0 and the equation F (x, y, z) = 0

KMT/EAG1B Algebra course 1

Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Tomáš Zdráhal
Semester in which the course is taught:		winter	

Description:

The course main objective is an active understanding of basic algebraic concepts necessary for further study of algebra and other mathematical disciplines.
Introduction to propositional and predicate logic. Algebraic structures with one or two operations. Vector spaces - linear dependency, basis, dimensions, orthogonality. Linear algebra.

KMT/EAG3B Algebra course 3

Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Tomáš Zdráhal
Semester in which the course is taught:		winter	

Description:

The aim is understanding of algebraic solvability of algebraic equations.
Polynomials
Decomposition of polynomials of one indeterminate over the field of complex and field of real numbers. Symmetric polynomials
The main theorem on symmetric polynomials, using symmetric polynomials.
Algebraic solutions of algebraic equations
Binomial equations, algebraic solvability of algebraic equations of the second, third and fourth degrees.

KMT/EIAMB ICT application in Mathematics

Number of ECTS credits:	4	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	David Nocar
Semester in which the course is taught:		winter	

Description:

The subject is focused on introducing to students the possibilities of mathematical software, both applying MS Office (Microsoft Equation, MathType) and specific mathematical applications used in mathematics teaching at elementary schools. It meets the requirements of educating future mathematics teachers within the state informational politics and of informational literacy of all teachers.
It works with basic types of mathematical instructional environment (dynamic geometry, spreadsheets, computer algebraic systems). Individual systems are demonstrated by Cabri Geometrie (or: CaR Geogebra, GEONExT), MS Excel (or: OpenOffice Calc and Google Spreadsheets), Imagine Logo (or: Comenius Logo) and Derive.

KMT/EETM English Terminology in Mathematics

Number of ECTS credits:	4	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Jitka Laitochova
Semester in which the course is taught:		winter	
Description:			
The subject consists of three independent units Algebra, Geometry and Calculus. Each of these units deals with basic terms, assertions and problems focusing on applications of mathematics at elementary schools. The subject is taught in English.			

KMT/EKGE Construction Geometry for Teachers of Mathematics

Number of ECTS credits:	4	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work, the student elaborates and passes on 2 drawn problems.	**Lecturer:**	Jitka Hodaňová
Semester in which the course is taught:		winter	
Description:			
Focal properties of conic sections. Orthogonal projection. Free parallel projection. Monge's projection, axonometric projection and its application (Projective method of choice).			

KMT/EIDMA The Introduction to Didactics of Mathematics A

Number of ECTS credits:	5	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Radka Dofková
Semester in which the course is taught:		winter	
Description:			
The purpose of this seminar is to introduce students to basic points from didactics of mathematics in prospective mathematics teachers training. The course will be structured to present main didactical principles of mathematical teaching and to practice various activities which are supposed to increase pupils´ motivation in mathematics.			

KMT/EDMA Development of Mathematical Abilities (KMT/ABILI)			
Number of ECTS credits:	4	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Martina Uhlířová
Semester in which the course is taught:		winter	
Description:			
The course is designed for students of primary school teacher training. The aim of the course is: to familiarize the students with methods and means of developing mathematical abilities of young children, i. e. to provide them with activities aiming at the development of spatial imagination, with some ideas for solving word problems, and with number tasks, to explain the basic terms and concepts.			

SUMMER TERM

KMT/ ECAL2 Calculus 2			
Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Jitka Laitochova
Semester in which the course is taught:		summer	
Description:			
Integral calculus of real functions of a real variable. Main topics are indefinite integral, definite integral and applications of definite integral.			

KMT/ ECAL4 Calculus 4			
Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Jitka Laitochova
Semester in which the course is taught:		summer	
Description:			
Infinite sequences and infinite series of constants and functions. Basic theory of infinite series. Applications of power series. Main topics: Infinite sequences of numbers. Infinite series of numbers - basic terms and concepts. Series with non-negative members. Absolute convergence. Sequences and series of functions. Power series and their applications.			

KMT/EAG2B Algebra course 2

Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Tomáš Zdráhal
Semester in which the course is taught:		summer	
Description:			
The course focuses on exploring the algebraic properties of the structure of polynomials over a general range, respectively. field integrity. The main differences algebraic and functional approach to polynomials. Students will also address the divisibility of polynomials over a general body and some methods of finding the roots of polynomials.			

KMT/EAG4B Algebra course 4

Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Tomáš Zdráhal
Semester in which the course is taught:		summer	
Description:			
The course aims to fully understand to the theory of algebraic structures with several operations. Properties of groups. Lagrange's theorem in the group theory. Factor groups. Group homomorphism. Lattices and lattices homorphism. Boolean algebra. Application of lattices and Boolean algebras.			

KMT/EIDMB The Introduction to Didactics of Mathematics B

Number of ECTS credits:	5	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Radka Dofková
Semester in which the course is taught:		summer	
Description:			
This seminar follows on The Introduction to Didactics of Mathematics A from summer semester. There will be more special technics which could be useful in mathematics teaching at primary school. There will be focus on students´ active involvement into course and on practical teachings methods.			

KMT/EITME ICT in Mathematics Education

Number of ECTS credits:	4	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Jan Wossala
Semester in which the course is taught:		summer	

Description:

The purpose of the course is to familiarize students with current possibilities of using ICT in the teaching of mathematics at lower primary schools. Great attention will be paid to possible applications of computers as a support for teachers, the education process, and the pupil`s individual work.

Students should acquire the skills needed in order to effectively incorporate the computer technology into the teacher preparation, to involve the computer technology in the teaching of mathematics, and to employ computers for the purposes of the primary school pupils` individual work and homework.

KMT/EPRST Introduction to probability theory and mathematical statistics

Number of ECTS credits:	6	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Kamila Fačevicová
Semester in which the course is taught:		summer	

Description:

The aim of the course is to introduce the basics of the probability theory and mathematical statistics. The course is focused on probability of a random event occurance, basic characteristics of random variables and analysis of dependency between two random variables. Also some descriptive statistical tools are explained.

KMT/EAMS Applications of mathematical statistics

Number of ECTS credits:	4	**Course completion:**	Exam
Completion requirements:	50 % attendance, tutorial work	**Lecturer:**	Kamila Fačevicová
Semester in which the course is taught:		summer	

Description:

The aim of the course is to serve a basic knowledge about statistical hypothesis testing. Students are supposed to learn how to analyse their own datasets. Particularly, how to state the statistical hypothesis, choose the proper method and proceed the analysis using R software. One of the main part of the course is dedicated to the interpretation of the results.