

Course description

Course abbreviation:	KFY/UVMA2	Page:	1 / 3
Course name:	Introduction to Higher Mathematics 2		
Academic Year:	2016/2017	Printed:	20.01.2018 15:49

Department/Unit /	KFY / UVMA2	Academic Year	2016/2017
Title	Introduction to Higher Mathematics 2	Type of completion	Exam
Accredited/Credits	Yes, 2 Cred.	Type of completion	Written
Number of hours	Přednáška 1 [Hours/Week] Seminář 1 [Hours/Week]		
Occ/max	Status A Status B Status C	Course credit prior to	NO
Summer semester	15 / - 5 / - 0 / -	Counted into average	YES
Winter semester	1 / - 0 / - 0 / -	Min. (B+C) students	not determined
Timetable	Yes	Repeated registration	NO
Language of instruction	Czech	Semester taught	Summer semester
Substituted course	None	Internship duration	0
Preclusive courses	KMA/MANA1 and KMA/MANA2 and KMA/MANA3		
Prerequisite	N/A		
Informally recommended courses	N/A		
Courses depending on this Course	N/A		

Course objectives:

Differential and integral calculus of functions of many-real variables.

The student is expected to know differential and integral calculus of one real variable within the range of KFY/UVMA1 or KFY/UVMAX (KFY/XUVM1) courses.

Requirements on student

The student:

- is able to derive and integrate functions of many-real variables and is able to use derivatives and integrals in selected applications.

Approximately in the half of semester student will take a written test on differential calculus of many variables functions (max. 50 points). During the exam period student will take a written test on integral calculus of many variables functions (max. 50 points).

If student do not achieve a grade at least 51 points in total from both tests, he can perform one correction test on both differential and integral calculus during the exam period (max. 100 points).

Rating:

100 - 81 points: excellent,

80 - 66 points: very good,

65 - 51 points: good,

0 - 50 points: unsatisfactory.

Content

Differential calculus of functions of many-real variables

- 1) Partial derivative.
- 2) Partial derivative of complex functions.
- 3) Total differential and derivative in the direction.
- 4) Local extremes of functions of many-real variables I.
- 5) Local extremes of functions of many-real variables I.

Integral calculus of functions of many-real variables

- 6) Double integral on intervals.

- 7) Double integrals on conventional sets.
- 8) Theorem of substitution in double integrals.
- 9) Triple integrals on intervals.
- 10) Triple integrals on conventional sets.
- 11) Theorem of substitution in triple integrals.

Application of integral calculus of one real variable

- 12) Geometric applications of integral calculus.
- 13) Physical application of integral calculus.

Prerequisites - other information about course preconditions

The student is expected to know differential and integral calculus of one real variable within the range of KFY/UVMA1 or KFY/UVMAX (KFY/XUVM1) courses.

Competences acquired

The student can derive and integrate functions of many-real variables and uses derivatives and integrals in selected applications.

Fields of study

Guarantors and lecturers

- **Guarantors:** Mgr. Aleš Vítek, Ph.D.
- **Lecturer:** Mgr. Aleš Vítek, Ph.D.
- **Seminar lecturer:** Mgr. Aleš Vítek, Ph.D.

Literature

- **Basic:** GILLMAN, L., MC DOWELL, R.H. *Matematická analýza*. SNTL, Praha, 1980.
- **Extending:** K. Rektorys. *Přehled užití matematiky, SNTL, Praha 1981*.
- **Recommended:** K. Rektorys. *Co je a k čemu je vyšší matematika, 1. vydání (Academia, Praha 2001)*.
- **Recommended:** M. Kaňka, J. Henzler. *Matematika pro ekonomické fakulty 2, 1. vydání (Ekopress, Praha 2000)*.

Time requirements

Activities	Time requirements for activity [h]
Being present in classes	26
Self-tutoring	10
Preparation for test	10
Continuous tasks completion (incl. correspondence tasks)	9
Consultation of work with the teacher/tutor (incl. electronic)	5
Total:	60

assessment methods

professional knowledge

- Continuous analysis of student's achievements
- Point system
- Written examination

teaching methods

professional knowledge

- Briefing
- Dialogic (discussion, dialogue, brainstorming)

Monologic (explanation, lecture, briefing)

learning outcomes

professional knowledge - knowledge resulting from the course:

The student can derive and integrate functions of many-real variables and uses derivatives and integrals in selected applications.

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Applied Physics	Bachelor	Full-time	Biophysics	1	2012	2016	Povinné předměty	A	1	LS
Applied Physics	Bachelor	Full-time	Biophysics	1	2014	2016	Povinné předměty	A	1	LS
Chemistry	Bachelor	Full-time	Chemistry	1	2012	2016	Povinně volitelné předměty	B	1	LS
Physics	Bachelor	Full-time	Physics with Other Degree Specialization	1	2013	2016	Povinně volitelné předměty	B	1	LS
Physics	Bachelor	Full-time	Physics with Other Degree Specialization	1	2	2016	Povinně volitelné předměty	B	1	LS