Mathematics II

This course is intended for foreign students studying at our faculty and domestic students who registered for this subject in their study plan. Conditions and requirements for this course are almost identical to the equivalent course being held in Czech language.

Content:

Functions of several variables - domain, limit, continuity, partial derivatives, extrema, implicit function. Multiple integrals - double and triple integral, Fubini's theorem, applications Line integral, surface integral, Gauss theorem, potential.

- Requirements

in academic year 2023/2024

Lecturers

doc. Mgr. Ing. Tomáš Bodnár, Ph.D., Office: KN:D-303

- lectures: Monday, 14:15-15:45 and Thursday 10:45 - 12:15.

Mgr. Hynek Řezníček , Office: KN:D-205b

- lectures: Monday 16:00-17:30 and Thursday 12:30 - 14:00.

In the case of any problem (especially with assessments from tutorials, or with exams) contact your teacher.

Tutorials, assessments

Tutorials are obligatory. Assessment from tutorials (written in the study record) confirms *student's presence and activity* at the tutorials and elaboration of homework and tests. Assessment is a necessary condition for the exam. (I.e. student can make the exam only with the assessment written in the study record.) The *assessments from tutorials obtained in previous years are not accepted*. Student has to obtain the assessment again. The assessments are written in the last semestral week, not later than one week after. Exceptions are possible only with the explicit agreement of the chair of the institute.

Tasks solved in tutorials

Exams

The exams from Mathematics II will be organized in the same way as in Mathematics I. There are several necessary conditions to be fulfilled by students in order to be admitted to the exam:

- Student must have a *valid assessment* from tutorials registered in the electronic system KOS. (students without valid assessment can't subscribe for the exam)
- Student has to *subscribe (register) in the KOS* system for the chosen date of the exam. (students who will be not subscribed for the exam in the KOS system can't participate in the exam)
- Student should come to the exam *in time*, i.e. he/she should be present in the examination room at least 10 minutes before the official start of the exam. (students who will come late, will be not allowed to participate in the exam)
- Student has to bring his/her *Student Identification Card*. (students will be not allowed to participate in the exam without presenting this card)

These conditions will be followed strictly, without any exceptions.

Dates of exams: Thursday 30.5., 6.6., 20.6., 27.6. and 5.9. 2024.

The detailed information is available in the

Notice of exams
from Mathematics II for the academic year 2023/24.

Sample exam tests:

Exam 1

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Exam 2

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Exam 3

Literature:

- Neustupa, J., Kračmar S.: Mathematics II, CTU Publishing House, Prague, 1996,
- Finney, R. L., Thomas, G.B.: Calculus, Addison-Wesley, New York, Ontario, Sydney, 1994

Examples:

The *Collection of examples from Mathematics II* written in Czech by authors E. Brožíková, M. Kittlerová and F. Mráz (2016) contains both examples and their solutions. Here you find several parts translated in English. The examples in English have the same numbering but they are without solutions (corresponding solution you can find in the Czech version, which is in the brackets). English translations will be added gradually. By the star (*) are denoted the examples, which go beyond the requirements of the exam this year.

- Riemann integral [Určitý integrál]
- Calculus - part 1 (partial derivatives, ...) [Diferenciální počet-část 1]
- Calculus - part 2 (gradient, diferential, directional derivative, etc.) [Diferenciální počet-část 2]
- Implicit Functions [Implicitní funkce]
- Extrema [Extrémy]
- Double integral [Dvojný integrál]
- Triple integral [Trojný integrál]
- Line integral [Křivkový integrál]
- Surface integral [Skalární] [Vektorový]

- Divergence theorem [Gaussova-Ostrogradského věta]

Web additional sources:

- **Keisler, H. J.: Elementary Calculus: An Infinitesimal Approach, 2nd edition, Prindle, Weber & Schmidt, 1986.**
- **Calculus Volume I., Volume II., Volume III., provided by https://cnx.org/.**
- Paul's Online Math Notes have gotten the notes/tutorials for Algebra, Calculus I, Calculus II, Calculus III and Differential Equations class online.
- Just Math Tutoring is a web site of Patrick from Vanderbilt University, who provide clear and thorough explanations, and to present them in an environment in which the student is comfortable.
- The Math Insight web site is a collection of pages and applets designed to shed light on concepts underlying a few topics in mathematics (see Index)
- Mathispoewr4u tutorials. This site provides over 3,500 free mini-lessons and example videos with no ads. The videos are organized by course and topic.

Timetable:

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