CENTER FOR INFORMATICS AND TECHNICAL SCIENCES

CURRICULUM

I affirm:
Dean:

MA201

HIGHER MATHEMATICS PART III (MULTIVARIABLE FUNCTIONS, DIFEERENCIAL EQUATIONS, SERIES)

Adopted prot. No. 11 of 11.11.2011
Teachers

Updated prot. #6 from 27.11.2018 Mr.
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ABSTRACT

The Higher Mathematics Part III course covers topics from vector functions of a scalar argument, functions of two and more variables, ordinary differential equations, number series and Fourier series, covering basic theoretical concepts and statements and paying special attention to applications them in physics, electrical engineering, mechanics and other fields.

The course also includes classes in a computer room with the aim of acquiring basic knowledge and skills for solving tasks on the topics included in the course in the Matlab programming environment.

MAIN OBJECTIVES AND LEARNING OUTCOMES

The main goal of the course in Higher Mathematics Part III is to form knowledge and skills for applying theoretical concepts (definitions and theorems) to solve both analytical and practical tasks.

At the end of his studies in Higher Mathematics Part III, the student must:

- has knowledge of the basic concepts (vector function, partial derivative, double integral, triple integral, ordinary differential equation, numerical series, Fourier series) and their properties;
- is able to apply the basic concepts and their properties to find speed and acceleration; extremum of a multidimensional function; double and triple integrals; face of a figure; body volume; solution of an ordinary differential equation; development in Fourier series;
- is able to model practical tasks in which the main concepts of the topics covered in the course are used;
- can use the Matlab programming environment to solve problems from the areas included in the course.

PREREQUISITES

The discipline Higher Mathematics Part III is basic for majors and requires prior study of the material of the disciplines: knowledge of mathematics from the middle course of study, Higher Mathematics Part I and Higher Mathematics Part II.

Another important prerequisite for the successful achievement of the course objectives is the availability of textbooks, study aids, software-equipped computer rooms.

The discipline Higher Mathematics Part II is basic for majors and requires prior study of the material in the disciplines: Higher Mathematics Part I, as well as knowledge of mathematics from the middle course of study.

Another important prerequisite for the successful achievement of the course objectives is the availability of textbooks, study aids, software-equipped computer rooms.

FORM OF EDUCATION

The forms of education are full-time and part-time.

STATUTE AND STRUCTURE

specialty status		Loans	regular training				distance learning			
			l	with	u	common	l	with	u	common
ICN	Mandatory	7	30	40		70	20	15		35
KST	Mandatory	7	30	40		70	20	15		35
KEVEI	Mandatory	7	30	40		70	20	15		35
SI	Mandatory	7	30	40		70	20	15		35
PIM	Mandatory	7	30	40		70	20	15		35
ESEO	Mandatory	7	30	10		70	20	15		35
PIUD	Mandatory	7	30	10		70	20	15		35
SIIT	Mandatory	7	30	10		70	20	15		35
EE	Mandatory	7	30	10		70	20	15		35

CONTENTS

C. COURSEWORK

Each student receives an individual assignment consisting of the t module:

1. tasks that must be solved independently by applying the studied theoretical material;
2. practical tasks to be implemented in the Matlab programming environment.

PLANNED LEARNING ACTIVITIES AND LEARNING METHODS

1. Students are provided with full information on the content of the course programme, as well as assessment requirements and the syllabus.
2. In the course of study, it is planned to carry out three control works.
3. Completing the course work, as well as successful preparation, requires classroom work, independent work during the semester and personal contact with the professors.
4. The electronic materials that are provided to the learners support the learning process and expand the possibilities of the teachers in carrying out in-depth training.

EVALUATION METHODS AND CRITERIA

The final assessment in Higher Mathematics Part III is complex, it consists of obtaining points from various activities, with the maximum number of points being 100.

The activities from which the assessment is formed are:

1. Audit employment up to 34 points

1.1 Current control of theoretical material up to 10 points

a. attending lectures up to 5 points

b. control works up to 5 points

1.2 Current control of seminar exercises up to 24 points

a. attending seminar exercises as scheduled up to 4 points

b. control works up to 5 points

c . e-tasks up to 4 points

2. Extracurricular employment (coursework, essay, report, etc.) up to 12 points

3. Exam procedure up to 54 points

a. tasks up to 30 points

b. theory up to 24 points

Remarks

1. If the student receives more than 36 points from item 1 and item 2, he has the right to a preliminary examination procedure (EXEMPTION).

2. If the student receives less than 14 points under item 1, he is not allowed to take the exam.

II. Grading scale

- from 36 to 50 points - average 3
- from 51 to 65 points - good 4
- from 66 to 80 points - very good 5
- from 81 to 100 points - excellent 6.

RECOMMENDED LITERATURE

1. Georgieva P., Vector functions. Functions of Two and More Variables, ASSIGNMENTS+ MATLAB, 2017
2. Georgieva P., E. Nikolova, Handbook of mathematics, Polygraph , Burgas, 2018
3. Dimitrova K., P. Pascalev, Methodical guide for solving problems in higher mathematics part 2, Archimedes, 2012
4. I. Stamova, G. Stamov, Higher mathematics, Third part, Zh. Uchkov , Yambol, 2008
5. Stanilov Gr., K. Georgiev, Tr. Trifonov, Differential Geometry (e-textbook)
6. Stewart J., Calculus, Brooks Cole, 2012