

## DISCIPLINE DESCRIPTION

“Mathematical Analysis”

|    |                                       |  |
|----|---------------------------------------|--|
| 1  | Specialized module                    | Mathematical analysis  |
| 2  | Specialty                             | 1-28 01 02; E-marketing  |
| 3  | Course of Study                       | 1  |
| 4  | Semester                              | 1, 2   |
| 5  | Credit units                          | 3  |
| 6  | Degree, title, full name of lecturers | Ph.D., Associate Professor Bokut Lyudmila  |
| 7  | Objectives                            | The objective of teaching the discipline is to acknowledge students with the basic concepts and methods of mathematical analysis and to develop their skills while solving the applied professional tasks as well as to develop the students' logical thinking.  |
| 8  | Prerequisites                         | "Mathematics" and "Physics" for high school  |
| 9  | Syllabus                              | <p>Theoretical foundations of the theory of limits, elements of differential calculus, elements of integral calculus, numerical series, functional series, power series, differential equations. As a result of studying the discipline, students should:</p> <p><i>know :</i></p> <ul style="list-style-type: none"> <li>– basic concepts of classical mathematical analysis, the relationship between them;</li> <li>– proofs of basic properties and theorems;</li> <li>– fundamentals of differential calculus of functions of one variable;</li> <li>– basics of integral calculus;</li> <li>– methods of analysis of sequences and series;</li> <li>– methods for solving ordinary differential equations</li> </ul> <p><i>be able to:</i></p> <ul style="list-style-type: none"> <li>– prove properties and theorems related to the basic concepts of mathematical analysis;</li> <li>– solve typical problems and examples that illustrate the main provisions of the theoretical course;</li> <li>– differentiate and integrate functions of one and several variables;</li> <li>– calculate integrals over a figure;</li> <li>– conduct research on numerical sequences and series;</li> <li>– solve ordinary differential equations;</li> <li>– apply mathematical knowledge in educational and professional activities.</li> </ul> |
| 10 | References                            | <p>1. Дифференциальное и интегральное исчисление функций одной и многих переменных. Дифференциальные уравнения: учеб.-метод. пособие / В. В. Цегельник [и др.]. – Минск: БГУИР, 2018. – 188 с.</p> <p>2. Матвеева, Л. Д. Математический анализ : учебно-пособие для студентов энергетических специальностей методическое / Л. Д. Матвеева, А. Н. Рудый ; Белорусский национальный технический университет, Кафедра "Высшая математика N2". - Минск : БНТУ, 2016. - 128, [1] с. : ил., схемы</p>  |

|    |                  |   |
|----|------------------|---|
|    |                  | <p>3. Лошкарева, С. Ю. Кратные интегралы. Ряды. Ряды Фурье : учебно-методическое пособие для студентов инженерно-технических и профессионально-технических специальностей / С. Ю. Лошкарева, О. Б. Савченко, Л. В. Бань ; Белорусский национальный технический университет, Кафедра "Высшая математика N2". - Минск : БНТУ, 2016. - 36 с.</p> <p>4. Математика в примерах и задачах: учебно-методическое пособие : в 10 ч. / О. М. Королева [и др.] ; Белорусский национальный технический университет, Кафедра "Высшая математика N2". – Минск : БНТУ, 2017. - Ч. 1 : Элементы линейной алгебры – 52, [1] с.</p> |
| 11 | Teaching Methods | explanatory-illustrative, reproductive, partial-research, comparative, problematic, dialogue-heuristic, research, generalizing, analytical.   |
| 12 | Tuition Language | Russian   |