**DAUGAVPILS UNIVERSITY**

**DESCRIPTION OF THE STUDY COURSE**

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| Name of study course | English language for mathematicians 1 |
| Code of study course (DUIS) | ValoD001 |
| Scientific branch | Mathematics |
| Course level | 7 |
| Credits | 2 |
| ECTS credits | 3 |
| Total contact hours | 16 |
| Number of lecture hours | - |
| Number of seminar hours | 16 |
| Hours of practical work | - |
| Hours of laboratory work | - |
| Number of hours of independent work | 64 |
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| Course author(-s) | |
| PhD, Senior Researcher Pēteris Daugulis (DU) Dr.math., Professor Felikss Sadirbajevs (DU) | |
| Course docent(-s) | |
| PhD, Senior Researcher Pēteris Daugulis (DU)  Dr.math., Professor Felikss Sadirbajevs (DU) | |
| Prior knowledge | |
| Proficiency in English at least at B2 level | |
| Annotation of the study course | |
| AIM OF THE COURSE:  The aim of the course is to prepare students for independent study of mathematical literature, translation from English and oral presentation of mathematical texts in English. The course provides students with an overview of the main sub-disciplines and applications of modern mathematics.  COURSE TASKS:   1. To acquire or revise a minimum vocabulary of terms in the main areas of mathematics and its applications. 2. To acquire or revise basic translation skills for general mathematical and mathematical application texts. 3. To acquire a basic outline of the most important areas of mathematics in English. | |

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| Calendar plan of the study course |
| Course structure: seminars (P) - 16 hrs, students' independent work (Pd) - 64 hrs.   1. Mathematics as a field of human activity (S1,Pd4). 2. History of mathematics (S1,Pd4). 3. Elementary (school-level) mathematics. (S1,Pd4). 4. Discrete mathematics. (S1,Pd4). 5. Number theory. (S1,Pd4). 6. Mathematical analysis I. (S1,Pd4). 7. Mathematical analysis II. (S1,Pd4). 8. Algebra. (S1,Pd4). 9. Linear algebra (S1,Pd4). 10. Geometry. (S1,Pd4). 11. Probability theory. (S1,Pd4). 12. Mathematical statistics. (S1,Pd4). 13. The language of mathematical proofs. (S1,Pd4). 14. Applications of mathematics I. Mathematical physics. (S1,Pd4). 15. Applications of mathematics III. Mathematical economics. (S1,Pd4). 16. Course overview. (S1, Pd4). |
| Study outcomes |
| KNOWLEDGE:   1. Glossary of key maths terms, verbs, phrases. 2. English descriptions of the most important sub-disciplines and applications of mathematics.   SKILLS:   1. Ability to translate orally and in writing general mathematical texts and texts on applications of mathematics. 2. The ability to identify the nature of the mathematical component of an English text.   COMPETENCES:   1. Competence in English versions of key mathematical terms (pronunciation and translation into Latvian). 2. Competence in translating English text of a mathematical nature. |
| Description of the organization and tasks of students' independent work |
| Independent work includes reading and translating mathematical texts and compiling a personal dictionary of terms. |
| Requirements for obtaining credits |
| Form of assessment the learning of the study course - differentiated examination.  Requirements (intermediate examinations) for the completion of the study course –   1. S1, regular attendance and active participation - 10%, 2. S2, written translation of 8 texts into Latvian, at least 2000 characters per text – 40%, 3. S3, control work, written translation into Latvian, at least 2000 characters – 20%, 4. S4, exam paper, written translation into Latvian, at least 3000 characters – 30%.   Study methods and forms - seminars, consultations, independent work, presentations, discussion, argumentation.  CRITERIA FOR EVALUATING THE LEARNING OUTCOMES  The acquisition of the study course is evaluated by using 10-point scale according to the laws and regulations of the Republic of Latvia and in accordance with the "Regulations on studies at Daugavpils University" (approved at DU Senate meeting on 17.12.2018., Minutes No. 15), based on the following evaluation criteria of learning outcomes: the scope and quality of acquired knowledge, acquire skills and competencies in accordance with the planned study results.  EVALUATION OF LEARNING OUTCOMES   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Type of test | Learning outcomes | | | | | | | 1. | 2. | 3. | 4. | 5. | 6. | | Mid-term test I | + | + | + | + | + | + | | Mid-term test II | + | + | + |  | + | + | | Mid-term test III | + | + | + | + | + | + | | Mid-term test IV | + | + | + |  | + | + | |
| Course content |
| Topic 1. Mathematics as a discipline, history of mathematics (S2,Pd8)  Origin and development of mathematics. Overview of the structure and applications of mathematics.  Topic 2. The language of elementary (school level) mathematics (S1,Pd4)  Elementary mathematical terms. Notation of numbers, arithmetic operations.  Topic 3. Discrete mathematics, number theory (S1,Pd4)  Set and function theory, sequences. Graphs. Fundamentals of number theory.  Topic 4. Mathematical analysis (S3,Pd12)  Limits of series and functions, rows. Derivatives. Integrals. Differential equations.  Topic 5. Algebra (S2,Pd8)  Key algebraic structures - groups, rings, linear spaces.  Topic 6. Geometry (S1,Pd4)  Geometry of planes and space. Geometric figures. Topology.  Topic 7. Probability theory and statistics (S2,Pd8)  Basic terms of probability theory - distribution functions, random variables. Basic terms of statistics. Data science terms.  Topic 8. The language of mathematical proofs (S1,Pd4)  Words and phrases used in mathematical proofs.  Topic 9. Using mathematics in other sciences (S2, Pd8)  Options: mathematical physics, chemistry, biology, linguistics, economics, psychology. Applications of mathematics in engineering.  Topic 10. Course overview (S1,Pd4).  L – lecture  S – seminar  P – practical works  Pd – independent work |
| Mandatory sources of information |
| 1. N.J. Higham. Handbook of writing for the mathematical sciences, Philadelphia: Society for Industrial and Applied Mathematics, 1998. |
| Additional sources of information |
| 1. R.P. Agarwal, D. O'Regan. Ordinary and Partial Differential Equations: With Special Functions, Fourier Series, and Boundary Value Problems, Springer, 2009. 2. M.L .Bittinger, D.J. Ellenbogen. Calculus and Its Applications, Pearson, 2008. 3. T.S. Blyth, E.F. Robertson. Basic Linear Algebra, Springer, 2006. 4. W.E. Boyce, R.C. DiPrima. Elementary Differential Equations and Boundary Value Problems, Wiley, 2005. 5. Handbook of Graph Theory/ Ed. by J.L. Gross, J. Yellen. - Boca Raton: CRC Press, 2004. 6. G.A. Jones, J.M. Jones. Elementary Number Theory, Springer, 2006. 7. T. Tao. Solving Mathematical Problems: A Personal Perspective, Oxford University Press, 2006. |
| Periodicals and other sources of information |
| 1. http://dictionary.site.lv/ |
| Notes |
| Part A of the doctoral study program "Mathematics".  The course is taught in Latvian or English. |