**DAUGAVPILS UNIVERSITY**

**DESCRIPTION OF THE STUDY COURSE**

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| Name of study course | Using computers in mathematics I |
| Code of study course (DUIS) | MateD017 |
| Scientific branch | Mathematics |
| Course level | 7 |
| Credits | 2 |
| ECTS credits | 3 |
| Total contact hours | 16 |
| Number of lecture hours | 4 |
| Number of seminar hours | 12 |
| Hours of practical work | - |
| Hours of laboratory work | - |
| Number of hours of independent work | 64 |
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| Course author(-s) | |
| Dr.math., Associated Professor Armands Gricāns (DU)  Ph.D., Docent Anita Kiričuka (DU) | |
| Course docent(-s) | |
| Dr. math., Associated Professor Armands Gricāns (DU)  Ph.D., Docent Anita Kiričuka (DU) | |
| Prior knowledge | |
| - | |
| Annotation of the study course | |
| The aim of the course is to provide a basic knowledge of formatting and presenting mathematical texts in LaTeX.  Course tasks:  - to learn the basic LaTeX constructs;  - to learn the requirements for formatting mathematical journal articles with LaTeX;  - to learn how to create presentations with LaTeX. | |
| Calendar plan of the study course | |
| Course structure: lectures (L) - 4 hrs, seminars (S) - 12 hrs, students' independent work (Pd) - 64 hrs.   1. Overview of LaTeX. LaTeX document structure and classes. Style file. Packages. Text and mathematical modes. LaTeX file conversion to DVI, PS and PDF. Languages. (L2, S2, Pd6) 2. Mathematical symbols. Mathematical packages (amsmath, amsfonts, amssymb). (L2, S2, Pd10) 3. Colours. Tables. Boxes. Graphics packages (graphicx, subfigure). (S2, Pd12) 4. Bibliographic database and style. (S2, Pd8) 5. LaTeX requirements for the formatting of mathematical journal articles. (S2, Pd14) 6. Creating presentations with web and beamer packages. (S2, Pd14) | |
| Study outcomes | |
| Knowledge:   1. Is familiar with basic LaTeX constructs. 2. Is familiar with the basic requirements for formatting mathematical journal articles with LaTeX. 3. Is familiar with creating presentations with LaTeX..   Skills:   1. Is able to use basic LaTeX constructs. 2. Know how to format mathematical journal articles using LaTeX. 3. Know how to create presentations with LaTeX.   Competence:   1. Actively participates in discussions on issues related to the presentation and presentation of mathematical texts. 2. Independently develops own competence by identifying current trends in the presentation and presentation of mathematical texts. | |
| Description of the organization and tasks of students' independent work | |
| Students carry out 6 independent works on the following topics:   1. LaTeX basic constructs I (mathematical mode); 2. LaTeX basic structures II (colours, tables, boxes, graphic packages); 3. design of a selected mathematical journal article I; 4. design of a selected mathematical journal article II; 5. creating presentations with web package; 6. creating presentations with beamer package. | |
| Requirements for obtaining credits | |
| 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. | 7. | 8. | | | Independent work I | + |  |  | + |  |  | + | + | | | Independent work II | + |  |  | + |  |  | + | + | | | Independent work III | + | + |  | + | + |  | + | + | | | Independent work IV | + | + |  | + | + |  | + | + | | | Independent work V | + |  | + | + |  | + | + | + | | | Independent work VI | + |  | + | + |  | + | + | + | | | Test | + | + | + | + | + | + | + | + | |   Final differentiated test assessment. The mark is calculated as the average mark of the independent work. | |
| Course content | |
| 1. Overview of LaTeX. LaTeX document structure and classes. Style file. Packages. Text and mathematical modes. LaTeX file conversion to DVI, PS and PDF. Languages. (L2, S2, Pd6) 2. Mathematical symbols. Mathematical packages (amsmath, amsfonts, amssymb). (L2, S2, Pd10) 3. Colours. Tables. Boxes. Graphics packages (graphicx, subfigure). (S2, Pd12) 4. Bibliographic database and style. (S2, Pd8) 5. LaTeX requirements for the formatting of mathematical journal articles. (S2, Pd14) 6. Creating presentations with web and beamer packages. (S2, Pd14)   Independent work - 64 acad. h. Students complete 6 independent works, the average mark of which is the differentiated credit mark. | |
| Mandatory sources of information | |
| 1. H. Kopka. Guide to LATEX. Addison - Wesley, 2004. <https://biblio.du.lv/Alise/lv/book.aspx?id=47137&ident=1044463&c=1&c=2&c=3> 2. F. Mittelbach. The LATEX Companion, Addison-Wesley, 2004. <https://biblio.du.lv/Alise/lv/book.aspx?id=47136&ident=1044462&c=1&c=2&c=3> 3. Overleaf. <https://www.overleaf.com/> | |
| Additional sources of information | |
| 1. AMS-LaTeX. <http://www.ams.org/arc/resources/amslatex-about.html> 2. LaTeX – A document preparation system. <https://www.latex-project.org/> 3. LaTeX. <https://en.wikipedia.org/wiki/LaTeX> 4. LaTeX: Symbols. <https://artofproblemsolving.com/wiki/index.php/LaTeX:Symbols> 5. LaTeX latviskošana. <http://home.lu.lv/~drikis/TeX/> 6. TeXstudio. <https://www.texstudio.org/> | |
| Periodicals and other sources of information | |
| 1. LaTeX resursi Internetā. <https://de.du.lv/matematika/matematikalinki/latex.html> | |
| Notes | |
| Part A of the doctoral study program "Mathematics".  The course is taught in Latvian or English. | |