# MODULE DESCRIPTION

| Module title | Module code |
|---|---|
| Programming Windows API | |

| Lecturer(s) | Department where the module is delivered |
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| **Coordinator:** dr. Tomas Plankis<br><br>**Other lecturers:** | Department of Software Engineering<br>Faculty of Mathematics and Informatics<br>Vilnius University |

| Cycle | Type of the module |
|---|---|
| First | Optional |

| Mode of delivery | Semester or period when the module is delivered | Language of instruction |
|---|---|---|
| Face-to-face | 5$^{th}$ and 7$^{th}$ semester | Lithuanian / english |

| Prerequisites |
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| **Prerequisites:** Procedural programming, Object oriented programming. |

| Number of ECTS credits allocated | Student's workload | Contact hours | Self-study hours |
|---|---|---|---|
| 5 | 130 | 64 | 66 |

| Purpose of the module: programme competences to be developed |
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| Module aim – to introduce students to basic concepts and principles of programming based on message loop; to provide basic knowledge for the creation and use of message loop based systems.<br><br>*Generic competences:*<br>• Communication and collaboration *(GC1).*<br>  ◦ An ability to present, information, ideas, problems, and suggested solutions convincingly in official and second (foreign) language for specialists and non-specialists in written and verbal form *(GC1.1).*<br>• Life-long learning *(GC2).*<br>  ◦ An ability independently to acquire new knowledge, methodologies, and tools and to apply them in practice *(GC2.3).*<br><br>*Specific competences:*<br>• Knowledge and skills of underlying conceptual basis *(SC4).*<br>  ◦ Knowledge and understanding of the key aspects and concepts of software engineering, including some at the forefront of the discipline, insight into possible application fields, and an awareness of the wider spectrum of the discipline *(SC4.1).*<br>  ◦ An ability to apply mathematical foundations, knowledge of science and engineering, computer science theory, and algorithmic principles in software systems development *(SC4.2).*<br>• Technological and methodological knowledge and skills, professional competence *(SC6).*<br>  ◦ An ability to combine theory and practice to complete software engineering tasks from different application areas while considering the existing technical, economic and social context *(SC6.1).* |

| Learning outcomes of the module: students will be able to | Teaching and learning methods | Assessment methods |
|---|---|---|
| Know of user interface design and operating principles. | Presentation, self-study, literature analysis | Laboratory works, exam (written), |
| Write applications based on message loop. | | |

| Convey written and oral information and new ideas related to the message loop. | presentation |
|---|---|
| Master new knowledge related to the Windows API | |

| Content: breakdown of the topics | Contact hours | | | | | | Self-study work: time and assignments | |
|---|---|---|---|---|---|---|---|---|
| | Lectures | Tutorials | Seminars | Laboratory work | Consultation in LW time | Contact hours | Self-study hours | Assignments |
| 1. Programming in Windows 2. Handles and Data Types, Message Loop and Window | 2 | | | 2 | | 4 | 2 | Literature analysis, mastering new functionalities |
| 3. Resource scripts 4. User Interface Controls | 2 | | | 2 | | 4 | 2 | |
| 5. Dialog Boxes 6. User Interface Management (Keyboard, Mouse and Timer) | 2 | | | 2 | | 4 | 2 | |
| 7. Dynamic Link Libraries 8. Input-Output. Files | 2 | | | 2 | | 4 | 2 | |
| 9. GDI and Drawing 10. Characters, strings and encoding | 2 | | | 2 | | 4 | 2 | |
| 11. Component Object Model (COM) | 2 | | | 2 | | 4 | 2 | |
| Presentations | 20 | | | | | 20 | 10 | Preparation |
| Game development | | | | | 20 | 20 | 30 | Game development |
| Preparing for the exam | | | | | | | 2 | |
| **Total** | **32** | | | **12** | **20** | **64** | **66** | |

| Assessment strategy | weight % | Deadline | Assessment criteria |
|---|---|---|---|
| Laboratory work (game) | 40 | Until the end of semester | It assesses how WinAPI capabilities are used in game development, including but not limited to: user interface and dialog boxes, resource scripts, dynamic libraries, drawing, and working with files. |
| Exam (written) | 40 | During exam session | 10 open and closed questions. |
| Presentation | 20 | During semester | Topics explanation (80%), consistency (10%), and completeness (10%) |

| Author | Publishing year | Title | Issue No or volume | Publishing house or Internet site |
|---|---|---|---|---|
| **Required reading** | | | | |
| Charles Petzold | 1999 | Programming Windows, Fifth edition | | Faculty of Mathematics and Informatics |
| **Optional reading** | | | | |
| | | Windows API Tutorial | | http://www.relisoft.com/win32/index.htm |
| | | Windows Programming | | http://en.wikibooks.org/wiki/Windows_Programming |