**UNIVERSITY OF ECONOMICS – VARNA**

**FACULTY OF INFORMATICS**

**DEPARTMENT OF INFORMATICS**

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**Adopted by the FC (record № 9/24.04.2024)**
**Adopted by the DC (record № 10/16.04.2024)**

**ACCEPTED BY:**
**Dean:**
**(Prof. Vladimir Sulov, PhD)**

# SYLLABUS

**SUBJECT: GRAPHICAL USER INTERFACE PROGRAMMING IN JAVA**

**DEGREE PROGRAMME: COMPUTER SCIENCE; MASTER`S DEGREE**

**YEAR OF STUDY: 6 for other field graduates; SEMESTER: 12 for other field graduates**

**TOTAL STUDENT WORKLOAD: 210 hours; incl. curricular 60 hours**

**CREDITS: 7**

**DISTRIBUTION OF STUDENT WORKLOAD ACCORDING TO THE CURRICULUM**

| *TYPE OF STUDY HOURS* | **WORKLOAD, hours** | **TEACHING HOURS PER WEEK, hours** |
|---|---|---|
| CURRICULAR:<br>incl.<br>• LECTURES<br>• SEMINARS / LAB. EXERCISES | <br><br>30<br>30 | <br><br>2<br>2 |
| EXTRACURRICULAR | 150 | - |

**Prepared by:**

1. **……..**
   **(Assoc. Prof. Pavel Petrov, DSc)**
2. **……**
   **(Chief Assist. Prof. Stojcho Stoev, PhD)**

**Head of department of Informatics: ……**
**(Prof. Julian Vasilev, PhD)**

## I. ANNOTATION

*The course provides the basic principles of the programming language Java by using visual programming environments. Students should acquire knowledge about the structure of the Java programs, the syntax of the language, the main Java classes and to acquire skills to create applications with a graphical user interface.*

*The students must receive theoretical and practical knowledge to create platform-independent applications that solve a wide range of practical tasks. Knowledge and skills can be extended in the direction to create applications not only for PCs but also for PDAs, mobile phones and more.In the course of training, the following key competencies are applied and developed, according to the recommendation of the Council of the European Union dated May 22, 2018, namely:*

*• Mathematical competence and exact sciences - group 3. Ability to solve multicriteria tasks, to use and apply models and concepts. Students should be able to put into practice the concepts of visual programming.*

*• Digital competence - group 4. Knowledge of the possibilities and limitations of computer technologies; understanding the principles and logic underlying software systems; ability to create and use programs and digital content.*

## II. THEMATIC CONTENT

| № | TITLE OF UNIT AND SUBTOPICS | NUMBER OF HOURS | | |
|---|---|---|---|---|
| | | L | S | L.E. |
| **Theme 1. Introduction to Java** | | **4** | **4** | |
| 1.1 | Common feature. | | | |
| 1.2 | Structure of the program. | | | |
| 1.3 | Classes. Objects. Interface. | | | |
| **Theme 2. Integrated development environments** | | **2** | **2** | |
| 2.1 | Popular IDEs. | | | |
| 2.2 | Software libraries. | | | |
| **Theme 3. Console applications** | | **2** | **2** | |
| 3.1 | Organization of the input and the output | | | |
| 3.2 | Working with files. | | | |
| **Theme 4. Graphical user interface** | | **12** | **12** | |
| 4.1 | Basic visual components. | | | |
| 4.2 | Swing components. | | | |
| **Theme 5. Advanced components** | | **10** | **10** | |
| 5.1 | The concept MVC. | | | |
| 5.2 | Persistence with RDBMS and NoSQL systems. | | | |
| | **Total:** | **30** | **30** | |

## III. FORMS OF CONTROL:

| № | TYPE AND FORM OF CONTROL | Number | extracur-ricular, hours |
|---|---|---|---|
| | | | |
| **1.** | **Midterm control** | | |
| 1.1. | Programming test | 2 | 50 |
| 1.2. | Programming project related to the topics discussed in this course | 1 | 40 |
| | **Total midterm control:** | **3** | **90** |
| **2.** | **Final term control** | | |
| 2.1. | Examination (test) | 1 | 60 |
| | **Total final term control:** | **1** | **60** |
| | **Total for all types of control:** | **4** | **150** |

## IV. LITERATURE

**REQUIRED (BASIC) LITERATURE:**


1. Bloch, J. Effective Java. Boston: Addison-Wesley, 2018. (B 77072)
2. Java SE Learning Trail, http://netbeans.apache.org/kb/docs/java/
3. The Java Tutorials, https://docs.oracle.com/javase/tutorial/index.html


**RECOMMENDED (ADDITIONAL) LITERATURE:**


1. Sage, K. Concise Guide to Object-Oriented Programming. An Accessible Approach Using Java. Cham: Springer, 2019. (B 77073)
2. Eclipse documentation, https://help.eclipse.org/latest/index.jsp