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| O imagine care conține siglă, simbol, Font, Grafică  Descriere generată automat | MINISTERUL EDUCAŢIEI **UNIVERSITATEA „AUREL VLAICU“ DIN ARAD**310130 Arad, B-dul Revolutiei nr. 77, P.O. BOX 2/158 AR *Tel.: 0040-257- 283010; fax. 0040-257- 280070*  [http://www.uav.ro](http://www.uav-arad.go.ro)*;* e-mail: [rectorat@uav.ro](mailto:rectorat@uav.ro) |

**Operator de date cu caracter personal nr. 2929**

**SYLLABUS**

1. **Study programme**

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| 1.1. Higher education institution | **„AUREL VLAICU” UNIVERSITY OF ARAD** |
| 1.2. Faculty | **Faculty of Exact Sciences** |
| 1.3. Department | **Department of Mathematics and Computer Science** |
| 1.4. Field of study | **Informatics** |
| 1.5. Academic year | **2024-2025** |
| 1.6. Study level | **Bachelor** |
| 1.7. Study programme | **Mathematics and Computer Science** |
| 1.8. Form of education | **Full-time education** |

1. **Course details**

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| 2.1. Name of the course | **GICS4O07 Object oriented programming** |
| 2.2. Course coordinator | **dr. Valeriu BEIU** |
| 2.3. Seminar/laboratory/project coordinator | **dr. Valeriu BEIU** |
| 2.4. Study year | **2** |
| 2.5. Semester | **1** |
| 2.6. Evaluation type | **E** |
| 2.7. Course type | **Mandatory** |

1. **Estimated total time** (hours per semester)

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| --- | --- |
| 3.1. Hours per week | **4** |
| 3.2. Lecture hours per week | **2** |
| 3.3. Seminar/laboratory/project hours per week | **2** |
| 3.4. Total hours per curriculum | **56** |
| 3.5. Lecture hours per per curriculum | **28** |
| 3.6. Seminar/laboratory/project hours per curriculum | **28** |
|  | Time division [Hours] |
| 3.4.1. Independent study from textbooks, course support, bibliography and notes | **10** |
| 3.4.2. Additional reading | **20** |
| 3.4.3. Preparing of seminars/laboratories/projects, homework, papers, portfolios and essay | **15** |
| 3.4.4. Tutorial coaching | **10** |
| 3.4.5. Examinations | **14** |
| 3.4.6. Other activities |  |
| 3.7. Total individual study hours | **69** |
| 3.8. Total hours per semester | **125** |
| 3.9. Number of ECTS credits | **5** |

1. **Prerequisites** (if applicable)

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| 4.1. Curriculum related |  |
| 4.2. Competence related |  |

1. **Conditions** (if applicable)

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| 5.1. Conditions for the lecture | **Projector, Internet Connection** |
| 5.2. Conditions for the seminar |  |
| 5.3. Conditions for the laboratory | **Laboratory room equipped with networked computers, internet connection and adequate software** |
| 5.4. Conditions for the project |  |

1. **Specific educational objectives** (competences to be acquired)

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| 6.1.  Professional competences | **C3. Designing and analysing algorithms for solving different problems**  **C5. Programming in high level programming languages**  **C6. Analysing, testing and exploiting information systems** |
| 6.2.  Transversal competences | **CT1. Applying the rules of organized and efficient work, of responsible attitudes towards teaching-scientific field, to value the own creative potential, while respecting the principles and norms of professional ethics**  **CT2. Efficient conduct of team activities**  **CT3. Efficient use of information, communication resources and assisted education both in Roumanian and in an internationally widespread language** |

1. **Course outcomes** (resulting from the specific educational objectives to be acquired)

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| 7.1. General outcomes | **During this lecture, the students will be familiarized with the main issues and topics in object-oriented programming, going from fundamentals to implementation techniques and project development in Java.**  **All of these will allow them to increase their chances of being hired and integrate multidisciplinary teams.** |
| 7.2. Specific outcomes | **Students will be able to prove that they have acquired knowledge about the fundamental concepts related to OOP. They will be capable of using a particular object-oriented programming language, e.g., Java.** |

1. **Course outline**

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| 8.1 Lecture | Teaching methods | Remarks |
| 1. Introduction, motivations, basic notions.  2. Introduction to Java language.  3. Documentation -- Class: Object and String.  4. Building a new Class.  5. Abstract class and hierarchies.  6. Exceptions  7. Inputs and outputs | Presentation  Lecture using video projector and the internet  Web search  Interactive discussions  Examples |  |
| 8.2 Lecture references  **1. The Java Tutorial: Learning the Java Language. Oracle.**  [**http://docs.oracle.com/javase/tutorial/java/TOC.html**](http://docs.oracle.com/javase/tutorial/java/TOC.html)  **2. The Java language Specification. James GOSLING, Bill JOY, Guy STEELE**  [**https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html**](https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html)  **3. Kathy Siera, Bert Bates, “Head First Java, 2nd Edition”, Feb. 2005, O’Reilly Media, Inc., ISBN: 0596009208.**  **4. Stuart Reges, Marty Stepp, “Buliding Java Programs: A Back to Basics Approach, 4th Edition”, 2017, Pearson.**  **5. Java SE Development Kit 8 Documentation**  **6. Vlad-Florin Dragoi, Lecture notes, core platform Aurel Vlaicu University, Arad, 2019-2020.** | | |
| 8.3 Seminar | Teaching methods | Remarks |
| 8.4 Seminar references | | |
| 8.5 / Laboratory | Teaching methods | Remarks |
| 1. Introduction. First program.  2. Math functions  3. Conditionals, loops. Applications.  4. Methods, functions.  5. Lists.  6. Input - output  7. Project | •Case studies  •Examples  •Individual study  •Brainstorming  •Practical challenges |  |
| 8.6 Laboratory references  **1. The Java Tutorial: Learning the Java Language. Oracle.**  [**http://docs.oracle.com/javase/tutorial/java/TOC.html**](http://docs.oracle.com/javase/tutorial/java/TOC.html)  **2. The Java language Specification. James GOSLING, Bill JOY, Guy STEELE**  [**https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html**](https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html)  **3. Kathy Siera, Bert Bates, “Head First Java, 2nd Edition”, Feb. 2005, O’Reilly Media, Inc., ISBN: 0596009208.**  **4. Stuart Reges, Marty Stepp, “Buliding Java Programs: A Back to Basics Approach, 4th Edition”, 2017, Pearson.**  **5. Java SE Development Kit 8 Documentation**  **6. Vlad-Florin Dragoi, Lecture notes, core platform Aurel Vlaicu University, Arad, 2019-2020.** | | |
| 8.7 / Project | Teaching methods | Remarks |
| 8.8 Project References | | |

1. **Corroboration / validation of course putline** (if applicable)

This course is taught in similar programs at many universities, both in Romania and abroad. For a better matching with the demands of the labor market, meetings with employers’ representatives, business representatives, and specialty teachers from the pre-university education system have been organized. Using English brings and added value to the program, enabling the hiring of graduates by multinational companies (both abroad and in Romania).

1. **Evaluation / Grading**

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| Activity type | Evaluation criteria | Evaluation methods | Percentage of the final grade |
| 10.1.  Lecture |  Level of mastering the domain-specific vocabulary   Logical consistency   Extent of correctness and completeness of knowledge   Responsibility   Commitment   Resolution | Final written exam at the  end of the semester | 50% |
| 10.2. Seminar |  |  |  |
| 10.3.  Laboratory |  Ability to use the knowledge   Ability to apply theoretical knowledge to practical cases   Responsibility   Commitment   Resolution | Partial written exam during the semester  Independent work, homework  Active participating | 50% |
| 10.4.  Project |  |  | % |
| 10.5 Minimal performance standard  **Proper mastering of the basics, understanding the fundamental notions/concepts, fluent with the domain-specific vocabulary, and able to analyze and explain simple cases.** | | |  |

Course coordinator Seminar coordinator Head of the Department Dean

Prof. dr. Valeriu BEIU Prof. dr. Valeriu BEIU Lect. dr. Lorena POPA Prof. dr. Sorin Nădăban