



MINISTERUL EDUCAȚIEI  
UNIVERSITATEA „AUREL VLAICU” DIN ARAD  
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## SYLLABUS

### 1. Study programme

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	Computer Science
1.8. Form of education	Full-time education

### 2. Course details

2.1. Name of the course	Object oriented programming
2.2. Course coordinator	Vlad-Florin Dragoi, Ph.D.
2.3. Seminar/laboratory/project coordinator	Iacob Oana-Roxana
2.4. Study year	2
2.5. Semester	1
2.6. Evaluation type	E
2.7. Course type	Mandatory

### 3. Estimated total time (hours per semester)

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 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	<b>15</b>
3.4.4. Tutorial coaching	<b>10</b>
3.4.5. Examinations	<b>14</b>
3.4.6. Other activities	
3.7. Total individual study hours	<b>69</b>
3.8. Total hours per semester	<b>125</b>
3.9. Number of ECTS credits	<b>5</b>

#### 4. Prerequisites (if applicable)

4.1. Curriculum related	
4.2. Competence related	

#### 5. Conditions (if applicable)

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

#### 6. Specific educational objectives (competences to be acquired)

6.1. Professional competences	<b>C1.Programming in high level programming languages; C2.Development and maintenance of computer applications; C4.Using the theoretical bases of computers and formal models;</b>
6.2. Transversal competences	<b>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 the activities organized in an inter-disciplinary group and developing the personal communication skills, networking and collaboration with various groups; CT3.Using of efficient methods and techniques for learning, informing, research and development of the capacity to value knowledge, adapting to the requirements of a dynamic society and communicating in English and in an Internationally widespread language.</b>

#### 7. Course outcomes (resulting from the specific educational objectives to be acquired)

7.1. General outcomes	<b>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.</b>
7.2. Specific outcomes	<b>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.</b>

#### 8. Course outline

8.1 Lecture	Teaching methods	Remarks
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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	<input type="checkbox"/> Presentation <input type="checkbox"/> Lecture using video projector and the internet <input type="checkbox"/> Web search <input type="checkbox"/> Interactive discussions <input type="checkbox"/> Examples	
8.2 Lecture references  1. <b>The Java Tutorial : Learning the Java Language. Oracle.</b> <a href="http://docs.oracle.com/javase/tutorial/java/TOC.html">http://docs.oracle.com/javase/tutorial/java/TOC.html</a> 2. <b>The Java language Specification. James GOSLING, Bill JOY, Guy STEELE</b> <a href="https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html">https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html</a> 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, 2019-2024.		
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. <b>The Java Tutorial : Learning the Java Language. Oracle.</b> <a href="http://docs.oracle.com/javase/tutorial/java/TOC.html">http://docs.oracle.com/javase/tutorial/java/TOC.html</a> 2. <b>The Java language Specification. James GOSLING, Bill JOY, Guy STEELE</b> <a href="https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html">https://docs.oracle.com/javase/specs/jls/se6/html/j3TOC.html</a> 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		

## 9. 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).

### 10. Evaluation / Grading

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

Course coordinator  
Vlad-Florin Dragoi

Seminar coordinator  
Iacob Oana-Roxana

Head of the Department  
Lect. dr. Lorena Popa

Dean  
Prof. dr. Nadaban Sorin