# SYLLABUS
## COURSE DESCRIPTION – ACADEMIC YEAR 2022/2023

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>Programming Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE CODE</td>
<td>76204</td>
</tr>
<tr>
<td>SCIENTIFIC SECTOR</td>
<td>INF/01</td>
</tr>
<tr>
<td>DEGREE</td>
<td>Bachelor in Computer Science</td>
</tr>
<tr>
<td>SEMESTER</td>
<td>2nd</td>
</tr>
<tr>
<td>YEAR</td>
<td>1st</td>
</tr>
<tr>
<td>CREDITS</td>
<td>9</td>
</tr>
<tr>
<td>TOTAL LECTURING HOURS</td>
<td>60</td>
</tr>
<tr>
<td>TOTAL LAB HOURS</td>
<td>30</td>
</tr>
<tr>
<td>ATTENDANCE</td>
<td>Attendance to course lectures and labs is optional. However, non-attending students have to contact the lecturer at the start of the course to discuss the modality of their independent study. The exam modality for both attending and non-attending students is the same, which is described in the fields “Assessment” and “Evaluation criteria and criteria for awarding marks” below.</td>
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<tr>
<td>PREREQUISITES</td>
<td>Students should be familiar with the basic knowledge of object-oriented programming and Java, as taught in the course “Computer Programming”.</td>
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<tr>
<td>COURSE PAGE</td>
<td><a href="https://ole.unibz.it/">https://ole.unibz.it/</a></td>
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</table>

| SPECIFIC EDUCATIONAL OBJECTIVES | Type of course: “caratterizzanti” for L-31  
Scientific area: “Discipline informatiche” for L-31  
The course is designed to give specific professional skills. It will provide students with advanced techniques in Java. In particular, students will acquire knowledge in the overall architecture and components of Java SDK and JRE, use of advanced programming techniques (e.g. multi-threads, reading/writing streams, generics, regular expressions, exception handling and testing) and code documentation (e.g. generate API documentation) of the software developed. |

<table>
<thead>
<tr>
<th>LECTURER</th>
<th>Kahramanogullari Ozan</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIENTIFIC SECTOR OF THE LECTURER</td>
<td>INF/01</td>
</tr>
<tr>
<td><strong>TEACHING LANGUAGE</strong></td>
<td>English</td>
</tr>
<tr>
<td>-----------------------</td>
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</tr>
<tr>
<td><strong>OFFICE HOURS</strong></td>
<td>Tuesdays, from 16:00 to 18:00, by prior email appointment <a href="mailto:Ozan.Kahramanogullari@unibz.it">Ozan.Kahramanogullari@unibz.it</a>. Office POS 2.19 Faculty of Computer Science, Piazza Domenicani 3.</td>
</tr>
<tr>
<td><strong>TEACHING ASSISTANT</strong></td>
<td>Corman Julien</td>
</tr>
<tr>
<td><strong>OFFICE HOURS</strong></td>
<td>Mondays 16:00-18:00 by prior email appointment, office POS 2.06, Faculty of Computer Science, Piazza Domenicani 3 <a href="mailto:julien.corman@unibz.it">julien.corman@unibz.it</a></td>
</tr>
</tbody>
</table>
| **LIST OF TOPICS COVERED** | Memory models in Java  
Virtual functions, late binding, overriding, and overloading  
Exception handling  
Reflection and runtime type identification  
Generics and collections  
I/O, serialization and XML/JSON processing  
Designing large applications: design patterns  
Multithreading  
Code optimization |
| **TEACHING FORMAT**   | Frontal lectures, lab exercises, group projects. |

**LEARNING OUTCOMES**

**Knowledge and understanding**
- Know in detail the fundamental principles of programming.
- Have a solid knowledge of the most important data structures and programming techniques.

**Applying knowledge and understanding**
- Be able to develop small and medium size programs using different programming languages and paradigms.
- Be able to solve problems through the application of programming methodologies.

**Making judgments**
- Be able to collect and interpret useful data and to judge information systems and their applicability.
- Be able to work autonomously according to the own level of knowledge and understanding.

**Communication skills**
- Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately.
- Be able to structure and write scientific documentation.

**Learning skills**
- Have acquired learning capabilities to pursue further studies with a high degree of autonomy.

**ASSESSMENT**

The assessment is based on:
- weekly **lab exercises**, which are focused on specific topics taught in the course. They are meant to motivate students to study throughout the semester and consolidate the theoretical concepts;
- a **group project**, which evaluates if the students can effectively apply the concepts and methodologies discussed in the course; and
- an **oral exam**, which evaluates if the students assimilated the theoretical concepts they used, by reviewing and discussing their group projects.

### ASSESSMENT LANGUAGE

English

### EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS

Final marks will be calculated in the following way:

- up to 10 points will be awarded to weekly assignments;
- up to 60 points will be awarded to the group project;
- up to 30 points will be awarded to the oral exam;

To pass the course, a student must demonstrate in the oral exam a comprehensive understanding of the group project.

### REQUIRED READINGS

- Lecture notes handed out during the course

### SUPPLEMENTARY READINGS


**SOFTWARE USED**

- JDK 13