### Analysis

**COURSE TITLE**: Analysis  
**COURSE CODE**: 76242  
**SCIENTIFIC SECTOR**: MAT/05  
**DEGREE**: Bachelor in Computer Science  
**SEMESTER**: 2nd  
**YEAR**: 1st  
**CREDITS**: 6

<table>
<thead>
<tr>
<th>TOTAL LECTURING HOURS</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL LAB HOURS</td>
<td>20</td>
</tr>
</tbody>
</table>

**ATTENDANCE**: Generally, attendance is not compulsory, but non-attending students can contact the lecturer at the start of the course to agree on the modalities of the independent study.

**PREREQUISITES**: There are no prerequisites.

**COURSE PAGE**: [https://ole.unibz.it/](https://ole.unibz.it/)

**SPECIFIC EDUCATIONAL OBJECTIVES**:  
- Type of course: "di base" for L-31  
- Scientific area: "Formazione informatica di base" for L-31  
- The aim of this course is to introduce fundamental topics of mathematics that are in support of computer science. In particular, the course will introduce students to the following topics: 1) sequences and series; 2) univariate functions; 3) derivatives, differentials and Taylor theorem; 4) Riemann integral; 5) logarithmic and exponential functions; and 6) normed vector spaces.

**LECTURER**: Ognjen Savkovic  
**SCIENTIFIC SECTOR OF THE LECTURER**: INF/01  
**TEACHING LANGUAGE**: English
| OFFICE HOURS | Friday 14:00-16:00, It is recommended to make an appointment beforehand by email. Ognjen.Savkovic@unibz.it, office POS 2.02, Faculty of Computer Science, Piazza Domenicani 3 |
| TEACHING ASSISTANT | Ognjen Savkovic, Paola Lecca |
| OFFICE HOURS | Tuesday 15-16, Paola.lecca@unibz.it Office POS 1.04, Faculty of Computer Science, Piazza Domenicani 3 |
| LIST OF TOPICS COVERED | • Sequences and series  
• Univariate functions  
• Derivatives, differentials and Taylor Theorem  
• Riemann integral  
• Logarithmic and exponential functions  
• Normed vector spaces |
| TEACHING FORMAT | This course will be delivered through a combination of formal lectures and exercises |
| LEARNING OUTCOMES | **Knowledge and understanding**  
• Have a solid knowledge of mathematical analysis that are in support of computer science.  

**Applying knowledge and understanding**  
• Be able to use the tools of mathematics to solve problems.  

**Making judgments**  
• 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.  

**Ability to learn**  
Have developed learning capabilities to pursue further studies with a high degree of autonomy. |
| ASSESSMENT | The written exam will consist of a set of verification questions, transfer of knowledge questions and exercises. The aim of the assessment is to check to which degree students have mastered the following learning outcomes: 1) knowledge and understanding, 2) applying knowledge and understanding, 3) making judgment.  
This holds for both attending and non-attending students. |
<p>| ASSESSMENT LANGUAGE | English |</p>
<table>
<thead>
<tr>
<th>EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS</th>
<th>Final Written Exam, 100% covering the full program. Written exam questions will be evaluated in terms of correctness, clarity, quality of argumentation, problem solving ability.</th>
</tr>
</thead>
</table>
| REQUIRED READINGS | Students should refer primarily to their notes taken in class (lectures and exercise classes) and consult the following textbook:  
- Title: Real analysis;  
  Author: John M. Howie;  
  ISBN: 978-1-4471-0341-7  
Supplementary books on the course material are listed below. |
| SUPPLEMENTARY READINGS |  
- Title: Analysis by Its History;  
  Authors: Gerhard Wanner, Ernst Hairer;  
  ISBN: 978-0-387-94551-4  
- Title: Calculus: A Complete Course;  
  Author: Robert A Adams;  
| SOFTWARE USED | No software used |