

**SYLLABUS**

1. **Study programme**

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| 1.1. Higher education institution | **„Aurel Vlaicu” University of Arad** |
| 1.2. Faculty | **of Exact Sciences** |
| 1.3. Department | **Department of Mathematics and Computer Science** |
| 1.4. Field of study | **Mathematics** |
| 1.5. Study level | **2024-2025** |
| 1.6. Ciclul de studii | **Bachelor** |
| 1.7. Study programme / Qualification | **Mathematics informatics** |
| 1.8. Form of education | **Full – Time study** |

1. **Course details**

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| 2.1. Name of the course | **The specialized practice** |
| 2.2. Course coordinator | **Sida Lavinia Elisabeta** |
| 2.3. Seminar/laboratory/project coordinator | **Sida Lavinia Elisabeta** |
| 2.4. Study year | **2** |
| 2.5. Semester | **2** |
| 2.6. Evaluation type | **summative** |
| 2.7. Course type | **compulsory** |

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

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| 3.1. Hours per week | **0** |
| 3.2. Lecture hours per week | **0** |
| 3.3. Seminar/laboratory/project hours per week | **0** |
| 3.4. Total hours per curriculum | **120** |
| 3.5. Lecture hours per semester | **0** |
| 3.6. Seminar/laboratory/project hours per semester | **0** |
| Time division [hrs] | |
| 3.4.1. Independent study from textbooks, course support, bibliography and notes | **20** |
| 3.4.2. Additional reading (libraries, specialized electronic platforms and field research) | **80** |
| 3.4.3. Preparing of seminars/laboratories/projects, homework, papers, portfolios and essays | **18** |
| 3.4.4. Tutorial coaching | **0** |
| 3.4.5. Examinations | **2** |
| 3.4.6. Other activities | **0** |
| 3.7. Total individual study hours | **120** |
| 3.8. Total hours per semester | **120** |
| 3.9. Number of ECTS credits | **2** |

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. for the lecture |  |
| 5.2. for the seminar |  |
| 5.3. for the laboratory |  |
| 5.4. for the project |  |

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

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| 6.1. Professional skills | **C2.** Mathematical processing of data, analysis of phenomena and processes.  **C3.** Designing and analysing algoritms for solving different problems.  **C6**. Analysing, testing and exploiting information systems. |
| 6.2. Transversal skills | **CT1.** Applying the rules of organized and efficient work, of responsibie 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 | - supplementing the training of future specialists with practical issues to allow them a quick transition and an appropriate adaptation in the subsequent professional activity;  - ensuring a judicious correlation of the knowledge acquired in courses, seminars, laboratory works, with practical activities;  - deepening the theoretical knowledge acquired in the didactic activity, with making connections between the studied phenomena;  - contact with the concrete aspects of an IT department/ to introduce the student to the atmosphere of general schools and high schools  - stimulating students' creativity;  - educating students and developing their social responsibilities. |
| 7.2. Specific outcomes | - The student is able to practically apply the theoretical knowledge acquired within the training program. |

1. **Outline** (if applicable)

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| 8.1 Lecture Outline | Teaching methods | Remarks |
| I. Completion of some mathematics assignments and projects or  II. Completion of a computer science project or program  1. Presentation of the topic (statement of the problem) to be dealt with/solved and establishing the tasks of the team members, (if working in a team).  2. Development of detailed project specifications.  3. Project analysis: identification of entities, relationships; usage scenarios; data context and data flow diagrams.  4. Design: conceptual data model; logical data model; processing design; physical data model; user interface; application architecture.  5. Implementation and testing of the developed applications, made available together with the documentation developed during the development stages in the department's network.  6. Presentation of the project for evaluation. | -Exposition: description, explanation, dialogue lecture, lectures with opponents, team lectures. - Conversation: heuristic conversation, debate, dialogue, conversations to fix and consolidate knowledge, systematization and synthesis conversations, application conversations.  - Algorithmization: solving algorithms; creative algorithms.  - Problematization: the use of problem-questions, problems and problem-situations.  - Discovery: directed and independent rediscovery, creative discovery, documentary discovery, experimental discovery. |  |
| 8.2 Lecture References  **Documents in electronic format or other documentation provided by the practice coordinator or made available by the practice partners.** | | |

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| 8.3 Seminar Outline | Teaching methods | Remarks |
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| 8.5 Laboratory Outline | Teaching methods | Remarks |
| 8.6 Laboratory Outline | | |
| 8.7 Project Outline | Teaching methods | Remarks |
| 8.8 Project Outline | | |

1. Correlation of course outline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

The content of the discipline is consistent with what is done in other university centers in the country and abroad. In order to better adapt the content of the discipline to the requirements of the labor market, meetings were held both with representatives of the business environment and with mathematics and computer science teachers from the Arad pre-university education.

1. **Evaluation / Grading** (if applicable)

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| Activity type | Evaluation criteria | Evaluation methods | Percentage of the final grade |
| 10.1. Lecture | **- Acquiring skills specific to the specialization**  **- Efficiency in verbal communication**  **- The ability to work in a team / to establish good relationships**  **- The desire to learn (to improve)**  **- The ability to work independently** | Written assessment: - practice portfolio - observation sheet Oral assessment: oral support of the practice project | 100% |
| 10.2.  Seminar |  |  |  |
| 10.3.  Laboratory |  |  |  |
| 10.4. Project |  |  |  |
| 10.5 Minimal performance standard  **Minimum performance standard: completing the internship** | | | |

Course coordinator

Sida Lavinia

Seminar/laboratory/project coordinator

Sida Lavinia

Head of the Department

Lector Popa Lorena

Dean

Prof.univ.dr. Sorin-Florin NĂDĂBAN