**SYLLABUS**
**University year 2024-2025**
**Year of study I / Semester I**

## 1. Information on academic programme

| | |
|---|---|
| 1.1. University | **„1 Decembrie 1918" University of Alba Iulia** |
| 1.2. Faculty | **FACULTY OF INFORMATICS AND ENGINEERING** |
| 1.3. Department | **Informatics, Mathematics and Electronics** |
| 1.4. Field of study | **Computer Science** |
| 1.5. Cycle of study | **Undergraduate** |
| 1.6. Academic programme / Qualification | **Computer Science/ ESCO: 2512/ Software developers Analyst 251201**<br>**Computer System Programmer 251204**<br>**Computer System Engineer 251203** |

## 2. Information of Course Matter

| 2.1. Course | **Computer Systems Architecture** | | 2.2. Code | | **CSE101** | |
|---|---|---|---|---|---|---|
| 2.3. Course Leader | | Lect. Univ. Dr. Cucu Ciprian | | | | |
| 2.4. Seminar Tutor | | Asist. univ. drd. Căpîlnaș Matei | | | | |
| 2.5. Academic Year | **I** | 2.6. Semester | **I** | 2.7. Type of Evaluation (E – final exam/ CE - colloquy examination / CA -continuous assessment) | **E** | 2.8. Type of course (C– Compulsory, Op – optional, F - Facultative) | **C** |

## 3. Course Structure

| 3.1. Weekly number of hours | 4 | 3.2. course | **2** | 3.3. seminar, laboratory | **2** |
|---|---|---|---|---|---|
| 3.4. Total number of hours in the curriculum | 56 | 3.5. course | **28** | 3.6. seminar, laboratory | **28** |

| Allocation of time: | hours |
|---|---|
| Individual study of readers | **40** |
| Documentation (library) | **25** |
| Home assignments, Essays, Portfolios | **27** |
| Tutorials | **-** |
| Assessment | **2** |
| Other activities ……. | **-** |

| 3.7 Total number of hours for individual study | 94 |
|---|---|
| 3.8 Total number of hours in the curriculum | 56 |
| 3.9 Total number of hours in the curriculum | 150 |
| 3.10 Number of ECTS ** | 6 |

## 4. Prerequisites (where applicable)

| 4.1. curriculum-based | NA |
|---|---|
| 4.2. competence-based | NA |

## 5. Requisites (where applicable)

| 5.1. course-related | Room equipped with video projector / board / Microsoft Teams Platform |
|---|---|
| 5.2. laboratory-based | Laboratory – computers / Microsoft Teams Platform |

## 6. Specific competences to be aquired (chosen by the course leader from the programme general competences grid)

| Professional competences | CP3 ( 1 ECTS), CP5 (1 ECTS), CP10 (1 ECTS), CP13 (2 ECTS), CP32 (1 ECTS) |
|---|---|
| Transversal competences | NA |

## 7. Course objectives (as per the programme specific competences grid)

| 7.1 General objectives of the course | - Learning fundamental concepts regarding computer systems architecture |
|---|---|
| 7.2 Specific objectives of the course | - Ability to recognize computer system components<br>- Ability to develop basic applications using assembly |

## 8. Course contents *

| 8.1 Course | Teaching methods | Hours |
|---|---|---|
| 1. Architecture, architecture types, Von Neumann architecture detalis | Lecture, discussions, presentation | 2 |
| 2. Numbering systems: binary, decimal, hexadecimal. Conversions, operations. | Lecture, discussions, presentation | 2 |
| 3. Logical gates. Transforming electrical impulse in operations. Binary adder | Lecture, discussions, presentation | 2 |
| 4. The PC: system buses, CPU, coprocessor etc | Lecture, discussions, presentation | 2 |
| 5. Memory segmentation | Lecture, discussions, presentation | 2 |
| 6. CPU registers and memory adressing | Lecture, discussions, presentation | 4 |
| 7. Assembly programming language: description, assembler variants, instructions | Lecture, discussions, presentation | 6 |
| 8. Assembly programming:BIOS / DOS services | Lecture, discussions, presentation | 4 |
| 9. Assembly programming: VIDEO modes | Lecture, discussions, presentation | 4 |
| | | |
| | | |

**References**
1. Joldeş Remus, Emil Olteanu, *Arhitectura Calculatoarelor, Vol. 2*, *Instrucţiunile Familiei de microprocesoare 80X86*, Editura UAI, Seria Didactica 2006.
2. Joldeș Remus, Cucu Ciprian, Domșa Ovidiu, Tulbure Adrian, Joldeș Iulian, Despa Otilia, *Limbajul de asamblare prin exemple - Îndrumator*, Editura UAI, Seria Didactica 2008.
3. Tanenbaum, A., *Sisteme de operare modernă – Editia a II-a*, Editura Byblos, Bucureşti 2004.
4. Muscă Gheorghe, *Programarea în limbaj de asamblare*, Seria: Limbaje şi tehnici noi de programare, Editura TEORA, Bucureşti, 1997, pp.1-33, pp.34- 101, pp.123-167. Manualul a fost reeditat şi în 1998 şi în 1999.
5. Somnea D., Vlăduţ T., *Programarea în Assembler*, Seria: Calculatoare personale, Editura Tehnică, Bucureşti, 1992, pp. 8-15, pp. 16-32, pp. 35-67, pp. 68-84, pp. 85-108, pp. 109-113, pp. 114- 120, pp. 121-134, pp. 140-146, pp. 147-182, pp. 183-209.

| 8.2. Seminars-laboratories | Teaching methods | Hours |
|---|---|---|
| 1. Working environment – DOSBox, TASM. | Discussion, presentation | 1 |
| 2. DOS commands | Discussion, presentation, exercises | 2 |
| 3. Numbering bases, conversions, operations | Discussion, presentation, exercises | 2 |
| 4. Evaluation Quizz | Quizz | 1 |
| 5. Hardware components | presentation | 2 |
| 6. Using TASM, TLINK and the TD debugger | exercises | 2 |
| 7. Assembly programming: basic instructions, advanced instructions, DOS functions, using the stack | exercises | 12 |

| 8. Evaluation Quizz | Quizz | 1 |
|---|---|---|
| 9. Assembly programming: video mode, procedures, macros | exercises | 3 |
| 10. Finalizing laboratory work | Discussion | 2 |

**References**
1. Joldeş Remus, Emil Olteanu, *Arhitectura Calculatoarelor, Vol. 2*, *Instrucţiunile Familiei de microprocesoare 80X86*, Editura UAI, Seria Didactica 2006.
2. Joldeş Remus, Cucu Ciprian, Domşa Ovidiu, Tulbure Adrian, Joldeş Iulian, Despa Otilia, *Limbajul de asamblare prin exemple - Îndrumator*, Editura UAI, Seria Didactica 2008.
3. Tanenbaum, A., *Sisteme de operare modernă – Editia a II-a*, Editura Byblos, Bucureşti 2004.
4. Muscă Gheorghe, *Programarea în limbaj de asamblare*, Seria: Limbaje şi tehnici noi de programare, Editura TEORA, Bucureşti, 1997, pp.1-33, pp.34- 101, pp.123-167. Manualul a fost reeditat şi în 1998 şi în 1999.
5. Somnea D., Vlăduţ T., *Programarea în Assembler*, Seria: Calculatoare personale, Editura Tehnică, Bucureşti, 1992, pp. 8-15, pp. 16-32, pp. 35-67, pp. 68-84, pp. 85-108, pp. 109-113, pp. 114- 120, pp. 121-134, pp. 140-146, pp. 147-182, pp. 183-209.

9. **Corroboration of course contents with the expectations of the epistemic community's significant representatives, professional associations and employers in the field of the academic programme**

NA

10. **Assessment**

| Activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Percentage of final grade |
|---|---|---|---|
| 10.4 Course | Correct knowledge of concepts | *Final quizz (on PC) with questions and exercises* | 50% |
| 10.5 Seminar/laboratory | Ability to programm in assembly | *The two quizzes plus all the assignments during the semester.* | 50% |

10.6 Minimum performance standard:
- Minimum grade 5 for each of the evaluations, based on criteria
- Taking the exam în the regular evaluation session (the first one) depends on class attendance: 10 labs attended and 6 courses
- Maximum half of the required courses /labs can be recovered by solving extra assignments. Students must request such assignments no later than two weeks after the course/lab being recovered.

Submission date                    Course leader signature                    Seminar tutor signature

Date of approval by Department                                        Department director signature

Date of approval by Faculty Council                                        Signature of the Dean

Annex to syllabus (optional)

# ANNEX TO SYLLABUS

**b. Assesment – for a better grade**

| Activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Percentage of final grade |
|---|---|---|---|
| 10.4 Course | Answering questions, solving exercises | Quizz with theory and exercises | 100 % |
| 10.5 Seminar/laboratory | NA | NA | NA |

**10.6 Standard minim de performanţă**

| A minimal grede of 5, according to quizz criteria | | |
|---|---|---|
| Data completării | Semnătura titularului de curs | Semnătura titularului de seminar |
| | | |

**c. Evaluare – restanţă**

| Activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Percentage of final grade |
|---|---|---|---|
| 10.4 Course | Answering questions, solving exercises | Quizz with theory and exercises | 100 % |
| 10.5 Seminar/laborator | NA | NA | NA |

**10.6 Standard minim de performanţă:**

| A minimal grede of 5, according to quizz criteria | | |
|---|---|---|
| Data completării | Semnătura titularului de curs | Semnătura titularului de seminar |
| | | |

*Formulare orientativă