*Recommended template: “Course Description, Syllabus, Course Requirements”*

# course syllabus and course requirements academic year 2022./2023. semester 1.

| Course title | Microcomputers |
| --- | --- |
| **Course Code** | **IVB035ANVM** |
| **Hours/Week: le/pr/lab** | **2/0/0** |
| **Credits** | **4** |
| **Degree Programme** | **Electrical Engineering BSc** |
| **Study Mode** | **full-time** |
| **Requirements** | **midterm grade** |
| **Teaching Period** | **fall** |
| **Prerequisites** | **Digital Logic Design 2.** |
| **Department(s)**  **Course Director** | **Department of Automation** |
| **Teaching Staff** | **Kisander Zsolt** |
|  |  |

# course description

*A short description of the course (max. 10 sentences).*

*Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description*

Microcomputers give an introduction to architectural features of modern and/or widely used MCU architectures, e.g.: Intel 8051, AVR, STM32, ESP32 etc.

# syllabus

*Neptun: Instruction/Subjects/Subject Details/Syllabus*

## **goals and objectives**

*Goals, student learning outcome.*

*Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction*

With this subject, the students will have a basic knowledge of todays’ embedded processors, their field of applications and common embedded peripheral units. During the lectures, we will go through the datasheets and application notes of the selected devices and learn about processor features based on these real life examples.

## **course content**

*Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content*

|  | TOPICS |
| --- | --- |
| LECTURE | 1. *Taxonomy of CPUs, common architectural building blocks, terms* 2. *History and evolution of embedded processing units* 3. *Instruction sets, RISC, CISC* 4. *Programming considerations, interrupts, RTOS* 5. *Memories, volatile, non-volatile, addressing* 6. *Common peripherals I. communication* 7. *Common peripherals II. analog-to-digital conversion* |
| PRACTICE |  |
| laboratory practice |  |

### **DETAILED SYLLABUS AND COURSE SCHEDULE**

### *academic holidays included*

| LECTURE | | | | |
| --- | --- | --- | --- | --- |
| week | **Topic** | **Compulsory reading; page number**  **(from … to …)** | **Required tasks (assignments, tests, etc.)** | **Completion date, due date** |
| 1. | Orientation, introduction | … | … | … |
| 2. | Taxonomy of CPUs, application specific processors |  |  |  |
| 3. | Architectural blocks of a CPU |  |  |  |
| 4. | Instruction sets and common instructions |  |  |  |
| 5. | Programming considerations |  |  |  |
| 6. | Memories, addressing modes |  |  |  |
| 7. | Communication peripherals |  |  |  |
| 8. | ADC peripherals |  |  |  |
| 9. | Break |  |  |  |
| 10. | Student presentations and Q&A |  | presentation | lecture |
| 11. | Student presentations and Q&A |  | presentation | lecture |
| 12. | Student presentations and Q&A |  | presentation | lecture |
| 13. | Student presentations and Q&A |  | presentation | lecture |
| 14. | Student presentations and Q&A |  | presentation | lecture |
| 15. | Grading |  |  |  |

## **assessment and evaluation**

*(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)*

##### **Attendance**

*In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.*

***Method for monitoring attendance*** *(e.g.: attendance sheet / online test/ register, etc.)*

attendance sheet

##### **assessment**

*Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.*

***Course resulting in mid-term grade*** *(PTE TVSz 40§(3))*

***Mid-term assessments, performance evaluation and their ratio in the final grade*** *(The samples in the table to be deleted.)*

| **Type** | **Assessment** | **Ratio in the final grade** |
| --- | --- | --- |
| *Presentation with Q&A (10mins + 5mins)* | *max 10 points* | *100%* |
|  |  |  |
|  |  |  |
|  |  |  |

***Opportunity and procedure for re-takes*** (PTE TVSz 47§(4))

*The specific regulations for improving grades and resitting tests must be read and applied according to the general Code of Studies and Examinations. E.g.: all tests and assessment tasks can be repeated/improved at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.*

Presentation from a new topic between 10th and 14th weeks or on the 1st week of the exam period.

***Grade calculation as a percentage***

*based on the aggregate performance according to the following table*

| **Course grade** | **Performance in %** |
| --- | --- |
| excellent (5) | 85 % … |
| good (4) | 70 % ... 85 % |
| satisfactory (3) | 55 % ... 70 % |
| pass (2) | 40 % ... 55 % |
| fail (1) | below 40 % |

The lower limit given at each grade belongs to that grade.

## **Specified literature**

*In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)*

##### **compulsory reading and availability**

[1.] Up-to-date datasheets of the discussed processors, available from the manufacturers website.