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

course syllabus and course requirements   
academic year 2023./2024. semester 2.

|  |  |
| --- | --- |
| Course title | Control Engineering 2. |
| **Course Code** | **IVB030AN** |
| **Hours/Week: le/pr/lab** | **2/1/0** |
| **Credits** | **4** |
| **Degree Programme** | **Electrical Engineering BSc** |
| **Study Mode** | **full-time** |
| **Requirements** | **exam** |
| **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*

Introduction to relay logic and PLC programming.

syllabus

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

1. **goals and objectives**

*Goals, student learning outcome.*

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

Students will learn and practice relay logic design via PLC simulation problems.

1. **course content**

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

|  |  |
| --- | --- |
|  | TOPICS |
| LECTURE | 1. *Boolean algebra and elementary logical operations* 2. *Relay logic realization of boolean functions, ladder logic* 3. *Combinational network realization* 4. *Sequential network realization* 5. *PLC basics* 6. *Real-world applications* |
| PRACTICE | 1. *Boolean algebra and elementary logical operations* 2. *Relay logic realization of boolean functions* 3. *Combinational network realization* 4. *Sequential network realization* 5. *PLC basics* 6. *Real-world applications* |
| laboratory practice |  |

**DETAILED SYLLABUS AND COURSE SCHEDULE**

*academic holidays included*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| LECTURE AND PRACTICE | | | | |
| week | **Topic** | **Compulsory reading; page number**  **(from … to …)** | **Required tasks (assignments, tests, etc.)** | **Completion date, due date** |
| 1. | Orientation, presenting the requirements |  |  |  |
| 2. | Boolean algebra and logical operations | Bolton CH3 |  |  |
| 3. | Elements of relay logic I. Components | Bolton CH5 & Rabiee CH5 |  |  |
| 4. | Elements of relay logic II. Ladder | Bolton CH5 & Rabiee CH5 |  |  |
| 5. | Combinational networks in ladder | Rabiee CH7 |  |  |
| 6. | Combinational networks in ladder | Rabiee CH7 |  |  |
| 7. | Sequential networks in ladder | Rabiee CH7 |  |  |
| 8. | Sequential networks in ladder | Rabiee CH7 |  |  |
| 9. | Break |  |  |  |
| 10. | PLC introduction, hardware features | Bolton CH1, CH2, Rabiee CH1 |  |  |
| 11. | PLC programming methods | Bolton CH5, Rabiee |  |  |
| 12. | Real world examples |  | homework | 15th week lecture |
| 13. | Summary |  |  |  |
| 14. | Grading |  |  |  |
|  |  |  |  |  |

1. **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-unit with final examination***

***Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam***

*(The samples in the table to be deleted.)*

|  |  |  |
| --- | --- | --- |
| Type | Assessment | *Weighting as a proportion of the pre-requisite for taking the exam* |
| 1. *Homework project* |  | *100%* |
|  |  |  |
|  |  |  |
|  |  |  |

***Requirements for the end-of-semester signature***

(Eg.: mid-term assessment of 40%)

Completing the homework project with a passing grade.

***Re-takes for the end-of-semester signature*** (PTE TVSz 50§(2))

*The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each 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.*

New homework project on 15th week.

***Type of examination*** *(written, oral): written*

***The exam is successful if the result is minimum 40 %.*** *(The minimum cannot exceed 40%.)*

***Calculation of the grade*** *(TVSz 47§ (3))*

The mid-term performance accounts for  ***50***  %, the performance at the exam accounts for  ***50***  % in the calculation of the final grade.

***Calculation of the final grade based on aggregate performance in percentage.***

|  |  |
| --- | --- |
| **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.

1. **Specified literature**

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

**compulsory reading and availability**

[1.] Programmable Logic Controllers Hardware and Programming 2nd Edition, by Max Rabiee, ISBN-13: 978-1605250069

[2.] Programmable Logic Controllers 6th Edition, by William Bolton, ISBN-13: 978-0128029299