COURSE SYLLABUS AND COURSE REQUIREMENTS
2024/2025 SPRING ACADEMIC YEAR, SEMESTER

Course title	Programming 4
Course Code	IVB056ANMI
Hours/Week: le/pr/lab	1/0/2
Credits	4
Degree Programme	Electrical Engineering BSc
Study Mode	full time
Requirements	midterm grade
Teaching Period	4(Spring)
Prerequisites	Nothing
Department(s)	Department of Automation
Course Director	Zoltán Zidarics
Teaching Staff	Zoltán Zidarics

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).
Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

Based on theory and practice, certain Spring Boot programming knowledge as follows:
• Creation and management of Spring Boot projects
• Sharing codebases with a version control system
• Workgroup development, software life cycle management

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.
Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

Acquisition of basic programming skills in Spring Boot. By the end of the semester, the students have the following competencies get:
Programming in Spring Boot on different operating systems (Linux, Windows),
b. Using the Jetbrains IntelliJ IDE tool,
c. use of Spring Boot programming paradigm
d. basic skills:
1. Create a project
2. creating a test environment
3. Code Documentation
4. Setting security environment
5. Deployment to Docker
6. using CI/CD

2. COURSE CONTENT

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

	TOPICS
LECTURE	1. Acquisition of basic programming skills in the Spring Boot.
PRACTICE	1. Acquisition of basic programming skills in the Spring Boot.
LABORATORY PRACTICE	1. Acquisition of basic programming skills in the Spring Boot.

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.	Introduction, refresh important Java skills, functional programming, lambdas, Maven, Lombok			
2.	XML, JSON, YAML, Annotations, Java reflection			
3.	Database fundamentals			
4.	Spring Boot environment			
5.	JPA implementation			
6.	REST API			
7.	Security			
8.	GUI surface			
9.	Deployment			
10.	Gitlab CI/CD			
11.	Microservice architecture			
12.	Final exam			
13.	Consultation			

PRACTICE, LABORATORY PRACTICE

week	**Topic**	**Compulsory reading; page number (from … to …)**	**Required tasks (assignments, tests, etc.)**	**Completion date, due date**
1.	Installing and setting IntelliJ, Java functional, lambdas, Maven, Lombok, Functional KATAs			
2.	Creating annotations and export object hierarchy to XML with reflection			
3.	JDBC interface, H2 database, SQL			
4.	Creating a Spring Boot application, structure of an application			
5.	JPA entities and repositories, JPQL			
6.	REST API in Spring Boot			
7.	Security in Spring Boot			
8.	GUI, Thymeleaf			
9.	Deployment to Docker image, JIB			
10.	GITLAB CI/CD environment			
11.	Microservice architecture			
12.	Final exam			
13.	Consultation			

3. 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.)*

online

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
Test 1	30	20
Test 2	30	20
Final exam	120	60

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.

The practical exams cannot be replaced, but the semester assignment in the first week of the exam period can.

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%
satisfactory (3)	55%
pass (2)	40%
fail (1)	40%

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

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. ***e.g..: Test 1***	*eg. max 20 points*	*eg. 20 %*
2. ***e.g.: Test 2***	*eg. max 30 points*	*eg. 30 %*
3. ***e.g.: home assignment (project documentation)***	*eg. max 30 points*	*eg. 30 %*
4. ***…***	*eg. max 15 points*	*eg. 20 %*

Requirements for the end-of-semester signature

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

A maximum of 2 of the results obtained in the online tests may be insufficient

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.

The practical exams cannot be replaced, but the semester assignment in the first week of the exam period can.

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

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

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

The mid-term performance accounts for … %, the performance at the exam accounts for … % 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%..100%
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.

4. SPECIFIED LITERATURE

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

COMPULSORY READING AND AVAILABILITY

[0].Oracle: https://docs.oracle.com/en/java/
[1].Pivotal: https://docs.spring.io/spring-framework/reference/index.html
[2].Pivotal: https://docs.spring.io/spring-data/jpa/docs/current-SNAPSHOT/reference/html/#reference
[3].:

RECOMMENDED LITERATURE AND AVAILABILITY

[0].Oracle: https://docs.oracle.com/javaee/6/tutorial/doc/bnbpz.html
[1].Thymeleaf: https://www.thymeleaf.org/documentation.html
[2].Google: https://github.com/GoogleContainerTools/jib/tree/master/jib-maven-plugin
[3].Gitlab: https://docs.gitlab.com/ci/