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

# course syllabus and course requirements academic year 2022/23 semester 2

|  |  |
| --- | --- |
| ***Course title*** | *Programming 4* |
| ***Course Code*** | *IVB003AN* |
| ***Hours/Week: le/pr/lab***  | *3 laboratory + 2 lecture*  |
| ***Credits*** | *4* |
| ***Degree Programme*** | *mandatory* |
| ***Study Mode***  | *lecture* |
| ***Requirements*** | *-* |
| ***Teaching Period*** | *2022/23/2* |
| ***Prerequisites*** | *-* |
| ***Department(s)*** |  |
| ***Course Director*** | *MIK-MS* |
|  |  |

# course description

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

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

Use of Java-based Spring Boot framework. Students get to know the basics of the Spring Boot framework, learn how to use and configure the subsystems. They will be able to develop web-based applications using the Thymeleaf web framework. They learn how to use the REST interface and acquire basic database management solutions based on JPA.

# syllabus

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

## **goals and objectives**

*Goals, student learning outcome.*

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

Independent design, programming, testing, configuration and deployment of a Spring Boot application.

## **course content**

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

|  |  |
| --- | --- |
|  | **TOPICS** |
| **laboratory practice** | 1. *Introduction*
2. *Description of necessary tools (Maven, XML, JSON)*
3. *Using POJO, Lombok operation*
4. *Operation and use of annotations*
5. *Design patterns*
6. *Use of JPA*
7. *Servlet*
8. *WEB interface, JSP, JSF*
9. *Spring boot basics*
10. *Rest interface*
11. *Thyme leaf*
12. *Security*
13. *Docker, containerization*
14. *Semester task*
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### **DETAILED SYLLABUS AND COURSE SCHEDULE**

### *academic holidays included*

|  |
| --- |
| ***PRACTICE, LABORATORY PRACTICE*** |
| *week* | **Topic** | **Compulsory reading; page number****(from … to …)** | **Required tasks (assignments, tests, etc.)** | **Completion date, due date** |
| *1.* |  |  |  |  |
| *2.* | Introduction, subject requirements |  | - |  |
| *3.* | XML, JSON Java tools, Maven | Shared slides/files | - |  |
| *4.* | Using POJO, Lombok | Shared slides | - |  |
| *5.* | Annotation, JSON-XML export | Shared slides | - |  |
| *6.* | MVC, Singleton, Builder patterns | Shared slides | - |  |
| *7.* | Using JPA, sample application | Shared slides | Home assignment 1 |  |
| *8.* | Servlet creation, configuration | Shared slides | - |  |
| *9.* | WEB interface, JSP, JSF |  | - |  |
| *10.* | Spring Boot basics as an application | Shared slides |  |  |
| *11.* | Rest interface implementation | Shared slides | - |  |
| *12.* | Web interface implementation with Thymeleaf | Shared slides | - |  |
| *13.* | Security configuration | Shared slides | - |  |
| *14.* | Creating a Docker image from your own application | Shared slides | - |  |
| *15.* | Discussion of semester assignment |  | Home assignment 2 |  |

## **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** |
| *Home assignment 1* | *max 40 points* | *40 %* |
| *Home assignment 2* | *max 60 points* | *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.*

Min. 40% on test and home assignments, each cases, and max. 3 unapproved absences

**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. [XML standard](https://www.w3.org/TR/xml/)
2. [JSON](https://www.json.org/json-en.html)
3. [Maven reference manual](https://maven.apache.org/index.html)
4. [Lombok manual](https://projectlombok.org/features/)
5. [Java annotation](https://docs.oracle.com/javase/tutorial/java/annotations/)
6. [Design patterns](https://www.javatpoint.com/design-patterns-in-java)
7. [JPA Manual](https://docs.oracle.com/javaee/6/tutorial/doc/bnbpz.html)
8. [Java servlet](https://www.javatpoint.com/servlet-tutorial)
9. [JSP](https://www.tutorialspoint.com/jsp/index.htm) [JSF](https://www.oracle.com/java/technologies/javaserverfaces.html)
10. [Spring Boot manual](https://docs.spring.io/spring-boot/docs/current/reference/htmlsingle/)
11. [REST Api](https://restfulapi.net/)
12. [Thymeleaf](https://www.thymeleaf.org/)
13. [Spring Security](https://docs.spring.io/spring-security/reference/index.html)
14. [Docker](https://www.docker.com/)

##### **recommended literature and availability**

1. [Mastering Spring Boot](https://www.amazon.com/Mastering-Spring-Boot-2-0-cloud-native/dp/1787127567)
2. [JPA Minibook](https://enos.itcollege.ee/~jpoial/java/naited/JPA_Mini_Book.pdf)
3. [Maven Cookbook](https://books.sonatype.com/mcookbook/pdf/mcookbook-pdf.pdf)
4. [The Docker book](https://dockerbook.com/)