

# Programming4

Syllabus Number

4E203

Special Subjects

Requisites 2 credit

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## 1. Course Description

We learn the following contents about Java using an integrated development environment.

- Development techniques using an Integrated Development Environment "Eclipse".
- Development techniques using debugger tools and JUnit.
- Object models and standard class APIs.
- Collection classes, Stream APIs.
- The overview of event driven programming and using GUI APIs.
- The new language specifications (Annotations, Lambda Expressions)

Students acquire skills related to the diplomatic policy DP2 and DP3.

## 2. Course Objectives

This course aims at mastering practical techniques and concepts through using programming language Java. Specifically, it is required for students to understand and to utilize the followings at least; development techniques using debugger tools and JUnit, object models of Java and event driven programming. In addition, we learn the bases of annotations and lambda expressions, student will be able to write practical and high quality computer programs using the topics described above.

## 3. Grading Policy

Learners have to get the acceptance of all assignments. This course evaluates at the following rate: reports are 20% and an examination 80%.

## 4. Textbook and Reference

### Textbook

This course uses a following references. However, mainly teaching materials is provided on LMS. And also, learners use Eclipse and JDK which are installed in student's own PC as programming environment.

### Reference

結城浩 Java言語プログラミングレッスン第3版(下) ソフトバンククリエイティブ、ISBN-13:978-4797371260

結城浩 Java言語プログラミングレッスン第3版(上) ソフトバンククリエイティブ、ISBN-13: 978-4797371253

柴田芳樹 訳 Effective Java 第3版 丸善出版、ISBN-13: 978-4621303252

山田 祥寛 独習Java 新版 翔泳社、ISBN-13: 978-4798151120

## 5. Requirements(Assignments)

Learners have to read contents and take self tests on LMS. And also, for developing understanding, it is effective to implement sample programs which are provided on LMS.

## 6. Note

Because there are many assignments, learners should to send reports systematically. Report deadlines are different on first half and second half of the term. Learners should take care the deadline of first half, because it is tended to be forgotten.

## 7. Schedule

- [1] Review the contents of Programming 3
- [2] Debugger and JUnit
- [3] Object classes (Override of clone, equals and toString method), Class Libraries
- [4] Collections (including Generics)
- [5] Usage Stream Classes 1 (File Input / Output)
- [6] Usage Stream Classes 2 (Text Stream, Byte Stream)
- [7] Exercise 1
- [8] Event Driven Programming, Java Delegation Event Model
- [9] GUI Programming by Java 1 (Drawing, Mouse Events)
- [10] GUI Programming by Java 2 (Mouse Events, Swing Component Model)
- [11] Exercise 2
- [12] Annotations
- [13] Lambda expressions
- [14] Threads (Parallel Programming)
- [15] Exercise 3