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Faculty of Natural Science
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Study guide

DA110: Fundamental Programming 7,5 credits (HT18)

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1. About the study guide

This study guide can be seen as an explanation of, and clarification to, the course plan for the course DA110: Fundamental programming.

The aim of this document is to give the student information about the content of the course, how the course will be carried out and how the examination in the course will be handled.

2. Introduction to the course

This course in Fundamental Programming will focus on covering the very basics of Java programming. The main topics that will be covered are:

- Variables, data types and simple data structures
- Control flow using conditions and loops
- Methods and classes
- Basic object oriented design

3. Examiner and teachers

The **course coordinator** for this course is Andreas Nilsson.

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The **examiner** for this course is Andreas Nilsson.

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Other **assisting teacher(s)** in this course:

Federica Comuni
E-mail: federica.comuni0002@stud.hkr.se

Natan Gomes De Sousa
E-mail: natan.gomes@gmx.de

4. Literature

Paul J. Dietel, Harvey Dietel, (2017) **Java How to Program Early Objects, Global edition**, Pearson Education Limited. (1296 pages).
ISBN 9781292223858

5. Implementation

The course intends to have a very practical approach to learning and will use the flipped classroom principles[1] as one of its cornerstones. This means that the student will have to take a greater responsibility for his or her own studies.

To get the most out of the course the student must not only study the suggested chapters before each activity and solve the assigned tasks, the student should also make sure to communicate any difficulties to the teachers so that the teachers can assist and suggest possible solutions. In other words, the teachers are there to facilitate the learning process and to help the student when the student struggles with understanding a concept or solving a task. But for the teacher to do this, the student must inform the teachers if there are any problems.

The teachers will primarily advice and give hints on how to solve problems rather than showing the actual solution. This approach is intended to motivate the student to find solutions to problems on their own. The student should not be discouraged by this and is of course allowed to ask for help or assistance repeatedly until the student understands how to solve the problem.

All course activities are located at campus in Kristianstad and will fall into one of the following categories:

- **Lectures** A mixture between teacher led lecturing and student activities. Focus will be on student activities but when needed, traditional teacher led lecturing will be used.
- **Exercises** Individual or group exercises consisting of slightly larger tasks. The exercises aim to give the student opportunity to practice what has been covered during the lectures.
- **Seminars** Group activities where the students will be divided into smaller groups and take part in discussions, reflect on solutions, write source code and/or take part in competitions.
- **Home exam** **Mandatory activity** where the student will be asked to create smaller applications or complete provided code.
- **Exam** **Mandatory activity** in the form of a written, individual exam to asses the students knowledge in Fundamental Programming.

The learning platform Canvas[2] will be used for publishing any material in the course.

6. Activities and associated reading

For information about when each activity is scheduled the student shall use the Kristianstad University web service for viewing the schedule[4].

Before, during and after each activity the student shall consult the corresponding page located on Canvas[2]. The information on each page will state what the student shall do before attending the activity (lecture/exercise/seminar), what will be covered during the activity and potentially give suggestions on what the student should do after each activity.

It is the students responsibility to come well prepared to each activity. Well prepared means that the students shall have completed the listed prerequisites.

As an example, before each lecture the student shall read the listed chapters in the course literature, watch the listed videos and read the teachers comments. During the lecture the student can ask questions about the covered topics and will have the opportunity to work on related tasks under the guidance of, or help from, the teacher. After the lecture the student shall reflect on what was covered and if needed, ask followup questions.

In Appendix A the student will find a compiled list of all lectures and associated reading instructions together with prerequisites for all other activities.

7. Examination

For more information about the examinations and what learning outcome is mapped to what examination see the course plan[3] or contact the course coordinator, Andreas Nilsson.

It is the students responsibility to check the schedule[4] regularly during the course to avoid missing any mandatory activities or changes to the schedule. The student is also responsible for attending any re-examination(s) needed.

The student is required to register for both ordinary examinations and for re-examinations. The registration must be done no later than 14 days before the examination session. More information about how to do this can be found on the Kristianstad University web page under ”Study at HKR”[5].

7.1. Examination 1 - Home exam (3 credits)

Graded Pass or Fail

During this examination all aids are allowed.

This examination is mandatory and students must pass it to be awarded the three credits. The examination will cover all the content of the course, this includes lectures, exercises, seminars and covered chapters in the course literature.

During the test the student must be able to show that he or she can individually create Java applications according to given instructions. This can include, but is not limited to, creating applications from scratch, creating parts of an application, correct given code, complete given code or alter given code.

It is imperative that the student prepare before this examination, otherwise the student will have a very small chance of passing the examination.

The examination will be given as a home exam so the student must make sure he or she has access to a computer with Java SDK and IntelliJ IDEA installed. The computer must be connected to the Internet as both publishing the tasks and the hand in will be done via Canvas[2].

Handing in the examination shall be done by using the appropriate upload link published on the learning platform. Late uploads will not be considered.

The grade is calculated based on the number of points the student scores in relation to the maximum number of points possible.

- 75% - Grade Pass

The home exam will be held during week 45
The second opportunity to do the practical test will be during week 48
The third opportunity to do the practical test will be during week 51

7.2. Examination 2 - Written exam (4,5 credits)

Graded Fail, 3, 4, 5

During this examination no aids are allowed.

This examination is mandatory and students must pass it to be awarded the associated credits. The examination will cover all the content of the course, this includes lectures, exercises, seminars and covered chapters in the course literature.

During the written exam the student might be asked to discuss, describe or explain theory or techniques covered during the course. The student must also be prepared to both read and write shorted snippets of Java code. During the written exam all Java code must be written using only pen and paper (no computer).

The grade is calculated based on the number of points the student scores in relation to the maximum number of points possible.

- 50% - Grade 3
- 75% - Grade 4
- 90% - Grade 5

The first exam will he held during week 45
The first re-exam will be held during week 48
The second re-exam will be held during week 51

7.3. Final Grading

Graded Fail, 3, 4, 5

The final grade for this course will be based on the students grades for the home exam and the exam (Examination 1 and Examination 2).

The following is required for the student to receive the different grades:

- Grade 3: Passing the home exam and get grade 3 at the exam.
- Grade 4: Passing the home exam and get grade 4 at the exam.
- Grade 5: Passing the home exam and get grade 5 at the exam.

7.4. Failing the examinations

In this course no extra tasks are given to students who almost managed to pass an examination. If a student fail an examination, the student must take the examination again.

The students will have three chances to pass the exam during this course, first the ordinary exam and then the two re-exams. Should the student not be able to pass the exam in these three chances the student is welcome back to try again the next time the course is given.

As with the exam the student have three chances to pass the home exam during this course. Failing to pass the home exam in these three chances will result in that the student must come back the next time the course is given and redo the home exam.

8. Media

8.1. Class recordings

During lectures and exercises the teacher will record notes and examples using either photos or videos. The recordings will be published on Canvas[2] when all groups have had the activity.

8.2. Tech in class

The teacher has no objection to student using any devices in the classroom as long as it does not prove a distracting to other students or interfere with the learning activities. Students are allowed to record audio and/or video in the classroom as long as the student make sure not to include other students who have not given their permission to be in the recordings.

9. General policies

9.1. Attendance

Students are recommended to attend, and take an active role, during all activities but the only mandatory activities are the examinations. Students are highly recommended to prepare before attending an activity.

9.2. Deadlines and being late for examinations

All deadlines in this course are hard deadlines and the only exception to this rule is if the student has a doctors appointment (or similar) and has told the teacher about this in advance. If the student is late for an examination the student has forfeited his or her right to attend that examination session and the student is referred to the next examination.

9.3. Studying with a disability

Students can apply for pedagogical support in connection with his or her studies. If the student is in need of pedagogical support the students should contact the coordinator for students with disabilities well before the start of the academic term so that HKR can help the student in the best way possible. More information can be found on the HKR website[5].

10. References

[1] Flipped Classroom
https://en.wikipedia.org/wiki/Flipped_classroom
(Available 2018-05-25)

[2] Canvas
https://hkr.instructure.com
(Available 2018-05-25)

[3] DA110E - Course plan
https://www.hkr.se/en/course/DA110E/course-syllabus
(Available 2018-05-25)

[4] Schedule
http://schema.hkr.se/index.jsp
(Available 2018-05-25)

[5] Study at HKR
https://www.hkr.se/en/study-at-hkr/
(Available 2018-05-25)

11. Appendix A

In this course the student is recommended to primarily use Canvas for information about how to prepare for each activity. The reason for this recommendation is that each activity page on Canvas will not only tell the student what chapters to read but also link to online resources. The online resources linked on Canvas can for example be tutorials and videos covering the same topics as the course literature.

Should the student only be interested in the associated chapters in the course literature then Table 1 covers that.

Lectures are the only activities in this course that require the student to prepare by reading chapters from the course literature. Other activities might rely on the student having completed previous lectures and/or other activities but will not require the student to prepare by reading new chapters from the course literature. Table 2 lists other activities and their associated prerequisites.

Table 1 - Lectures and associated reading

Activity	Topic	Associated reading
Lecture 1	Introduction	N/A
Lecture 2	Compiler and Interpreter	N/A
Lecture 3	Variables and Datatypes	Chapter 2 Chapter 3.1 - 3.5
Lecture 4	Control Flow	Chapter 4.1 - 4.14 Chapter 5.1 - 5.10
Lecture 5	Methods	Chapter 3.1 - 3.5 (repetition) Chapter 6.1 - 6.12
Lecture 6	Data Structures	Chapter 7.1 - 7.16
Lecture 7	Classes	Chapter 8.1 - 8.15 Chapter 9.1 - 9.6
Lecture 8	Software Design	9.1 - 9.6 (Repetition)
Lecture 9	TBA	TBA

Table 2 - Other activities and associated prerequisites

Activity	Topic	Prerequisites
Exercise 1	Getting started	N/A
Exercise 2	Variables and Datatypes	Lecture 3
Exercise 3	Control Flow	Lecture 4
Seminar 1	Variables and Control Flow	All previous content *
Exercise 4	Methods	Lecture 5
Seminar 2	Methods	All previous content *
Exercise 5	Data Structures	Lecture 6
Exercise 6	Classes	Lecture 7
Exercise 7	Summary	All previous content *
Seminar 3	Data Structures	All previous content *

* All content covered in the course up to this point is considered prerequisites for the activity