

This is a temporary(previous) version of course syllabus to help students to briefly have a look at the course content. The final version is to be updated soon.



## Korea University International Summer Campus (KU ISC) 2020

*Embark on a unique summer*

June 30, 2020 ~ Jul 23, 2020

### ISC293 – Introduction to Computer Science

#### I . Instructor

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Home Institution	University of Nottingham
Office	Woodang Hall, Room 305
Office Hours	2-3pm Monday to Thursday by Appointment

#### II. Textbook

Required Textbook	NA
Recommended Additional Readings	<p>Computer Science Illuminated. Nell Dale, John Lewis, Jones and Bartlett Publishers, 2019. Covers topics I, II and III of the course. ISBN 1284155617 or 978-1284155617.</p> <p>Computer Science: An Overview. J Glenn Brookshear. Pearson Addison-Wesley, 2018. Alternative to the above book. ISBN 013487546X or 978-0134875460.</p> <p>Java in Easy Steps. Mike McGrath, Easy Steps Ltd, 2017. Covers topics IV and V of the course. ISBN 1840787538 or 978-1840787535.</p> <p>Java Programming Fundamentals. Premchand S. Nair, CRC Press, 2009. Covers topics IV and V of the course. ISBN 9781420065473 or 978-1420065473.</p>

#### III. Course Description and Objectives

##### Course Description

This course gives an introduction to the world of computer science and is designed for students from different backgrounds as no prior knowledge of computing is assumed. This course gives an insight into computer science as the discipline that studies computers and computer systems, how they work and how they are constructed and programmed. This is not another course in which students learn to use some specific software. Instead, this course will enable students to gain an understanding of: the way computers store and process information, the organization of hardware, the way computer networks work, the construction of computer programs with emphasis on algorithms and data structures to solve a variety of real-world problems. The course also gives a gentle introduction to computer programming using the Java programming language. Students will learn to understand, modify and write some simple Java programs. Since part of this course involves learning some computer programming, it is essential that students have access to their own computer during the course.

**Important:** students will be provided with the course notes and worksheets once the course starts and these should be sufficient to prepare for the exams. However, it is also highly recommended to study from the books in the recommended additional readings. Please note that none of the recommended books covers all the material taught in the course but the notes and worksheets provided do that.

## Syllabus

- I. Fundamentals of Computing
  1. History of Computing
  2. Binary Numerical System
  3. Other Numerical Systems
  4. Data Representation and Storage
  5. Introduction to Programming in Java
- II. Computer Architecture and Program Execution
  1. Basic Operation of a Computer
  2. Computer Architecture
  3. Program Execution
  4. Assembly Language
  5. Writing Simple Java Programs
- III. Data Storage and Communication
  1. Networks and Internet Concepts
  2. Data Structures Fundamentals
  3. Implementing Data Structures
  4. Working With Data Types in Java
- IV. Computer Algorithms and Programming
  1. Algorithms Fundamentals
  2. Sequential and Selection Structures
  3. Iterative Structures
  4. Writing Algorithms in Java

## IV. Grading

Attendance	% - Korea University attendance policy
Participation	% - NA
Exam 1	<b>30 % - Monday 6th July</b>
Exam 2	<b>30 % - Monday 13th July</b>
Exam 3	<b>30 % - Wednesday 22nd July</b>
Group Programming	<b>10 % - Thursday 23rd July</b> A final assignment of writing a computer program in Java will be undertaken by students in groups. In addition to further demonstrate the acquired skills to design and write a computer program, this assignment will also help students to develop their communication and teamwork skills. Each group will present their work to the class.
About the Exams	Each exam will be set at the start of the lecture in order to assess the material covered in the previous week. The third exam includes a practical test on computer programming. This test is about writing a computer program in the Java programming language. Each student should bring their own laptop for taking this test. Each exams takes about 40 minutes and the lecture continues after a short break once the exam ends.
Final Course Grade	It is obtained from the weighted average of the three weekly exams plus the group programming assignment. However, students that do not achieve a

	pass grade from this calculation, will have the opportunity of taking a Final Exam (100%) that covers the whole course content including practical computer programming. The grade obtained from the weekly exams will be replaced by the grade obtained in the final exam. This special opportunity of a final exam will take place on the morning of Friday 19th of July.
Policy on Exams	A missed weekly exam will be counted as zero in the weighted average calculation. If there is a valid reason for missing a weekly exam (e.g. serious illness, bereavement, etc.) the student should get in contact with the professor as soon as possible to explain the situation. Then, the student will have to provide valid evidence to justify the absence. This evidence will be checked by the ISC Program Staff (room 314). Only after the provided evidence has been accepted by the ISC office, an alternative arrangement may be made for the missed weekly exam.
In-class Formative Assessment	In addition to the summative assessment (three exams) there will be a number of formative assessments (worksheets) in each class. These assessments do not count towards the grade but are very useful to prepare for the weekly exams. Students will be asked to work in small groups for completing these formative assessments.

## V. Class Outline

Date	Topic	Chapter	Remarks
June 30 (Tue)	Orientation Day		
July 01 (Wed)	Introduction to Course History of Computing Binary Numerical System	NA	NA
July 02 (Thu)	Other Numerical Systems Data Representation and Storage	NA	NA
July 03 (Fri)	Introduction to Programming in Java	NA	NA
July 06 (Mon)	Examination 1 Basic Operation of a Computer Computer Architecture	NA	NA
July 07 (Tue)	Program Execution	NA	NA
July 08 (Wed)	Assembly Language	NA	NA
July 09 (Thu)	Writing Simple Java Programs	NA	NA
July 13 (Mon)	Examination 2 Networks and Internet Problems	NA	NA
July 14 (Tue)	Data Structures Fundamentals	NA	NA
July 15 (Wed)	Implementing Data Structures	NA	NA
July 16 (Thu)	Working With Data Types in Java	NA	NA
July 20 (Mon)	Algorithms Fundamentals Sequential and Selection Structures	NA	NA
July 21 (Tue)	Iterative Structures Writing Algorithms in Java	NA	NA
July 22 (Wed)	Examination 3 Group Programming	NA	NA
July 23 (Thu)	Group Programming Presentation Grade Consultation Special Opportunity Final Exam (100%)	NA	NA