

Introduction to Programming – Concepts and Tools

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Summary

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- Concepts of procedural programming (week 1–5)
 - Syntactic elements, basic data types, arithmetic expressions
 - Control structures, loops
 - Methods (procedures), call by value vs call by name, method overloading, scope, recursion
 - Arrays
 - Searching in/sorting of arrays
- Elementary concepts of OOP (week 6–7)
 - Classes and objects, access modifiers, encapsulation, static variables and methods
 - Inheritance, generic methods using class object, abstract classes, interfaces
 - UML class diagrams

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Summary

- Selected topics in programming (week 8–10)
 - Software engineering, testing
 - Exception handling
 - File handling
 - Dynamic data structures
- Graphical user interfaces (week 11)
 - Windows, frames
 - Components
 - Event handling

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Cross-session topics

- Good programming practice
 - Useful variable names
 - Indentation
 - Comments
 - ...
- Java (online) documentation
- Reporting
 - Design
 - Testing
 - User Guide

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Perspective

- Concepts in programming
 - Language independent
 - Syntax independent
 - Apply to many languages very different in style
 - Transferable
- Realisation of those concepts in Java
 - Syntax is important

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Acquired skills

- Go for the concepts!
 - Without understanding the concepts you will not be able to implement even simple algorithms or to write larger programs.
 - Focus on the essentials.
- Acquire (practical) skills along the way!
 - Skills are important to be able to apply the concepts.
 - Solid skills cannot be acquired without conceptual skills.
 - Acquiring skills can support learning the concepts.

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Topics not covered

- Team work
- Programming larger pieces of software
- Object oriented programming
- (More) modern technology
- Databases/Internet
- Advanced algorithms
- Other programming language paradigms
- ...



Exam

- Friday, June 6
- Open book, bring
 - Course book
 - Additional notes by Peter Sestoft
 - Handwritten notes
 - Language dictionary
- English questions only
- 4 questions of given weight



Exam preparation

- Do a programming project
- Use old exam(s) as exam preparation, see homepage. Note however that our course focuses more on concepts than GP, which will be reflected in the exam.
- Use the newsgroup to ask fellow students, and test your own skills by answering questions of fellow students.
- A last resort might be sending me an email, but try the newsgroup first, since more people can participate in the discussion.



Finally ...

- Thanks for joining the course!
- Enjoy the project period!
- Enjoy being at ITU!