301AA - Advanced Programming [AP-20]

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Course pages: http://pages.di.unipi.it/corradini/Didattica/AP-20/

Virtual room: *you have found it!*

Department of Computer Science, Pisa
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***AP-01**: Overview and Admins*

Goals of the course

- To provide the students with a deep understanding of how ***high level programming concepts*** and ***metaphors*** map into ***executable systems*** and which are ***their costs and limitations***
- To gain familiarity with modern principles, techniques, and best practices of software construction
- To introduce the students to techniques of programming at higher abstraction levels, in particular ***component programming*** and ***functional programming***
- To present ***state-of-the-art frameworks*** incorporating these techniques.

Prerequisites

- Undergraduate level knowledge of
  - at least one object-oriented programming language (like Java, C++, C# or others)
  - at least one functional programming language (like Haskell, OCaml, Scheme or others)

➔ Informal online evaluation (to be organized)

➔ Suggestions to fill possible gaps will be given

Programme

- Run Time Support and Execution Environments
- Component Based Programming
- Software and Application Frameworks
- Polymorphism & Generic Programming
- Functional aspects of programming languages
- Scripting languages
- Advanced concepts in programming languages

Organization of the course

- **Frontal lessons** are presented online on Teams, using slides
- ***Lessons will be recorded and left accessible on Teams (unless…)***
- An **informal entry evaluation** of the course prerequisites will be proposed at the beginning of the course. Details will follow…
- **Hands-on activities** will be organized, to experiment with concepts, tools and languages presented in the lessons. Mainly in the second part of the course.
- Interaction with the lecturer: **during lessons**, by e-mails, in meetings during office hours (day/time to be fixed).
- On the **web page of the course**, the slides presented in each lesson are published progressively, with references to corresponding topics in the reading material.
- → http://pages.di.unipi.it/corradini/Didattica/AP-20/
- → see also http://pages.di.unipi.it/corradini/Didattica/AP-19/

Evaluation and other things…

Evaluation

- Some programming assignments during the course
- Final oral exam

Attendance to the course is strongly encouraged

- *The recorded lessons are available for exceptional situations*
- If you miss a lesson, you can find on the course web page the list of topics presented, with slides and references to teaching material

Examination methods for **non-attending students** are identical to those for attending students