



## UNIVERSITÀ DI PISA PROGRAMMAZIONE II

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**FRANCESCA LEVI**

Anno accademico 2019/20  
CdS INFORMATICA  
Codice 273AA  
CFU 9

Moduli	Settore/i	Tipo	Ore	Docente/i
PROGRAMMAZIONE II	INF/01	LEZIONI	72	FRANCESCA LEVI

### Obiettivi di apprendimento

#### *Conoscenze*

The student who successfully completes the course will have the ability to design and verify advanced programming abstractions using the abstraction mechanism provided by object-oriented programming languages like Java. He or she will have a good understanding of the basic components of the run-time supports of high-level programming languages.

#### *Modalità di verifica delle conoscenze*

During the written exam the student must demonstrate to be able to put into practice some notions of programming language semantics learned during the course. The student's ability to explain correctly the main topics presented during the course at the board will be assessed during the oral exam.

Methods:

- Final oral exam
- Final written exam
- Periodic written tests

A causa dell' emergenza COVID l'esame scritto è rimpiazzato da un esame orale telematico. Per quanto riguarda la sessione estiva 2019-2020. Resta la discussione del progetto.

### Indicazioni metodologiche

Delivery: face to face

Learning activities:

- attending lectures
- participation in discussions
- individual study

Attendance: Advised

Teaching methods:

- Lectures
- project work

### Programma (contenuti dell'insegnamento)

Programming Language Paradigms. Run-time structures: environment, memory, heap; blocks, subprograms, activation records, stack; objects; interpretation, compilation. Object-Oriented Programming. The kernel of the Java language: classes, objects, inheritance, data abstraction (specification and implementation, verification techniques based on induction), abstraction through hierarchies, Java polymorphism. Concurrent programming techniques.

### Bibliografia e materiale didattico

Possible readings to cover the various parts of the course include the following. Programming language paradigms: 1) M. Gabbrielli and S. Martini, Linguaggi di Programmazione: Principi e Paradigmi, McGraw-Hill, 2006 2) Michael L. Scott, Programming Language Pragmatics, Third Edition, Morgan-Kaufmann, 2009 3) Peter Sestoft Programming Language Concepts, Springer, 2012 Object-Oriented Programming: 4) B. Liskov (with J. Guttag), Program Development in Java: Abstraction, + Specification and Object-Oriented design, Addison-Wesley, 2000 Concurrent Programming Techniques: 5) The art of multiprocessor programming (Cap 1-2-9), Maurice Herlihy, Nir Shavit, 2012 Elsevier Other material will be available for downloading from the course web page.



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Pagina web del corso

<http://pages.di.unipi.it/levi/PR2levi2019.html>

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