Course number	G-LAS12 80006 LE10

Course title (and course title in English)	Introduction to Algorithms and Informatics Introduction to Algorithms and Informatics		Instructor's name, job title, and department of affiliation	Graduate School of Informatics Program-Specific Associate Professor,LE GALL, Francois

Group	Interdisciplinary Graduate Courses	Field(Classification)	Statistics, Informatics and Data Science

Language of instruction	English	Old group		Number of credits	2

Number of weekly time blocks	1	Class style	Lecture (Face-to-face course)	Year/semesters	2025	First semester

Days and periods	Wed.2	Target year	Graduate students	Eligible students	For science students

Students of Graduate School of Informatics, Graduate School of Engineering cannot take this course as liberal arts and general education course. Please register the course with your department.

[Overview and purpose of the course]

This course is an introductory graduate course on algorithms and informatics for non-specialists. It will cover the fundamentals of algorithm design and analysis, the analysis of graphs and flow problems, data structures as well as an introduction to important concepts such as randomization, heuristics and approximation.

[Course objectives]

At the end of the course, students should understand the basic concepts of algorithms and informatics studied during the semester.

[Course schedule and contents)]

1. Introduction: the role of algorithms in computing (1 week)
2. Data structures, search and sort algorithms (3 weeks)
3. Basic techniques for algorithm design (4 weeks)
a. Divide-and-Conquer
b. Greedy algorithms
c. Dynamic programming
4. Graphs algorithms (3 weeks)
5. Randomized algorithms (2 weeks)
6. Solving hard problems: heuristics and approximation (2 weeks)

[Course requirements]

None

[Evaluation methods and policy]

Evaluation on submitted reports.

[Textbooks]

Not used

Introduction to Algorithms and Informatics(2)

[References, etc.]

References, etc.

T. H. Cormen, C. E. Leiserson, R. L. Rivest and C. Stein   Introduction to Algorithms, 3rd edition   The MIT Press

[Study outside of class (preparation and review)]

The instructor expects students to spend enough time after each class for review. Additionally, mandatory reading material and assignments will be given during the course.

[Other information (office hours, etc.)]

[Essential courses]