Algorithm Design and Analysis

Course code CIF61008	student workload 90 hours	credits (according to ECTS) 4.5	semester Sem. 3	frequency each odd-semester	duration 16 meetings

1	Types of courses		contact hours	independent study	class size
	compulsory		63 hours	27 hours	40 students

5	Prerequisites for participation

2	Learning outcomes
	IF-ILO-2
	Graduates have the ability to be scientific, work collaboratively, have a professional attitude, and have good adaptation skills when working in groups or as an individual.
	IF-ILO-3
	Graduates are able to develop professional careers in the field of computer science based on quality aspects, data-based decision making, be responsible, and make continuous improvements.
	IF-ILO-4
	Graduates have the ability to think computationally, design-based thinking, conduct analysis with scientific writing, and are able to apply the values of Technopreneurship in creating product innovations in the Systems or Information Technology domain.
	IF-ILO-7
	Mastering the theoretical concept and principles of computer science, especially in the aspect of algorithms, programming, intelligent systems, information management, parallel and distributed computing, information security, human-computer interaction, software engineering, and fundamentals of computer systems and networks.
	IF-ILO-13
	Graduates are able to perform abstraction, modeling, representation, and data acquisition in order to perform the data analysis.

3	Subject aims
	1.　　Students are able to understand the concept of algorithm design and analysis in solving broad problems and are able to study various examples of algorithms and their applications
	2.　　Students are able to design, and perform analytical calculations, to determine the correctness and accuracy of several algorithms including non-recursive algorithms, order of growth, asymptotic notation, recursive algorithms, brute force, greedy, divide & conquer, decrease & conquer, dynamic programming and backtracking algorithms, on relevant cases in various fields and multi-disciplinary.

4	**Teaching methods**
	lectures, case study, class discussion, presentation
6	**Assessment methods**
	assignment, mid-term examination, end-term examination, project evaluation, practical-skill assessment
8	**This module is used in the following degree programmes as well**
10	**Responsibility for module**
11	**Other information**
	1. Thomas H. Cormen, Charles E.Leiserson, Ronald L. Rivest, Introduction To Algorithms, MIT Press/McGraw-Hill, 2001.
	2. Anany Levitin, Introduction To The Design & Analysis of Algorithms, Addison Wesley, 2003.