Swarm Intelligence

Course code CIF61056	student workload 90 hours	credits (according to ECTS) 4,5	semester Sem. 5 & 7	frequency each odd-semester	duration 16 meetings

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

5	Prerequisites for participation
	Have completed Algorithms and Data Structures

2	Learning outcomes
	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-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-10
	Graduates are able to analyze, design, build and evaluate an intelligent system that has the ability to learn from the environment.

3	Subject aims
	Students are able to understand the concepts and basics of intelligent computing from Swarm Intelligence in the form of algorithms from the results of the conversion of the behaviour of individual groups that exist in nature into a form of mathematical equations that are collected into logical steps
	Students are able to understand the concept of advanced Swarm Intelligence and use it to solve a simple or complex problem with a system based on the principles of group intelligence
	Students are able to understand in depth the detailed steps and component specifications at each step, from Swarm Intelligence which cannot be found in other optimization techniques
	Students are able to implement various kinds of Swarm Intelligence algorithms to search for optimal solutions in multidisciplinary scientific fields, where the solution space must be very wide

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**

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<tr><td>11</td><td>Other information</td></tr>
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1. Swarm Intelligence (Publisher: The Morgan Kaufmann Series in Evolutionary Computation) 1st Edition (April 9, 2001). Author: Russell C. Eberhart, Yuhui Shi, James Kennedy.

2. Swarm Intelligence: Principles, Advances, and Applications. November 24, 2015 by CRC Press. Author: Aboul Ella Hassanien, Eid Emary.

3. Advances in Swarm Intelligence: 7th International Conference, ICSI 2016, Bali, Indonesia, June 25-30, 2016, Proceedings, Part II (Lecture Notes in Computer Science) 1st ed. 2016 Edition. Editor: Ying Tan, Yuhui Shi, Li Li.