Design Patterns					
Course Code **CIF62034**	**Student Workload** 90 hours	**Credits** (according to ECTS) 4.5	**Semester** Sem 6 & 8	**Frequency** each even-semester	**Duration** 16 meetings

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

2	**Prerequisites for participation** Have completed Software Engineering course
3	**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-11 Graduates are able to plan, develop, manage, and analyze the computer network-based system and the services running on top of them by considering the network security aspects.
4	**Subject aims** Students are able to explain the basic concepts of design patterns. Students are able to explain the basic concepts of design patterns. Students are able to implement the types of creational patterns. Students are able to implement the types of structural patterns. Students are able to implement the types of behavioral patterns. Students are able to understand the advanced use of design patterns.
5	**Teaching methods** lectures, case study, class discussion, presentation.
6	**Assessment methods** assignment, mid-term examination, end-term examination, project evaluation, practical-skill assessment.
7	**This module is used in the following degree programs as well**
8	**Responsibility for module**

9	**Other information** 1. Erich Gamma, John Vlissides, Ralph Johnson & Richard Helm, 1994, Design Patterns: Elements of Reusable Object-Oriented Software 2. Craig Larman, 1997, Applying UML and patterns 3. Elisabeth Freeman and Kathy Sierra, 2004, Head First Design Patterns 4. Steven Metsker & William C. Wake, 2006, Design Patterns in Java 5. Vaskaran Sarcar, 2018, Java Design Patterns: A Hands-On Experience with Real-World Examples 6. Adrian Ianculescu, Kamalmeet Singh & Lucian-Paul Torje, 2018, Design Patterns and Best Practices in Java: A Comprehensive Guide to Building Smart and Reusable Code in Java 7. Pressman RS (2009) Software Engineering A Practitioner's Approach 7th Ed - Roger S. Pressman. 8. Sommerville I (2016) Software engineering (10th edition