

DEPARTMENT OF CIVIL ENGINEERING  
COURSE SYLLABUS

Course Details							
<b>Code</b>	INF102			<b>Academic Year</b>	3	<b>Semester</b>	Spring
<b>Title</b>	Object Oriented Programming			<b>T</b>	<b>A</b>	<b>L</b>	<b>ECTS</b>
				2	0	2	6
<b>Language</b>	German						
<b>Level</b>	<b>Undergraduate</b>	X	<b>Graduate</b>		<b>Postgraduate</b>		
<b>Department / Program</b>	Civil Engineering						
<b>Forms of Teaching and Learning</b>	Formal						
<b>Course Type</b>	<b>Compulsory</b>			<b>Elective</b>		X	
<b>Objectives</b>	After completing this module, the students have knowledge of object-oriented programming and basic knowledge of basic data structures. They can name and apply elementary structuring and processing mechanisms (object orientation, modularization, and recursion).						
<b>Content</b>	<p>The following concepts are introduced using an object-oriented programming language (Java):</p> <ul style="list-style-type: none"> <li>- Object-oriented data modeling with UML</li> <li>- encapsulation</li> <li>- inheritance and polymorphism</li> <li>- abstract classes and interfaces</li> <li>- exception handling</li> <li>- genericity</li> </ul> <p>Students deal with these concepts by independently solving, programming and handing in predetermined, relevant programming tasks.</p>						
<b>Prerequisites</b>	INF101						
<b>Coordinator</b>							
<b>Lecturer(s)</b>							
<b>Assistant(s)</b>							
<b>Work Placement</b>	None						
Recommended or Required Reading							
<b>Books / Lecture Notes</b>	Ullенboom C. Java ist auch eine Insel. Galileo Computing, 2014. - Grundkurs Programmieren in Java. D. Ratz, J. Scheffelt, D. Seele, J. Wiesenberber. Hanser Verlag, 2006.						
<b>Other Sources</b>	Concepts of Programming Languages, Robert W. Sebesta, Pearson Education, 2012.						
Additional Course Material							
<b>Documents</b>	-						

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Assignments	-		
Exams	-		
<b>Course Composition</b>			
Mathematics und Basic Sciences			%
Engineering	40		%
Engineering Design			%
Social Sciences			%
Educational Sciences			%
Natural Sciences			%
Health Sciences			%
Expert Knowledge	60		%
<b>Assessment</b>			
<b>Activity</b>	<b>Count</b>		<b>Percentage (%)</b>
Midterm Exam	1		40
Quiz			
Assignments	6		0
Attendance			
Recitations			
Projects			
Final Exam	1		60
		<b>Total</b>	<b>100</b>
<b>ECTS Points and Work Load</b>			
<b>Activity</b>	<b>Count</b>	<b>Duration</b>	<b>Work Load (Hours)</b>
Lectures	14	2	28
Self-Study	1	60	60
Assignments	6	10	60
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations			
Laboratory			
Projects			
Final Exam	1	10	10
		<b>Total Work Load</b>	<b>159</b>
		<b>ECTS Points (Total Work Load / Hour)</b>	<b>6</b>
<b>Learning Outcomes</b>			

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1	Ability to analyze problems, taking into account the required and generated data.
2	Ability to perform object-oriented modeling with UML elements.
3	Knowledge of principles of object-oriented programming.
4	Ability to perform object-oriented programming in Java.

**Weekly Content**

1	Introduction to object-oriented programming (explanation of the advantages in terms of quality and reusability)
2	Introduction to object-oriented data modelling, class diagrams in UML
3	Introduction to object-oriented data modelling, class diagrams in UML
4	Creation of classes and objects, constructor methods
5	Inheritance and polymorphism
6	Method overloading
7	Type queries and conversions
8	Repetition
9	Midterm exams
10	Genericity
11	Abstract classes and interfaces
12	Interface programming
13	Exception handling
14	Introduction to GUI programming with Java (Java Swing, JavaFX)
15	Repetition

**Contribution of Learning Outcomes to Program Objectives (1-5)**

	P1	P2	P3	P4	P5	P6	P7
1	5	5	5			3	1
2	5	5	5			3	1
3	5	5	5			3	1
4	5	5	5			3	1

**Contribution Level** 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

**Compiled by:**

**Date of Compilation:**

12.03.2020