

Course title	<i>Programming Paradigms</i>
Course code	<i>INFM121SE</i>
Module coordinator	<i>Miriam Heinrich</i>
Lecturer	<i>Prof. Dr. Martin Sulzmann</i>
Level of course	<i>Bachelor</i>
Recommended prerequisites	<i>Experience in a programming language</i>
Type of course	<i>Lecture</i>
Weekly lecture hours (SWS)	<i>3</i>
ECTS credits	<i>3</i>
Workload	<i>In total 90 h, 45 h course attendance, 45 h self-study</i>
Assessment (grading; pass/fail)	<i>graded</i>
Regular cycle	<i>Each semester</i>
Language of instruction	<i>English</i>
Contents:	<p><i>Selection of topics to be covered</i></p> <ul style="list-style-type: none"> <li>- <i>Functional languages</i> <ul style="list-style-type: none"> <li>- <i>Lambda calculus</i></li> <li>- <i>Higher-order functions</i></li> <li>- <i>Algebraic data types and pattern matching</i></li> <li>- <i>Connection to object-oriented programming</i></li> </ul> </li> <li>- <i>Imperative language</i> <ul style="list-style-type: none"> <li>- <i>In-place update and other form of side effects</i></li> </ul> </li> <li>- <i>Polymorphism (parametric aka "generics", subtyping, ad-hoc overloading, ...)</i></li> <li>- <i>Program correctness and testing</i></li> <li>- <i>Embedded domain-specific languages</i></li> <li>- <i>Concurrency</i></li> </ul>
Learning outcome (competencies):	<p><i>This course explores various programming paradigms and their underlying concepts. Students will</i></p> <ul style="list-style-type: none"> <li>• <i>learn fundamental concepts that can be found in modern programming languages.</i></li> <li>• <i>understand how are concepts/features in different languages are selected</i></li> <li>• <i>be able to program in imperative, functional and object-oriented programming languages.</i></li> </ul>
Teaching methods	<input checked="" type="checkbox"/> <i>Lecture</i> <input type="checkbox"/> <i>Group work</i> <input checked="" type="checkbox"/> <i>Exercises</i> <input type="checkbox"/> <i>Simulation</i> <input type="checkbox"/> <i>Video feedback</i> <input type="checkbox"/> <i>Others:</i>
Assessment methods	<i>Written exam</i>
Recommended reading	<i>Textbook: Concepts in Programming Languages von John C. Mitchell</i>
Additional information	
Recognition of credits	