

Module Nr. SE-O-10	Credits 6 CP	Workload 180 h	Semester 3	Frequency Yearly (WS)	Duration 1 Semester
Courses Modern Programming concepts in Engineering			Contact time 4 h/week	Self-study 80 h	Group size --
Modern Programming Concepts in Engineering					
Learning outcomes After completion of the course the students: <ul style="list-style-type: none"> • acquire fundamental skills for the development of software solutions for engineering problems. • are capable of analysing a problem with respect to its structure such that adequate object-oriented software concepts, data structures and algorithms can be applied and implemented. 					
Content Lectures and exercises cover the following topics: <ul style="list-style-type: none"> • Principles of object-oriented modelling (Encapsulation, Polymorphism, Inheritance) • Unified Modelling Language (UML) • Basic programming constructs • Fundamental data structures • Implementation of efficient algorithms • Vector and matrix operations • Solving systems of linear equations • Grid generation techniques • Using software libraries View3d a visualization toolkit Packages for graphical user interfaces • During the exercises, students practice object-oriented programming techniques in the computer lab on the basis of fundamental engineering problems. 					
Teaching Methods / Language Data projector, blackboard, demo programs, computer lab / English					
Modes of assessment Module examination and Homework					
Requirements for the award of credit points Passed module examination 70% Completed exercises 30%					
Module applicability (in other study programs) Master Computational Engineering					
Weight of the mark for the final score 5 %					

Module coordinator and lecturer(s) Prof. Dr. M. König
Other information