UNIVERSITÄT
DUISBURG
ESSEN

FAKULTÄT FÜR
INGENIEURWISSENSCHAFTEN
Institut für Mechatronik und Systemdynamik
Lehrstuhl für Mechanik und Robotik

Prof. Dr.-Ing. Andrés Kecskeméthy

Information Regarding the Course "Computational Methods" for ISE-Students

Objectives of the course

The objective of the course Computational Methods is to endow students with knowledge and experience in the application of computer methods to the solution of mechanical and chemical engineering problems. Due to the enormous dissemination of computer technology in the design and construction process of machines and systems, the sum of computational methods in engineering has become an immensely broad area covering many interdisciplinary subjects, such as modeling, simulation, numerical methods, computer graphics, man-machine interfaces, etc. It is thus impossible to cover all aspects of computational engineering in one single course. Our approach is to expose students to a typical application of computer methods for the solution of one particular aspect of engineering, from which the students will gain enough experience such as to generalize these experiences to other fields, which they may encounter later in their professional career.

Getting the credits for "Computational Methods"

In order to obtain the credits for "Computational Methods", students must successfully complete two curricular components: a basic course and a hands-on project.

The basic course is a course selectable from a subset of optional courses offered in the ISE curriculum featuring contents of computational methods in engineering. A list of selectable basic courses is displayed in the registration form for the course Computational Methods. Students wishing to register a basic course not shown in the list must consult the lecturer of the basic course as well as the course organizer prior to the start of the semester. The selection of the basic course is final, i.e., once a selection has been registered, in can not be altered, unless in extraordinarily exceptional cases. Compulsory courses of the student's curriculum can not be chosen as basic courses for Computational Methods.

The hands-on project is a programming task issued by the lecturer of the basic course which fits the targets of this course. In the hands-on project, the student proves her or his ability to apply the computational methods described in the basic course to a practical example of engineering.

Registration procedure and final mark

Students wishing to obtain the credit in Computational Methods must complete the registration form and let it be signed first by the lecturer of the basic course and then by the course organizer (Prof. Kecskemethy, MB 268). Registration for the course Computational Methods must be submitted to the office of the course organizer prior to the registration for the exam of the basic course. Once registered as basic course for Computational Methods, the basic course can not be credited anymore as an optional course in the student's curriculum.

The basic course and the hands-on project are evaluated (marked) separately by the course lecturer. Both curricular components must be passed. The total mark is then obtained as the average of these two marks rounded to the better mark. After obtaining the final mark, the student must bring the signed form to the course organizer, who submits the final result to the Prüfungsamt.

Duisburg, 01.10.2009

Prof. Dr.-Ing. Andres Kecskemethy
Course organizer for Computational Methods

Registration for Computational Methods

Name: _____ Matr. Nr.: _____

Email: _____

☐ Winter term 20____ / 20____ ☐ Summer term 20____

Selected course (Only **electives** from the masters curriculum can be selected for computational methods !)

☐ Biofluidmechanics

☐ FEM II

☐ Kinematics of Mechanisms and Robot (if not taken as compulsory course)

☐ Multibody Dynamics

☐ Simulation in Logistics I

☐ Simulation in Logistics II

☐ _____

Hands-on project

Course lecturer: _____ Deadline: _____

Title: _____

_____

Approved by: _____ _____

Date, Course lecturer Date, Course organizer

_____

Date, Student

Academic record

Mark of the course: _____

Mark of the hands-on project: _____

Mark for Computational Methods: _____

_____ _____

Date Course lecturer