COURSE DETAIL

NUMERICAL FLUID DYNAMICS AND HEAT TRANSFER
Country Sweden
Host Institution Lund University
Program(s) Lund University
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Mechanical Engineering Engineering
UCEAP Course Number 122
UCEAP Course Suffix
UCEAP Official Title NUMERICAL FLUID DYNAMICS AND HEAT TRANSFER
UCEAP Transcript Title NUMERCL FLUID DYNMC
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description
This course provides basic knowledge about numerical methods that are routinely used for simulating fluid flow and heat transfer. The main emphasis is on incompressible flow and convective heat transfer. Furthermore, knowledge on the most common turbulence models and how these affect the solution is provided. The course is aimed at providing capability to perform this kind of simulations. Also, to provide capability in analyzing and assessing the results of such simulations. This knowledge should be sufficient in order to choose a proper solution method and asses the accuracy of the results for a given engineering problem. The course includes methods for the numerical solution of engineering fluid dynamics and heat transfer problems. Handling of convection-diffusion problems is treated. The concept of numerical diffusion is introduced. Algorithms for pressure-velocity coupling are presented (e.g. SIMPLE, SIMPLEC, SIMPLEX, PISO etc.). In the course discretization using finite volume techniques and how these affect accuracy and stability is discussed. Several types of computational meshes and how these are generated and how these affect the solution are discussed. Also included are the most common RANS based turbulence models.

Language(s) of Instruction
English

Host Institution Course Number
MMVN05

Host Institution Course Title
NUMERICAL FLUID DYNAMICS AND HEAT TRANSFER

Host Institution Course Details

Host Institution Campus
Engineering

Host Institution Faculty

Host Institution Degree

Host Institution Department
Engineering- Energy Sciences

Course Last Reviewed

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