Applied Computational Fluid Dynamics (CFD) online course

The Speed School of Engineering at the University of Louisville is again proud to offer an online Applied CFD course for Summer Semester 2015 through the Department of Chemical Engineering. This course is uniquely tailored for both graduate students and non-degree seeking career engineers in need of introductory CFD training.

What is CFD?
In short, CFD is a cutting edge software tool increasingly used in industry and research for predicting fluid flow, heat and mass transfer, chemical reactions, and related phenomena by numerically solving the set of governing mathematical equations that describe these processes.

CFD analysis is used for:
- conceptual studies to test new processes and designs
- overcoming complex product development and technical challenges
- high level and detailed troubleshooting
- redesign of existing systems for greater efficiency

Economically sound results! CFD analysis reduces the cost and total effort required for design, testing, and experimentation/data acquisition.

Goal. This course teaches the software and techniques toward CFD proficiency for simulating and predicting phenomena of fluids-related engineering problems.

Objectives. Learn to solve fluid flow problems using FLUENT, the leading commercial CFD package. Topics include software and techniques for geometry creation, meshing, model and solver setup, and post-processing of results. This CFD course emphasizes applications in balance with theory.

Concepts Covered.
- Geometry Generation: 2D & 3D geometry generation
- Meshing: 2D, 3D, mesh quality, resolution, numerical diffusion
- Computation: Convergence and stability, steady state, un-steady state, Newtonian and Non-Newtonian fluids, heat transfer, and turbulence models
- Post-Processing

Complete flexibility. Our cyber instruction runs on YOUR time, unlike the traditional classroom. Access the course and assignments at any time, day or night, from any location.

Eligibility. Register as a non-degree seeking student or for elective credit towards graduate degree in progress. Prerequisite: undergraduate Fluid Dynamics.

Student Benefits. Non-degree seeking students enjoy access to Ekstrom Library, student recreation centers, and all other UofL facilities and organizations.

About the instructor. Dr. Berson is an Associate Professor of Chemical Engineering at the University of Louisville. His extensive experience with CFD modeling of a diverse array of flow systems and reactors has resulted in numerous peer-reviewed scientific publications. He has performed CFD modeling for industry clients, university collaborators, the National Renewable Energy Laboratory, and the Department of Energy.

More Information?
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