





AE/ME 339

Computational Fluid
Dynamics (CFD)

K. M. Isaac

Professor of Aerospace
Engineering

Introduction and Scope

Computational Fluid Dynamics (AE/ME 339)
Course Information

K. M. Isaac
MAEEM Dept., UMR

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Course Information

K. M. Isaac

MAEEM Dept., UMR

Time: 9:30-11:05 TR

Place: 103 Engineering Management Building
UMR

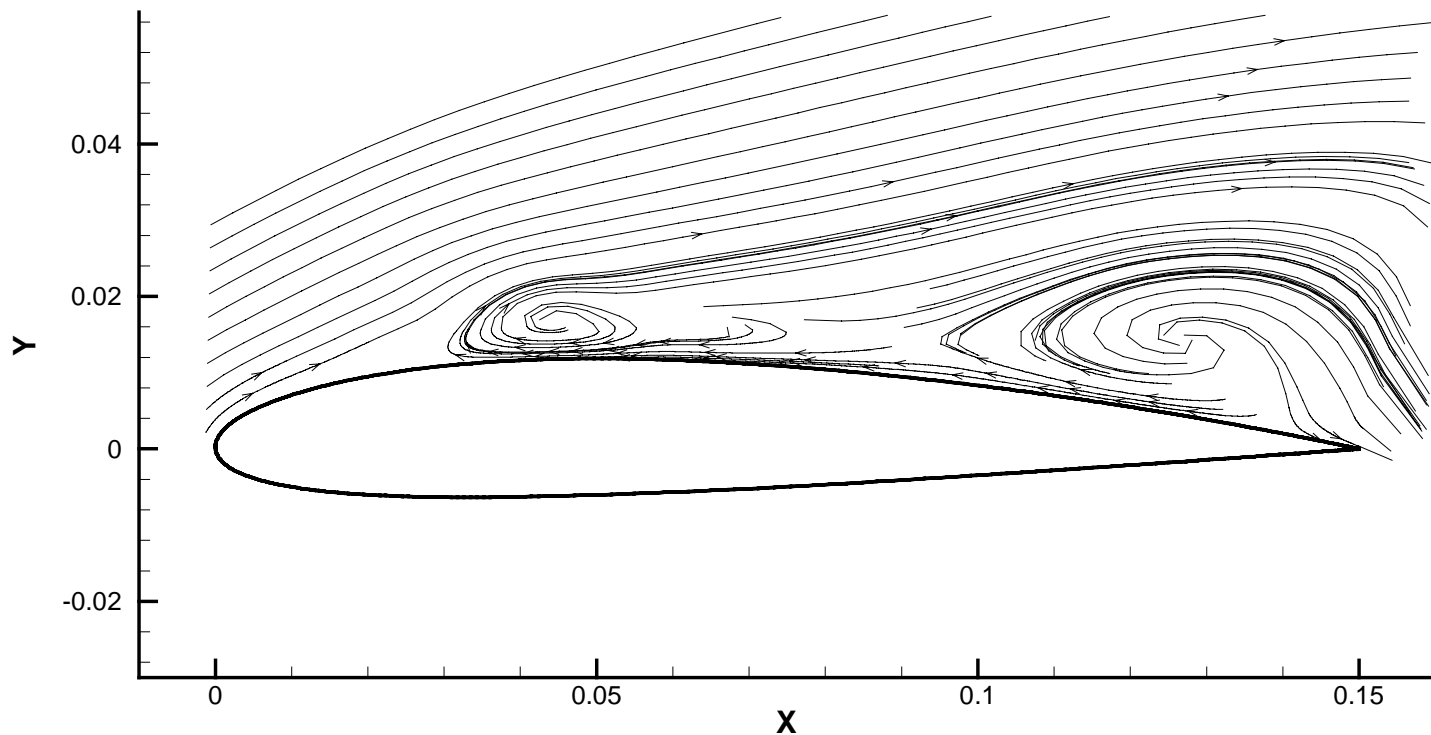
Prerequisites: CSc 73, one course in aerodynamics/
fluid mechanics

Course structure: Weekly assignments
Class projects
2 in class exams
final exam

- Ordinary differential equations (ODE)
- Numerical techniques for solving ODEs
- Example: Flow in constant area pipe with heat addition and friction
- Partial differential equations, classification
- Discretization of derivatives
- Errors and analysis of stability
- Example: Unsteady heat conduction in a rod
- Example: Natural convection at a heated vertical plate
- Descretization techniques

- The shock tube problem
- Couette flow
- Introduction to packaged codes:
 - Grid generation
 - Problem setup
 - Solution
- Turbulence modeling

NACA 2412 airfoil at 20 deg angle-of-attack
streamlines show massive flow separation
on top surface





***Program
Completed***

University of Missouri-Rolla

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