

MECH 5885 - Computational Fluid Dynamics

Fall 2026 Syllabus, Section 01, CRN 41524,

Credit hours: 4

Instructor

Stefan Moldovan

Email: simoldovan@ysu.edu

Public Instructor Information

Instructor Title: Assistant Professor

Instructor Professional Qualifications: Doctor of Philosophy in Mechanical Engineering, The University of Akron

Instructor Office Location: Moser 2535

Instructor Office Phone: 330-941-1733

Course Description

Modeling of physical processes, including fluid flow, heat and mass transfer, and others using commercial computational fluid dynamics (CFD) software packages. Understand the computer aided design (CAD) modeling and meshing requirements for CFD. Understand finite differential and finite volumes methods used in CFD. Understand the need for various turbulence models and how to choose them. Become proficient at disseminating the results from a CFD software. Three hours lecture and three hours laboratory per week. Prereq.: MECH 3720 and MECH 3725. 4 s.h.

Course Readings

Group	Title	Author	ISBN
Required	Pdf handouts.	Stefan Moldovan	
Optional	Web-accessible ANSYS/FLUENT manual and online tutorials.	ANSYS	
Optional	Numerical Heat Transfer and Fluid Flow	S. Patankar	9781315275130
Optional	Computational Fluid Mechanics and Heat Transfer	Dale Anderson, John C. Tannehill, Richard H. Pletcher	9780429196201

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Schedule of Topics and Assignments

Week of	Reading(s)	Proposed Topic	Due/To Prepare for Class
8/24	Introduction		
8/31	Geometry for CFD		HW 1
9/7	Geometry for CFD		
9/14	Geometry for CFD		HW 2
9/21	Meshing for CFD		
9/28	Meshing for CFD		
10/5	Meshing for CFD		HW 3
10/12	Meshing for CFD		
10/19	Solution (Solver) setup for CFD Project Proposal		
10/26	Solution (Solver) setup for CFD		Project Proposal



11/2	Solution (Solver) setup for CFD	HW 4
11/9	Solution (Solver) setup for CFD	
11/16	Solution (Solver) setup for CFD	
11/23	Project	
11/30	Project	
12/7	Project	Project

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.