



Jordan University of Science and Technology  
Faculty of Engineering  
Aeronautical Engineering Department

**Course name and number:**

<b>AE 545 Computational Fluid Dynamics</b>
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**Credit, contact hours and categorization:**

Credit and contact hours	Contact hours	Categorization
3 Credit Hours	Sunday-Tuesday-Thursday 1-hour lecture Or Monday-Wednesday 1.5-hours lecture	Engineering Topic

**Instructor's or course coordinator's name:**

Name	Dr. Montasir Hader
Office location	N1-L2
Email address	hader@just.edu.jo

**Textbook and other supplemental materials:**

Textbook			
Title	An Introduction to Computational Fluid Dynamics: The finite volume method		
Author(s)	Versteeg, H. K. and Malalasekkera, W.		
Edition	1s Edition		
Other Information	McGraw-Hill's		
References			
Book Name	Author(s)	Edition	Other Information
Numerical heat transfer and fluid flow	Suhas Patankar	1st Edition	McGraw-Hill's
Computational Fluid Dynamics	Anderson, John D.	1st Edition	Pearson

**Course information:**

Course Catalogue		
Introduction to computational fluid dynamics and heat transfer using the finite-volume method. Extensive code development. Application of a commercial CFD solver to a problem of interest.		
<b>Course type</b> : This course is <b>selected elective</b> from a list		
Prerequisites or co-requisites		
Line Number	Course Name	Prerequisite Type
714520	AE452 Heat Transfer	Prerequisite / Study
714430	AE443 Gas Dynamics	Prerequisite / Study



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**Specific goals of the course :**

Specific outcomes of instruction and the student outcomes (SO) mapping		
Outcomes	SO Mapping	Course Outcome Weight (Out of 100%)
To develop an understanding for: the major approaches and methodologies used in CFD	20SO 2, 20SO 7, 40SO 8, 20SO1	20%
Increase skills in: implementing and using basic CFD methods, computer use and programming, debugging.	10SO 2, 10SO 3, 10SO 5, 20SO 7, 40SO 8, 10SO1	80%

**Brief list of topics to be covered:**

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1	Introduction, Navier Stokes Equations	Course Handout
Weeks 2	Introduction to finite difference and finite volume method	Course Handout
Weeks 5-16	Introduction to commercial CFD software ANSYS FLUENT	Course Handout