

# Contents

## Part I

<b>1</b>	<b>Basic Philosophy of CFD</b> .....	<b>3</b>
	J.D. Anderson, Jr.	
<b>2</b>	<b>Governing Equations of Fluid Dynamics</b> .....	<b>15</b>
	J.D. Anderson, Jr.	
<b>3</b>	<b>Incompressible Inviscid Flows: Source and Vortex Panel Methods</b> ...	<b>53</b>
	J.D. Anderson, Jr.	
<b>4</b>	<b>Mathematical Properties of the Fluid Dynamic Equations</b> .....	<b>77</b>
	J.D. Anderson, Jr.	
<b>5</b>	<b>Discretization of Partial Differential Equations</b> .....	<b>87</b>
	J.D. Anderson, Jr.	
<b>6</b>	<b>Transformations and Grids</b> .....	<b>105</b>
	J.D. Anderson, Jr.	
<b>7</b>	<b>Explicit Finite Difference Methods: Some Selected Applications to Inviscid and Viscous Flows</b> .....	<b>127</b>
	J.D. Anderson, Jr.	

## Part II

<b>8</b>	<b>Boundary Layer Equations and Methods of Solution</b> .....	<b>153</b>
	R. Grundmann	
<b>9</b>	<b>Implicit Time-Dependent Methods for Inviscid and Viscous Compressible Flows, with a Discussion of the Concept of Numerical Dissipation</b> .....	<b>183</b>
	G. Degrez	

**10 Introduction to Finite Element Methods in Computational Fluid Dynamics** ..... 235  
E. Dick

**11 Introduction to Finite Volume Methods in Computational Fluid Dynamics** ..... 275  
E. Dick

**Part III**

**12 Aspects of CFD Computations with Commercial Packages** ..... 305  
J. Vierendeels and J. Degroote

**Index** ..... 329