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Nota di contenuto	Cover -- Aerodynamics for Engineers -- Contents -- Preface -- Why Study Aerodynamics? -- Aerodynamics and the Energy-Maneuverability Technique -- Solving for the Aerothermodynamic Parameters -- Description of an Airplane -- Summary -- Problems -- References -- Fundamentals of Fluid Mechanics -- Introduction to Fluid Dynamics -- Conservation of Mass -- Conservation of Linear Momentum -- Applications to Constant-Property Flows -- Reynolds Number and Mach Number as Similarity Parameters -- Concept of the Boundary Layer -- Conservation of Energy -- First Law of Thermodynamics -- Derivation of the Energy Equation -- Summary -- Problems -- References -- Dynamics of an Incompressible, Inviscid Flow Field -- Inviscid Flows -- Bernoulli's Equation -- Use of Bernoulli's Equation to Determine Airspeed -- The Pressure Coefficient -- Circulation -- Irrotational Flow -- Kelvin's Theorem -- Incompressible, Irrotational Flow and the Velocity Potential -- Stream Function in a Two-Dimensional, Incompressible Flow -- Relation between Streamlines and Equipotential Lines -- Superposition of Flows -- Elementary Flows -- Adding Elementary Flows to Describe Flow Around a Cylinder -- Lift and Drag Coefficients as Dimensionless Flow-Field Parameters -- Flow Around a Cylinder with Circulation -- Source Density Distribution on the Body Surface -- Incompressible, Axisymmetric Flow -- Summary -- Problems -- References -- Viscous Boundary Layers -- Equations Governing the Boundary Layer for a Steady, Two-dimensional,

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Sommario/riassunto

For junior/senior and graduate-level courses in Aerodynamics, Mechanical Engineering, and Aerospace Engineering Revised to reflect the technological advances and modern application in Aerodynamics, the Sixth Edition of Aerodynamics for Engineers merges fundamental fluid mechanics, experimental techniques, and computational fluid dynamics techniques to build a solid foundation for students in aerodynamic applications from low-speed through hypersonic flight. It presents a background discussion of each topic followed by a presentation of the theory, and then derives fundamental equations, applies them to simple computational techniques, and compares them to experimental data. Teaching and Learning Experience To provide a better teaching and learning experience, for both instructors and students, this program will: Apply Theory and/or Research: An excellent overview of manufacturing conceptswith a balance of relevant fundamentals and real-world practices. Engage Students: Examples and industrially relevant case studies demonstrate the importance of the subject, offer a real-world perspective, and keep students interested.