1.	Record Nr. Autore Titolo Pubbl/distr/stampa ISBN	UNINA9910784366103321 Akan A. Osman Open channel hydraulics / / A. Osman Akan Amsterdam ; ; Boston, : Elsevier/Butterworth-Heinemann, 2006 1-281-05186-1
		9786611051860 0-08-047980-4
	Descrizione fisica	1 online resource (377 pages)
	Disciplina Soggetti	627.042 Channels (Hydraulic engineering)
		Hydraulics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di bibliografia	Includes bibliographical references and index.
	Nota di contenuto	Front Cover; Title Page; Copyright Page; Table of Contents; Preface; Acknowledgments; Chapter 1 Fundamentals of open-channel flow; 1.1 Geometric elements of open channels; 1.2 Velocity and Discharge; 1.3 Hydrostatic pressure; 1.4 Mass, momentum and energy transfer in open-channel flow; 1.4.1 Mass Transfer; 1.4.2 Momentum Transfer; 1.4.3 Energy Transfer; 1.5 Open-channel flow classification; 1.6 Conservation laws; 1.6.1 Conservation of Mass; 1.6.2 Conservation of Momentum; 1.6.3 Conservation of Energy; 1.6.4 Steady Flow Equations; 1.6.5 Steady Spatially-Varied Flow Equations 1.6.6 Comparison and Use of Momentum and Energy Equations; Chapter 2 Energy and momentum principles; 2.1 Critical flow; 2.1.1 Froude Number; 2.1.2 Calculation of Critical Depth; 2.2 Applications of energy principle for steady flow; 2.2.1 Energy Equation; 2.2.2 Specific Energy Diagram for Constant Discharge; 2.2.3 Discharge Diagram for Constant Specific Energy; 2.2.4 Specific Energy in Rectangular Channels; 2.2.5 Choking of Flow; 2.3 Applications of momentum principle for steady flow; 2.3.1 Momentum Equation; 2.3.2 Specific Momentum Diagram for Constant Discharge 2.3.3 Discharge Diagram for Constant Specific Momentum; 2.3.4 Hydraulic Jump; 2.3.5 Specific Momentum in Rectangular Channels; 2.3.6 Hydraulic Jump in Rectangular Channels; 2.3.7 Choking and

	Momentum Principle; Chapter 3 Normal flow; 3.1 Flow resistance; 3.1.1 Boundary layer and flow resistance; 3.1.2 The Darcy-Weisbach equation; 3.1.3 The Chezy equation; 3.1.4 The Manning formula; 3.2 Normal flow equation; 3.3 Normal depth calculations in uniform channels; 3.4 Normal depth calculations in grass-lined channels; 3.5 Normal depth calculations in riprap channels 3.6 Normal flow in composite channels; 3.7 Normal flow in compound channels; Chapter 4 Gradually-varied flow; 4.1 Classification of channels for gradually-varied flow; 4.2 Classification of gradually- varied flow profiles; 4.3 Significance of Froude number in gradually- varied flow calculations; 4.4 Qualitative determination of expected gradually-varied flow; 4.5.2 Standard step method; 4.6 Applications of gradually-varied flow; 4.6.1 Locating hydraulic jumps; 4.6.2 Lake and channel problems; 4.6.3 Two-lake problems 4.6.4 Effect of choking on water surface profile; 4.7 Gradually-varied flow in channel systems; 4.8 Gradually-varied flow in natural channels; Chapter 5 Design of open channels; 5.1 General design considerations; 5.2 Design of unlined channels; 5.2.1 Maximum permissible velocity method; 5.2.2 Tractive force method; 5.2.3 Channel bends; 5.3 Design of channels with flexible linings; 5.3.1 Design of channels lined with vegetal cover; 5.3.2 Design of riprap channels; 5.3.3 Temporary flexible linings; 5.4 Design of rigid boundary channels; 5.4.1 Experience curve approach; 4.2 Best hydraulic section approach
Sommario/riassunto	Open Channel Hydraulics is written for undergraduate and graduate civil engineering students, and practicing engineers. Written in clear and simple language, it introduces and explains all the main topics required for courses on open channel flows, using numerous worked examples to illustrate the key points. With coverage of both introduction to flows, practical guidance to the design of open channels, and more advanced topics such as bridge hydraulics and the problem of scour, Professor Akan's book offers an unparalleled user- friendly study of this important subject-