

APPENDIX A-78

Civil Engineering Hydraulics by Nalluri, C. and Featherstone, R. Publisher: Blackwell Science, MA, USA, 2001.

Computer Applications in Hydraulic Engineering-connecting theory to practice by Walski, M.T. (Ed) Publisher: Haestad Press, Waterbury, CT, U.S.A, 2002.

COURSE AIM

To provide the student with the basic concepts and methods of analysis of hydraulics and its applications in the sustainable design of civil engineering projects.

SPECIFIC OUTCOMES OF INSTRUCTION

The student should know the fundamentals of hydraulics and its methods of analysis in the design of civil engineering projects, such as physical & kinematic properties of liquids; sediment-laden fluids, hydrostatics; hydrodynamic forces, flow conservation equations and control volume analysis; basic types of hydraulic applications; flow in pipes and open conduits, flow in pipeline water supply systems.

COURSE OUTLINE

- Week Number 1:* Introduction to hydraulic aspects in civil engineering projects and its ecosystem environment.
- Week Number 2:* Properties of fluid(s), sediment-laden liquids and units.
- Week Number 3:* Behavior of real fluid flow.
- Week Number 4-5:* Hydrostatics and fluid forces.
- Week Number 6:* Flow conservative equations; Mass, Momentum and Energy Equations.
- Week Number 7-8:* Application of flow conservative equations.
- Week Number 9:* Flow in single pipes.
- Week Number 10:* Flow in pipe systems.
- Week Number 11:* Pumps (in parallel and in series)
- Week Number 12:* Pump-pipeline system analysis.
- Week Number 13:* Free surface flow in open channels and flow types.

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Week Number 14: Introduction to basic design of uniform channel surface flow.

Week Number 15: Introduction to main physical parameters of Ecosystems.

Week Number 16: Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr. Wael Mohamed Hamdy Khadr.

Course Demand: *Required*