



UNIVERSIDAD LIBRE®

Personería Jurídica No. 192 de 1946 de Mingobierno
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FREE UNIVERSITY PEREIRA SECTION

UNDERGRADUATE PROGRAM IN ENVIRONMENTAL ENGINEERING



SUBJECT: HYDRAULICS

CODE: -----

SEMESTER: SIXTH

HOURS WEEKLY: 4

THEORETICAL: 4

PRACTICES: 0

REQUIREMENTS: FLUID MECHANICS I

GOALS.

- That the student consolidates the basic knowledge of fluid mechanics, in the field of flow in pressure conduits and hydraulic machines and acquire the fundamentals of groundwater.

METHODOLOGY.

The course will be developed with master lectures by the professor on the content basics of the subject; for their part, students will strengthen their knowledge of the subject



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through recommended readings, consultations with the teacher and problem solving of application.

WORK PROGRAM.



1. REVIEW QUESTIONS OF BASIC CONCEPTS AND APPLICATION TO THE HYDRAULICS OF CLOSED DUCTS

- Pressure, flow, speed
- Energy Balance: speed, potential, pressure
- Kinematics of liquids: Flow fields. Classification of flows. Line of stream, path and flow tube.
- Basic equations of hydraulics: Continuity equation, Energy equation, momentum equation
- Holes and gates
- Forces

2. PIPING DESIGN

- Friction losses
- Losses due to attachments
- Valves





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- Application of Bernoulli's energy equation with pumps
- Water hammer



3. PIPES IN SERIES, IN PARALLEL, BRANCHED AND NETWORKS

4. CENTRIFUGAL PUMPS

- Analysis of characteristic curves and installation details

5. GROUNDWATER

Distinguish types of aquifers. Potential



LITERATURE.

GILES RV, EVETT JB, LIU C., Fluid mechanics and hydraulics. McGraw Hill

SOTELO AVILA, General Hydraulics





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RUSSEL GEORGE, Hydraulics

KING HW, BRATER EE, Hydraulics Manual. UTHEA

CASTILLA ANTONIO, Pumps and pumping stations (class notes), University of
Valle, Faculty of Engineering, Department of Fluid Mechanics and Thermal Sciences

