



UNIVERSIDAD LIBRE®

Personería Jurídica No. 192 de 1946 de Mingobieno
Nit.: 860.013.798-5



FREE UNIVERSITY PEREIRA SECTION

UNDERGRADUATE PROGRAM IN ENVIRONMENTAL ENGINEERING



SUBJECT: UNIT PROCESSES I

CODE: -----

SEMESTER: FIFTH

HOURS WEEKLY: 4

THEORETICAL: 4

PRACTICES: 0

REQUIREMENTS: CHEMISTRY III,

PHYSICS III,

CALCULUS IV,

ADVANCED MATHEMATICS

GOALS.

- To ensure that the student identifies and correlates the theoretical foundations of each one of the operations and processes used in water treatment
- That the student knows the physical, mathematical, chemical or biological models that allow to explain the theoretical basis of each of the operations and processes





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- That the student identifies the characteristics of the different components involved in each of the operations and processes
- That the student determines and correlates the operational and design parameters related in each operation and process.

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



WORK PROGRAM.

- Reactors and their models
- Aeration
- Mixture
- Coagulation
- Flocculation





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- Sedimentation
- Flotation
- Filtration
- Adsorption
- Ion Exchange



LITERATURE.

METCALF & EDDY, Sanitary Engineering. Water Treatment, Disposal, and Reuse

residuals, Editorial Labor, 1985

RAMALHO RS, Introduction to Wastewater Treatment Processes, Academy Press, 1983

ADAMS CE, FORD DL, ECKENFELDER WW, Development of Design and Operational

Criteria for Wastewater Treatment, CBI, 1981

ARBOLEDA V. JORGE, Theory, design and control of water clarification processes,

Pan American Center for Engineering and Environmental Sciences, CEPIS, 1973

SAMKS RL, Water Treatment Plant Design for the Practicing Engineer, An Arbor Science,

1980





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McCABE WL, SMITH JC, Unit Operations of Chemical Engineering, McGraw Hill, 1967

HUDSON, HE Jr., Water Clarification Processes. Ed Van-Nostrand, New York, 1981

CRUZ LE, DUARTE A., Design and assembly of an operations and processes laboratory
Unitarians. National University of Colombia, Bogotá, 1978

SAWYER & McCARTY, Chemistry for Environmental Engineering, McGraw Hill, Inc. New
York, 1978

