FREE UNIVERSITY PEREIRA SECTION

UNDERGRADUATE PROGRAM IN ENVIRONMENTAL ENGINEERING

SUBJECT: **WATER, SEWERAGE, AND GAS NETWORKS**

CODE:	12935
SEMESTER:	NINTH
AREA:	APPLIED ENGINEERING
MODE	THEORY - PRACTICE
PREREQUISITE	HYDROLOGY
IHS	3
HTSI	6

NUMBER OF CREDITS: 3

GOALS

That the student acquires the necessary knowledge to plan, project, calculate design and build drinking water supply and sewage systems.
That the student is able to direct operation and maintenance activities of the drinking water supply and sewage systems.

METHODOLOGY

The course will consist of lectures by the professor on the basic content of the subject; for their part, students will strengthen their knowledge of the subject through recommended readings, consultations with the professor, the solution of application problems and the development of a project that must be completed during the course.
semester.

WORK PROGRAM

1. WATER SUPPLY

Design period and probable life of structures, future population calculations, water consumption.

Sand collection works. Sand traps

Conduits

Pressure pipes, classes and manufacturing

Valves

Pumps and pumping stations

Regulator tanks

Disinfection

Distribution networks

Home connections

2. SEWERAGE

- Sewerage systems: Sanitary, combined and stormwater sewers
- Hydraulics of the ducts
- Example of sanitary sewage calculation
- Models of inspection wells and drop chambers
- Pumping sewage
- Multiple pumping
- Combined sewer calculation example

3. GROUNDWATER

- Confined aquifers, semi-confined aquifers, unconfined aquifers

- Construction of wells

4. COMPLEMENTARY WORKS

- Rainwater drains
- Spillways
- Drop cameras
- Inverted siphons

LITERATURE

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

- FAIR GM, GEYER JC, OKUN DA, Sanitary and Wastewater Engineering.
RUSSEL GEORGE, Hydraulics.

- SILVA G. LUIS F., Design of Aqueducts and Sewers.

- SOTELO AVILA, General Hydraulics.

- STEEL ERNEST W., Water Supply and Sewerage.

- KARASIK, Centrifugal pumps.

- KING HW, BRATER EE, Hydraulics Manual. UTHEA.

- VEN TE CHOW, Open Channel Hydraulics. McGraw Hill.