

I. COURSE DESCRIPTION:

This is an introductory course to municipal services. Students will be introduced to the basic principles and procedures for the design and construction of water distribution, sanitary sewer and storm drainage systems.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Apply the basic principles of hydraulics applicable to water distribution and wastewater collection.

Potential Elements of the Performance:

- Explain the principles of hydrostatic pressure
- Complete calculations with hydrostatic pressure
- Apply Bernoulli's principle
- Complete calculations to determine flow (Darcy Weisbach and Hazen Williams equations)
- Complete calculations to determine flow in pipes under pressure
- Complete calculations to determine flow in channels (Manning's Equation)

2. Apply the principles of hydrology to storm water management systems, including environmental consideration.

Potential Elements of the Performance:

- list water uses and availability
- explain the hydrologic cycle
- calculate rainfall intensity and volume
- define and determine watersheds
- interpret hydrographs
- Peak flow determination using Rational formula
- SCS Method of estimating runoff
- TR-55 Method of estimating peak flow

3. Identify components of a water distribution system and apply the principle criteria for design.

Potential Elements of the Performance:

- List appropriate design factors
 - Selection of pump for a given system
 - Complete system design calculations (single pipeline systems)
 - List materials of construction for various components of system
 - Describe types of distribution reservoirs and indicate their location
 - Complete calculations for water flow in pipe network
4. Identify components of a sanitary sewage collection system and apply the principle criteria for design.

Potential Elements of the Performance:

- List appropriate design factors
 - Estimate flows
 - Complete sanitary sewer design calculations
 - list materials of construction for various components of system
 - determine infiltration and inflow into systems
 - complete calculations for water flow in pipe network
5. Identify components of storm sewage collection system and apply the principle criteria.

Potential Elements of the Performance:

- estimate storm runoff volumes
- describe effects of land development on storm runoff
- list factors to be considered in storm sewer layout and design
- complete storm sewer design calculations
- Describe the effects of flooding

III. TOPICS:

1. Hydraulics
2. Hydrology
3. Water Distribution Systems
4. Water Quality
5. Storm Water Management

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Computer Applications in Hydraulic Engineering, Haestad Methods, Haestad Press, 6th edition)

Basic Environmental Technology, Jerry Nathanson, 4th Edition. Prentice Hall

Water and Wastewater Technology, Mark J Hammer, 5th edition, Pearson

V. EVALUATION PROCESS/GRADING SYSTEM:

Assignments/Quizzes - 30%
Tests - 70%

The following semester grades will be assigned to students:

Grade	Definition	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 703 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

<include any other special notes appropriate to your course>

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

MUNICIPAL SERVICES
COURSE NAME

CIV200-5
CODE NO.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.