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**COURSE PREFIX/NO:** EVT 111  
**COURSE TITLE:** Introduction to Water & Wastewater Treatment Laboratory  
**LEC HRS/WEEK:** 0.0  
**LAB HRS/WEEK:** 3.0  
**CREDIT HRS/SEMESTER:** 1.0

[Distance Learning Attendance/VA Statement](#)  
[Textbook Information](#)

## **COURSE DESCRIPTION**

This course introduces the chemical and biological analytical techniques used to measure water and wastewater quality.

## **COURSE COMPETENCIES/PERFORMANCE OBJECTIVES**

Upon successful completion of this course students should be able to:

### **Module 1: Potentiometric Analysis**

- Explain the concept of potentiometric analysis.
- Demonstrate an understanding of the techniques required to properly use electronic potentiometric laboratory instrumentation by using the proper methodology in the use of various potentiometric instruments for the examination of water and/or wastewater according to Standard Methods for the Examination of Water and Wastewater and/or EPA approved methods.
- Demonstrate proper sampling scheduling, collection, and preservation techniques.

### **Module 2: Spectroscopic & Colorimetric Analysis**

- Explain the concept of spectroscopic analysis.
- Demonstrate an understanding of the techniques required to properly use spectrophotometers and/or colorimeters by using the proper methodology in the use of various spectroscopic instruments and colorimeters for the examination of water and/or wastewater according to Standard Methods for the Examination of Water and Wastewater and/or EPA approved methods.
- Demonstrate proper sampling scheduling, collection, and preservation techniques.

### **Module 3: Microbiological Analysis**

- Explain the concept of microbiological analysis.
- Demonstrate an understanding of the techniques required to properly use microbiological equipment and supplies by conducting analysis of water samples.
- Demonstrate aseptic technique and proper sterilization procedures.

- Demonstrate the proper methodology for membrane filtration, confirmation tests, and/or other applicable techniques for the examination of water and/or wastewater according to Standard Methods for the Examination of Water and Wastewater and/or EPA approved methods.
- Demonstrate proper sampling scheduling, collection, and preservation.

#### **Module 4: Solids Analysis**

- Explain the concept of solids analysis.
- Demonstrate an understanding of the techniques required to properly analyze solids by using the proper methodology in the use of various solids analysis equipment set-ups for the examination of water and/or wastewater according to Standard Methods for the Examination of Water and Wastewater and/or EPA approved methods.
- Demonstrate proper sampling scheduling, collection, and preservation.

#### **Module 5: Analysis by Chromatography**

- Explain the concept of chromatography.
- Demonstrate an understanding of the techniques required to properly use gas, liquid, and/or other types of chromatographs by using the proper methodology in the use of various chromatography instruments for the examination of water and/or wastewater according to Standard Methods for the Examination of Water and Wastewater and/or EPA approved methods.
- Demonstrate proper sampling scheduling, collection, and preservation.

#### **Module 6: Case Study**

- Analyze one or more set of water samples, using proper sampling and analysis techniques.
- Analyze water samples and interpret the results of the analysis using critical thinking skills.
- Communicate the results of each investigation in a written report and/or presentation.

### **MINIMAL STANDARDS**

Minimal standards of performance for receiving 1 hour of semester credit from York Technical College are indicated by achieving a 60 percent average on all evaluation instruments used in the course performance evaluation strategy. Students must achieve 70% average for this course to transfer to other programs, such as the Environmental Science or Analytical Chemistry program.

### **COURSE REQUIREMENTS**

#### **Attendance Policy**

Students are responsible for attending meetings in the course until they have completed all course requirements. Students are responsible for all material covered and for all assignments made in all classes. Students who are absent from a course more than 10% of the total contact hours assigned may be withdrawn in accordance with the attendance policy of York Technical College. See attached Instructor's Individual Policy for more information.

#### **Withdrawal from the Course**

A student may withdraw from a course after the drop/add period until midterm with a grade of "W" (withdrawn). Students who withdraw after midterm may receive a "W" at the discretion of the

instructor if performance has been satisfactory to the point of withdrawal. Otherwise, such withdrawals will receive a grade of "WF."

### **Student Conduct**

Students are expected to conform to all standards of conduct as specified in the York Technical College Handbook and Catalog. Students found guilty of academic dishonesty such as cheating or plagiarism will be given a grade of zero and may be subject to further disciplinary action.

### **EVALUATION STRATEGIES/GRADING**

**Grades will be determined as described below:**

<b>Modules 1- 5</b> (Competency Checksheets, Reports, and/or Quizzes)	75% of course grade
<b>Module 6</b> (Paper and/or Presentation)	25% of course grade

### **Grading Scale:**

A	90 -100
B	80 -89
C	70 -79
D	60 -69
F	Below 60

A statement of your instructor's additional requirements and/or policy will be provided.

### **ENTRY LEVEL SKILLS**

A student entering this course should possess reading comprehension and writing skills on at least the 10<sup>th</sup> grade level.

**PREREQUISITES:** None

**CO-REQUISITES:** None

**Disabilities Statement:** Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.

### **TOPIC/CONTENT OUTLINE**

Potentiometric Analysis

- Sampling and Sample Storage
- pH
- Temperature
- Conductivity
- Selective ion probes
- Biological Oxygen Demand

## Spectroscopic & Colorimetric Analysis

- Sampling and Sample Storage
- Spectrophotometers
  - Light (Visible and Ultraviolet)
  - Atomic Absorption
- Turbidity
- Chemical Oxygen Demand

## Microbiological Analysis

- Sampling and Sample Storage
- Membrane filtration

## Solids Analysis

- Suspended Solids

## Analysis by Chromatography

## Case Study