

Tompkins Cortland Community College
Master Course Syllabus

Course Discipline and Number: CONT 216

Year: 2021-2022

Course Title: Materials Testing

Credit Hours: 2

Attendance Policy: *To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. It is the responsibility of all instructors to distribute reasonable attendance policies in writing during the first week of class. Students are required to comply with the attendance policy set by each of their instructors. Students are not penalized if they are unable to attend classes or participate in exams on particular days because of religious beliefs, in accordance with Chapter 161, Section 224-a of the Education Law of the State of New York. Students who plan to be absent from classroom activity for religious reasons should discuss the absence in advance with their instructors. See college catalog for more information.*

Services for Students with Disabilities: *It is the College's policy to provide, on an individual basis, appropriate academic adjustments for students with disabilities, which may affect their ability to fully participate in program or course activities or to meet course requirements. Students with disabilities should contact the Coordinator of Access and Equity Services, to discuss their particular need for accommodations. All course materials are available in alternate formats upon request.*

Course Description

This is a fourth-semester course designed for Construction Technology students. Laboratory procedures pertaining to a variety of construction materials are discussed, followed by performance of those tests. Students prepare complete, formal reports of each exercise to professional standards. Course content is presented through lecture, class discussion, and demonstrations. Students perform lab exercises either individually or in groups. Prerequisites: CONT 107; ENGL 103; MATH 122 or MATH 132; RDNG 116 if required by placement testing. Prior completion of a lab science course is strongly recommended. 2 Cr. (1 Lec., 2 Lab.) Spring semester.

Course Context/Audience

A required course in the Construction Technology degree and certificate programs, this course brings together many of the critical skills learned throughout the programs. These include technical construction knowledge, analytical skills, scientific method, research methods and technical writing. Students also gain experience working within groups to accomplish a task.

Basic Skills/Entry Level Expectations

Writing: WC College level writing skills are required. See course co-requisites or pre-requisites.

Math: MC College level math skills – Course requires college level math skills. See course description for co-requisite and/or prerequisite requirement(s).

Reading: R4 Before taking this course, students must satisfactorily complete RDNG 116 or have assessment indicating that no reading course was required.

Course Goals

1. Testing Procedures: the student will learn the standardized procedures for testing a number of materials. One half of the laboratory procedures performed will be standard tests of soils, aggregates and/or structural fills; such as moisture content, particle size, liquid and plastic limits, in-place density and maximum density. The remaining laboratory procedures will focus on other construction materials such as concrete, masonry, hot mix asphalt and steel.
2. Group Process: the student will learn to work effectively as a group member to accomplish a common goal.
3. Research: the student will learn to access sources of published data in order to make comparisons and conclusions related to experimental results and internet searches to validate certifications common to the construction trade
4. Report writing: each student will learn to prepare scientific laboratory reports of professional quality.

Course Objectives/Topics

Objective/Topic	% Course
Background: the student will be able to describe each of the tests undertaken during the semester including equipment, procedures, applications and limitations.	5%
Preparation: the student will be able to prepare an appropriate sample of the material to be tested.	5%
Test procedures: the student will be able to perform the test to industry standards and collect the appropriate data.	10%
Calculations: the student will be able to apply mathematical procedures to calculate appropriate and usable results.	20%
Presentation of results: the student will be able to select methods of presenting test results by creating graphs, tables and/or descriptions as appropriate.	20%
Analysis/conclusions: the student will be able to apply his/her knowledge in order to make scientifically valid conclusions based on test results.	20%
Reports: the student will be able to present professional quality written reports for each experiment.	20%

General Education Goals - Critical Thinking & Social/Global Awareness

CRITICAL THINKING OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
<p>Students will be able to</p> <ul style="list-style-type: none"> ➤ develop meaningful questions to address problems or issues. ➤ gather, interpret, and evaluate relevant sources of information. ➤ reach informed conclusions and solutions. ➤ consider analytically the viewpoints of self and others. 	<p>Students are required to review data they generate during the laboratory procedure and compare results with published data. They must evaluate their data accuracy and determine the validity of results. Finally they must consider if the data meets the objective of the procedure and supports their conclusions.</p>
SOCIAL/GLOBAL AWARENESS OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
<ul style="list-style-type: none"> ➤ Students will begin to understand how their lives are shaped by the complex world in which they live. ➤ Students will understand that their actions have social, economic and environmental consequences. 	<p>Throughout the lecture students are presented with examples of how the tests and procedures are evaluated to predict the physical properties of materials for engineering purposes. A structure's life cycle can be predicted; why did a landslide occur? Can a structure withstand an earthquake? Roles of the Designer, Engineer, Contractor, Building Inspector, and Owner are examined through interpretation of routing test procedures.</p> <p>Not addressed</p>

--	--

Instructional Methods

1. Lecture: each topic should be introduced through the lecture format in conjunction with demonstration and discussion.
2. Demonstration: where practical, most of the experimental procedures should be demonstrated.
3. Discussion: discussion should be employed throughout the class time.
4. Group: all experiments should be conducted in one or more groups.

Methods of Assessment/Evaluation

Method	% Course Grade
Reports: written reports should be required for all experiments.	70%
Observation: the instructor should make observations related to professionalism, group dynamics, efficiency, and demeanor.	15%
Exam: a comprehensive final exam should be administered.	15%

Text(s)

Engineering Properties of Soils and their Measurement, Bowles, 4th Edition, McGraw-Hill, New York, NY.

Bibliography

ENR (Periodical).

McGraw-Hill Civil Engineering (Periodical).

ASCE ASTM Standards, © 2005.

Other Learning Resources

Audiovisual No resources specified
Electronic Structural Design Software
Other No resources specified