Tompkins Cortland Community College

Master Course Syllabus

Course Discipline and Number: CONT 216 **Year: 2024-2025**

Course Title: Materials Testing **Credit Hours: 2**

I. Course Description:

Laboratory testing procedures pertaining to a variety of construction materials are discussed, followed by performance of those tests. Special attention is placed on concrete testing in accordance with procedures set by ASTM standards. Course content is presented through lecture, class discussion, and demonstrations. Students perform lab exercises either individually or in groups and prepare individual, complete, formal reports of each exercise to professional standards. Lab fee required. Prerequisites: CONT 107; ENGL 100; prior completion of, or concurrent enrollment in, MATH 122 or MATH 138. 2 Cr. (1 Lec., 2 Lab.) Spring semesters.

II. Additional Course Information:

1. This is a required course in the Construction and Environmental Technology A.A.S. and certificate. It can also be used as a technical elective for the Applied Science and Technology program.
2. The course requires physical activity, ability to lift 50 lbs. of weight, and ability to adhere to safety guidelines of operating industrial and laboratory equipment.
3. Safety clothing, shoes, and gear are required in the materials lab.
4. After completion of the course, students may choose to take the ACI Concrete Field Testing Technician – Grade 1 Certification Exam.
5. A lab fee of approximately $25 is required for this course.
6. This course requires a minimum of 1 hour of lecture and 2 hours of lab per week for a 15-week semester.

III. Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1. Properly follow the procedure for sampling freshly-mixed concrete.
2. Perform tests to calculate temperature, slump, density, yield, and air content (with both the pressure and volumetric methods) of freshly-mixed concrete.
3. Fabricate test specimens of concrete for compressive strength testing, and perform such tests.
4. Describe testing processes for other construction materials including aggregate, soils, asphalt, masonry, and steel.

IV. Tompkins Cortland Institutional Learning Outcomes; Program Learning Outcomes; SUNY General Education Outcomes

Tompkins Cortland ILOs N/A

Complete this section for “service” courses only (e.g. courses that are required of all students; courses that are not program specific but satisfy liberal arts requirements; or commonly used in multiple academic programs to meet non-

program-specific requirements). Check only Institutional Learning Outcomes (ILOs) that are meaningfully developed and assessed in this course. For each ILO chosen, include the SLO to which it aligns.

Students will:
☐ Communicate effectively, in oral and written forms, taking into consideration audience and purpose.

☐ Apply principles and methods of scientific inquiry and quantitative reasoning appropriate to their discipline.

☐ Use information, critical thinking, and the creative process to solve problems and reach conclusions.

☐ Use technology appropriate to their discipline.

☐ Describe the ways in which social, economic, or environmental sustainability depends on their own and the collective contributions of a diversity of ideas and people.

Program Learning Outcomes

Complete this section for program-specific courses (e.g. those that share the same 4 letter designation as the academic program or satisfy requirements in related programs). List the academic program(s) here and note which Student Learning Outcomes align to specific Programmatic Learning Outcomes. Please see the MCS Instructions for more details.

Specify the Academic Program
Construction and Environmental Technology A.A.S.

PLO #1. Graduates will have the educational background and ability to learn new, job-specific skills

SLOs:

1. Properly follow the procedure for sampling freshly-mixed concrete.
2. Perform tests to calculate temperature, slump, density, yield, and air content (with both the pressure and volumetric methods) of freshly-mixed concrete.
3. Fabricate test specimens of concrete for compressive strength testing, and perform such tests.
4. Describe testing processes for other construction materials including aggregate, soils, asphalt, masonry, and steel.

SUNY General Education Outcomes N/A

If this course **assesses** a SUNY GEN ED Outcome, check all that apply and indicate which course outcome(s) address each checked item:

☐ CRITICAL THINKING - Students will:

a. identify, analyze, and evaluate arguments as they occur in their own or others' work; and
b. develop well-reasoned arguments.

☐ INFORMATION MANAGEMENT - Students will:

a. perform the basic operations of personal computer use;
b. understand and use basic research techniques; and
c. locate, evaluate and synthesize information from a variety of sources.

☐ GENERAL EDUCATION CATEGORY - Area(s):
For courses that are approved to meet one (or more) of the ten SUNY General Education categories, indicate which category the course fulfills, and which outcome(s) are aligned with the SUNY outcomes for that category:

☐ This course does not address any of the above Tompkins Cortland ILOs, PLOs, or SUNY General Education Outcomes.

V. Essential Topics/Themes

1. Sampling of freshly mixed concrete
2. Temperature of freshly mixed concrete
3. Slump of freshly mixed concrete
4. Air content of freshly mixed concrete by the pressure method and by the volumetric method
5. Density and yield of freshly mixed concrete
6. Making and curing concrete test specimens; testing specimens for strength
7. Moisture testing of soil samples
8. Overview of mass, volume, and void relationship in soils
9. Soil classification
10. Asphalt mix and properties
11. Overview of masonry material strength
12. Overview of steel properties

VI. Methods of Assessment/Evaluation

Method	**% Course Grade**
1. In-class Participation and/or Attendance	30%-50%
2. Lab Reports	30%-50%
3. Quizzes	0%-20%
4. Final Exam	20%-40%

VII. Texts – ☐ Required ☒ Recommended ☐ Used for more than one course (list courses)

1. CP-1 39th Ed. *Technician Workbook for ACI Certification of Concrete Field Testing Technician – Grade 1*
2. CP-1 *Pack 2: Technician Study Package.*

Editions listed are current as of date of syllabus. More recent editions may be used.

VIII. Bibliography of Supplemental Materials

1. *Testing of Construction Materials.* Bahurudeen & Moorthi.CRC Press, ISBN-10: 0367644959, a. ISBN-13: 978-0367644956
2. *Civil Engineering Materials: Introduction and Laboratory Testing*. Rashad Islam. ISBN-10: 0367224828, a. ISBN-13: 978-0367224828
3. ASCE ASTM Standards ~~© 2005~~ (most recent)

Editions listed are current as of date of syllabus. More recent editions may be used.

IX. Other Learning Resources

Audiovisual: No resources specified
Electronic: No resources specified
Other: No resources specified

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 academic adjustments. All course materials are available in alternate formats upon request.*

Academic Integrity: *Every student at Tompkins Cortland Community College is expected to act in an academically honest fashion in all aspects of his or her academic work: in writing papers and reports, in taking examinations, in performing laboratory experiments and reporting the results, in clinical and cooperative learning experiences, and in attending to paperwork such as registration forms.*
Any written work submitted by a student must be his or her own. If the student uses the words or ideas of someone else, he or she must cite the source by such means as a footnote. Our guiding principle is that any honest evaluation of a student's performance must be based on that student's work. Any action taken by a student that would result in misrepresentation of someone else's work or actions as the student's own — such as cheating on a test, submitting for credit a paper written by another person, or forging an advisor's signature — is intellectually dishonest and deserving of censure.
Several degree programs offer student learning opportunities (such as internships, field work, and clinical experiences) outside the standard classroom setting. As part of the learning process, students must understand and engage in conduct that adheres to principles guiding employment within the professional workplace. These behaviors include, but are not limited to, academic integrity, accountability, reliability, respect, use of appropriate language and dress, civility, professional ethics, honesty, and trustworthiness. Disciplinary action may be initiated for inappropriate conduct occurring while participating in any course-related project or event.