

**Tompkins Cortland Community College**

**Master Course Syllabus**

**Course Discipline and Number: CONT107**

**Year: 2024-2025**

**Course Title: Construction Materials**

**Credit Hours: 3**

**I. Course Description:** This is a first semester course designed primarily for Construction and Environmental Technology students. It is intended to develop familiarity with and an understanding of the properties of basic construction materials including concrete, steel, wood, aggregates, and masonry and to explore environmental regulations, alternative construction methods, and sustainability in the construction industry. Course content will be presented through lecture, class discussion, demonstrations, and field trips. Prerequisites: None. Students should seek tutoring support as needed. 3 Cr. (3 Lec.) Fall semester.

**II. Additional Course Information:**

1. This course is an introductory course for Construction and Environmental Technology Students.
2. This course is a prerequisite for CONT115, CONT208, and CONT216.

**III. Student Learning Outcomes**

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

1. Describe the most common construction materials and the advantages and limitations of each.
2. Explain the functions of key players in the construction industry.
3. Discuss the operations of several local construction firms as a result of site visits.
4. Describe how the construction industry is adapting to national environmental policy.

**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 AAS**

**PLO #1** Communicate information effectively to appropriate stakeholders.

SLO #1 Describe the most common construction materials and the advantages and limitations of each

**PLO #2** Execute scientific experiments, gather accurate data, use the scientific method and appropriate analysis to derive conclusions.

PLO #3 Use current technology appropriate to the construction industry.

**PLO #4 Evaluate the social, economic, and ecological dimensions of sustainability within the construction**

SLO #4 Describe how the construction industry is adapting to national environmental policy

### **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): **- N/A**

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. Material properties: stress and strain, hardness and ductility as they pertain to construction materials.
2. Building systems: basic concepts of footings, foundations, sub-structure and superstructure.
3. Soils and excavation: soil types, basic soil investigation methods, and methods of excavation.
4. Trees, lumber and wood products: structure of wood including its structural limitations and advantages, "engineered" wood products compared to solid wood.
5. Concrete: structure, the methods of modifying its properties, advantages and limitations, formwork and reinforcing of concrete structures.

6. Masonry: various types of masonry materials used in construction, their applications and limitations.
7. Iron and steel: production and structures of iron/carbon alloys, applications and limitations of steel in structural applications.
8. Aggregates: types of aggregates, testing procedures used to analyze them, and their application as structural base material and an element in concrete and asphalt products.
9. Construction Industry: key participants in the construction industry, their roles in delivering the product, regulations governing the industry, adapting the industry to national policies promoting sustainability and accessibility.

## VI. Methods of Assessment/Evaluation

Method	% Course Grade
1. Quizzes: A minimum of 5, requiring responses in the form of complete sentences/paragraphs.	65-75%
2. Final exam: comprehensive and including multiple choice questions.	25-35%

## VII. Text – Required

*High school instructors may consult with staff in the CollegeNow office for additional information and guidance.*

	OER
1. <i>Construction Materials, Methods, and Techniques</i> . Spence, William P., Latest Edition, Thomson Delmar Learning.	<input type="checkbox"/>

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

## VIII. Bibliography of Supplemental Materials

1. New York State Uniform Fire Prevention and Building Code
2. American Society for Testing and Materials. <i>ASTM Standards in Building Codes</i> . 43 <sup>rd</sup> ed. Philadelphia, PA, © 2006.
3. Concrete Reinforced Steel Institute. <i>CRSI Design Handbook</i> . 10 <sup>th</sup> ed., Schaumburg, IL, © 2008.
4. Concrete Reinforced Steel Institute. <i>Manual of Standard Practice</i> . 29 <sup>th</sup> ed., Schaumburg, IL, © 2018.
5. American Institute of Steel Construction, Inc. <i>Manual of Steel Construction</i> , 14 <sup>th</sup> ed., Chicago, IL, © 2011.

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

## IX. Other Learning Resources

<b>Audiovisual:</b> Documentary videos
<b>Electronic:</b> Power Point
<b>Other:</b> Guest speakers from the construction industry; field trips

**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 their 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 their own. If the student uses the words or ideas of someone else, they 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.*