

Fall 2019

# CET 317-001: Construction Computing

John A. Wiggins

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**Department of Engineering Technology  
Construction Engineering Technology Program  
Course Policy – Fall 2019**

Title and Course Number

CET 317 - Construction Computing

Credits and Contact Hours:

Credits - 3 Hours Lecture

Course Meeting

This course will meet on Tuesday and Friday mornings between 10:00 and 11:20 P.M. in the Central King Building, Room 126.

Course Description

An introduction to computing practices within the construction industry. This will run the gamut from blueprint reading, understanding blueprint reading, excel applications for estimating, payment and related construction issues, and project scheduling using Microsoft Project and other scheduling techniques to create Gantt and CPM scheduling. Aspects of both vertical and horizontal construction will be covered.

Prerequisites and Co-Requisites

CIS 101 or equivalent; Use of a personal computer is required.

Textbook

Digital Quality Management in Construction, P. Marsden, Routledge Publishing, 2019, ISBN 978-1-138-39082-9

Instructor

The instructor for this course is John A. Wiggins, P.E., J.D., F.ASCE. Professor Wiggins holds a BSCE degree (1973) from Newark College of Engineering, an MSCE degree (1981) from the New Jersey Institute of Technology and a Juris Doctor degree (1980) from the Seton Hall School of Law and is a full time member of the faculty at NJIT. In addition to his teaching duties, Prof. Wiggins is a practicing civil engineer. He holds Professional Engineer and Professional Planner licenses from the State of New Jersey and a Professional Engineer's license from the Commonwealth of Pennsylvania as well as being admitted to the New Jersey State Bar. He is also a PhD candidate in Civil Engineering at Rutgers University, New Brunswick, NJ where his principal area of study is Construction Management.

Oral and written communication requirements

The students will be required to produce various reports as part of the assignments in this course. A 10 page research paper on a submitted or assigned topic that will be prepared in conjunction with the term project as well

as prepare a 10 minute oral presentation on a topic of their choosing. The report will require some basic research and be written in either MLA or APA format.

### **Concepts and Skills (Course Learning Outcomes)**

Upon completion of the course, each student will be able to:

1. Produce and utilize design, construction and operations documents;
2. Estimate costs, estimate quantities, and evaluate materials for construction projects;
3. Perform standard analysis in at least one sub-discipline related to construction engineering. In this case, the sub-discipline will be estimating and scheduling using standard software applications. Utilize measuring methods, hardware, and software that are appropriate for field, laboratory, and office processes related to construction.

### Professional Communications

All communications between the student and Instructor (homework, reports, papers, emails, etc.) are professional communications and should be treated as same. Use of slang and computer short-hand are improper and should be avoided. Also, proper grammar and spelling should be employed at all times.

### Office Hours

The Instructor is available in his office (GITC 2107) for consultation at the times posted on the department webpage for office hours and by appointment only. Appointments can be made on line by visiting the Instructor's advising webpage ([http://ucs-vmserver3.njit.edu/et/et\\_scheduling/appointment\\_days.php?id\\_person=3](http://ucs-vmserver3.njit.edu/et/et_scheduling/appointment_days.php?id_person=3)) and reserving an appointment . Students who miss their appointment and walk-ins will only be seen, if at all, if time permits and after all those students with appointments are seen.

### Teaching Methods

A wide variety of instructional methods are used to provide students with meaningful learning experiences. These include individual problem solving and group problem solving in addition to the traditional lecture format.

### Attendance Policy/Student Conduct

During the conduct of the class, professional courtesy is expected. This includes arriving on time as well as leaving during class. It is the intent of the Instructor to conduct this class similar to what would be encountered in a business setting. In that regard, the class will be conducted in a professional atmosphere in an effort to acquaint the students with the atmosphere of a professional environment. Laptops are permitted in class in conjunction with the course materials. Food is not permitted in class. With respect to attire, hats are not worn in class. Similarly, "private" conversations with fellow students during a class are discourteous and inconsiderate to both your Instructor as well as your fellow students. You are encouraged to ask any questions that you feel further clarifies the material being presented or that will be to the benefit of class in general. Please feel free to ask any question at any time. Education works best when there is a dialogue and not a monologue.

It is the student's responsibility to attend class. If a class is missed, the student is responsible for all material and announcements provided during his absence. Assignments will be made either via Canvas. Lecture attendance is not required (except as noted below) but is a portion of the student's grade. Attendance will be taken during the first 15 minutes of class, after which the student will be marked absent for the session. A sign-in sheet be circulated during this time and collected as a record of attendance. Late comers will not be permitted to add their name to the sheet.

### Grading Criteria

A Mid-Term and a Final examination shall be administered throughout the course. The Mid-Term shall cover only the material designated by the Instructor. The Final Examination shall be a comprehensive examination of all material covered during this course. It is mandatory that the Mid-Term and Final Examination be taken to successfully complete course. It is strongly encouraged that all students make every effort to attend the examinations as make-up tests are strongly discouraged. In the event that a student fails to take the Mid-Term or the Final examination, a grade of "F" shall be entered for the student for this course. Unless otherwise announced by the Instructor, all test and examinations will be of the "closed notes-closed book" variety.

Homework assignments will be used to assess the student's progress during the course as well as to be employed to assess the quality of student's effort and understanding of the material presented. All homework shall be graded and returned to the student as soon as possible. Homework may be covered in class as a review for the student. It is the intent to assign 11 homework assignments during the course of the semester and the grade on 10 of these assignments will be counted for credited. In the completion of homework assignments, the assignment should be logically presented with citation to reference materials properly presented. It is suggested that, whenever possible, final answers be underlined or "boxed". All assignments are due at the time posted in the assignment and the homework will be posted by the student in Canvas. Once the portal for the submission of homework is closed, the assignment will not be accepted for credit. Similarly, late assignments will not be graded. Also, assignments that are anonymous (i.e., those without a name on them) will not be graded.

Computational homework may be legibly hand lettered in pencil or ink and shall be supplied on a sheet of gridded computational paper and scanned for submission. Gridded paper is available in the bookstore or at any stationary store. Written homework shall be submitted in a typed or in a word-processed format, 11 or 12 point font. The student's name should appear in the upper right hand corner, followed by the date, the assignment number and description as shown below. No cover or cover sheet is required. Grammar and spelling will be counted.

*\*\*\*\*\*Sample Assignment Heading \*\*\*\*\**

CET 317 – Construction Computing  
Assignment No. XXXX

John Smith  
September 1, 2019

In determining the final grade for this course, all grades shall be weighted as follows:

Homework	20 %
Term project	10 %
Mid term	30 %
Final Examination	35 %
Class Participation/ Attendance	5 %

Grading Scale

Letter grades will be assigned based on the following scale

A	100 - 90
B	89 – 80
C	79 – 70
D	69 – 60
F	59 - 0

The grade of Incomplete will only be granted in the case of an extreme emergency on the part of the student, proved by adequate evidence. Your Instructor reserves the right to vary the above as necessary based on the results of the course.

### Course Outline

Week	Date	DOTW	Lecture Topic	Readings	Assignment
1	9/3/19	T	Introduction and Course Overview	TBA	NA
<b>Module 1 - Communications</b>					
1	9/6/19	F	Blue print Reading /Intro to Communications	TBA	NA
2	9/10/19	T	Business Letters	TBA	NA
2	9/13/19	F	Resumes and PowerPoint	TBA	Assignment No. 1 – Communications
<b>Module 2 – Estimating and Payment</b>					
3	9/17/19	T	Vertical Construction Plan Reading	TBA	TBA
3	9/20/19	F	Proposal Preparation	TBA	Assignment No. 2 – Plan Interpretation
4	9/24/19	T	Estimating & Take Off- Horizontal Construction	TBA	NA
4	9/27/19	F	Estimating & Take Off- Vertical Construction	TBA	Assignment No. 3 – Estimating
5	10/1/19	T	Pay Estimates for Horizontal Construction	TBA	NA
5	10/4/19	F	Pay Estimates for Vertical Construction	TBA	Assignment No. 4 – Pay Estimates
6	10/8/19	T	Mid- Term Examination	NA	
<b>Module 3 – Scheduling</b>					
6	10/11/19	F	Introduction to Scheduling	TBA	TBA
7	10/15/19	T	Gantt Chart Scheduling	TBA	TBA
7	10/18/19	F	Gantt Chart Scheduling	TBA	Assignment No. 5 – Gantt scheduling
8	10/22/19	T	Schedule Basics – Logic Diagrams	TBA	TBA
8	10/25/19	F	Schedule Basics - Logic Diagrams	TBA	Assignment No. 6 – Logic Diagrams
9	10/29/19	T	Schedule Basics - Logic Diagrams	TBA	TBA
9	11/1/19	F	Schedule Basics - Logic Diagrams	TBA	Assignment No. 7 – Logic Diagrams
10	11/5/19	T	Linear Scheduling	TBA	TBA
10	11/8/19	F	Linear Scheduling	TBA	Assignment No. 8 – Linear Scheduling
11	11/12/19	T	Linear Scheduling	TBA	TBA
11	11/15/19	F	Linear Scheduling	TBA	Assignment No. 9 – Linear Scheduling 2

12	11/19/19	T	<b>No Class – Thursday Schedule</b>	TBA	TBA
12	11/22/19	F	Linear Scheduling Line of Balance	TBA	TBA
13	11/26/19	T	No Class – Thanksgiving	TBA	TBA
13	11/27/19	W	Basic CPM	TBA	TBA
13	11/29/19	F	Basic CPM	TBA	Assignment No.10 – CPM
14	12/3/19	T	Basic CPM	TBA	TBA
14	12/6/19	F	Advanced CPM	TBA	TBA
15	12/10/19	T	<b>Last Class</b>	NA	TBA
15	12/12.13/19	T	<b>Reading Days</b>	NA	NA
16	12/14- 12/20/19	W,R	<b>Final Examination – TBA</b>	NA	NA

Note: Actual Topics and Assignments may be altered based on class progress; the student should check the course webpage in Canvas.