

# Spring 2020 Course Syllabus

## CEM 175C- 2017 National Electrical Code: Commercial

**INSTRUCTOR:** Sean Livingston  
 Phone Numbers: Daytime (831) 454-3096  
 Email: Sean.Livingston@santacruzcounty.us  
 Office Hours: Thurs 5:30 - 6 PM and 9:05 - 9:35 PM - Room 825

**SECTION: 1** Room 825, 3 units, Thursday nights, 6:00 – 9:05 PM  
**REQUIRED TEXT:** 2017 National Electrical Code (NEC), (2019 California Electrical Code (CEC))  
 (No Electronic Text in class)

### **Student Learning Outcomes**

1. Analyze the National Electric Code (NEC) applied to commercial construction.
2. Critically assess aspects of the NEC including conductors, cables, raceways, fittings, boxes, panels, devices, hazardous locations, special equipment and environments, high voltage wiring methods, and electrical blueprint reading for commercial construction.
3. Apply NEC to current commercial construction project specifications.

**Objectives :** The following objectives apply to commercial construction;

1. Analyze electrical systems for NEC compliance.
2. Identify wiring sizes consistent with the NEC.
3. Identify proper grounding techniques.
4. Explain how to calculate feeder and service loads.
5. Critically evaluate systems for compliance with the NEC.
6. Describe installation of grounding systems.
7. Calculate service conductor size according to the NEC.
8. Solve problems associated with electrical systems.

<b><u>Lecture Schedule</u></b>	<b><u>NEC 2014 Articles</u></b>	<b><u>Quiz #</u></b>	<b><u>from Lecture Dates</u></b>
1) Jan. 30	NEC Art 100, 110 & Electrical theory	φ	-----
2) Feb . 6	NEC Art 300	1	Jan . 30
3) Feb . 13	NEC Art 310 & Electrical theory	2	Feb . 6
4) Feb . 20	NEC Art 240	3	Feb . 13
5) Feb . 27	NEC Art 220 & Electrical theory	4	Feb . 20
6) Mar. 5	NEC Art 250	5	Feb . 27
7) Mar. 12	Review	6	Mar. 5
<b>8) Mar. 19</b>	<b>Mid-Term Exam - Open Book (no notes)</b>	<b>Jan. 30 - Mar. 5 Lectures</b>	
7) Mar. 26	Spring Break !	-----	
8) Apr. 2	NEC Art 430	φ	-----
8) Apr. 9	NEC Art 450 & Electrical Theory	7	Apr. 2
9) Apr. 16	NEC Art 450 & Electrical Theory	φ	-----
10) Apr. 23	NEC Art 500, 501, 502, 503, Misc. Ch. 5	9	Apr. 9 <sup>th</sup> & 16
11) Apr. 30	NEC Art 700, 701, 702, 705, 708 & 750	10	Apr. 23
12) May 7	NEC Art. 800, Ch. 9 & Electrical theory	11	Apr. 30
13) May 14	Review	12	May. 7
<b>14) May 21</b>	<b>Final Exam - Open Book (no notes)</b>	<b>Entire Semester Lectures</b>	

## **GRADES/TESTS:**

There will be eleven in-class weekly quizzes, plus the midterm & final. The weekly in-class quizzes **MAY NOT BE MADE UP IF MISSED !!!** The mid-term exam and final exam are each weighted equally. **You must arrange in advance at least two weeks** for either the Midterm or Final if you will not be present on the scheduled dates, (exams will **only** be available for scheduling the day of the midterm or final). You will also be graded on your attendance. The breakdown for the grading criteria is as follows:

1 midterm & 1 final	40% (midterm & final weighted 20% ea.)
11 weekly quizzes,	60% (11 quizzes weighted 5.45% ea.)
Student participation	

A = 85-100

B = 75-84

C = 65-74

D = 60-64

F = below 60 (Class may be taken credit/no credit, a minimum of 65% is required for credit)

Lectures and quizzes will be available for this class online at Cabrillo College Canvas. Lectures will be posted on the day following the class lecture. Quizzes will be available the same day and time frame as the in-class quiz, usually between 6:10pm – 7:00pm. Please use this link if you have not used this site before for access to Canvas; <https://www.cabrillo.edu/services/tlc/canvas/students.html>.

I encourage students to bring questions and examples to class for discussion. If you have questions from your field or trade experience, please feel free to bring them up at an appropriate time during our class discussion. We have a set amount of material we need to cover, but I like to make the time to answer your questions.

I will bring in examples of equipment and fittings to help students visualize what the Code is referring to. If you have any similar displays that are relevant please let me know and I will try to incorporate them into our class discussion.

## **CEM Program Certification & Degree Counseling**

Contact Department Chair for Construction Energy Management (CEM)

Bruce Greenstein (831) 479-6235

## **RELATED WEBSITES**

<a href="http://www.iccsafe.org">www.iccsafe.org</a>	International Code Council (ICC)
<a href="http://www.nfpa.org">www.nfpa.org</a>	National Fire Protection Association, NEC author (NFPA)
<a href="http://www.cslb.ca.gov">www.cslb.ca.gov</a>	Contractors State License Board, State of California (CSLB)
<a href="http://www.iaei.org">www.iaei.org</a>	International Association of Electrical Inspectors (IAEI)
<a href="http://www.dir.ca.gov/DAS">www.dir.ca.gov/DAS</a>	State Electrician Certification info
<a href="http://www.tricountyjatc.org">www.tricountyjatc.org</a>	International Brotherhood of Electrical Workers (IBEW)

## **STUDENTS WITH DISABILITIES**

**NONDISCRIMINATION and ACCESSIBILITY NOTICE:** The District is committed to equal opportunity in educational programs, employment, and all access to institutional programs and activities. The District, and each individual who represents the District, shall provide access to its services, classes, and programs without regard to national origin, religion, age, gender, gender identity, gender expression, race or ethnicity, color, medical condition, genetic information, ancestry, sexual orientation, marital status, physical or mental disability, pregnancy, or military and veteran status, or because he/she is perceived to have one or more of the foregoing characteristics, or based on association with a person or group with one or more of these actual or perceived characteristics.

Students needing accommodations should inform the instructor. As required by the Americans with Disabilities Act (ADA), accommodations are provided to insure equal access for students with verified disabilities. To determine if you qualify or if you need assistance with an accommodation, please contact the ACCESSIBILITY SUPPORT CENTER (Formerly DSPS), Room 1073 (upstairs in the Library), (831) 479-6379 or (831) 479-6370.

## **RESOURCES**

**Support Services:** Cabrillo College has many programs and services designed to help you during your academic journey. You can visit the website at [www.cabrillo.edu](http://www.cabrillo.edu) for a complete listing of support services (under the Student Services tab). Please take advantage of the services provided to you by the college.

**Financial Aid:** Cabrillo College provides several financial aid opportunities for students. For tuition and/or book assistance information, go to <https://www.cabrillo.edu/services/finaid/>

**Student Rights and Responsibilities:** You are expected to contribute to a positive learning environment. Your responsibilities as a student include:

- \*Respect for your fellow students, staff, and faculty
- \*Actively participating in the learning environment
- \*Taking responsibility for learning and progressing in your course
- \*Requesting assistance from the instructor when needed
- \*Adhere to all academic integrity principles
- \*Reading and understanding the Cabrillo Student Rights and Responsibilities Handbook. (the student grievance procedure is outlined beginning on pg. 18 of the handbook).
- \*Following all school policies and procedures (All policies and procedures can be found at <http://www.cabrillo.edu/associations/governingboard/BoardPolicies.html>).

**Safety:** Cabrillo College is committed to providing a safe and secure campus environment. The college will not tolerate acts of harassment or violence. For campus safety and security information, go to <https://www.cabrillo.edu/services/sheriff/>. To report an incident or complaint, please go to the Just Report It page on the website: <https://www.cabrillo.edu/reportit/>