

# California Polytechnic State University, San Luis Obispo

## Construction Management Department

### CM 411-01 & -02; CM 411-03 & -04 Specialty Contracting Construction Management

<b>Section</b>	CM 411-01 and -02	CM 411-03 and -04
<b>Instructor:</b>	Lonny Simonian	Paul Redden
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<b>Office Hours:</b>	M 8:40-11:00 W 8:40-11:00	T 9:00 – 11:30 AM Th 9:00 – 11:30 AM
<b>Class Days/Times:</b>	411-01 M 12:10 PM – 3:00 PM, TWR 12:10 PM – 2:00 PM 411-02 M 3:10 PM – 4:00 PM, TWR 2:10 PM – 3:00 PM	
<b>Classroom:</b>	Construction Innovations Center: 186 – Room B206	Construction Innovations Center: 186 – Room B202
<b>Prerequisite(s):</b>	CM 214, 232, and 313	

## Course Description

Materials, methods, and techniques associated with mechanical, electrical, and plumbing systems. Topics include heating, ventilating, air conditioning, power distribution, grounding, lighting, communication, fire detection/protection, and plumbing. Integration of scheduling, estimating, and construction subcontracts with a project-based approach. 3 laboratories, 2 activities.

## Course Goals and Learning Outcomes

### Course Goals:

As a result of this course, you should be able to:

- Understand the types of materials used in specialty contracting, demonstrated through the mastery of CLOs 1 through 25
- Understand how to read mechanical, electrical, and plumbing plans and specifications
- Know the different types of equipment and materials used in specialty contracting
- Comprehend the design intent and constructability issues in specialty contracting
- Analyze a system design, estimate materials and components used, and create installation work packages

## **Course Learning Outcomes (CLOs):**

### **Scheduling**

1. LO1 Discuss Building Information Modeling as it relates to MEP coordination, MEP prefabrication, and MEP scheduling

### **Estimating**

2. LO2 Estimate MEP subcontract work

### **Contracts Administration**

3. LO3 Understand the unique aspects of MEP contracts/subcontracts

### **Electrical Systems for Buildings**

4. LO4 Know the different types of devices used in building electrical system
5. LO5 Describe how building electrical systems work; how they are designed; and how they fit-in with mechanical, architectural, and structural system
6. LO6 Know how building electrical systems are built and understand the costs associated with the different types of systems
7. LO7 Appreciate the need for building electrical systems to create a working environment within a building
8. LO8 Apply the knowledge of electrical power systems toward assembling receptacle and lighting circuits
9. LO9 Synthesize the knowledge gained through class readings and exercises through construction site visits
10. LO10 Examine electrical drawings and specifications; prepare electrical take-offs of electrical material, equipment, and commodities; and use building construction cost data reference guides to determine the cost for different electrical systems
11. LO11 Conduct independent site visits to recently construction buildings, prepare written summaries, and give oral presentations about building electrical systems

### **Mechanical and Plumbing Systems for Buildings**

12. LO12 Understand commissioning, enhanced commissioning, passive ventilation systems, passive heating and cooling, alternative energy strategies, BIPV's, green power, energy modeling
13. LO13 Use of the psychometric chart to determine the properties of air for the purpose of providing comfort
14. LO14 Describe the Refrigeration cycle and physical components used achieve the desired results
15. LO15 Describe the fundamental factors that determine human comfort
16. LO16 Perform plan reading exercises for a water distribution system; drain, waste, and vent system; storm water system; and HVAC system
17. LO17 Identify and select appropriate piping materials based on the plumbing application
18. LO18 Identify and describe the construction methods and materials used to fabricate and install water distribution systems; sanitary drainage and vent systems; storm water drainage systems; and HVAC systems
19. LO19 Recognize and use the appropriate terminology and units of measure used for plumbing and mechanical systems
20. LO20 Identify industry standard designations, sizes, and graduations for plumbing and mechanical systems

21. LO21 Describe procedures for testing and checking conformance for plumbing and mechanical systems
22. LO22 Identify equipment used to fabricate and install plumbing and plumbing systems; and to fabricate and install force-air heating systems
23. LO23 Use building codes and standards to perform layout, sizing, and plan checking
24. LO24 Perform a quantity takeoff for piping and associate components from a plumbing plan
25. LO25 Perform a quantity takeoff for sheet metal poundage from a HVAC plan

## Student and Program Learning Outcomes

The American Council for Construction Education (ACCE) is the accrediting body for Cal Poly's construction management program. The ACCE requires achievement of 20 student learning outcomes (SLOs). The construction management program has identified 20 program learning outcomes (PLOs) that equal or exceed the ACCE SLOs and 5 additional idiosyncratic PLOs.

This course supports the following PLOs:

- PLO 1: Create written communications appropriate to the construction discipline.
- PLO 2: Create oral presentations appropriate to the construction discipline.
- PLO 3: Create a construction project safety plan.
- PLO 4: Create construction project cost estimates.
- PLO 5: Create construction project schedules.
- PLO 8: Analyze methods, materials, and equipment used to construct projects.
- PLO 18: Understand the basic principles of sustainable construction.
- PLO 20: Understand the basic principles of mechanical, electrical and plumbing systems.

## Topical Outline, Outcomes, and Method of Assessment

This course has embedded assessment instruments for the PLO(s) listed below:

- PLO 20: Understand the basic principles of mechanical, electrical and plumbing systems.

An overview of content, course learning outcomes, program learning outcomes, instructional activities, and assessment measures, is listed in the table below.

Section 01 & 02 Weeks	Section 03 & 04 Weeks	Topical Outline	CLOs	PLOs	Instructional Activities	Method of Assessment
1-5	5-10	<ul style="list-style-type: none"> <li>• Electrical Systems</li> <li>• Theory, Equipment, Application</li> </ul>	1-11	1,4,8, 18,20	<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Plan reading exercises</li> <li>• Lab exercises</li> <li>• Project exercise</li> </ul>	<ul style="list-style-type: none"> <li>• Homework, Quizzes, and Exam, and Project evaluation rubric</li> </ul>

Section 01 & 02 Weeks	Section 03 & 04 Weeks	Topical Outline	CLOs	PLOs	Instructional Activities	Method of Assessment
5-10	1-5	<ul style="list-style-type: none"> <li>Mechanical &amp; Plumbing Systems</li> <li>Theory, Equipment, Application</li> </ul>	1,2,3, 1225	4,5,20	<ul style="list-style-type: none"> <li>Lecture</li> <li>Site visit</li> <li>Workbook exercises</li> <li>Lab exercises</li> <li>Project exercise</li> </ul>	<ul style="list-style-type: none"> <li>Homework, Quizzes, and Exam, and Project evaluation rubric</li> </ul>
10	10	<ul style="list-style-type: none"> <li>MEP Final Project</li> </ul>	1-25	1,2,3,4,5, 8,18,20	<ul style="list-style-type: none"> <li>Project exercise</li> </ul>	<ul style="list-style-type: none"> <li>Project evaluation rubric</li> </ul>

## Required Texts/Reading

### Textbook

Mechanical & Electrical Systems for Construction Managers, ATP, Third Edition (ISBN 978-0826993632) available at the Cal Poly bookstore.

### Other Readings

Supplemental reading material provided in class

### Other Equipment/Material Requirements

Calculator, flash drive, laptop computer, set of colored pencils or highlight markers, architectural and engineering scales

## Classroom Protocol

As a student, you are responsible to:

- Arrive on time
- Sit in the classroom, not a cubical
- Use the back door if a presentation is taking place
- Complete the assigned readings and review the lecture material before class
- Stow your cell phone and laptop during discussions or lectures
- Do not stow your bike in the classroom
- Don't conduct private conversations with fellow students or engage in non-classroom activities

## Assignments and Exams

The following assignments and their associated point values are subject to change by the instructor as needed.

Description	Points
Electrical - Homework, Quizzes, and Labs	200
Electrical - Exam	200

Mechanical and Plumbing - Homework, Quizzes, and Labs	200
Mechanical and Plumbing - Exam	200
MEP project	200
<b>Total Points Possible</b>	<b>1000</b>

## Late/Missed Work and Make-Up Policy

According to Academic Senate Resolution AS-592-03/IC, 485.2, the following are considered “excusable” reasons for make-up missed work:

- Illness with a doctor's statement
- Serious illness or death of close relatives
- Active participation in official university events or field trips (with a statement from the adviser involved certifying that the student was actively participating in the event or field trip)
- Religious holidays
- Selective service and military reasons
- NCAA athletic competitions
- Instructionally Related Activities (IRA)/competitions
- Jury duty or any other legally required court appearances
- Job or internship interviews

See ["Excusable" Reasons for Missing Class](#) provided on the university website.

## Grading Policy

Listed below is the grading scale for this course.

Letter Grade	Percentage	Performance	Definition
A	93 – 100%	Excellent Work	Superior Attainment of Course Learning Outcomes
A-	90 – 92%	Mostly Excellent Work	
B+	87 – 89%	Very Good Work	Good Attainment of Course Learning Outcomes
B	83 – 86%	Good Work	
B-	80 – 82%	Mostly Good Work	
C+	77 – 79%	Very Acceptable Work	Acceptable Attainment of Course Learning Outcomes
C	73 – 76%	Acceptable Work	
C-	70 – 72%	Mostly Acceptable Work	
D+	67 – 69%	Mostly Poor Work	Poor Attainment of Course Learning Outcomes
D	63 – 66%	Poor Work	
D-	60 – 62%	Very Poor Work	

Letter Grade	Percentage	Performance	Definition
F	0 – 59%	Failing Work	Non-Attainment of Course Learning Outcomes

## University Policies

### Participation and Attendance

Students are responsible for knowing the University policy regarding class attendance. See [Class Attendance Policy](#) provided on the university website.

### Add/Drop Policy

Students are responsible for knowing the University policies, procedures, and schedule for dropping or adding classes. See [Add/Drop Policy](#) provided on the university website.

### Academic Integrity

Students are responsible for knowing the [Academic Honesty Policy](#).

### Students with Disabilities

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Disability Resource Center, Building 124, Room 119, at (805) 756-1395, as early as possible in the term, as accommodations may take several weeks to arrange. If you are a student with a disability, please consider discussing your needs and possible accommodations with me as soon as possible, and visit the [DRC Website](#) for additional information.

### SensusAccess

SensusAccess is a self-service, alternate media solution made available by Kennedy Library to automatically convert files into a range of alternate media including audio books (MP3 and DAISY), e-books (EPUB, EPUB3 and Mobi) and digital Braille. The service can also be used to convert inaccessible files such as image-only PDF files, JPG pictures and Microsoft PowerPoint presentations into more accessible and less tricky formats. This service is available at no charge for all Cal Poly students, faculty, staff and alumni. For additional information, visit [SensusAccess at the Kennedy Library](#).

### Diversity and Inclusion

Cal Poly considers the diversity of its students, faculty, and staff to be a strength and critical to its educational mission. Cal Poly expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. For more information on resources related to diversity and inclusion, please visit the Office of University Diversity & Inclusivity website at [diversity.calpoly.edu](http://diversity.calpoly.edu).

### Technical Support and Contact Information

Support is available for troubleshooting and access issues for PolyLearn. Please visit the [PolyLearn Student Support Web Site](#) for further information.

## Campus Resources to Support Student Learning

Cal Poly offers programs and resources that are available to assist students during your academic studies, such as the [Cal Poly Student Academic Services Web Site](#).

## Class Recordings

Students may not record (audio or video) in this class except in accordance with ADA accommodations. Any recordings made in connection with a disability accommodation are for the student's personal academic use only and may not be distributed in any manner to any other individual. Exceptions will be considered on a case-by-case basis.

## Other Policies

There will be two exams; one exam will cover Plumbing and Mechanical Systems; another exam will cover Electrical Systems. The exams will be closed book; you're allowed one sheet of single-sided notes. An understanding of the material will be required to successfully complete the exams.

Course materials will be posted to PolyLearn on a continuous basis. It is the responsibility of the student to review posted course information and be prepared to discuss the posting by the next class session. It is imperative that you check your My Cal Poly Portal email on a daily basis. It is anticipated that several emails will be sent informing you of important class activities throughout the quarter. Do not rely upon your cell phone to receive these emails through a linked account as these emails frequently are delivered to your cell phone's spam folder.

## CM 411-01 & -02 Specialty Contracting Construction Management Schedule

Week	Monday	Tuesday	Wednesday	Thursday
<b>1</b> January 6-9 Electrical Fundamentals and Electrical Materials	<ul style="list-style-type: none"><li>• Introduction to the course</li><li>• Review Syllabus &amp; Schedule</li><li>• MEP Systems (Chapter 1)</li></ul>	<ul style="list-style-type: none"><li>• Electrical Lecture #1 – Electrical Fundamentals (Chapters 20 &amp; 23)</li><li>• Video – Home time Electrical</li></ul>	<ul style="list-style-type: none"><li>• Electrical Lecture #2 – Electrical Materials (Chapter 22)</li><li>• Video – Electrical Rough-in</li></ul>	<ul style="list-style-type: none"><li>• Electrical Site Plan Discussion</li><li>• Electrical Quiz</li><li>• Project Team Formation</li></ul>
<b>2</b> January 13-16 Lighting and Alternating Current	<ul style="list-style-type: none"><li>• Electrical Lecture #3 – Lighting (Chapters 29 &amp; 30)</li></ul>	<ul style="list-style-type: none"><li>• Electrical Lighting Wiring Circuit Discussion</li><li>• Video – Lamps &amp; Light Sources</li></ul>	<ul style="list-style-type: none"><li>• Electrical Lecture #4 – Alternating Current (Chapters 21 and 24)</li><li>• Video – Electrical Tools, Safety, &amp; Wiring</li></ul>	<ul style="list-style-type: none"><li>• Electrical Lighting Plan Discussion</li><li>• Electrical Quiz</li></ul>
<b>3</b> January 20-23 Single Phase Power and Grounding	<ul style="list-style-type: none"><li>• Academic holiday – Martin Luther King, Jr.'s Birthday observed</li></ul>	<ul style="list-style-type: none"><li>• Electrical Lecture #5 – Single Phase Service (Chapter 25)</li></ul>	<ul style="list-style-type: none"><li>• Electrical Power Wiring Circuit Discussion</li><li>• Electrical Lecture #6 –</li></ul>	<ul style="list-style-type: none"><li>• Electrical Power Plan Discussion</li><li>• Electrical Quiz</li><li>• Video – GFCIs and AFCs</li><li>• Electrical Quiz</li></ul>

		<ul style="list-style-type: none"> <li>• Video – Electrical Panel boards</li> <li>• Project Introduction</li> </ul>	Grounding (Chapter 26)	
<b>4</b> January 27-30 Overcurrent Protection, Inductive Circuits, and Communication Systems	<ul style="list-style-type: none"> <li>• Electrical Lecture #7 – Overcurrent Protection (Chapter 25)</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Lecture #8 – Inductive Circuits (Chapter 28)</li> <li>• Video – Path of Least Resistance</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Doorbell Wiring Circuit Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Communication Plan Discussion</li> <li>• Electrical Quiz</li> </ul>
<b>5</b> February 3-6 Three Phase Power and Fire Detection Systems	<ul style="list-style-type: none"> <li>• Electrical Lecture #9 – Three Phase Power (Chapters 29 &amp; 30)</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Fire Alarm Plan Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• ABC Building bid</li> </ul>	<ul style="list-style-type: none"> <li>• Project Preliminary Deliverable</li> </ul>
<b>6</b> February 10-13 <i>Mechanical</i>	<ul style="list-style-type: none"> <li>• Electrical Systems Exam</li> <li>• Pump Curves and Hydraulics (Chapter 1)</li> </ul>	<ul style="list-style-type: none"> <li>• Comfort and Psychrometric Chart (Chapter 8 &amp; 9)</li> </ul>	<ul style="list-style-type: none"> <li>• Load Calculation (Chapters 16 &amp; 17)</li> </ul>	<ul style="list-style-type: none"> <li>• Forced Air (Chapters 10 &amp; 18)</li> <li>• Mechanical Quiz</li> </ul>
<b>7</b> February 17-20 <i>Mechanical</i>	<ul style="list-style-type: none"> <li>• Academic holiday – President's Day observed</li> </ul>	<ul style="list-style-type: none"> <li>• Steam and water heating (Chapters 11 &amp; 19)</li> </ul>	<ul style="list-style-type: none"> <li>• Air conditioning</li> <li>• Chapters (12&amp; 13)</li> <li>• Project Intermediate Deliverable</li> </ul>	<ul style="list-style-type: none"> <li>• Heat pump and control systems (Chapters 14 &amp; 15)</li> <li>• Mechanical Quiz</li> </ul>
<b>8</b> February 24-27 <i>Mechanical and Plumbing</i>	<ul style="list-style-type: none"> <li>• Drawing review for mechanical systems</li> </ul>	<ul style="list-style-type: none"> <li>• Estimating and scheduling for mechanical systems</li> <li>• Contracting for mechanical systems</li> </ul>	<ul style="list-style-type: none"> <li>• Plumbing Materials (Chapter 2 )</li> </ul>	<ul style="list-style-type: none"> <li>• Sanitary Drainage, Vent, and Storm water Drainage Piping ( Chapter 3 )</li> <li>• Mechanical Quiz</li> </ul>
<b>9</b> March 2-5 <i>Plumbing</i>	<ul style="list-style-type: none"> <li>• Sanitary Drainage, Vent, and Storm water Drainage Piping (Chapter 4)</li> <li>• Project Advanced Deliverable</li> </ul>	<ul style="list-style-type: none"> <li>• Sizing Water Supply Piping and Plumbing Fixtures and Appliances (Chapter 5 &amp; 6)</li> </ul>	<ul style="list-style-type: none"> <li>• Testing and Inspecting Plumbing Systems</li> <li>• Fire Protection Systems (Chapter 7)</li> </ul>	<ul style="list-style-type: none"> <li>• Drawing reviews for plumbing systems</li> <li>• Plumbing Quiz</li> </ul>



<b>10</b> March 9-12 <i>Plumbing and Final Project</i>	<ul style="list-style-type: none"> <li>Estimating and scheduling for plumbing systems</li> </ul>	<ul style="list-style-type: none"> <li>Contracting for Plumbing systems</li> </ul>	<ul style="list-style-type: none"> <li>Mechanical and Plumbing Exam</li> <li>Project Final Deliverable</li> </ul>	<ul style="list-style-type: none"> <li>Project Final Presentations</li> </ul>
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### CM 411-03 & -04 Specialty Contracting Construction Management Schedule

Week	Monday	Tuesday	Wednesday	Thursday
<b>1</b> January 6-9 <i>Mechanical</i>	<ul style="list-style-type: none"> <li>Introduction to the course</li> <li>Review Syllabus and Schedule</li> <li>Pump Curves and Hydraulics (Chapter 1)</li> </ul>	<ul style="list-style-type: none"> <li>Comfort and Psychrometric Chart (Chapter 8 &amp; 9)</li> </ul>	<ul style="list-style-type: none"> <li>Load Calculation (Chapters 16 &amp; 17)</li> </ul>	<ul style="list-style-type: none"> <li>Forced Air (Chapters 10 &amp; 18)</li> <li>Project Team Formation</li> <li>Mechanical Quiz</li> </ul>
<b>2</b> January 13-16 <i>Mechanical</i>	<ul style="list-style-type: none"> <li>Steam and water heating (Chapters 11 &amp; 19)</li> </ul>	<ul style="list-style-type: none"> <li>Air conditioning (Chapters 12 &amp; 13)</li> </ul>	<ul style="list-style-type: none"> <li>Heat pump and control systems (Chapters 14 &amp; 15)</li> </ul>	<ul style="list-style-type: none"> <li>Drawing review for mechanical systems</li> <li>Mechanical Quiz</li> </ul>
<b>3</b> January 20-23 <i>Mechanical</i>	<ul style="list-style-type: none"> <li>Academic holiday – Martin Luther King, Jr.’s Birthday observed</li> </ul>	<ul style="list-style-type: none"> <li>Estimating and scheduling for mechanical systems</li> <li>Project Introduction</li> </ul>	<ul style="list-style-type: none"> <li>Contracting for mechanical systems</li> </ul>	<ul style="list-style-type: none"> <li>Plumbing Materials (Chapter 2)</li> <li>Mechanical Quiz</li> </ul>
<b>4</b> January 27-30 <i>Plumbing</i>	<ul style="list-style-type: none"> <li>Sanitary Drainage, Vent, and Storm water Drainage Piping (Chapter 3)</li> </ul>	<ul style="list-style-type: none"> <li>Sizing Sanitary Drainage and Vent Piping (Chapter 4)</li> </ul>	<ul style="list-style-type: none"> <li>Sizing Water Supply Piping (Chapter 5)</li> </ul>	<ul style="list-style-type: none"> <li>Plumbing Fixtures and Appliances (Chapter 6)</li> <li>Plumbing Quiz</li> </ul>
<b>5</b> February 3-6 <i>Plumbing</i>	<ul style="list-style-type: none"> <li>Testing and Inspecting Plumbing Systems</li> <li>Fire Protection Systems (Chapter 7)</li> </ul>	<ul style="list-style-type: none"> <li>Drawing reviews for plumbing systems</li> <li>Estimating and scheduling for plumbing systems</li> </ul>	<ul style="list-style-type: none"> <li>Contracting for Plumbing systems</li> </ul>	<ul style="list-style-type: none"> <li>Project Preliminary Deliverable</li> </ul>
<b>6</b> February 10-13	<ul style="list-style-type: none"> <li>Mechanical and Plumbing Systems Exam</li> </ul>	<ul style="list-style-type: none"> <li>Electrical Lecture #1 – Electrical</li> </ul>	<ul style="list-style-type: none"> <li>Electrical Lecture #2 – Electrical</li> </ul>	<ul style="list-style-type: none"> <li>Electrical Site Plan Discussion</li> <li>Electrical Quiz</li> </ul>

Electrical Fundamentals and Electrical Materials	<ul style="list-style-type: none"> <li>• MEP Systems (Chapter 1)</li> </ul>	Fundamentals (Chapters 20 & 23) <ul style="list-style-type: none"> <li>• Video – Hometime Electrical</li> </ul>	Materials (Chapter 22) <ul style="list-style-type: none"> <li>• Video – Electrical Rough-in</li> </ul>	
<b>7</b> February 17-20 Lighting and Alternating Current	Academic holiday – President’s Day observed	<ul style="list-style-type: none"> <li>• Electrical Lecture #3 – Lighting (Chapters 29 &amp; 30)</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Lighting Wiring Circuit Discussion</li> <li>• Video – Lamps &amp; Light Sources</li> <li>• Project Intermediate Deliverable</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Lighting Plan Discussion</li> <li>• Electrical Quiz</li> </ul>
<b>8</b> February 24-27 Single Phase Power and Grounding	<ul style="list-style-type: none"> <li>• Electrical Lecture #4 – Alternating Current (Chapters 21 and 24)</li> <li>• Video – Electrical Tools, Safety, &amp; Wiring</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Lecture #5 – Single Phase Service (Chapter 25)</li> <li>• Video – Electrical Panelboards</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Power Wiring Circuit Discussion</li> <li>• Electrical Lecture #6 – Grounding (Chapter 26)</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Power Plan Discussion</li> <li>• Video – GFCIs and AFCs</li> <li>• Electrical Quiz</li> </ul>
<b>9</b> March 2-5 Overcurrent Protection, Inductive Circuits, and Communication Systems	<ul style="list-style-type: none"> <li>• Electrical Lecture #7 – Overcurrent Protection (Chapter 25)</li> <li>• Project Advanced Deliverable</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Lecture #8 – Inductive Circuits (Chapter 28)</li> <li>• Video – Path of Least Resistance</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Doorbell Wiring Circuit Discussion</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Communication Plan Discussion</li> <li>• Electrical Quiz</li> </ul>
<b>10</b> March 9-12 Three Phase Power and Fire Detection Systems	<ul style="list-style-type: none"> <li>• Electrical Lecture #9 – Three Phase Power (Chapters 29 &amp; 30)</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Fire Alarm Plan Discussion</li> <li>• ABC Building bid</li> </ul>	<ul style="list-style-type: none"> <li>• Electrical Systems Exam</li> <li>• Project Final Deliverable</li> </ul>	<ul style="list-style-type: none"> <li>• Project Final Presentations</li> </ul>