

California Polytechnic State University, San Luis Obispo

Construction Management Department

CM 424 – Technology, Society, and the Built Environment

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Office Hours:	By appointment – send me an email
Class Days/Times:	Online Asynchronous
Classroom:	Your computer
Prerequisite(s):	Junior standing

Course Description

Analysis of the evolution of technologies used within the built environment from a societal/economic/historical/political perspective. A discussion of the benefits and trade-offs associated with introduced technologies. Topics include sustainability, prefabrication, lean construction, and emerging technologies. 2 units (activity).

Course Goals and Learning Outcomes

Course Goals:

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

- Define technology and its role within the built environment, demonstrated through the mastery of CLOs 1, 3, and 5.
- Discuss the evolution of various technologies used within the built environment, demonstrated through the mastery of CLOs 2,3, and 4.
- Analyze technology implementation and its success and failure within a social and historical context., demonstrated through the mastery of CLOs 2 and 4.
- Identify emerging technologies and their likelihood of success based off of current and projected social interaction, demonstrated through the mastery of 1, 2, and 4.
- Identify the benefits and trade-offs of technology used within the construction industry, demonstrated through the mastery of CLOs First CLO number in series 2 and 5.

Course Learning Outcomes (CLOs):

1. Identify different aspects of the sociotechnical web that exists within the built environment
2. Identify benefits and trade-offs of technologies used within the built environment and its impact on global resources

3. Define different types of technologies used within the built environment throughout history to modern day
4. Determine reasons for success or failure of emerging technologies within the built environment as well as possibilities for emerging technologies based off of industry and societal need
5. Identify impacts of the built environment on diversity and sustainability

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 6: Analyze professional decisions based on ethical principles.
- PLO 10: Apply electronic-based technology to manage the construction process.
- PLO 12: Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
- PLO 13: Understand construction risk management.
- PLO 18: Understand the basic principles of sustainable construction.
- PLO 21: Understand the role construction managers play in enhancing the needs of society.
- PLO 24: Understand the importance of recognizing culture differences and role culture plays on influencing project success for a construction team.
- PLO 25: Understand the benefits of respecting the unique and diverse backgrounds individuals bring to a construction team.

Topical Outline, Outcomes, and Method of Assessment

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

None

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

Unit	Topical Outline	CLOs	PLOs	Instructional Activities	Method of Assessment
1	Course Introduction Introduction and definition of technology	1, 3	1, 12, 21	Reading and videos Discussion	1, 4, 5
2	Prefabrication and Modular construction	1 – 3	1, 6	Reading and videos Discussion	1, 4, 5, 9, 11
3	Transportation and Infrastructure	1, 2, 4	1, 21	Reading and videos Discussion	1, 4, 5, 9, 10, 11

Unit	Topical Outline	CLOs	PLOs	Instructional Activities	Method of Assessment
4	Race for the Sky – Skyscrapers	1 – 4	1, 21	Reading and videos Discussion	1, 2, 4, 5, 9, 10, 11
5	Safety and Health	1 – 3	1, 13	Reading and videos Discussion	1, 4, 5, 6, 11
6	Mother Nature and Green Technologies	1 – 5	1, 6, 18, 21	Reading and videos Discussion	1, 4, 5, 9, 10, 11
7	Diversity and Inclusion	1 – 5	1, 21, 24, 25	Reading and videos Discussion	1, 3, 4, 5, 9, 10, 11
8	BIM, Software, and Data	3, 4	1, 10, 12, 24, 25	Reading and videos Discussion	1, 4, 5, 9, 10, 11
9	Emerging Technologies	4	1, 10, 21	Reading and videos Discussion	1, 3, 4, 5, 11
10	Wrapping it up	1 – 5	1, 2, 10, 12, 18, 21, 24, 25	Reading and videos Discussion	1, 4, 5, 7, 10

Several learning assessments will be used throughout this course. A numerical listing is below and each number corresponds to the method of assessment column.

1	Discussion Posts	7	Final Exam
2	Delphi Study Part 1	8	Research Paper
3	Delphi Study Parts 2 & 3	9	Essays
4	Slack Posts	10	Online Forum Attendance and Participation
5	MC Quizzes	11	Tradeoffs/Pros and Cons Grid
6	Exam 1	12	Miscellaneous

Required Texts/Reading

Textbook

None.

Other Readings

Required and/or supplemental readings are posted on the course PolyLearn page.

Other Equipment/Material Requirements

Students will be expected to complete activities and other learning modules through the PolyLearn course page, and through Procore, an online project management software.

Classroom Protocol

As a student, you are responsible to:

- Act professionally in all forums, using the netiquette standards introduced in PolyLearn.
- Engage respectfully with peers and instructor in all interactions.
- Review the unacceptable words list provided in PolyLearn.

Assignments and Exams

This course will provide several learning assessments (assignments) for you to complete throughout the duration of the course. Recognizing that each student has different and preferred ways of learning and learning assessments, a menu of assessment types has been created and you can pick from whichever types you prefer to get the grade you want in the class.

The different assignments are presented in the matrix below along with their corresponding point value, total number offered, and total points available for each assessment in the course.

Assignment	Point Value Per Assignment	Total Number Offered	Total Points Available
Discussion Posts	20	10	200
Delphi Study Part 1	50	1	50
Delphi Study Parts 2 & 3	25	2	50
Slack Posts	5	40	200
Quizzes	20	10	200
Exam 1	100	1	100
Final Exam	100	1	100
Research Paper	300	1	300
Essays	50	6	300
Online Forum Attendance & Participation	25	4	100
Tradeoffs/Pros and Cons Grid	25	8	200
Miscellaneous	varies	varies	100
TOTAL			1900

Late/Missed Work and Make-Up Policy

Due to the multiple opportunities to complete work above, and since you do not have to complete every assignment in the course, no late assignments will be permitted.

Grading Policy

For this class, you will not need to complete each assignment, but you will need to be diligent to get the points you need to get the grade you want. A total of 1900 points are available in this course, and you can get the grades below by getting the following points:

Grade	Points Needed
A	1330 points or more
B	1140 to 1329 points
C	950 to 1139 points
D	760 points to 949 points
F	0 to 759 points

University Policies

Participation and Attendance

Insert student participation and attendance expectations here.

Students are responsible for knowing the University policy regarding class attendance. See this link on [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 this link on [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.

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](#).