PURDUE UNIVERSITY

Engineering Faculty Document No. 91-21
March 4, 2021

TO: The Faculty of the College of Engineering

FROM: Construction Engineering and Management

RE: CEM 58500

The faculty of Construction Engineering and Management has approved the following new course. This action is submitted to the Engineering Faculty with a recommendation for approval.

CEM 58500 – Temporary Structures

Sem. 1, 2, S; Lec; 1-credit hours

Course Description

This class will provide construction and design professionals the skills to understand construction loads and their combinations, wind loads and their impacts, timber design, bracing and guying design, designing vertical forming systems, and shoring analysis for vertical construction.

Reason

The area of temporary structural design is not represented by most structural engineering programs but plays an important role in construction. Understanding of temporary structures is an important safety element for construction of vertical structures where some notable failures have occurred. The course is an extension of a 3-credit hour course undergraduate course taught by Prof. McCullouch.

Enrollment: F23 - 33, F22 - 24, F21 - 15, F20 - 15

Makarand Hastak
_____
Makarand Hastak, Professor and Head
Division of Construction Engineering & Mgmt.

PURDUE
U N I V E R S I T Y ®

CEM58600

Temporary Structures – Vertical Construction Module

Instructor

Name: Bob McCullouch Ph.D., PE

Phone: 765-496-1873

Email**:** bgm@purdue.edu

Office: HAMP 1239

Office Hours: By Appointment

Course description

This class will provide construction and design professionals the skills to understand construction loads and their combinations, wind loads and their impacts, timber design, bracing and guying design, designing vertical forming systems, and shoring analysis for vertical construction.

Prerequisites (if needed)

The following information has been provided to assist you in preparing to use technology successfully in this course.

- Internet access/connection: high speed recommended
- MS Office

Course website

Brightspace is our course management system. You can login to the course website at http://www.purdue.edu/brightspace/ West Lafayette campus. It is strongly suggested that you explore and become familiar with the site navigation. Start with the Content section. For example, you will find in the left-hand course menu the items *Student Help* and *Student Success. Student Help* contains information about Brightspace, including tutorials to help you learn about Brightspace functionality, as well as a link to the Purdue Libraries. *Student Success* contains many resources offered through programs at Purdue to help you become successful in your courses, such as tutoring, downloadable resources and more.

Course Outcomes

The overall outcome of the course is to recognize the important role of temporary structures during the construction process, what resources to consult and reference, to develop design capabilities for wind loads, timber construction, vertical forming systems, vertical shoring, and bracing and guying systems.

Learning Objectives

The class objective is to develop an understanding on how to design temporary systems typically used in vertical construction. Upon completion of this course you will be able to understand:

The possible types and magnitudes of loads experienced by temporary structures.
Have the ability to understand and design bracing and guying systems needed and used in vertical construction.
Design vertical forming systems.
Design vertical shoring systems.
Understand how construction interfaces with design.

Learning Resources & Texts

- Required Textbook: No textbook required
- References and additional resources will be available on the class site.

Course Logistics

- You are encouraged to "mentally enroll" in this course as if it occurred on Monday mornings. In other words, our weeks will run from Monday to Sunday. I will post information (online activities, discussion starters, etc.) for the upcoming week by Sunday evening, so that when you log in on Monday, you can begin the new week.
- When assignments are due, they are due by 10:00 a.m. EST on the due date listed in the course schedule.
- Deadlines are an unavoidable part of being a professional and this course is no exception. Course requirements must be completed and posted or submitted on or before specified due date and delivery time deadline. Due dates and delivery time deadlines are defined as Eastern Standard Time (as used in West Lafayette, Indiana). Please note, students living in distance time zones or overseas must comply with this course time and time and due date deadline policy. Avoid any inclination to procrastinate. To encourage you to stay on schedule, due dates have been established for each assignment; 20% of the total points will be deducted for assignments received 1-6 days late; assignments received more than 1 week late will receive 0 points.
- An assignment file should be appended by your username, such as "homework1_kim53.doc". This may make it easier for me to manage assignment files you download to my computer.

Instructor's online hours

I will be available via email and will respond as soon as I am available (generally within 24-48) hours. For the online discussions, I will check in at least 3 times per week. Keep in mind that it is not possible for me to respond to every single posting every week (nor is it pedagogically appropriate), but I will be sure to respond to a variety of postings and students each week and attempt to assure equality in terms of responses to students. Furthermore, there is a specific discussion forum that you can use to ensure that you have my attention – to ask questions or to call my attention to a particular discussion you are engaged in that you would like me to take a look at. If you feel you are being neglected in any way, please contact me. When emailing me, please place in the subject line the course number/section and the topic of the email (i.e. XXX 240 – Assignment 2 Question). This will help me in locating your emails quicker.

Office hours

Office hours are by appointment only.

Assignments and Quizzes

You will have a number of individual assignments throughout the course. Details on these assignments, along with will be posted on the course website.

Assignments	Due	Points
Participation	Ongoing	5
1	See Schedule	5
2	"	5
3	"	5
4	"	5
5	"	5
6	"	5
7	"	5
8	"	5
9	"	5
10	"	10
Quizzes – 6 each at 10 points each		60
Total		**120**

- Participation (5 points; ongoing). A running dialog about course topics will be maintained via the Blackboard discussion forums.

Quizzes will be proctored with times to be coordinated with students.

Participation policies

If you want to a successful online student, be sure the following qualities:
- Be self-motivated and self-disciplined.
- Be willing to "speak up" if problems arise.
- Be willing and able to commit to 4 to 10 hours per week per course.
- Be able to communicate through writing.
- Be able to meet the minimum requirements for the course.
- Accept critical thinking and decision making as part of the learning process.

In contrast, here are some common behaviors that lead to failing the course.
- Don't read until the night before the discussion.
- Don't log in frequently.
- Wait until the last day to participate in online discussion.
- Forget about deadlines.
- Ignore emails from the instructor and/or your peers regarding course activities.
- Don't get familiar with the grade book and syllabus.

Netiquette

Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Our differences, some of which are outlined in the University's nondiscrimination statement below, will add richness to this learning experience. Please consider that sarcasm and humor can be misconstrued in online interactions and generate unintended disruptions. Working as a community of learners, we can build a polite and respectful course ambience. Please read the Netiquette rules for this course:

- Do not dominate any discussion. Give other students the opportunity to join in the discussion.
- Do not use offensive language. Present ideas appropriately.
- Be cautious in using Internet language. For example, do not capitalize all letters since this suggests shouting.
- Avoid using vernacular and/or slang language. This could possibly lead to misinterpretation.
- Keep an "open-mind" and be willing to express even your minority opinion.
- Think and edit before you push the "Send" button.
- Do not hesitate to ask for feedback.

Grading scale

A+   97 - 100% of points
A   94 - 96% of points
A-   90 - 93% of points
B+   87 - 89% of points
B   84 - 86% of points
B-   80 - 83% of points
C+   77 - 79% of points
C   74 - 76% of points
C-   70 - 73% of points
D+   67 - 69% of points
D   64 - 66% of points
D-   60 - 63% of points

Incompletes

A grade of Incomplete (I) will be given only in unusual circumstances. To receive an "I" grade, a written request must be submitted prior to the fifth week of class and approved by the instructor. Requests are accepted for consideration but in no way ensure that an incomplete grade will be granted. The request must describe the circumstances, along with a proposed timeline for completing the course work. You will be required to fill out and sign an "Incomplete Contract" form that will be turned in with the course grades. Any requests made after the course is completed will not be considered for an incomplete grade.

Course Evaluation

Indicate how students can evaluate the course. For example:

During the last week of the course, you will be provided with an opportunity to evaluate this course and your instructor. Purdue now uses an online course evaluation system. You will receive an official email from evaluation administrators with a link to the online evaluation site. You will have up to two weeks to complete this evaluation. Your participation is an integral part of this course, and your feedback is vital to improving education at Purdue University. I strongly urge you to participate in the evaluation system.

Academic Dishonesty

Purdue prohibits "dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty." [Part 5, Section III-B-2-a, University Regulations] Furthermore, the University Senate has stipulated that "the commitment of acts of cheating, lying, and deceit in any of their diverse forms (such as the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest." [University Senate Document 72-18, December 15, 1972]

Please review the following resource page on plagiarism: http://www.education.purdue.edu/discovery/research_integrity.html.

You are **required to complete** the following plagiarism tutorial: https://www.indiana.edu/~istd.

Please print out, sign, scan, and **submit your certificate in the first week** of the course. If you have previously completed this tutorial, you may submit a previous certificate; however, I recommend taking it again, as it is always good to have a refresher and incidents of plagiarism will not be overlooked.

Emergency Statement

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Here are ways to get information about changes in this course. Blackboard, my email address, and my office phone.

Disability Statement

Students with disabilities must be registered with Disability Resource Center in the Office of the Dean of Students before classroom accommodations can be provided. If you are eligible for academic accommodations because you have a documented disability that will impact your work in this class, please schedule an appointment with me as soon as possible to discuss your needs.

Course Schedule

Week	Sessions	Topics	Discussions	Assignments	Quizzes	Reference materials
1	1,2	Codes and Standards	1	1		
2	3,4	Wind Loads, Timber Design	2	2,3	1	
3	5	Bracing Design – Timber		4	2	Wood design reference
4	6	Bracing & Guying		5,6	3	BCSI Manual
5	7	Formwork Design		7	4	
6	8	Forming Systems		8		Slab and wall form examples
7	9	Shoring Analysis		9,10	5	
8	10,11	Scaffolding Design			6	SSFI Manual

Schedule and assignments subject to change. Any changes will be posted on class site.