

Temporary Structures

BCN 4423C, Section 2078, Prerequisite: BCN 3431C

Web Course

Summer 2018

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Office Hours: I will respond to your emails and texts as soon as possible¹.
Meetings at my physical office are available upon request.

Course Description:

To study the temporary structures that contractors have to build in order to construct the primary structure. This includes form work, scaffolding, support excavation systems, and equipment for hoisting materials, personnel, and erecting structures.

Subject Aims:

This course is intended to teach temporary construction methods and design principles to ensure stability of structures during all phases of the construction process. This includes: concrete form work, scaffolding, hoisting personnel and materials, and erecting structures.

Course Learning Outcomes (CLOs):

Upon completion of the course, students will demonstrate the ability to:

1. Recognize that temporary structures (TS) have a major impact on schedule, cost and quality of construction projects and have been responsible for hundreds of deaths on construction sites.
2. Analyze and design wood beams, columns, and trusses using NDS for Wood Construction.
3. Analyze and design form work for concrete walls, beams, slabs, and columns.
4. Identify alternative form work systems and select the most appropriate one.
5. Review alternative scaffolding systems and discuss their standard of practice.
6. Discuss options for the support of excavation systems.
7. Identify erection equipment to select the most suitable equipment for hoisting materials, personnel, and erecting structures.

Required Text:

1. National Design Specifications for Wood Construction (NDS), by American Forest and Paper Association (2015 edition). The NDS and Supplement are available as free view only pdf downloads at <http://www.awc.org/codes-standards/publications/nds-2015>.
2. Johnston, David W. Formwork for Concrete 8th edition: ISBN: 9780870319129 There may be paperback versions available that may be cheaper.
3. Select Lynda.com Tutorials on Excel (free for students and you will need to look at them.)

¹This can be up to 12 to 24 hours later.

Table 1: Assessment Matrix

Course Learning Outcomes (CLO)	Assignments	Student Learning Outcomes (SLO)		Percent students passing with a 70% or higher
		SACS	ACCE	
1. Recognize impact of temporary structures	Module 5 Discussion	1	3	80%
2. Use the NDS for Wood Construction	Test 2 (or equivalent)	1	19	80%
3. Design form work for walls, slabs, and columns	Test 4 (or equivalent)	1	19	80%
4. Identify alternative form work systems	Module 1 Quiz	1	8	80%
5. Review scaffolding systems	Module 10 Quiz	1	8	80%
6. Discuss excavation systems	Module 11 Quiz	1	8	80%
7. Identify erection equipment	Final Project	1	8	80%

ACCE - American Council for Construction Education
 SACS - Southern Association of Colleges and Schools

ACCE SLO 3. Create construction safety plan - Reinforce
 ACCE SLO 8. Analyze methods, materials, and equipment used into construct projects - Direct Assessment
 ACCE SLO 19. Understand the basic principles of structural behavior. - Direct Assessment

SACS 1. Apply knowledge of engineering, materials, methods, equipment, and processes to safely construct buildings and structures.

4. Additional reference material will linked in the notes and on the class website.

The 2015 NDS will be required by the second week of class so be sure to download a copy. If you are interested in worked examples, the 2005² version of the NDS is sold as a package with several other free documents including worked examples. These worked examples will not be necessary for our class but if you think you might be using the Timber Design code in the future I recommend that you purchase it while you still are a student.

The AWS requirements for student discounts are as follows.

For students the approach we (the AWC) use is to have them purchase the 2005 Wood Design Package at the student rate of \$75. They will then receive a complementary membership with the American Wood Council. Students must use their university email address as their primary email when they order so that we can verify their status as a full time student and give them the student rate. If their student status cannot be verified they will be charged the full price of \$150.

Additional Text:

1. Design of Wood Structures 6th edition, ISBN: 0071379320
2. Forest Products Laboratory, Wood Handbook: Wood as an Engineering Material http://www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr190.pdf (509 pages)
3. [Temporary Structure Design](#) by Chris Souder, ISBN-13: 978-1118905586
4. APA The Engineered Wood Association, Design/Construction Guide: Concrete Forming
5. APA The Engineered Wood Association, Plywood Design Specification

Course Schedule:

A detailed course schedule, with a week-by-week topic list and due dates for deliverables, is provided on the **e-Learning** course website: elearning.ufl.edu

²Just to be clear, we will only be using the 2015 version.

Module	Topic	Assignment	Due Date	
1	Introduction	Chapters 1-3 in Formwork Text	Tue	May 15
		Syllabus Quiz	Thu	May 17
		Module 1 and Reading Quiz	Mon	May 21
2	Timber Beam	Timber Beam - Hand Solution	Wed	May 23
		Timber Beam - Hand Verification	Thu	May 24
		Timber Beam - Spreadsheet Assignment	Fri	May 25
		Timber Beam - Complete Package	Tue	May 29
		Module 2 Quiz - Big	Fri	Jun 01
3	Timber Column	Timber Column - Hand Solution	Mon	Jun 04
		Timber Column - Hand Verification	Tue	Jun 05
		Timber Column - Spreadsheet Assignment	Wed	Jun 06
		Timber Column - Complete Package	Thu	Jun 07
		Module 3 Quiz - Big	Mon	Jun 11
4	Bracing	Bracing Individual Assignment	Tue	Jun 12
		Module 4 Quiz	Thu	Jun 14
5	Span Limits and Safety	Chapters 4-6 in Formwork Text	Fri	Jun 15
		New Module 5 Discussion	Fri	Jun 15
		Module 5 Quiz	Mon	Jun 18
6	Wall Form	Wall Form - Hand Solution	Wed	Jun 20
		Wall Form - Hand Verification	Thu	Jun 21
		Wall Form - Spreadsheet Assignment	Fri	Jun 22
		Wall Form - Complete Package	Mon	Jun 25
		Wall Form Individual Assignment	Wed	Jun 27
		Wall Form Lab	Thu	Jun 28
		Module 6 Quiz - Big	Mon	Jul 02
7	Column Form	Module 7 Quiz	Wed	Jul 04
8	Slab Form	Slab Form - Hand Solution	Fri	Jul 06
		Slab Form - Hand Verification	Mon	Jul 09
		Slab Form - Spreadsheet Assignment	Tue	Jul 10
		Slab Form - Complete Package	Wed	Jul 11
		Slab Edge Form Lab	Thu	Jul 12
		Chapters 7-9 in Formwork Text	Thu	Jul 12
		Slab Form Individual Assignment	Thu	Jul 12
Module 8 Quiz - Big	Mon	Jul 16		
9	Re-shoring	Module 9 Quiz	Thu	Jul 19
10	Scaffolding	Module 10 Quiz	Mon	Jul 23
11	Excavation	Module 11 Quiz	Thu	Jul 26
12	Equipment	Virtual Field Trip (optional)	Fri	Jul 27
		Guest Lecture Attendance	Fri	Jul 27
		Participation in Class	Fri	Jul 27
		Final Project	Thu	Aug 02

Summer Semester Holidays

Mon May 28, 2018

Homework Policy:

Assignments will be accepted up to the established time. Any Assignment turned in after the deadline will be graded at 50% of the original credit. Any assignment turned in more than 24 hours late will not be accepted and the student will receive a 0 (zero) on the assignment. All work turned in for this course is expected to be of professional quality in content and presentation.

Evaluation of Grades:

The assessment will be based on individual student's demonstration of fulfilling the course objectives as set out in the syllabus and there will be no leniency based on previous accomplishment in other classes. The course will be examined using:

- Individual Assignments
- Team Assignments
- Class Discussion Participation
- Course Participation
- Quizzes
- Final Project

The course instructor reserves the right to grade assigned problems either on detailed checking or based on attempt, as well as the right to not grade work that does not satisfy mandatory specifications.

Make up assignments, quizzes, and tests will only be given upon proof of extenuating circumstances or prior arrangements. Please pay close attention to the deadlines on [Syllabus page](#), and turn your work in before it is due.

Grading Weights:

Individual Assignments:	20%
Team Assignments:	30%
Participation in Class Discussions:	10%
Course Participation:	10%
Quizzes:	20%
Final Project:	10%
Total:	100%

Table 2: Grading Scale

A-: 90% - 92.9%	A: 93% - 100%		
B-: 80% - 82.9%	B: 83% - 86.9%	B+: 87% - 89.9%	
C-: 70% - 72.9%	C: 73% - 76.9%	C+: 77% - 79.9%	
D-: 60% - 62.9%	D: 63% - 66.9%	D+: 67% - 69.9%	
E: < 60%			

Course Activities:

- Lectures in the form of on line presentations
- Virtual in-class practice problems (upon request)
- Team and individual assignments involving designing elements of form work for a concrete structure
- Virtual field trip(s) (as scheduling permits)
 - Unlike actual field trips, you will not be needing need protective equipment. These will be in the form of an online video.
- Online class discussions

Participation Policy:

Participation is mandatory. Class discussions, will be announced in advance so it will be your responsibility to get permission ahead of time for an absence if you will not be available.

Participation grade will be computed in proportion to the amount of comments during the class discussions and group discussions (on team home page).

- Individual assignments will not require substantial discussion, just a minimum of two posts on your team discussion page (I've started the assignment, and I've finished the assignment).
- Sharing answers on Individual assignments, prior to the everyone's submission, will be regarded as cheating.
- Sharing answers on Team assignments with your team members is a requirement, however, sharing answers with other teams will also be regarded as cheating.

Students are expected to act with integrity and composure at all times and there will be zero tolerance for unbecoming conduct which includes, but is not restricted to rude comments and disruptive behavior.

Attendance Policy:

See Participation

Honor Code:

Be aware of the Honor System of University of Florida. All students in this course are subject to the requirements of the University of Florida's Honor Code. Although joint work on assignments may be acceptable in some cases, duplication of an assignment either manually or electronically will be dealt with with as an act of academic dishonesty.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

Based on this pledge and since I have access to all of the course submissions electronically, I do not bother to check for cheating until the end of the semester. This minimizes the time consumed enforcing this policy. If I catch you cheating I will pursue the following outcomes through Honor Court:

1. If you cheat once I will reduce your final grade by a letter grade.
2. If you cheat more than once, I will fail you.

This is an automated process, using custom software, so I will not be aware of an infraction until the end of the semester. As such I will not be able to warn you until it is too late.

I will say that I once caught nine students out of a class of forty, some of which failed the course. It is unpleasant for me to fail a student, but in order to maintain the integrity of a degree from Rinker, I will.

Remedies:

Students who fail to comply with the listed behavior will be excused from the class and advised to seek readmission though the School's Director of Undergraduate Studies.

University Policy on Accommodating Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Dean of Students Office. They will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

Dean of Students Office - <http://www.dso.ufl.edu/drc/>