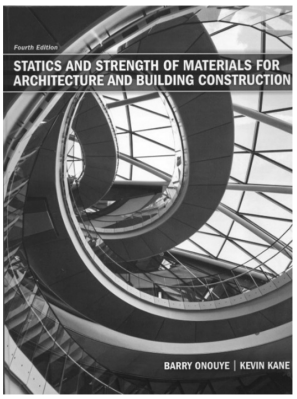
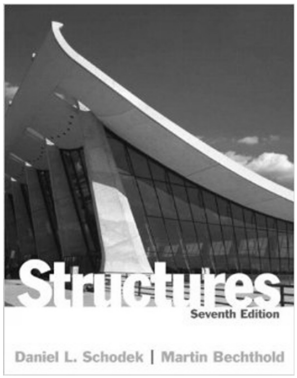
ARCHITECTURE 324

STRUCTURES II



Course Introduction:

Course Syllabus
Course Format
Online Resources



Teaching Staff:

Prof.
Dr.-Ing. Peter von Bülow pvbuelow@umich.edu

GSI's:

002	Abdallah Kamhawi	kamhawi@umich.edu
003	Abdallah Kamhawi	kamhawi@umich.edu
004	Amely Wackerbauer	awackerb@umich.edu
005	Hui Zhu	huizz@umich.edu
006	Mohsen Vatandoost	mohsenv@umich.edu
007	Mohsen Vatandoost	mohsenv@umich.edu

Course Syllabus

Organization

- Lecture – Monday & Wednesday
- Recitation – Friday
- HW Problems – on web
- Topic Quiz - weekly

Evaluation

- 24 Lecture Quizzes 240
- 13 Topic Quizzes 260
- 12 HW Problems 820
- Tower Project 250
- 10 Recitation Labs 200

Text

- *Structures* by Schodek
- *Statics and Strength of Materials* by Onouye
- Code material on Canvas
- Web site
  structures.tcaup.umich.edu

Architecture 324
3 credit hours

structures.tcaup.umich.edu/
Winter 2026

ARCHITECTURAL STRUCTURES II
Syllabus

Prof. Peter von Buelow
pvbuelow@umich.edu
Office 1205c TCAUP
Phone 763-4931

office hours:
by appointment

Recitation Sections	F	**GSI's**	
Section 002	9:30-10:30	Abdallah Kamhawi	kamhawi@umich.edu
Section 003	10:30-11:30	Abdallah Kamhawi	kamhawi @umich.edu
Section 004	9:30-10:30	Amely Wackerbauer	awackerb@umich.edu
Section 005	10:30-11:30	Hui Zhu	huizz@umich.edu
Section 006	10:30-11:30	Mohsen Vatandoost	mohsenv@umich.edu
Section 007	9:30-10:30	Mohsen Vatandoost	mohsenv@umich.edu

Section 001 9:30-10:30 MW

CATALOG DESCRIPTION

This course covers the basic principles of elastic behavior for different materials such as wood, steel, concrete and composite materials, and compares the properties and applications of materials generally. It investigates cross sectional stress and strain behavior in flexure and in shear, and torsion as well as the stability of beams and columns. The qualitative behavior of combined stresses and fracture in materials is also covered. Prerequisite: ARCH 314

OBJECTIVES

Students are introduced to the fundamentals of analysis and design of simple structural members in wood, steel, concrete and masonry. Basic code requirements of strength, stability and serviceability are discussed. Both vertical and lateral loads based on ASCE-7 are considered. Principles of composite materials design, and structural continuity are covered.

ORGANIZATION

The course is comprised of lectures (Monday & Wednesday) and a recitation (Friday). The lectures will be posted on the course website and may be watched asynchronously if you cannot attend in person. Lecture attendance is not required, however there is a quiz with each lecture. The lectures cover structural concepts and procedures of design using the primary building materials of wood, steel, concrete and masonry. Each Friday the class is broken into smaller recitation sections in which the GSIs review analysis procedures of the various structural elements discussed in the lectures. Recitations may also include an in-class lab assignment. Solutions to homework problems are entered online through the course website. Topics are summarized weekly through Canvas Topic Quizzes. In addition, a construction/testing project gives students an opportunity to apply concepts to a physical design. Computer facilities, including software, are available on machines in the building, for supporting computations.

EVALUATION

Evaluation is based on an accumulated total number of points. Points are earned based on performance in all course activities – 24 lecture quizzes, 12 Canvas topic quizzes, 11 homework problems, 9 recitation labs, and the tower project. Grades are assigned according to the number of points achieved during the semester:

24 lecture quizzes 10 pts each	240
13 topic quizzes 20 pts each	260
12 homework problems, 5pts/ question	820
tower testing project	250
10 recitation labs, 20 pts each	200
TOTAL	1770

The point scale relates to a full range of letter grades assigned as follows:

A+	1711	A	1652	A-	1593
B+	1534	B	1475	B-	1416
C+	1357	C	1298	C-	1239
D+	1180	D	1121	D-	1062
		E	1061 and below		

By University policy the minimum passing grade is a D (1121). For graduate students C- (1239) is required to pass. The highest recorded grade in Architecture is an A.

Course Schedule

Lectures

Monday & Wednesday

video recorded and posted on Canvas

Recitation

Friday with GSI

online signup – see emailed link

Homework

On course website "Problems"

Quizzes

Lecture Quizzes – in class or in Canvas video

Canvas (weekly Topic Quiz)

Project

tower

weight and load

DATE	TOPIC	Text Reading	PROBLEMS (due dates online)
JAN 7	Course Intro	Onouye, Schodek	
JAN 9	1 - Wood Properties	NDS	
JAN 12	2 - Wood Beam Analysis	Schodek 6.4.2	
JAN 14	3 - Wood Beam Design	Onouye 8	
JAN 16	Recitation **[1-Wood Beams]**		
		Topic Quiz 1	1. Wood Beam Analysis
JAN 19	**Martin Luther King Day **** No Class **** Martin Luther King Day **** No Class**		
JAN 21	4 - Wood Column Analysis	Onouye 9.1-9.2 & 9.4, Schodek 7.4.3	
JAN 23	Recitation		
		Topic Quiz 2	2. Wood Beam Design
JAN 26	5 - Wood Column Design	NDS Tower Intro	
JAN 28	6 - Cross Laminated Timbers	CLT Handbook	
JAN 30	Recitation **[2-Wood Columns]**		
		Topic Quiz 3	3. Wood Column Analysis
FEB 2	7 - Steel Properties	AISC, Onouye 8.7	
FEB 4	8 - Steel Beam Analysis	Schodek 6.4.3	
FEB 6	Recitation – Tower Project		
		Topic Quiz 4	4 Steel Beam Analysis
FEB 9	9 - Steel Beam Design	Schodek 6.4.3	
FEB 11	10 - Steel Column Analysis	Onouye 9.3, Schodek 7.4.4	
FEB 13	Recitation **[3-Steel Beams]**	**Prelim. Tower Report Due**	
		Topic Quiz 5	5. Steel Beam Design
FEB 16	11 - Steel Column Design	Onouye 9.3, Schodek 7.4.4	
FEB 18	12 - Continuous Beams	I. Engel Ch. 17, Schodek 8	
FEB 20	Recitation **[4-Steel Columns]**		
		Topic Quiz 6	6. Steel Column Analysis
FEB 23	13 – 3-Moment Theorem		
FEB 25	"Tower without Ends" Tony Fitzpatrick video		
FEB 27	Recitation **[5-Continuous Beams]**		
		Topic Quiz 7	
MAR 2	**WINTER RECESS **** NO CLASS **** WINTER RECESS **** NO CLASS ******		
MAR 4	**WINTER RECESS **** NO CLASS **** WINTER RECESS **** NO CLASS ******		
MAR 6	**WINTER RECESS **** NO CLASS **** WINTER RECESS **** NO CLASS ******		
MAR 9	14 - Gerber Beams	Schodek 8.4.4	
MAR 11	15 - Intro to Concrete – PCA video		
MAR 13	Recitation **[6-Flexural Strain]**		
		Topic Quiz 8	7. Three Moment Theorem
MAR 16	16 - Concrete Beam Analysis	Schodek 6.4.4 – 6.4.6	
MAR 18	17 - Concrete Beam Design	I. Engel Ch.15	
MAR 20	Recitation **[7-Concrete Reinforcing]**		
		Topic Quiz 9	8. Concrete Beam Analysis
MAR 23	**Tower Testing **** Tower Testing **** Tower Testing **** Tower Testing ******		
MAR 25	18 - T-Beams	Schodek 7.4.5	
MAR 27	Recitation		
		Topic Quiz 10	9. Concrete Beam Design
MAR 30	19 - Concrete Columns		
APR 1	20 - Pre-Stressing		
APR 3	Recitation **[8 – Pre-Stressing]**		
		Topic Quiz 11	10. Pre-Stress
APR 6	21 - Composite Sections		
APR 8			
APR 10	Recitation **[9-Composite Sections]**		
		Topic Quiz 12	11. Composite Sections
APR 13	22 - Masonry Intro.	TMS 402	
APR 15	23 - Masonry Walls	TMS 402	
APR 17	Recitation **[10-Lateral Stability]**	**Final Tower Report Due Sunday**	
		Topic Quiz 13	12. Masonry Walls (due Tues.)
APR 20	24 - Masonry Vaults & Shells		

Course Web Site

structures.tcaup.umich.edu

Lectures

Recitation

Recitation Sign Up

https://forms.gle/8Fxv2L257JGXrDhS9

Arch 324 Recitation Sign Up

This form is to allow you the option to try to choose a certain section for your recitation. If you have a course conflict with certain times, be sure to list it

A section will be filled by the first 20 students to choose that section. Or if you have a time conflict that requires a certain section (like 10:30 - 11:30) the last one in will get bumped out. So if you have a time conflict you must enter the section(s) you can attend even if they are full.

Here is the list of Sections with GSIs:

002	Abdallah Kamhawi	Friday	9:30-10:30 rm ARR
003	Abdallah Kamhawi	Friday	10:30-11:30 rm ARR
004	Amely Wackerbauer	Friday	9:30-10:30 rm ARR
005	Hui Zhu	Friday	10:30-11:30 rm ARR
006	Mohsen Vatandoost	Friday	10:30-11:30 rm 2104
007	Mohsen Vatandoost	Friday	9:30-10:30 rm 2104

pvbuelow@umich.edu Switch account

* Indicates required question

Email *

☐ Record **pvbuelow@umich.edu** as the email to be included with my response

Section 1st choice *

Choose

Section 2nd choice

Choose

Section 3rd choice

Choose

I have a time conflict at this time and cannot attend a recitation at this time

☐ 9:30-10:30

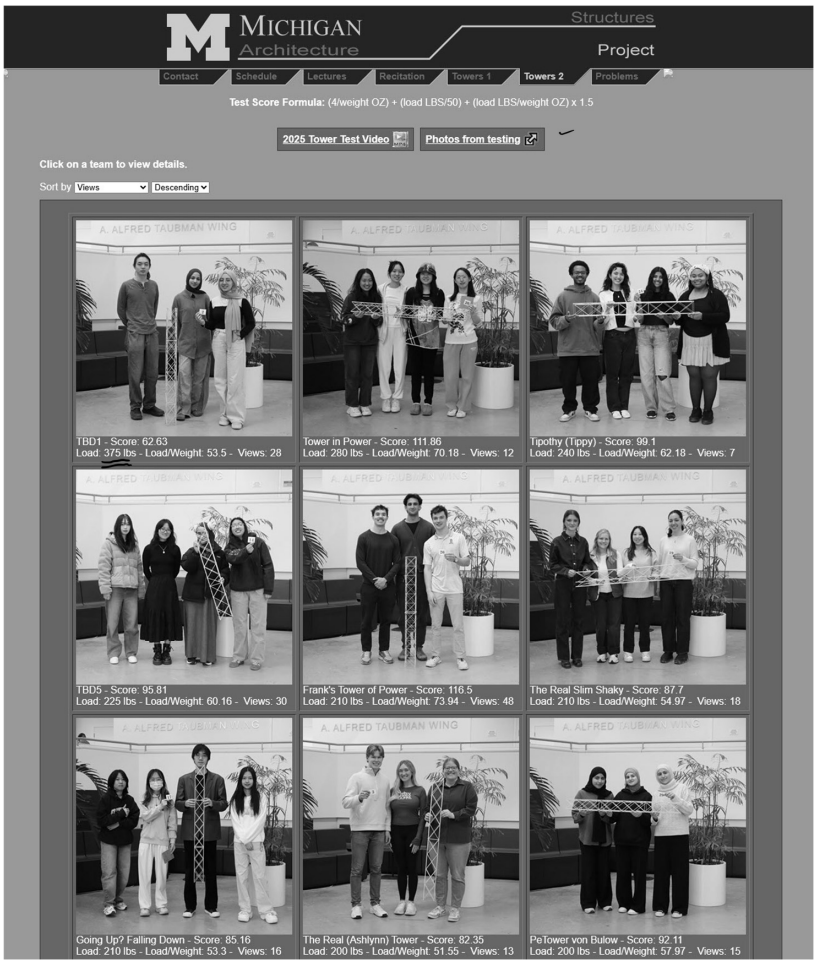
☐ 10:30-11:30

A copy of your responses will be emailed to pvbuelow@umich.edu.

Submit Clear form

Tower Test

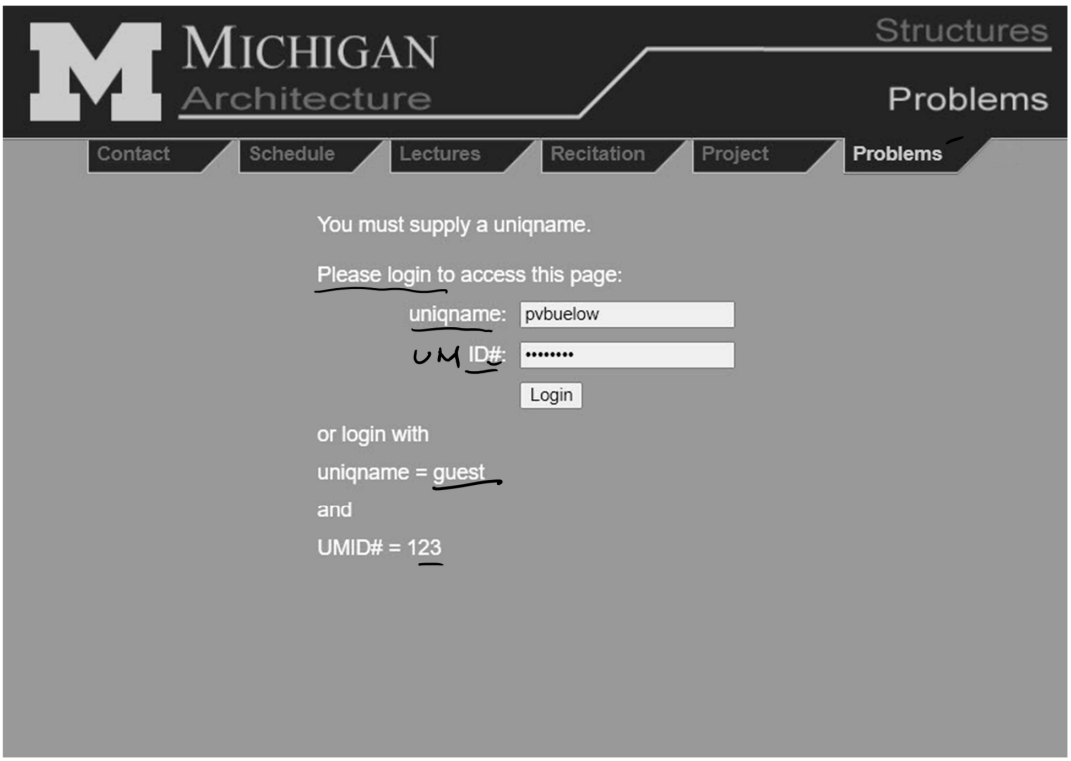
Tower Test



Computer Problems

Uniqname

UM ID Number



Computer Problems

Problem Menu

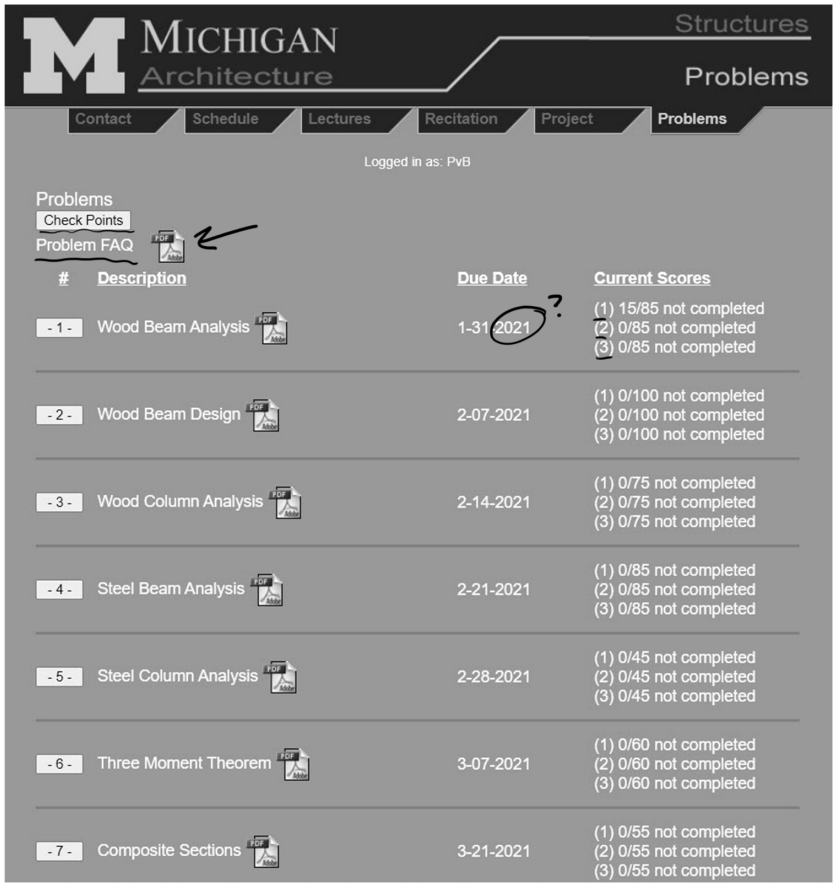
Check Grades

Problem FAQ

Select Problem

Download Instructions

Work Problem (best of 3 versions)



Computer Problems

Problem Page

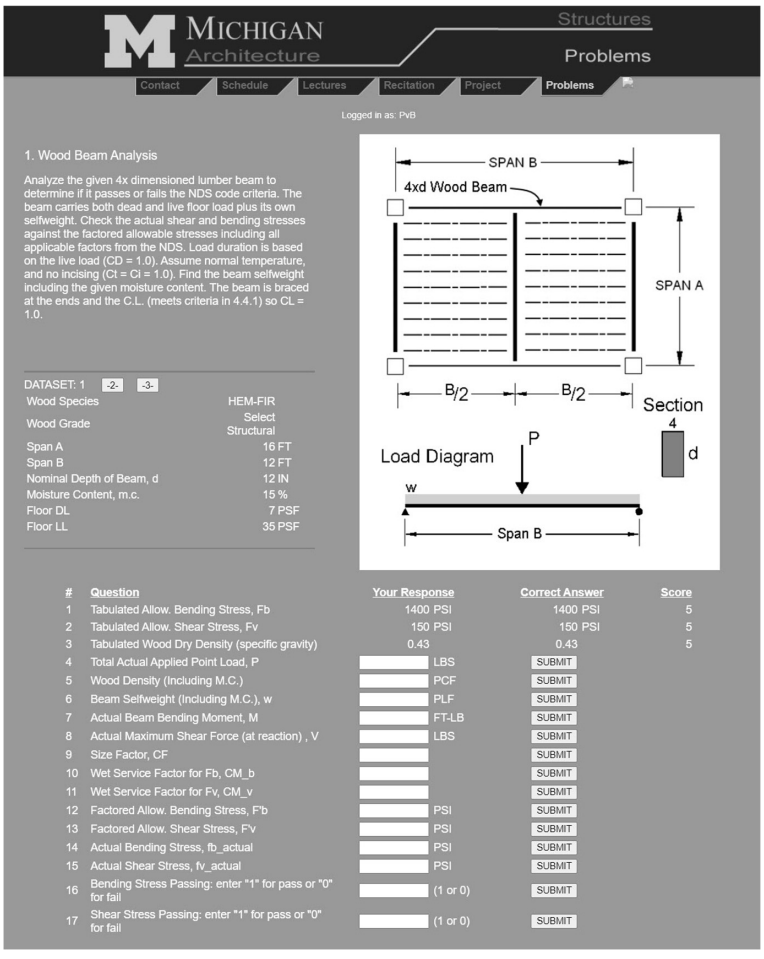
Choose Data Set

Enter Answers

Submit

Read Score

Correct if Necessary



Tips on how engineering students study for exams