"The separation of technology and art is both unnecessary and incorrect; one is not an enemy of the other. Instead it is essential to understand that technology is often a necessary component of art and that art helps technology to serve man better. Nowhere is this more true than in architecture and structure, a marriage in which science and beauty combine to fulfill some of the most basic physical and spiritual needs of humanity."

Mario Salvadori

**Prerequisites:**
MATH 127 or 128 and PHYS 151

**Faculty:**
Associate Professor
Office: Phone: 
Email: 
Office Hours: 

**Teaching Assistant:**
Email: 
Desk Hours: 
Location: 

**Catalog Description:**
Fundamental principles of structures: Types of framing systems and their patterning in architecture, loads and force flow, vector mechanics and linear equilibrium, moments and rotational equilibrium, funicular structural systems, properties and behavior of materials under axial tension stress. An emphasis is placed on graphic static analysis of triangulated assemblies.

**Course Objectives and Learning Outcomes:**
After completing this course, the student:

1. Will understand the fundamental principles of structure, including:
   - Forces (sources of loads, force actions & reactions)
   - Linear & rotational equilibrium
   - Structural framing systems
   - Structural analysis via graphic statics

2. Will be able to apply the fundamental principles in:
   - Funicular structures (cables & arches)
   - Trusses & triangulated structures
   - Basic framed structural systems

3. Will be able to synthesize the application of fundamental principles in design
   - Design project of the student’s own creation

**Further Information:**
Structure is an intrinsic part of a building and therefore of primary concern to architecture. A clear understanding of the basic principles of structure, including the nature of loads and forces on a building and their resolution through a sensible and economical support structural is a fundamental responsibility of the architect. The designer needs to be aware of the wide variety of available structural systems, and have the ability to evaluate their applicability for a given project in terms of appropriateness, safety and economy. Furthermore, effective communication with engineering professionals who perform the actual computations for a structural system is an essential aspect in the design of any building project, and so learning the “language” of structural engineering is a further objective of this class.

This course will focus at the foundational principles of structural design. Students will learn about basic structural systems, materials, patterns, and “rules of thumb” proportioning of members. Fundamental concepts of structural design will be introduced, including loads and force flow, statics and engineering mechanics,
truss analysis. Graphic analysis procedures will form a core learning experience.

Course Format: The course will be composed of weekly lectures (some of which may be posted online to be viewed outside of class) accompanied with periodic lab classes and work sessions. Lab sessions will illustrate and reinforce the concepts discussed in the lectures and work sessions will allow time for in-class problem sets. Weekly homework problems will be issued, along with project assignments and examinations during the semester.

NAAB Criteria: This course satisfies NAAB Student Performance Criteria B5, Structural Systems: Ability to demonstrate the basic principles of structural systems and their ability to withstand gravitational, seismic, and lateral forces, as well as the selection and application of the appropriate structural system. More information regarding the 2014 NAAB Conditions of Accreditation and the Student Performance Criteria may be gathered by going to the NAAB website at www.naab.org

Completion Requirements: To allow the greatest flexibility in student learning, opportunities for hands-on experiences and adjustments to the course as the semester progresses, this class is based on a cumulative-point scale. The total number of points for final grades will be approximately 500, the exact total depending on the number of assignments, projects, labs, etc. during the semester. The various components of the class are equally weighted, thus helping to ensure students of all learning preferences can succeed equally well. There may also be opportunities to earn bonus points.

You can judge your performance in the class periodically by comparing your earned points as a percentage of the total possible at that point in the semester. The best approach for success is to attend all classes and labs, and put in effort to understand the information when it is presented and when you study and review. See page six of the syllabus for additional tips.

Components: The various activities of the class will be distributed approximately as follow:

Exams (2): Approx. 80 points each
Quizzes (2): Approx. 20 points each
Homework, Lab & Projects: Approx. 300 points in total
Total Points for Semester: Approx. 500

Grading: To best encourage the learning experience, homework assignments (not projects) will be evaluated on a ✓, ✓+, ✓- basis. ✓ is equivalent to 10 points (which is full credit), ✓- is equivalent to 7 points, and ✓+ is 13 points (bonus credit). Not all homework assignments will be evaluated, however all assignments and projects must be completed to the instructor’s satisfaction to pass the course. The specific grade point cut-offs are a percentage of the total semester points as follow:

A-, A, A+ 90%, 93%, 97%
B-, B, B+ 80%, 83%, 85%
C-, C, C+ 70%, 73%, 77%
D-, D, D+ 60%, 63%, 67%
F 59% or less

The University defines “A” as denoting excellent mastery of the subject and outstanding scholarship, “B” denotes good mastery of the subject and good scholarship, and “C” denotes average or acceptable mastery of the subject and the usual expected achievement. Excellent mastery and outstanding scholarship means world-class. You should not assume that simply working hard will guarantees you receive an A. However, if you do not work diligently you can expect to not receive an A grade.

Assignments: Student assignments are to be completed on green engineering graph paper in pencil. Illegible or sloppy work is not acceptable and will be returned for revision. This policy will be strictly enforced.

Unless otherwise noted, homework is assigned on a Tuesday or Thursday class and
due at the start of class the subsequent week. Plan on making a scan or photocopy so that you have a record of what was submitted while the work is being reviewed. The course TA will conduct the review of weekly assignments.

Weekly review sessions will be conducted by the course TA to review homework assignments after they are turned in.

“Daily Detail” The first five minutes of each class will consist of a brief sketch exercise focusing on an architecturally relevant structural assembly or detail. The sketches will be submitted for credit immediately after the exercise period, with each drawing worth up to two points. Drawing quality itself per-se is not being evaluated, although repetitive hasty and sloppy work will not receive full credit. This is an opportunity to study a small structural condition in detail as well as practice freehand drawing skills. There are no makeups for any sketch, and they will be completed only at the start of class. Up to three of these may be missed with no penalty.

Just-In-Time Teaching Weekly reviews will be conducted of material prior to the class period consisting of several online questions to facilitate preview of new material. Each of these question sets will amount to four points total, so there will be approximately 40 points of the grade total from these questions. Up to three of these may be missed with no penalty.

Required Supplies: Basic scientific calculator with trig functions (cell phone calculators not permissible – See “Academic Integrity” below), green engineering calc paper, protractor, engineering scale, and either a rolling ruler or a pair of small drafting triangles to accurately transfer parallel lines; Moleskin Cahier Journal for “Daily Detail” sketch. Small stapler and three-hole punch recommended.

Laptop Computers and Other Electronic Devices: Personal laptop computers, tablets, smartphones, etc. are not permitted in this class unless expressly given permission by the professor ONLY for the purpose of note taking. The only exceptions are for specific announced class activities. WEB BROWSING, EMAIL, INSTANT MESSAGING, WORK ON STUDIO PROJECTS, OR ANY OTHER ACTIVITIES NOT RELATED TO THE CLASS IS EXPRESSLY PROHIBITED ON ANY LAPTOP, TABLET, SMARTPHONE OR OTHER INTERNET-CONNECTED DEVICE. The first infraction will result in a 5-point penalty, and subsequent infractions will be 10 points.

The detrimental effects of multitasking on learning have been clearly demonstrated, and this provision is to help instill productive habits. See “Multitasking” on page seven of this syllabus.

Attendance: In accordance with School of Architecture policy, as stated in the SoA Student Handbook, if you accumulate three or more unexcused absences, you may automatically receive a grade of F for the course.

If you must miss class because of illness or injury requiring a visit to a doctor, a death in the immediate family, military or legal obligations, or other equally serious reasons, you will be given an excused absence when you provide acceptable written documentation of the reason. This should be done, if at all possible, in advance of the class(es) you will miss; in any case, for an absence to be excused this documentation must be provided by no later than the third class meeting after the missed class(es) or the absence will be considered unexcused. Documentation for excused absences should be given to your instructor.

NOTE: As a general rule, a student missing a class or laboratory assignment because of observance of a religious holiday shall have the opportunity to make up missed work. Students must notify instructor of anticipated absences by the last day of late registration to be assured of this opportunity. Faculty may give students an additional week, but are encouraged to set a clear deadline.

NOTE: Students who represent UNLV at any official extracurricular activity shall have the opportunity to make up assignments, but the student must provide offi-
cial written notification to the instructor no less than one week prior to the missed class(es). HOWEVER: NO make-up exams or quizzes will be given. If you have a documented valid excuse for missing an exam or a quiz (see Attendance Policy for valid reasons), it will be dropped before your final course grade is calculated. When disagreements regarding this policy do arise, they can be appealed to the department chair/unit director, college/school dean, and/or the Faculty Senate Academic Standards Committee.

For purposes of definition, extracurricular activities may include, but are not limited to; band, drama, intercollegiate athletics, recruitment, and any other activity sanctioned by a college/school dean, and/or the Executive Vice President and Provost.

**Work Load:**

It should be clearly understood that the architecture faculty expects a time commitment on the part of each student enrolled of not less than two hours outside of class for every hour in class. You are therefore expected to spend anywhere from six to eight hours per week outside of class in addition to your time in class. If your life circumstances do not allow this type of time commitment, it will be difficult for you to do well in this class.

**Ownership of Work:**

Any design project, drawing or model that is submitted for academic credit is recognized by the University of Nevada and the School of Architecture to be the equivalent to a formal examination. Therefore, upon submission, in addition to all examinations, all projects, drawings and/or models become the property of the School of Architecture. However, in practice, projects submitted to the School of Architecture are usually returned to the individual student for inclusion in their academic portfolio. The School of Architecture does reserve the right to retain certain projects or exams for use in publicity, display, or other official uses. In addition, projects or exams may be retained for archival reasons or in cases of grade disputes. In all cases, projects and exams will be made available to the authors for photocopying or photo reproduction.

**Classroom Etiquette:**

Please make every effort to be on time for class. If you are unavoidably late, please take anything you will need during the class out of your bag or backpack before entering the classroom so as to minimize the disturbance for your classmates. No cell phone use or headphones in class. Drinks only in closed containers. **No food is allowed in the classroom.**

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### UNLV Policies

#### Academic Misconduct:

Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV’s function as an educational institution.

An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the **Student Academic Misconduct Policy** (approved December 9, 2005) located at: [https://www.unlv.edu/studentconduct/student-conduct](https://www.unlv.edu/studentconduct/student-conduct).

#### Copyright:

The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws.** The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as
disciplinary action under University policies. Additional information can be found at: http://www.unlv.edu/provost/copyright.

Disability Resource Center (DRC):
The UNLV Disability Resource Center (SSC-A 143, http://drc.unlv.edu/, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

Religious Holidays Policy:
Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor within the first 14 calendar days of the course for fall and spring courses, or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: http://catalog.unlv.edu/content.php?catoid=6&navoid=531.

Transparency in Learning and Teaching
The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information: https://www.unlv.edu/provost/teachingandlearning https://www.unlv.edu/provost/transparency

Incomplete Grades:
The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-quarters of course work for that semester/session but for reason(s) beyond the student’s control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

Tutoring and Coaching:
The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit http://www.unlv.edu/asc or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.
UNLV Writing Center: One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student’s Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: http://writingcenter.unlv.edu/.

Rebelmail: By policy, faculty and staff should e-mail students’ Rebelmail accounts only. Rebelmail is UNLV’s official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students’ e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. Emailing within WebCampus is acceptable.

Final Examinations: The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: http://www.unlv.edu/registrar/calendars.

Library Statement: Students may consult with a Librarian on research needs. For this class, the subject librarian is http://www.library.unlv.edu/contact/librarians_by_subject. UNLV libraries provides sources to support students access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at http://www.library.unlv.edu/.

Other Notes: I am ready to assist you in any way possible. Although, other obligations often preclude unannounced drop-in visits by students, you can meet with me during regular office hours or by scheduling an appointment outside of normal office hours. The time and place of any other informal meetings will be announced in lecture. I am always happy to chat with students immediately after lecture once I have packed up my things and left the room ready for the next class. To make the most of any discussions, please come prepared with specific questions. Study groups are encouraged to visit during office hours if you have questions. The course TA will similarly maintain a weekly desk schedule and conduct periodic review sessions.

Tips for Academic Success: • Attend ALL lectures and labs

• Take Copious Notes! For heaven’s sake, TAKE NOTES!

• Arriving on time, being prepared, and taking good notes are essential to doing well. You are responsible for taking notes in class; the lecture overheads and PowerPoint cannot substitute for notes that you take. PowerPoint slides will be available on the course WebCampus site, so don't feel you must swiftly scrawl all information available during class. Research shows that we process information most deeply and recall it most easily when we write by hand. All students are responsible for bringing a paper notebook to class and taking notes with a pencil or pen.
• Try to concentrate during lecture not on copying down what is on the lecture hall screen word for word, but on tracking and understanding fundamental concepts and principles. Seek clarification for new ideas presented.

• Ideally, review your notes within 24 hours of the lecture. Make a list of the things that you do not understand or are unsure of. Write yourself several questions on the lecture material that might be on a test or quiz. Come to my office hours with questions about things you don’t understand. Before a test concentrate your efforts on your notes, and think about the big picture as well as the details.

• DON’T MULTITASK! [See Below]

• Form a study group. The best way to learn something is to have to teach it. In order to teach you have to understand the material. Study groups work, can be fun, and are a good way to meet new people. Find one or form one. In a study group you will find that each person may find some components easy but have difficulty with others.

The diversity of the group means that there will be one or more people who understand the concept and can explain. If no one can, it is time to ask for help, either electronically or in person. Study groups should meet at least once or twice a week and everyone should come prepared with questions for the study group. Studying for exams will be easier if you work on the material several times a week.

• One more imperative regarding studying: DO NOT LEAVE IT UNTIL THE NIGHT BEFORE AN EXAMINATION. THERE IS TOO MUCH MATERIAL FOR A SINGLE NIGHT.

On Multitasking ...

• Studies have shown unequivocally that multitasking seriously impairs learning, even among those who profess to be the best multitaskers out there. Here are a few quotes from an interview with a Stanford University researcher, Richard Nass, who has written extensively on the matter:

"One of the biggest delusions we hear from students is, "I do five things at once because I don’t have time to do them one at a time." And that turns out to be false. That is to say, they would actually be quicker if they did one thing, then the next thing, then the next. It may not be as fun, but they’d be more efficient."

"You’re confident of that?"

"Yes. There’s lots and lots of evidence. And that’s just not our work. The demonstration that when you ask people to do two things at once they’re less efficient has been demonstrated over and over and over. No one talks about it -- I don’t know why -- but in fact there’s no contradictory evidence to this for about the last 15, 20 years. Everything [as] simple as the little feed at the bottom of a news show, the little text, studies have shown that that distracts people. They remember both less. Studies on asking people to read something and at the same time listen to something show those effects. So there’s really, in some sense, no surprise there. There’s denial, but there’s no surprise.

The surprise here is that what happens when you chronically multitask, you’re multitasking all the time, and then you don’t multitask, what we’re finding is people are not turning off the multitasking switch in their [brain] -- we think there’s a switch in the brain: we don’t know for sure -- that says: "Stop using the things I do with multitasking, Focus. Be organized. Don’t switch. Don’t waste energy switching." And that doesn’t seem to be turned off in people who multitask all the time."
Further resources on multitasking can be found on the course WebCampus site.

**Required Texts:**

Ching, Francis D.K., Onouye, Barry S., and Zuberbuhler, Douglas  

Multiple Authors  
*Structures I, Fall 2016 compilation textbook. Published by University Readers*

Oakley, Deborah  
*Course pack for Structures I, Fall 2016*

**Recommended Texts:**

Allen, Edward, and Zalewski, Waclaw  
*Form and Forces: Designing Efficient, Expressive Structures; John Wiley & Sons, Inc., 2009*

Allen, Edward  

Allen, Edward and Iano, Joseph  

Ching, Francis D.K.  

Salvadori, Mario, Heller, Robert and Oakley, Deborah  

**Reference Texts:**

Ambrose, James  

American Institute of Steel Construction, Inc. (AISC)  

International Code Council  
*International Building Code, 2015*

Lin, T.Y. and Stotesbury, S.D.  

Millais, Malcom  
*Building Structures: From Concepts to Design, 2nd Ed., E& FN Spon, 2005*

Moore, Fuller  
*Understanding Structures; WPB McGraw-Hill, 1999*

Ramsey, C. G. and Sleeper, H. R.  

Schodek, Daniel and Bechthold, Martin  
*Structures; Seventh Edition, Pearson Education, 2014*

Shaeffer, Ronald E.  

Schueller, Wolfgang  
*The Design of Building Structures, Prentice Hall, Inc., 1995*

Underwood, Rod and Chiuini, Michele  
Some Notable Architects and Designers of “Structural” Architecture

Gunnar Birkerts  A principal designer with famous firm, Skidmore, Owings & Merrill
Gordon Bunshaft  Another principal designer with famous firm, Skidmore, Owings & Merrill
Santiago Calatrava  Spanish architect, structural engineer & sculptor
Eladio Dieste  Uruguayan architect, designer of brick masonry shell structures
Lord Norman Foster  British “high tech” architect.
Buckminster Fuller  American inventor of the geodesic dome and all-around genius.
Antoni Gaudi  Spanish architect who studied funicular masonry structures in early 20th century.
Sir Nicholas Grimshaw  British “high tech” architect.
Chuck Hoberman  American designer of deployable structures.
Sir Michael Hopkins  British designer of lightweight fabric membrane structures
Louis Kahn  American architect noted for “structural honesty” in work.
Renzio Piano  Italian architect famed for exceptional detail. Early work with Richard Rogers.
Sir Richard Rogers  British “high tech” architect. Early work with Renzo Piano.
Kenneth Snelson  Structural artist who studied with Buckminster Fuller. True inventor of tensegrity.
Eugène Viollet-le-Duc  18th century French, famous for use of iron in stone masonry structures.

Some Notable Structural Engineers

Ove Arup  Founder of major British engineering firm, Arup
Horst Berger  Designer of lightweight fabric membrane structures
Santiago Calatrava  Spanish architect, structural engineer & sculptor
Felix Candela  Spanish/Mexican designer of concrete shell structures
Eladio Dieste  Uruguayan designer of amazing brick shell structures
Eugène Freyssinet  French designer of early concrete shell structures
Ted Happold  British engineer, founding partner of Buro Happold
Fazular Kahn  Inventor of new structural forms for super high rise buildings
August Kommandant  Engineer for many of Louis Kahn’s most famous buildings
Heinz Isler  Swiss designer of funicular shell structures
Rober Maillart  Swiss bridge engineer, pioneer of elegant structural form
William LeMessurier  Designer of NYC Citicorp Tower
Pier Luigi Nervi  Italian engineer, developer of many revolutionary concrete systems
Frei Otto  Pioneering designer of form active structures
Peter Rice  British engineer of fabric membrane structures & Sydney Opera House
John Roebling  Designer of the Brooklyn Bridge
Jörg Schlaich  German engineer of tensile structures
Eduardo Torroja  Spanish designer of early concrete shell structures

Some Other Notable Firms of Tectonically Expressive Architecture:

Bing Thom Architects  Kieren Timberlake  Pickard Chilton
Bohnlin, Cywinski, Jackson  Lake Flato  Rafael Viñoly Architects
Cutler Anderson  Miller-Hull  Skidmore, Owings and Merrill
Gensler  Olson Kundig Architets  Studio Gang
Gwathmey Siegel & Assoc.  Patkau Architects  Von Gerken Marg & Partners
## Course Calendar | Fall 2016

**ABS 341 / ABS 541 — Structures I**

School of Architecture — University of Nevada, Las Vegas

Course Calendar | Fall 2016  
Issued 8-30-16 — Subject to Revision

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<th>Readings</th>
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<td>1 8-30 &amp; 9-1</td>
<td>$S1$ – pp. 3-12 &amp; 29-42</td>
<td>Overview of class and learning experience</td>
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<td></td>
<td>$BSI$ – Ch. 2</td>
<td>Looking at structures: Types and grid patterns</td>
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<td>2 9-6 &amp; 9-8</td>
<td>$S1$ – pp. 53-78</td>
<td>Structure as Architecture; structure and form</td>
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<td>$S1$ – pp. 13-14 &amp; 100-116</td>
<td>Structural requirements; Free Body Diagrams</td>
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<td>3 9-13 &amp; 9-15</td>
<td>$S1$ – pp. 15-20 &amp; 117-127</td>
<td>Stability; Structural design process; Loads &amp; vectors; Basic states of stress; linear and rotational equilibrium</td>
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<td>4 9-20 &amp; 9-22</td>
<td>$S1$ – pp. 21-22 &amp; 131-161</td>
<td>Funicular cables</td>
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<td>$BSI$ – Ch. 6, pp. 260-262</td>
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<td>5 9-27 &amp; 9-29</td>
<td>$S1$ – pp. 163 - 189</td>
<td>Funicular cables &amp; arches</td>
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<td>Quiz 1</td>
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<td>6 10-4 &amp; 10-6</td>
<td>Course pack notes</td>
<td>Moments: Reactions, support types, section cuts, cantilever retaining walls</td>
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<td>7 10-11 &amp; 10-13</td>
<td>$BSI$ – Ch. 3, pp. 90-100</td>
<td>Framing systems</td>
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<td>Course pack notes</td>
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<td>8 10-18 &amp; 10-20</td>
<td>Course pack notes</td>
<td>Intro to graphic and analytic analysis of trusses</td>
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<td>$BSI$ – Ch. 6, pp. 244-253</td>
<td>Single-panel trusses</td>
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<td>9 10-25 &amp; 10-27</td>
<td>$S1$ – 191-227</td>
<td>Analysis of Multi-panel trusses</td>
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<td>Design project assigned</td>
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<td>10 11-1 &amp; 11-3</td>
<td>Course pack notes</td>
<td>Efficient &amp; optimal form trusses</td>
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<td>Selection of compression members</td>
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<td>11 11-8 &amp; 11-10</td>
<td>Course pack notes</td>
<td>Fan and cable-stayed structures</td>
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<td>$BSI$ – Ch. 6, pp. 263-264</td>
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<td>12 11-15 &amp;11-17</td>
<td>Course pack notes</td>
<td>Lateral stability of structures</td>
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<td>$BSI$ – Ch. 6, pp. 266-276</td>
<td>Intro to membranes, shells and reticulated structures</td>
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<td>Design Project Intermediate Submittal Due</td>
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<td>13 11-22</td>
<td>Course pack notes</td>
<td>Design considerations for triangulated spanning structures</td>
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<td>Design projects individual team meetings w/ Prof. Oakley</td>
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<td>14 11-29 &amp; 12-1</td>
<td>$S1$ – pp. 79-97</td>
<td>Structural detailing</td>
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<td>$S1$ – pp. 43 – 46</td>
<td>Systems integration</td>
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<td>$BSI$ – Ch. 8</td>
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<tr>
<td>15 12-6 &amp; 12-8</td>
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<td>Wrap-up and review</td>
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<tr>
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<td>Completed design project due Monday 12-12 @ 5:00 pm</td>
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**Final Exam:** Thursday, December 15, 10:10 AM – 12:10 PM (Set by registrar’s office)  
**Textbooks:** $S1$ = Custom Compiled Structures 1 Textbook; $BSI$ = Building Structures Illustrated

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Course Policies - 10