

<i>Classes:</i>	<i>11:00 - 12:20 Tuesdays and Thursdays</i> <i>Rm. 2160</i>
<i>Course Manager:</i>	<i>Branko Kolarevic</i>
<i>Instructor:</i>	<i>Brad Braun</i> <i>babraun@ucalgary.ca</i> <i>PF4201</i> <i>Office hours: Tuesdays & Thursdays 12:30 - 1:30 or by appointment</i>
<i>Teaching Assistant:</i>	<i>Matthew Ketis-Bendena</i> <i>Mbendena@yahoo.com</i>

Introduction

Advanced structural systems for buildings including: structural connections and composite structures; system characteristics and architectural intent; and case studies in contemporary building structures.

This course examines the choices for structural systems, the context within which choices are made, and the variables involved. The approach is a qualitative, as opposed to quantitative, as the intent is to provide students with sufficient background to begin to appreciate the factors involved in choosing and incorporating structural systems. Assignments do not address the entire material covered in the course, but instead, focus specifically on very particular aspects of structural systems choice.

Objectives

- To learn the fundamentals of structural systems choices
- To understand the factors which affect systems choices
- To demonstrate the ability to design a structural system
- To learn the skills required to access and apply knowledge as it pertains to building components and systems

Teaching Approach

This course is divided into topic areas which are presented in terms of both theory and practical application. Topic areas are presented through lectures, assignments, discussion of student work, videos, site visits, and course readings. As site visits are considered to be an essential component of the course, **attendance at site visits is mandatory.**

Content

- 1 Overview of systems
 - 1.1 forces, types of load, free body diagrams, load distribution, types of support
 - 1.2 overview of component typologies (column and beam, trusses, arches, etc)
 - 1.3 systems typologies: primary, secondary, tertiary
- 2 Selection of systems
 - 2.1 Wood frame
 - 2.2 Light steel
 - 2.3 Steel
 - 2.4 Masonry, cast-in-place & precast concrete
- 3 Factors affecting systems choices
 - 3.1 Overview of Loading
 - 3.2 Economics
 - 3.3 Fire considerations

Evaluation

The course evaluation will be based on the assignments completed during the term. There will be no final examination. In addition to specific evaluation criteria specific to each assignment, all assignments will be evaluated on:

- Responsiveness and relevance to specifics of assignment
- Clarity and completeness of digital representations and textual explanations (where required)
- Overall quality of work (including graphic quality)

Assignment 1:	Precedent Analysis	10%
	Assigned: Sept 13	
	Due: See presentation schedule	
Assignment 2:	Systems Selection	30%
	Assigned: Sept 20	
	Due: Oct 25	
Assignment 3:	Conceptual Structure for Studio	20%
	Assigned: Oct 18	
	Due: To be determined in conjunction with studio	
Assignment 4:	SSEF Steel Structures Competition	40%
	Assigned: Oct 25	
	Due: Dec 8	

All assignments are due at the beginning of class time on the day they are due unless otherwise stated in the assignment. Late assignments will be penalized by one letter grade (i.e.: A to A-) for each 24 hour period or portion thereof that they are submitted late. **All late submissions must be submitted to EVDS reception during regular office hours and date-stamped by the receptionist.**

With the exception of Assignment One, assignments are to be submitted as a hard copy as specified in the assignment description. The hard copy is the basis for evaluation for assignments 2, 3, & 4. Assignments not submitted as a hard copy will be considered to be incomplete. In addition, a **digital copy** of all assignments is requested as part of the submission to provide an archive of student work for the purpose of accreditation.

Assignment of Grades

Letter Grade	4-Point Scale	4-Point Range	Percent	Description
A+	4.00	4.00	92.5-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	85-92.49	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	80-84.99	Very good performance
B+	3.30	3.15-3.49	76-79.99	Good performance
B	3.00	2.85-3.14	73-75.99	Satisfactory performance
B-	2.70	2.50-2.84	70-72.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	66-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	63-65.99	
C-	1.70	1.50-1.84	60-62.99	
D+	1.30	1.15-1.49	56-59.99	
D	1.00	0.50-1.14	50-55.99	
F	0.00	0-0.49	0-49.99	

Note: A student who receives a B- or lower in two or more courses will be required to withdraw regardless of their grade point average unless the program recommends otherwise. Individual programs may require a higher minimum passing grade. A grade point value of 3.0 on the 4-Point Scale is the minimum acceptable average that a graduate student must maintain throughout the program as computed at the end of each registration anniversary year of the program. A student who receives a grade of F will normally be required to withdraw unless the program recommends otherwise.

Readings

Specific readings will be assigned from the required text for the course. An initial reading list is provided on Blackboard. **It is expected that assigned readings will be completed prior to the beginning of class for the date they are assigned.** It is also highly recommended that students read the recommended texts for this course. Additional required short readings may be posted on Blackboard from time to time.

Course Texts

Required:

Building Structures Illustrated: Patterns, Systems, and Design.

Ching, Onouye, & Zuberbuhler (2008). John Wiley & Sons.

ISBN: ISBN: 978-0-470-18785-2

Recommended:

Building Construction Illustrated, 4th Edition

Ching & Adams (2008). John Wiley & Sons.

ISBN: 978-0-470-08781

The Architect's Studio Companion: Rules of Thumb for Preliminary Design, 4th Edition.

Allen & Iano (2006). John Wiley & Sons.

ISBN: 978-0-471-73622-6

Why Buildings Stand Up.

Mario Salvadori (2002). W. W. Norton.

ISBN: 0-393-30676-3

(this is a quick read recommended for those with no prior understanding of structural systems)

Blackboard

Blackboard will be utilized as the primary communication tool for this course. It is the responsibility of students to ensure that they are registered for the course and that their e-mail contact information is up-to-date with the university. The email address utilized by Blackboard is your primary email address on file with the My U OF C portal.

Site Visits

Appropriate safety wear is mandatory on site visits, including CSA approved steel-toed footwear, hard hats, and safety goggles. There are some steel-toed rubber boots and hard hats available to be signed out through the workshop, however it is ultimately the students responsibility to provide the appropriate safety wear required to attend the site visits. This will be discussed in class prior to the first site visit.

Special Budgetary Requirements

There are no mandatory or optional course fees for this course. Students should each budget for the plotting and mounting of a total of a maximum of two A1 boards, in addition to several 11x17 colour prints.

Notes:

1. Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor.
2. It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 403-220-8237 (<http://www.ucalgary.ca/drc/node/46>).

Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

3. Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test),(b) parts of the work are taken from another source without reference to the original author,(c) the whole work (e.g., an essay) is copied from another source, and/or,(d) a student submits or presents work in one course which has also been submitted in another course(although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.
4. Information regarding the Freedom of Information and Protection of Privacy Act and how this impacts the receipt and delivery of course material (<http://www.ucalgary.ca/secretariat/privacy>)
5. Emergency Evacuation/Assembly Points (<http://www.ucalgary.ca/emergencyplan/assemblypoints>)
6. Safewalk information (<http://www.ucalgary.ca/security/safewalk>)
7. Contact Info for:

Student Union
(<http://www.su.ucalgary.ca/page/affordability-accessibility/su-structure/contact-info>)

Graduate Student representative
(<http://www.ucalgary.ca/gsa/>)

Student Ombudsman's Office
(<http://www.su.ucalgary.ca/page/quality-education/academic-services/student-rights>)

EVDA 613 SCHEDULE - FALL 2011 (Subject to change)

WEEK	DATE	TOPIC	Assign. 1 Presentations	Readings
1	T Sept 13	Intro		
		Assignment 1 given		
	Th Sept 15	lecture		SAA Chapter 3
2	T Sept 20	lecture		BCI Material Properties
		Assignment 2 given		
	Th Sept 22	lecture		BSI Chapter 1
3	T Sept 27	lecture	Groups 1 & 2	BSI Chapter 2
	Th Sept 30	lecture	Groups 3 & 4	BSI Chapter 3
4	T Oct 4	lecture	Groups 5 & 6	BSI Chapter 4
	Th Oct 6	lecture	Group 7 & 8	BSI Chapter 5
5	Oct 10 - 14	THANKSGIVING & BLOCK WEEK - no classes		
6	T Oct 18	Lecture	Groups 9 & 10	ASC Chapter 2
		Assignment 3 given		
	Th Oct 20	lecture	Groups 11 & 12	ASC Chapter 3
7	T Oct 25	lecture		BSI Chapter 6
	Th Oct 27	Assignment 2 due & pin-up discussion		
		Assignment 4 given		
8	T Nov 1	lecture		BSI Chapter 7
	Th Nov 3	lecture		BSI Chapter 8
9	T Nov 8	lecture		
	Th Nov 10	Site visit (subject to change)		
10	T Nov 15	lecture		
	Th Nov 17	lecture		
11	T Nov 22	lecture		
	Th Nov 24	lecture/SSEF Steel Structures crits		
12	T Nov 29	lecture/SSEF Steel Structures crits		
	Th Dec 1	lecture/SSEF Steel Structures crits		
13	T Dec 6	lecture/SSEF Steel Structures crits		
	Th Dec 8	Assignment 4 due & presentations		

NOTES:

Additional readings may be added during the term - you will be notified via e-mail

BCI Building Construction Illustrated - reading available on Blackboard/Course Documents/Required Course Readings

BSI Building Structures Illustrated (required text)

SAA Structure as Architecture - reading available on Blackboard/Course Documents/Required Course Readings

ASC Architects Studio Companion - reading available on Blackboard/Course Documents/Required Course Readings