Spring 2020

ARCH 282-002: Structural Principles for Digital Design and Interior Design (Revised for Remote Learning)

Thomas Ogorzalek

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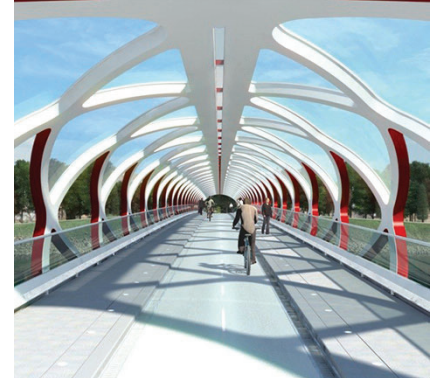# ARCH 282 (REVISED FOR REMOTE LEARNING)
STRUCTURAL PRINCIPLES

Thomas Ogorzalek
Senior University Lecturer
J. Robert and Barbara A. Hillier
College of Architecture and Design
New Jersey Institute of Technology

Milwaukee Art Museum, Santiago Calatrava

WTC Transit Hub, Santiago Calatrava

Peace Bridge, Calgary Santiago Calatrava

Course Syllabus **(REVISED 3.22.20)**
Type of Course: 3 credit course for interior design students
3 contact hours per week, meets once a week on Monday 8:30am-11:20am in ~~CKB 315,~~
ON-LINE DURING SCHOOL CLOSURE
Consists of lectures, workshops, and design projects

Course Description:
Introduction to fundamental principles and behavior of building structures for interior design students. Students will be exposed to a variety of structural systems, their material composition, and principles that underlie their design

Learning Objectives:
The objectives of the course seek to provide students a basic understanding of structural behavior in withstanding gravity and lateral forces. In doing so students will develop the ability to document, assess and communicate structural systems utilized in contemporary architecture today.

Format:
Class will be comprised of **on-line** lectures **(see course schedule)**, discussions, in-class model workshops, and design projects, meeting once a week. Class lectures will provide basic information to be supplemented by readings and class discussions to review and clarify course content. Workshops and design projects will provide students an opportunity to explore structural behaviors first hand and demonstrate their understanding of the principles that are being discussed. ~~Depending on class size class, field trips to existing buildings will give students an opportunity to become familiar with a variety of structural systems.~~

Course Requirements:
Class will meet once a week: Monday 8:30am – 11:20am
Weekly class attendance is mandatory as the majority of course content will be presented and discussed in class sessions. Unexcused absences can result in the lowering of final grades or failure. Three or more unexcused absences will require a meeting with the course instructor.

COMPUTER:
During school closure, access to a computer with high speed internet connection, Webcam, microphone and audio, and Windows/Apple operating system is required. (Webcam and Windows/Apple operating system is required for Online Exam with proctoring service)

Course Delivery: Online synchronous lectures will be delivered during regularly scheduled class time Monday 8:30am-11:20am. Regular office hours will be maintained throughout the semester as per the syllabus and/or by appointment. These meetings will take place online via Cisco WebEx Meetings when requested.

Course Delivery Software: Cisco WebEx Meetings

Attendance and Tardiness Policy
1) Excused Absences:
Are for medical and religious reasons or pre-approved for student-athletes only. An absence due to illness can be excused if the student has filed official documentation (licensed medical practitioner including NJIT Health Services) with the Office of the Dean of Students. The Office of the Dean of Students will, in turn, notify the instructor(s) that appropriate documentation has been received and confirmed, and detail what accommodation is warranted. These accommodations may range from identified dates for excused absences (normally for temporary illness) to extra time for projects and assignments (for ongoing medical issues). For absences for religious reasons see Point 4 at https://www.njit.edu/registrar/policies/attendancepolicy.php. Conflicts for student-athletes see Missed Class Policy at: http://www.njithighlanders.com/documents/2014/8/7/2014_Book_08_7_14.pdf?tab=2014-15sahandboo

2) Unexcused Absences:
All undergraduates are expected to attend all regularly scheduled classes. Unexcused absences can result in the lowering of final grades or failure. Three or more unexcused absences will require a meeting with the instructor, coordinator, and advisor. The instructor is under no obligation to repeat any missed information or provide access to lecture notes or presentation materials to students who arrive late. It remains the responsibility of the student to learn the material presented.

University Attendance Policy for Undergraduate Students
https://www.njit.edu/registrar/policies/attendancepolicy.php

Course Evaluation and Grading Criteria: (subject to change during semester)
NJIT Undergraduate grading scale:
A   4.0   Superior
B+   3.5   Excellent
B   3.0   Very Good
C+   2.5   Good
C   2.0   Acceptable
D   1.0   Minimum
F   0.0   Inadequate

An Incomplete is only granted in the event of a documented medical or family emergency, and must be approved by the instructor and administration.

NJIT has a policy of issuing mid-term warnings for students who are not performing at a satisfactory level. Any student issued a warning will be required to have a conference with the instructor to evaluate satisfactory completion of the work for the remainder of the semester. At any point during the semester students can arrange to meet with the instructor to inquire how their performance of the assignments is progressing and how they may improve. Final grades will be discussed in person at the end of the semester.

Academic integrity and honesty are of paramount importance. Cheating and plagiarism will not be tolerated. The NJIT Honor Code will be upheld, and any violations will be brought to the immediate attention of the Dean of Students. All students are responsible for upholding the integrity of NJIT by reporting any violation of academic integrity to the Office of the Dean of Students. The identity of the student filing the report will remain anonymous. All students are expected to adhere to the University Code on Academic Integrity and to the Code of Student Conduct.
Dean of Students: www.njit.edu/doss
Code of Academic Integrity: https://www.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf
Code of Student Conduct: https://www.njit.edu/doss/policies/conductcode/index.php

Assignments:
Course requirements will include in-class model workshops with accompanied documentation, project assignments, mid-term and final exams. Each assignment will constitute a percentage of the overall grade as follows:
- Class readings, attendance and participation   **5%** of final grade
- In-class workshops and model assignments   **35%** of final grade
- Mid-term exam   **25%** of final grade
- Final project   **10%** of final grade
- Final exam   **25%** of final grade

NOTE: The Final exam will be take on-line.
Access to the exam will be through CANVAS using Respondus Lock-Down Browser. Students will be required to have the following;
- High-speed internet connection
- Webcam
- Microphone and Audio
- Windows or MAC operating system
- NJIT ID or Photo-Issued ID

Course Reference Readings and Materials

A series of readings will accompany lectures and individual assignments. Readings can be found in the reserve texts located at HCAD Library Permanent Reserve. Additional and any supplemental readings that are not in the reserve texts will be will be emailed to students and/or posted on Kepler.

Allen, Edward Iano, Joseph	*The Architect's Studio Companion: Rules of Thumb for Preliminary Design 4th Edition* John Wiley &Sons, Inc., New York 2002
Armijos, Samuel J.	*Fabric Architecture: creative resources for shade, signage, and shelter* New York: W.W. Norton, 2008
Ching, Francis D.K. Onouye, Barry S. ZuberBuhler, Douglas	*Building Structures Illustrated: patterns, systems, and design* John Wiley &Sons, Inc., Hoboken, NJ 2009
Engel, I.	*Structural Principles* New Jersey: Prentice-Hall, Inc., 1984
Salvadori, Mario with Heller, Robert	*Structure in Architecture* New Jersey: Prentice-Hall, Inc., 1963, 1975, 1986

Preliminary Schedule (subject to change) **REVISED 3.22.20**

Week	Day/Date		Remarks
January			
I	Mon	1/27	Introduction: Expectations, Goals, and Methodology
February			
II	Mon	2/3	Lecture: Loads and Materials | Model Workshop: Tension + Compression
III	Mon.	2/10	Lecture: Forces | Model Workshop: Equilibrium
IV	Mon.	2/17	Lecture: Structural System Types | Model Workshop: Basic Framing
V	Mon.	2/24	Lecture: Structural System Elements | Model Workshop: Spanning Systems
March			
VI	Mon.	3/2	Lecture: Mid-Term Review & Class Discussion
VII	Mon.	3/9	Mid-term Exam
VIII	Mon.	3/16	**Spring Recess – no class**
IX	Mon.	3/23	Lecture: Wood & Masonry **(on-line synchronous lecture)**
X	Mon.	3/30	Lecture: Lightweight and Structural Steel **(on-line synchronous lecture)**
April			
XI	Mon.	4/6	Lecture: Pre-cast and Site-cast Concrete **(on-line synchronous lecture)** Final Project Issued
XII	Mon.	4/13	Lecture: Fabric Structures **(on-line synchronous lecture)**
XIII	Mon.	4/20	Project Design Workshop: Schematic Design **(on-line synchronous review)**
XIV	Mon.	4/27	Project Design Workshop: Design Development **(on-line synchronous review)**
May			
XV	Mon.	5/4	Lecture: Final Exam Review **(on-line synchronous lecture)** | ~~Final Project Due~~
	Tue.	5/5	Last Day of Classes | **Final Project Due at 11:59pm via email**
	Fri.	5/8	Final Exams Week begin (Exam Day TBA)

Contact Information:

Thomas Ogorzalek
Senior University Lecturer
Hillier College of Architecture and Design
New Jersey Institute of Technology, Newark NJ 07102
Email: thomas.ogorzalek@njit.edu
Office: Weston 524   Office Hours: Thursday, 11-12pm, or by appointment.