INTERIOR DESIGNERS INSTITUTE
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Course Syllabus

COURSE: 308 Construction Principles

PREREQUISITES FOR THIS CLASS: Completion of Certificate Program

COURSE TEXTBOOKS: Ching, Francis D. K.; *"Building Construction Illustrated"*

COURSE DESCRIPTION:
Three hour lectures, in class discussion and questions, and optional student planned field trips.

EVALUATION:
One of the following each week as arranged in class: a 20 question quiz at the beginning of class, or a student planned field trip. Quizzes and trips begin class two.

Each item above: 20 points

Minimum %	Grade
90	A
80	B
70	C
60	D
0	F

QUIZ CONTENT:
Quiz content includes information from the assigned reading and or the lecture in class

FIELD TRIP:
The goal of the student organized field trip is to engage with an expert from an allied discipline. In order to receive full points for the field trip you must submit three field trip photos as required in your Canvas assignment at idi.instructure.com and attached herein. Please read the full requirements in one of those locations.

COURSE OBJECTIVES:
1. Develop basic knowledge in construction materials and methods.
2. Develop basic knowledge of construction terminology.
3. Learn the nature of common materials.
4. Become familiar with building systems.

CLASS PARTICIPATION:
Class participation will be considered in evaluating the student's overall grade.

Lecture 1 - Introduction

1) The building team, allied disciplines, and the language required to communicate with them
    a) Building team: Client, Building owner, Designers, Contractors, Regulatory bodies
    b) Design disciplines; Architect, Interior, Structural, Mechanical, Electrical, Plumbing
    c) Construction disciplines; Contractors, Subcontractors, Inspectors
2) Diversity of Terms
    a) By geographical region
    b) By discipline or group
3) Sustainability and integrated design practices
    a) Building life cycle
    b) Allied team member involvement from the beginning of the design process
4) Geographical location and its impact on interior design
5) Conceptual Systems not the focus of this course
    a) Scale, proportion, organization, adjacencies, etc.
6) Integrated Design and sustainability
7) Literal Systems
        i) Structural System
        ii) Enclosure System
        iii) Mechanical System
8) Types of Construction

Reading for quiz 1: Building Construction Illustrated pages – 1.02, 1.03, 1.23, 2.02, 2.03, 2.04, 2.05, A18-A22

Lecture 2 - Structural Systems

1) Structural Systems - Respond to Loads on Buildings
        i) Vertical Loads
        ii) Horizontal Loads
2) Basic Structural Systems
        i) Skeletal
        ii) Planar
        iii) Structural Systems that resist Horizontal Loads
3) Simple Beams
        i) Tension and Compression
        ii) Neutral Axis
        iii) Cantilever
        iv) Structural Bay
4) Foundations
        i) Floor Systems
        ii) Wall Systems
        iii) Structural Steel Frames
        iv) Concrete and Masonry Bearing Walls
        v) Wood and Metal Stud Walls

Reading for quiz 2: Building Construction Illustrated pages – 2.08, 2.09, 2.10, 2.14, 2.15, 2.20, 2.21, 2.22, 3.02, 3.03, 3.04

Lecture 3 - Concrete

1) Introduction to Concrete
2) Composition of Concrete
3) Methods of mixing
4) Construction
    i) Walls
    ii) Foundation Slabs
    iii) Foundation Walls
5) Decorative Precast Concrete
6) Tilt Up Concrete
7) Concrete Finishes
8) Construction Joints

Reading for quiz 3: Building Construction Illustrated pages – 3.19, 4.08, 5.05, 5.07, 5.08, 5.09, 5.10, 5.11, 5.13, 12.04, 12.05

Lecture 4 - Wood

1) History - Background
2) Introduction to Wood
    i) Hardwood
    ii) Softwood
3) Growth of Wood
    i) Annular Rings
    ii) Grading - Structural and Appearance
4) Milling Wood
    i) Quarter sawing
    ii) Plain sawing
5) Seasoning of wood
6) Decay resistant wood
7) Defects in Wood
8) Grading of Lumber
    i) Structural
    ii) Appearance
    iii) Wood Panel Products - Plywood, Particleboard, MDF, and OSB
9) Nominal vs Actual sizes of lumber
    i) Dressed vs Undressed lumber
10) Engineered Lumber
    i) Glulam - Beam
    ii) PSL - Beam or Joist
    iii) TJI - Joist
    iv) Other – Paralam

Reading for quiz 4: Building Construction Illustrated pages – 4.33, 4.34, 4.35, 4.40, 10.29, 12.11, 12.12, 12.13, 12.14

Lecture 5 - Light Weight Framing

1) Wall Framing
    i) Platform Framing
    ii) Wood Stud Framing
    iii) Light Gauge Steel Studs
2) Floor Framing
    i) Wood Floor Joists
    ii) Wood Joist Framing
    iii) Wood Subflooring
    iv) Prefabricated Joists & Trusses
    v) Metal Floor Joists
3) Roof Framing
    i) Rafter Framing
    ii) Wood Rafters
    iii) Light Gauge Roof Framing

Reading for quiz 5: Building Construction Illustrated pages – 3.08, 3.13, 3.20, 4.26, 4.28, 5.42, 5.44, 5.45, 6.19, 6.20, 6.21

Lecture 6 - Metal

1) History
2) Introduction to Metal
    i) Mining of metal
        (a) Classifications and Terms
    ii) Ferrous Metals
    iii) Non Ferrous Metals
3) Forming Metal
    i) Cast
    ii) Wrought - Extruding, Pressing, Forging
4) Strength
5) Durability
    i) Deterioration, Surface Discoloration, Corrosion, Galvanic action
    ii) Finishes - Galvanizing, Anodized Aluminum, Powder Coating
6) Construction Systems
    i) Structural Steel Frame
    ii) Shapes - Wide flange, Pipe, Channel, Tube, Angle
    iii) Trusses
    iv) Advantages and Disadvantages
7) Light weight steel framing

Reading for quiz 6: Building Construction Illustrated pages –4.14, 4.19, 4.22, 7.31, 8.06, 10.04, 12.08, 12.09

Lecture 7 - Masonry

1) History
2) Definition
3) Overview - Material strength, Construction differences, Durability, Textures, Shapes, Sizes
    i) Brick
    ii) Concrete Block - CMU
    iii) Natural Stone
    iv) Glass Block
4) Properties
5) Structural Masonry
    i) Arch, Lintels
    ii) Arch types
6) Construction
    i) Reinforced Masonry
    ii) Veneer
    iii) Brick Courses
    iv) Bond patterns
    v) Stone patterns
    vi) Buttresses, Pilasters, Lintels
    vii) Paving

Reading for quiz 7: Building Construction Illustrated pages – 5.20, 5.21, 5.26, 5.27, 5.29, 5.33, 12.06, 12.07, 12.10

Lecture 8 - Mechanical Systems – Thermal Design

1) Mechanical Systems
    i) Introduction
    ii) Comfort
    iii) Heat Sources
    iv) Comfort Zone
    v) Control of Comfort Zone
        (a) Site Location
        (b) Orientation
        (c) Materials and Construction
    vi) System Types
        (a) Solar; passive, active
        (b) Radiant heating
2) Plumbing Systems
    i) Water Supply
    ii) Sanitary Drainage Systems
        (a) Traps
        (b) Vents
        (c) Wall thickness for plumbing
    iii) Alterations
        (a) Layout

(b) Raised Wood Floor
(c) Concrete Slab on Grade
(d) Post Tension Slab

Reading for quiz 8: Building Construction Illustrated pages – 1.16, 11.03, 11.04, 11.05, 11.09, 11.10, 11.15, 11.21, 11.24, 11.26, 11.27, 11.28

Lecture 9 - Electrical Systems, Energy Conservation and Acoustics

1) Electrical Systems
    i) Wire - Conductor and Insulator
    ii) Conduit
    iii) Electrical Basics
    iv) Electrical Distribution
    v) Low Voltage
2) Energy Conservation
    i) Energy Sources
    ii) Building envelope efficiency
    iii) Solar
        (1) Active
        (2) Passive
3) Acoustics
    i) Basics
    ii) Room Shape
    iii) Finishes
    iv) Transmitted noise

    Reading for quiz 9: Building Construction Illustrated pages – 11.30, 11.31, 11.33, 11.34, 11.36, A14-17

Lecture 10 - Interior Finishes

1) Exterior Plaster
    i) Gypsum Plaster, Cement Plaster
    ii) Application
    iii) Texture
2) Ceramic Tile, Stone
    i) Ceramic Tile
    ii) Stone Flooring
    iii) Installation
        (1) Thinset
        (2) Thickset
3) Gypsum Board
    i) Types and sizes
    ii) Installation
    iii) Accessories
4) Wood Floors
    i) Types
    ii) Installation

5) Resilient Floors
    i) Types - Sheet Vinyl, VCT, Sheet Linoleum, Cork flooring
    ii) Installation
6) Carpet

Reading for quiz 10: Building Construction Illustrated pages – 10.02, 10.03, 10.04, 10.09, 10.10, 10.11, 10.13, 10.14, 10.17, 10.18, 10.19, 10.21, A13

Lecture 11 - Interior Finishes

1) Direct to Ceiling - Acoustic ceiling tile
2) Suspended Acoustical Ceiling
3) Wood Paneling
4) Wood Molding
    i) Casing, Base, Baseboard, Rails, Crown, Cornice
    ii) Wood joints
5) Plastic Laminate
6) Painting and Coating

Reading for quiz 11: Building Construction Illustrated pages – 10.23, 10.24, 10.26, 10.27, 10.28, 10.29, 10.30

Lecture 12 – Student Queries

1) Quiz 11
2) Site photos

COURSE POLICIES:

Tutoring:

A list of qualified tutors is available upon request. Please see the professor if you feel you need a tutor.

Attendance and Tardiness:

Attendance will be taken during each class period. Students who are late, absent, or leave class early will receive a reduction in their grade.

Quizzes:

There are no make up quizzes. Quizzes can only be taken on the date listed in the syllabus or as modified during the quarter. Quizzes cannot be taken early or late. If you arrive for class after any student has completed the quiz, you will not be allowed to take the quiz for that class period. There are absolutely no exceptions. Quizzes will take place each class period for 15 minutes of class. Students have all 15 minutes to work on completing the quiz.

Quiz tips:

1. Quizzes are based on the reading.
2. Quizzes are multiple choice.
3. Quizzes are taken online; learn to use your device and practice before taking a quiz.

Missed lectures:

In the event a class is missed, it is the student's responsibility to gather information on the lecture from another student. The professor is not another student.

Cheating:

Any form of cheating will result in failure of the course.

Syllabus content:

The syllabus may be modified during the course of the quarter by the professor at any time. It is the student's responsibility to be aware of any changes that take place.

Extra Credit:

There is no extra credit or makeup work offered for this course. There are absolutely no exceptions.

To receive 20 points for attending a field trip you must submit three (3) photos via Canvas:

1) One photo of you having fun on the trip.

This photo must be submitted in the .jpg or .jpeg file format using the provided Photoshop template. It must be a unique photo (you cannot submit the same photo as your classmate). Do not combine multiple photos. This photo must also have some construction related content. See an example below:

2) A second photo of a construction assembly.

This photo must be submitted in the .jpg or .jpeg file format using the provided Photoshop template. It must be a unique photo (you cannot submit the same photo as your classmate). Do not combine multiple photos. The construction assembly must be one that you viewed during our tour. In addition, the image file must be annotated (text and lines) detailing or labeling the features (or parts) of the assembly (use the template). Finally, five (5) items in the image must be annotated to receive full credit; you will lose 2 points for any incorrectly detailed (labeled) item. See an example below:

3) A third photo of the expert from another discipline leading our tour.

This photo must be submitted in the .jpg or .jpeg file format using the provided Photoshop template. It must be a unique photo (you cannot submit the same photo as your classmate). Do not combine multiple photos. This photo must include annotation showing the expert's name and position (use the template). Examples could include: John Doe, Construction Superintendent, or Jeff Johnson, Architect, or Susan James Electrical Engineer, etc. See an example below: