



Department of Architecture

**ARC 407** (3 cr/hrs)

## **Construction Documents**

Fall Semester 091 (2009-2010)

# **Course Outline**

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Lecture sessions:

Sundays and Tuesdays (2.10-5.10 PM) B04, Bldg 19

Consultation (office hours): U, M and TU (11.00 AM – 1.00 PM)

### **Course Description** (Undergraduate Bulletin)

This course is setup to introduce concepts and methods of preparing construction documents for buildings. It provides a hands-on experience in preparing such documents. The course will emphasize the use of computer integrated database management systems, Intranet and Intranet methods for accessing, distributing and coordinating construction documents. Topics to be covered include; the graphic component: a coordinated set of drawings, plans, sections, elevations, graphic symbols, and details, required to graphically describe the project. The alphanumeric component: dimensions and annotations, tables, and schedules (doors, windows, and room finishes). Specifications, mostly text but sometimes supplemented with graphics, including bills of quantity or materials.

**Prerequisite: ARC124 and ARE-212**

### **Course Objectives**

- ④ Introduce students to construction document and its constituent elements, including overview the nature and function of the document and its constituent elements
- ④ Undertake detailed overview of specification based on the Construction Specification Institute format, including the role of specification in architectural projects

- Provide students with an opportunity to undertake exercises to develop skills in the preparation of specifications
- Introduce students to working drawing conventions and procedures for preparing working drawings
- Introduce students to objected oriented CAD and provide them with an opportunity to develop skills in the use an OO CAD program to prepare working drawings
- Provide students with an opportunity to practically apply knowledge learnt in other courses to the production of working drawing

## Teaching Methods and Assessment

The course is organized in the form of studio work centered in the interdiction to professional architectural working drawing in particular, and the phased production of the working document. Nevertheless, the course utilizes both a lecture and a studio format in its teaching. Exploration of Construction Document, including all its constituent parts is undertaking in lecture format, along with examination of samples of such work. The production of working drawing is undertaking in a studio format that involves the student working throughout the semester to produce the working drawing of a simple building Assessment is by major examination for the lecture part, and critique and assessment of submissions for the studio part.

The assessment students' performance in this course will be determined based on the evaluation of the entire semester work including active participation in the course activities, interim submissions and final submission.

## Course Organization & Schedule

- The course will explore the meaning of construction documentation including learning about its components and how they are produced and interrelated.
- The course presupposes that students enrolled have a good working knowledge of standards of architectural drawings, computer aided drafting (proficiency in AutoCAD), construction systems, building materials and concrete structural design.
- This course focuses on the production of working drawings for a selected project using an object oriented CAD tool (Architectural Desktop – Autodesk Architecture).
- Each student is required to select a separate architectural project of a medium size and can be utilized to achieve the course objectives.
- Each student is required to produce a complete set of working drawings for his selected project comprising of: site plan; structural and framing plans; construction floor plans, sections and elevations; construction details of utility spaces (bathrooms, toilets, specialty spaces); roofing plan details; building services;

# Course Organization & Schedule

stairs, windows and doors details and schedule; and three optional details.

- Each student is required to produce an outline specification to his project

Weeks	Activities	Submission	Grade
1-4	<b>Outline of Building Drawings</b> <ul style="list-style-type: none"> <li>Select a separate architectural project of a medium size</li> <li>Complete building drawings with principal dimensions</li> </ul>	<b>A3 Building Drawing Report</b> that includes: All Plans 1:100 2 Sections 1:100 Structural Grid Wall Materials Stair Details Windows and doors	15%
5-7	Introduction to <b>Construction Documents and Specifications</b> <ul style="list-style-type: none"> <li>Construction documents</li> <li>Working drawings</li> <li>Specifications</li> <li>Bills of quantities</li> <li>Contract documentations and conditions</li> </ul>	<b>Specification Manual</b> for your selected project	10%
		<b>Quiz &amp; Exam</b>	10%
8-10	<b>Developing the Building Model</b> <ul style="list-style-type: none"> <li>Overview of the OO CAD software (Autodesk Architecture)</li> <li>Setup of the building model</li> <li>Column grid and structural layout</li> <li>Vertical circulation and building shell</li> <li>Editing and refining building model</li> </ul>	<b>Building Model Submission</b>	15%
11-14	<b>Construction Documentation</b> <ul style="list-style-type: none"> <li>Generating sections and elevations</li> <li>Generating schedules of doors, windows, finishes and materials</li> <li>Generating annotations</li> <li>Detailing</li> </ul>	<b>Building Model with construction documents</b>  (check submission sheet)	25%
15	Sheet layout and plotting		
<b>Final Exam</b>			15%

Attendance 10%

## Course Lecture Topics

The course lecture topics that complement the studio task include the following:

- ④ Introduction to the professional architect and architectural projects.
- ④ Working Drawing
  - What is Working Drawing?
  - Difference between conceptual and Working Drawing
  - Conventions in Working Drawing production
  - Guidelines and procedures for producing working drawing
- ④ Construction Documents and its components
  - Working Drawing
  - Specification Manuals
  - Bill of Quantities
  - Contract Conditions Tender documents
- ④ Specifications
  - Organization and components of technical specifications
  - Types of specifications
  - Procedures for preparing specifications
- ④ Bill of Quantities, Contract Conditions and Bidding Documents
  - Function, structure and role of bill of quantities
  - Contract conditions and their role in building projects
  - Bidding documents and contract bidding procedures

## Learning Outcomes

*On successful completion of this course, students should be able to:*

### **Cognitive Outcomes**

- Describe the various roles that professional architects play in the role of a building project
- Identify and describe the various component of a construction document
- Outline the various conventions used in working drawing production and use them in the production of the working drawing of a simple building
- Be able to assess the potential and future impact of OO CAD packages on architectural project management
- Be able to apply knowledge of materials, construction system and structures in the production of the working drawing of a simple building
- Define specification and describe how specification is arranged and produced using the Construction Specification Institute format

### **Skills/Presentation**

- Be able to prepare the architectural working drawing of a simple building
- Be able to use an objected oriented CAD program in the production of a simple working drawing
- Be able to produce an outline specification of a small size building

## ***Values/Attitudes***

- Time management
- Task management
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## **Textbook, References, Resources & Notices**

### **Textbook:**

1. Wakita O. A. & Linde R. M. (1994) Construction Specification Portable Handbook, N.York: John Wiley & sons
2. Stitt F. A. (1999) Construction Specification Portable Handbook, N.York: McGraw Hill

### **Other Key Readings and References:**

1. Liebeng (1999) Architectural Working Drawings, N.York: John Wiley & Sons
2. Ching F., Building Construction Illustrated
3. Sweets Catalogue
4. Chappel & Willis (2000), The Architect in Practice, London: Blackwell Science
5. AIA (1994) Handbook of Professional Practice
6. Aubin P. F. Mastering AutoDesk Architectural Desktop

## Guidelines and Responsibilities

### Participation & Attendance:

You are required to show up at classes on time. Your punctuality, active participation in the class and cooperation with group work are the primary criteria for evaluating the performance of your participation. If you have any special circumstances that might lead to late attendance or absence, you **MUST** contact the Course Instructor whenever these circumstances emerge.

### Course Workload and Submissions

You are expected to spend 6 hours per week as a study time, in addition to your class time for readings and completing required tasks. Therefore, be mindful of your time and effort and avoid chronic problems of inaccuracy and inherent last minute and overnight hasty submissions.

**The submission due dates are firm.** Manage your time well right from the beginning. It will certainly help you to meet the deadlines smoothly.

### Plagiarism

All work presented must be the students' own. Direct copying breaches intellectual copyright and is called plagiarism, which will incur penalties of zero mark.

### Consultation & Help!

Make a good use of these hours for direct contact with your instructor to share your concern, learning progress, difficulties in understanding concepts, lack of motivation, etc. Be open minded and have a direct communication with your Instructor to share with him your concerns especially at times when you are in need of further clarifications, or do not feel much excited to work, or not that encouraged to participate in your class, or feel overloaded with other work. Certainly, your instructor will try to help in one way or another to ease the situation. Finally, remember that your instructor is always available to support and motivate you for a better learning experience and a fruitful academic life.

*Best wishes!*

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