



COURSE OUTLINE

Course Number	Course Title	Credits
BCT101	Construction Graphics	3
Hours: 2 Lecture 2 Studio/Lab,	Co- or Pre-requisite BCT110 Construction Materials & Methods	Implementation sem/year Fall 2017

Course Description:

BCT101 Construction Graphics (3)

Corequisite: BCT 110 or divisional permission

Introduction to the interpretation of construction drawings for residential and light commercial projects, cultivating an understanding of how plans, elevations, sections, and details relate to each other. Students render basic architectural drawings by hand as well as with CAD software, and consistently practice and apply informal sketching techniques. 2 lecture/2 laboratory hours

Required texts/other materials:

Text : PRINT READING FOR CONSTRUCTION Residential and Commercial; Walter C. Brown Daniel P. Dorfmueller 6th ed. 2013 The Goodheart-Wilcox Company
ISBN 978-1-60525-802-7

Other learning resources:

Online web site in text

Last Revised: Fall 2021

Course Coordinator: James Maccariella, maccarij@mccc.edu

Available Resources:

Autodesk Student web site; Free software download

COURSE DESCRIPTION

Construction Graphics introduces students to print reading through a study of the fundamental skills and concepts involved in reading, sketching, and interpreting drawings. Construction drawings include information on construction materials, procedures, specifications, and methods of estimating construction costs. Construction Graphics is an Introduction to the interpretation of Construction drawings for residential and light commercial construction projects through basic architectural drawing by hand with an introduction to CADD software. Students draw plans, elevations, sections, and details to understand how they relate to each other. Informal sketching techniques are practiced and used throughout this course. Also covers analysis, creation, and organization of construction documents. The intent is to enable the student to communicate and express architectural construction information using professional graphic techniques in an efficient manner. An introduction to the principles and techniques of print reading using contemporary prints of Single and multifamily dwellings and small Commercial project plans are covered in the textbook.

Course-specific General Education Knowledge Goals and Core Skills.

- I. To develop the abilities of the student to use the mechanical tools and Computer software to sharpen their visual perception and graphic expression.
- II. To heighten student awareness of the typical problems encountered in construction documentation and the related problems in building construction
- III. To present information applicable to the carpentry, electrical, mechanical, and general building trades, and provide experiences reading contemporary construction documents.
- IV. To present information applicable to project delivery systems, construction professionals, building information modeling (BIM), zoning and permitting, fireproofing, green building technology, sustainable construction, and LEED® certification.

General Education Knowledge Goals

Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

MCCC Core Skills

Goal A. Written and Oral Communication in English. Students will communicate effectively in speech and writing, and demonstrate proficiency in reading.

Goal D. Information Literacy. Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Goal E. Computer Literacy. Students will use computers to access, analyze or present information, solve problems, and communicate with others.

UNIT I– SKETCHING, GRAPHICAL COMMUNICATION *and* INTRODUCTION TO COMPUTER SOFTWARE

Objectives: I, II, III& IV, Goal 4. Goal E

The student will be able to...

Understand the architectural documentation process of *Schematic Design, Design Development, Construction Documentation and Contract Administration.*

Illustrate a proficiently in sketching straight lines and circular lines.

Demonstrate the use of measurement lines and proportions in sketching.

Produce an elevation sketch of a building

Create a *Multi-view* sketch of the *TOP VIEW, FRONT, and RIGHT SIDE* of a 3d object.

Create an *Isometric* sketch of the same 3d object.

Use the CAD interface and a keyboard, and mouse to construct drawing information into a computer.

Describe and use the basic terms, concepts, and techniques of computer-aided drafting

Set up drawings, use drawing aids, save drawings, and get help when needed

Draw lines, basic shapes, and geometric constructions, and edit drawings

Place text on drawings and insert and edit tables.

Use display options to increase drawing flexibility

Use proper drafting standards and practices for dimension drawings and use dimension styles properly.

Create multi-view layouts and plot drawings

Unit 2: Introduction to Print Reading:

Construction Drawing Organization; Math; Reading Measuring Tools and Using Scales

Objectives I& II, Goal 2

The student should be able to:

Identify what is included in a set of construction drawings.

Convert between improper fractions and mixed numbers.

Add, subtract, multiply, and divide decimal fractions.

Calculate dimensions Calculate areas and volumes of objects.

Relate math to construction problems.

Identify the drawing scale of a print

Read dimensions on a print

Make measurements using an architect's and or engineer's scale

Unit 3: Print Reading Basics

Lines and Symbols; Fundamental Drawing Practices; Specifications and Building Codes

Objectives I& II, Goal 4

The student should be able to:

Identify the common types of lines used on prints.

Match drawing symbols with their meanings.

Visualize orthographic views of objects and structures.

Identify the different types of building views shown in construction drawings.

Identify standard dimensioning practices used on construction drawings.

Describe the dimensioning methods used for building features on different drawing types.

Unit 4: Specifications and Building Codes

Construction Materials—Types and Uses

Objectives II, III & IV, Goal 2,3; Goal D

The student should be able to:

Identify a variety of basic materials used in construction.

Identify the basic components of concrete.

Describe different types of masonry brick, block, and mortar.

Classify wood as hardwood or softwood.

Recognize different structural steel shapes.

Describe various types of glass, plastics, and insulation.

Identify symbols representing materials on a drawing.

Explain the fundamentals of green building construction.

Unit 5: Reading Prints

Site Plans; Architectural Drawings; Foundation Prints and Residential Framing Prints

Objectives II & III, Goal 2,3; Goal D

The student should be able to:

Recognize common features of site plans, Identify property line descriptions and Explain the difference between True North and Plan North.

Read contour lines on a site plan and Plot topography sections

Identify the types of drawings classified as architectural drawings.

List different types of floor plans used in construction projects.

Describe the purpose of elevations, sections, and details.

Identify materials specified on architectural drawings.

Interpret construction requirements specified on architectural drawings.

Identify footings on a foundation plan.

Describe different types of foundation support systems.

Identify various components of a foundation system.

Recognize various types of concrete floor systems.

Recognize reinforcing steel on prints and Understand concrete reinforcing notation.

Read beam and column schedules.

List the differences between heavy framing and light framing.

Recognize the construction of various floor, wall, and roof framing systems.

Read framing drawings.

Explain the differences between platform, balloon, and post-and-beam framing.

Understand stair details and terms.

Unit 6: Plumbing Prints; HVAC Prints and Electrical Prints

Objectives II & III, Goal 2,3; Goal D

The student should be able to:

Identify various piping systems.

Recognize plumbing fixture symbols on prints.

Explain the three stages of plumbing installation.

Read a piping diagram.

Identify the purpose of HVAC systems.

Explain different types of heating and cooling systems.

Identify HVAC symbols on prints.

Identify electrical symbols.

Explain various electrical terms.

Recognize different types of electrical drawings.

II. EVALUATION

Each Graphics assignment or project will be evaluated on completeness, appearance, compliance, and effort displayed. Line work and lettering will weigh heavily as they greatly affect appearance.

Compliance with directions and effort shown by good work turned in when due and evidence of research will lead to the better grades. Completeness and the use of proper graphic techniques will be taken as evidence of understanding. 20%

Short word tests will be given each week which will cover other material, terms, definitions, and items presented in lecture or assigned from the texts or accompanying literature. 10%

- Quizzes and print reading activities are given at the end of each chapter or section. Quizzes from text are due at the beginning of class as assigned. Print reading activities are done in lab with instructor. Missed work because of student absence may be turned in next class and will be recorded at half the points. Total points from Quizzes and activities will be 50% of your grade.

- Final Examination: a comprehensive final examination of 60-100 questions relating to a set of construction drawings will be given over the last two classes. The final will be 15% of your grade.

Final Grade Calculation: Your final grade will be calculated by averaging all of your grades and weighing them as indicated above. Attendance is 5% of the grade.

Incomplete Grade:

The grade of incomplete (I) will only be considered for special circumstances only. All assignments, projects and examinations shall be completed prior to the final examination or a grade of "I" will be assigned. It is the student's responsibility to contact the instruction and arrange the completion of an incomplete or a grade change.

Additional Resources & Supplies

Quantity Item Description

1- 30-60 Degree Drafting Triangle (Minimum 10" Length for Long Side)

45 Degree Drafting Triangle (Minimum 10" Length for Perpendicular Sides)

Architectural Scale triangular type

Mechanical or regular pencil (Choose whichever you are comfortable

Using. If you opt for a mechanical pencil, get extra leads)

Eraser (Recommend either white vinyl or hi-polymer)

Eraser Shield (Recommend metal versus plastic)

1 usb thumb drive or digital storage device.

V. Academic Integrity Statement:

Students are expected to comply with the college-wide requirements for academic integrity. Mercer County Community College is committed to Academic Integrity—the honest, fair, and continuing pursuit of knowledge, free from fraud or deception. This implies that students are expected to be responsible for their own work. Presenting another individual's work as one's own and receiving excessive help from another individual will qualify as a violation of Academic Integrity. The entire policy on Academic Integrity is located in the Student handbook and is found on the college website (http://www.mccc.edu/admissions_policies_integrity.shtml).

VI. Special Needs Students Statement

Mercer County Community College is committed to ensuring the full participation of all students in all activities, programs and services. If you have a documented differing ability or think that you may have a differing ability that is protected under the ADA and Section 504 of the Rehabilitation Act, please contact Arlene Stinson in LB 216 stinsona@mccc.edu for information regarding support services. If you do not have a documented differing ability, remember that other resources are available to all students on campus including academic support through our Academic Learning Center located in LB 214.