



## **COURSE OUTLINE**

CIV234  
Course Number

Specifications & Estimates  
Course Title

2  
Credits

1/2  
Lecture/Laboratory Hours

### **COURSE DESCRIPTION**

Involves the study of construction documents and methods of producing a job estimate. The general, special, and technical sections of the documents are studied in depth. Students prepare several technical sections and cost estimates for a small commercial or industrial building. Spring offering.

Text (s):      **Reference Division Booklist**

Prerequisites: **ABT104 or permission of instructor**

**Course Coordinator: John Santosuosso**

**Latest Review: Spring 2007**

## **I. GENERAL OBJECTIVES:**

- A. To prepare a student for some of the major tasks he will be expected to perform in the office of a Professional Engineer or Architect.
- B. To familiarize the student with the various parts and aspects of compiling a complete set of Construction Documents.
- C. To get the student to proceed under his own initiative to investigate, locate, and record facts, figures, and methods by, or with which, actual work may proceed and be properly directed.
- D. To make the student aware of the legal ramifications of the specifications and to compile the articles in a logical manner as used in the trade.
- E. To indoctrinate the student in methods of take-off procedures and mensuration from a set of plans.
- F. To familiarize the student with the methods used to obtain a reasonable cost estimate and be aware of some current cost figures.
- G. To sensitize the student to the cost of construction and have he/she become aware and more critical of methods and materials used in his designs.
- H. To have an understanding of the proper language and use of master specifications available in the trade.

## **II. SPECIFIC OBJECTIVES:**

### **UNIT I: CONSTRUCTION DOCUMENTS**

- A. State and define the four items required to make a legal contract.
- B. List the various parts that make up a Project Manual.
- C. Be capable of indicating the content and intent of the various Documents found in the Project Manual.
- D. Locate necessary information needed to set up a Document.
- E. Describe the legal aspects between the contract Drawings and the Specifications.
- F. Demonstrate in writing the more general types of specifications.
- G. Find in manufacturers catalogs information needed to write descriptive specs.
- H. Show this knowledge of how to locate and refer to the more standard code specifications.
- I. Demonstrate the proper use of accepted specifications language and punctuation.
- J. Produce a proper "Invitation-to bid" letter.

### **UNIT II: WORKING SPECIFICATIONS**

The student should be able to:

- A. Name and describe the various divisions of the Uniform System.
- B. Describe the methods by which specifications can be cataloged and numbered.
- C. Place a material or method specification under its proper place in the proper division.
- D. Name the three recommended parts of a section format.
- E. Set up a complete specification section for a small operation by using ready written material.
- F. Write a complete specification section for simple operation and material selection.
- G. Edit a set of master specifications for a real project.

### **UNIT III: AGENDA, CHANGE ORDERS, AND REPRODUCTION**

The student should be able to:

- A. Define alternates.
- B. Define and write addenda.
- C. Write change orders and describe where and how they should be used.
- D. Tell about the various methods used for the reproduction of specifications.
- E. Describe the advantages of using master specs.
- F. Demonstrate the two principal ways to describe materials in a master.
- G. Describe an architectural specification.
- H. Produce a set of specifications for a small industrial, residential or commercial building or site in a format to be described by the instructor.

### **UNIT IV - COST ESTIMATING**

The student should be able to:

- A. Read a set of construction plans and specifications to glean the information needed to correctly enumerate and evaluate quantities required for performing the work.
- B. Evaluate the drawings and specification with reasonable accuracy as to grade of material either specified or normally required for the various parts of the work.
- C. Pick and use a checklist for an estimate of the project at hand in order to make a quantity list of all items required from a set of plans.
- D. Tabulate these quantities using their proper unit quantities.
- E. Locate the cost per unit and the cost of labor for proper installation.
- F. Make a summary of costs so as to conclude the cost of the labor and/or material for the Project.
- G. Specify the probable rate for contingencies, overhead, profit, and cost of professional services.

### **III. METHOD OF PRESENTATION**

The main method of instruction will be by actually producing a set of specifications and job estimate using actual examples obtained from the industry. Lecture and recitation time will be used to explain these examples and demonstrate methods and techniques which may be used to achieve an acceptable project manual and estimate. Samples will be available for study. The assigned text will be covered and several outside sources of relevant material may be indicated for study.

### **IV. EVALUATION**

Short tests will be given approximately each week on the material covered. No references will be allowed.

A set of specifications for the building or site assigned by the instructor will be required as office practice and be completed by the end of the semester. Parts of this set may be required at an earlier date for review.

A cost estimate of a small structure or site will be required for the final exam. Cost books will be allowed. Cost estimate for the building or site will be required as office practice and will be completed by the last week of class.

All submittals will be judged on neatness, comprehensiveness, detail and understanding. Items or specifications included which do not pertain, or items or specification which by their omission cause serious conditions, will be considered as a lack of understanding.

Students will be required to keep a notebook of all class notes, assignments, quizzes, outside reading and other materials to be handed in at the completion of the course for evaluation of completeness and returned for student's future reference.

## PROPOSED GRADING

Notebook	5%
Quizzes and Assignments	35%
Final Exam	20%
Small Estimating Project	10%
Large Estimating Project	<u>30%</u>
	100%

### 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](http://www.mccc.edu/admissions_policies_integrity.shtml)).

## V. REFERENCE MATERIALS

### Specifications

Asphalt Pocketbook of Useful Information, Series No. 6 (MS-6)  
The Asphalt Institute

Building Contracts for Design and Construction  
Harold D. Hauf, John Wiley & Sons, Inc.

Construction Specifications Handbook  
Hans W. Meier, Prentice Hall

Construction Specifications Writing  
H. J. Rosen, John Wiley

Contracts, Specifications, and Law for Engineers  
C. W. Dunham, McGraw Hill

Engineering Contracts and Specifications  
Robert W. Abbott, John Wiley & Sons, Inc.

Practical Legal Advice for Builders & Constructors  
E. E. Colby, Prentice Hall

Principles of Specifications Writing  
H. J. Rosen, Reinhold Publishing Corp.

Specifications  
H. G. Edwards, D. Van Nostrand Co., Inc.

Specifications Writing for Architects and Engineers  
N. Harris, McGraw Hill

Sweet’s Catalogs  
McGraw Hill

**VI. REFERENCE MATERIALS (cont'd)**

**Estimation**

Building Construction Cost Data  
R. S. Godfrey, Means Co., Inc.

Building Construction Estimating  
Alonzo Wass, Prentice Hall

Building Cost File  
McKee-Berger-Mansuto

The Building Estimator's Reference Book  
McLurg-Shoemaker, Frank & Walker Co.

Concrete & Formwork  
T. W. Love, Craftsman Book Co.

Construction Estimates and Costs  
H. E. Pulver, McGraw Hill

Don Graf's Data Sheets  
Don Graf, Reinhold Publishing Corp.

Estimating for the Building Trades  
Steinberg-Stemple, American Technical Society

Fundamentals of Construction Estimating and Cost Accounting  
Keith Collier, Prentice Hall

Handbook of Bidding, Surveying and Estimating  
Ben Benson, Prentice Hall

Mechanical Estimator's Handbook  
Charles S. Wood, Craftsman Book Co.

National Construction Estimator  
Gary Moselle, Craftsman Book Co.

National Repair and Remodeling Estimator  
Albert S. Paxton, Craftsman Book Co.

The Practical Lumber Computer  
Merritt Moselle Craftsman Book Co.

Practical Rafter Calculator  
Gary O. Rufus, Craftsman Book Co.

**REFERENCE MATERIALS** (cont'd)

**Codes**

ASTM Standards in Building Codes

ASTM

BOCA Basic Building Code

Building Officials & Code Administrators International Inc.

Construction Safety Code

N. J. Department of Labor and Industry

Construction Specifications for Asphalt Concrete & Otho Plant-Mix Types

The Asphalt Institute

Fire Resistance Ratings

National Board of Fire Underwriters

Industrial Ventilation

SMACNA

Minimum Property Standards

FHA

National Electrical Code

National Fire Protection Association

National Plumbing Code

ASME

Occupational Safety and Health Standards

Federal Register, U. S. Department of Labor

Fire Protection Handbook

NFPA

Electronic Sweet's

CD-ROM