

SPRINGFIELD TECHNICAL COMMUNITY COLLEGE

ACADEMIC AFFAIRS

Course Number: CIVL 420 Department: Civil Engineering Technology

Course Title: Construction Management Semester: Spring Year: 1999

Objectives/Competencies

Course Objective	Competencies
1. To develop an understanding of the basic management concepts associated with operating a small construction contracting business. 2. To develop an understanding of the three principle forms of business organization and their advantages and disadvantages.	1. Explain the five principle functions of the management cycle: plan, staff, organize, direct and control as they relate to the construction process. 2. List the significant role of the construction industry in the nation's gross national product. 3. Explain the significant reasons for the high rate of construction contracting business failures and the recommended remedies for these reasons. 1. List the advantages and disadvantages of the sole proprietorship, the partnership and the corporation regarding: creation, licensing requirements, ownership, owner liabilities, power, taxation, operating responsibilities, and termination. 2. Explain limited partners and silent partners. 3. Explain the differences between common and preferred stock. 4. Demonstrate the ability to read the stock quotations for

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<p>3. To develop a thorough understanding of the entire contract bidding process from estimates to bidding to final awarding of the contract.</p>	<p>individual stocks and mutual funds.</p> <p>5. Define foreign corporation as it relates to the construction industry within the United States.</p> <p>6. Define the advantages of an S Corporation form of business organization.</p> <p>7. Explain what a joint venture is and why they are commonly found within the construction industry.</p> <p>8. Demonstrate an understanding of how business organizations are developed to meet company objectives and how they are organized functionally and for communication purposes along staff/line relationships.</p> <p>1. Explain the differences between a lump sum estimate and a unit price estimate.</p> <p>2. Explain the role and responsibilities of an architect/engineer on the development and implementation of a construction project.</p> <p>3. Explain the methods that are used to advertise a major construction project, how and when bid invitations are used, how bids are reviewed for acceptability, and the process of awarding a contract.</p> <p>4. Explain the differences and give examples of ownership costs and operating costs as they relate to equipment ownership.</p> <p>5. Explain what alternates are and how they are used within the competitive bidding process.</p> <p>6. Define and explain the significance of bid bonds.</p>

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<p>4. To familiarize the student with the development and interpretation of project specifications.</p>	<ol style="list-style-type: none"> 7. Define addenda and explain who develops them and their significance within the bidding process. 8. Explain cost plus types of contracts and their advantages and disadvantages. 9. Explain liquidated damages as they relate to the contractor and the completion of a construction project. 10. Explain change orders, how they are prepared and issued, and their significance to contractor, owner, and surety company. <ol style="list-style-type: none"> 1. Demonstrate a working knowledge of the plans, the general specifications and the special conditions of a major contract. 2. Explain standardized drawings and how they are successfully utilized primarily on horizontal type construction projects. 3. Define the role of the American Institute of Architects in the development of project specifications and the specifications format.
<p>5. To learn the role of contract surety bonds on construction projects.</p>	<ol style="list-style-type: none"> 1. Explain performance bond and how it provides protection to the owner of a construction project. 2. Explain payment bond and how it provides protection to the owner of a construction project. 3. Explain the role of a surety company within the construction industry. 4. Explain how the owner of a project obtains a completed

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<p>6. To learn the insurance requirements for a contracting firm, those mandated by law and those considered necessary to protect business and personal assets.</p>	<p>project after the contractor defaults.</p> <ol style="list-style-type: none"> 1. Explain in detail, including who pays for it, what agency controls the requirements, and what the coverage is designed to provide, for: <ol style="list-style-type: none"> a. Workman's compensation insurance. b. Unemployment insurance. c. Automobile insurance. d. Old Age Survivors and Disability insurance. 2. Explain the various coverages for: <ol style="list-style-type: none"> a. Builder's Risk insurance. b. Owner's liability insurance. c. Umbrella excess liability insurance. d. Wrap up insurance. e. Builder's liability insurance. f. Fidelity insurance. 3. Explain the legal ramifications of: <ol style="list-style-type: none"> a. Hold harmless clause. b. Attractive nuisance.
<p>7. To prepare the student how to draft an income statement and a balance sheet, and interpret the results of those two financial documents.</p>	<ol style="list-style-type: none"> 1. Determine the effect of various financial transactions on income, expenses, assets, liabilities, and net worth. 2. Draw up income statement and balance sheet for a firm given specific sample financial transactions. 3. Demonstrate how to calculate straight line, accelerated and production method rates of depreciation. 4. Determine equipment expense, accumulated depreciation

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<p>8. To understand the basics of the job scheduling and the use of the Critical Path Method.</p> <p>9. To understand the array of federal and state employment statutes as they relate to the contracting firm plus the relationships of union/non-union work forces.</p>	<p>and book value for various pieces of equipment.</p> <p>5. Calculate cash discounts based on "2/10 net 30," "prox net 30," and "2/10 EOM" and AOG, ROG and COD types of shipments.</p> <p>6. Explain how a mechanic's lien protects the contractor and how one is implemented.</p> <p>7. Explain the many different levels of ownership transfer ranging from cash purchases to installment purchases.</p> <p>8. Explain the basic principles of engineering economy including the significance of compounding interest (mortgages), sinking funds, equivalent costs, and amortization of asset purchases.</p> <p>1. Explain "talking the project through" as a means of calculating the interdependencies of the many tasks involved in a complete construction project.</p> <p>2. Explain "early time" and "late time."</p> <p>3. Explain "float."</p> <p>4. Explain and demonstrate how to find the critical path on a construction project.</p> <p>5. Explain how to "crash" the CPM network.</p> <p>1. Explain the key results and implications of the :</p> <p>a. Sherman Anti-trust Act.</p> <p>b. Norris-LaGuardia Act.</p> <p>c. The National Lab Relations Act (Wagner Act).</p> <p>d. The Labor Management Relations Act (Taft-Hartley</p>

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<p>10.To understand the broad requirements of an effective construction project safety program and how OSHA has impacted the construction industry.</p> <p>11.To learn the concepts and methods of scientific and management research, including the written and oral presentation of this research.</p>	<p>Act).</p> <p>e. The Labor-Management Reporting and Disclosure Act (Landrum-Griffin Act).</p> <p>f. The Civil Rights Act of 1964 (Executive Order 11246).</p> <p>g. The Davis Bacon Act.</p> <p>h. Americans with Disabilities Act.</p> <p>2. Briefly describe the history of the AFL-CIO.</p> <p>3. Explain open shop, boycotts, closed shop, arbitration and union steward.</p> <p>1. Explain the Occupational Safety and Health Act (OSHA).</p> <p>2. Explain "unsafe act" and unsafe condition" within the construction work place.</p> <p>3. Develop and explain a complete safety program for a moderate sized construction project (\$6 million).</p> <p>4. Explain the role of management in safety.</p> <p>5. Explain the economic benefits of an effective job safety program.</p> <p>1. Research and develop a technical brief on a management or major construction failure.</p> <p>2. Provide a ten minute classroom oral report on the technical research conducted on this management/construction failure.</p>