

1. Course Number and name

CE 4358 Construction Methods and Materials

2. Credits and contact hours

3 credits hours

3. Instructor's or course coordinator's name

Austin Marshall

4. Textbook

Schaufelberger, John E. and Migliaccio, Giovanni C., Construction Equipment Management. Second Edition, 2019. Rutledge Publishing, ISBN 978-0-8153-5083-4

5. Specific course information

- a. Course Description: This course is designed to give students a working knowledge of the proper use of materials and equipment, equipment selection, leasing vs. owning equipment, and purchasing equipment, and understanding how the proper selection and use of equipment can make or break job profits.
- b. Prerequisites: Bachelor's Degree in Engineering, Physical Sciences or Business
- c. Required course in the program

6. Specific goals for the course:

- a. Specific outcomes include students be able to:
 - an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics to equipment selection and operation problems
 - an ability to apply engineering design to produce solutions allow structures to be built effectively and safely
 - an ability to develop and conduct appropriate analysis and interpret data, and use engineering judgment to draw conclusions regarding construction planning and its effects on profits and job completion timing

7. Relation to the student outcomes: 1,2,6

8. Topics to be covered:

- Time Value of Money, Depreciation
- Stochastic Project Parameters to Consider
- Operating and Ownership Costs
- Earthmoving
- Dozers, Loaders, Scrapers
- Compaction Equipment
- Cranes
- Concrete Equipment

- Shaft Drilling and Pile Driving
- Graders and Pumping Equipment
- Total Job Planning

Prepared by Austin Marshall

1. Course Number and name

CE 4354 Electrical and Mechanical Construction

2. Credits and contact hours

3 credits hours; 3 lecture hours

3. Instructor's or course coordinator's name

Lindsay E. Wagner

4. Textbook

- Janis and Tao. Mechanical and Electrical Systems in Building. Pearson, 5th edition

5. Specific course information

- a. Course Description: This course is designed to give students a working knowledge of requirements for managing mechanical – electrical contracting work.
- b. Prerequisites: Bachelor's Degree in Engineering, Physical Sciences or Business
- c. Required course in the program

6. Specific goals for the course:

- a. Specific outcomes include students be able to:
 - Identify equipment and components of electrical, heating, air conditioning and ventilation systems
 - Describe the relationships between the mechanical, plumbing and electrical systems

- Discuss implications of sustainable building systems on design
- Develop and understand load calculations for an electrical design project
- Develop an understanding for the jobsite inspection process
- Develop an understanding of local codes in reference to the topics of this course
- Understand the basic fundamentals of plumbing, electrical and mechanical systems.
- Effectively communicate with plumbing, electrical and mechanical contractors

7. Relation to the student outcomes: 1

8. Topics to be covered:

- a. Basics
- b. Codes, Standards
- c. HVAC systems
- d. Cooling systems
- e. Heating systems
- f. Air handling systems
- g. Plumbing systems
- h. Fire protection systems
- i. Electrical systems
- j. Communications systems
- k. Lighting systems
- l. Noise, vibration control
- m. Sustainable design, construction