CM360
Construction Management Information Systems
[Onsite]

Course Description:

This course provides a study of computer applications in construction. Topics include project costs control, field data collection and processing, estimating, scheduling and productivity analysis.

Prerequisite(s) and/or Corequisite(s):

None.

Credit hours: 4

Contact hours: 50 (30 Theory Hours, 20 Lab Hours)

SYLLABUS

Instructor: _____

Office hours: _____

Class hours: _____

MAJOR INSTRUCTIONAL AREAS

1. Role of computers in the construction industry
2. Knowledge and information management
3. Computerized estimating
4. Computerized scheduling
5. Web-based solutions in the construction industry
6. Content management systems
7. Online bidding and planning
8. Computer-Aided Design (CAD) applications
9. Construction accounting software
10. Mobile computing
11. Automation and robotics
12. IT implementation

COURSE OBJECTIVES

1. Describe how the use of the Internet, computer networking, and computer applications relate to the construction industry.
2. Analyze how knowledge management is applied in the construction industry.
3. Evaluate the use of computers in the construction estimating process.
4. Evaluate the use of computers in construction scheduling.

5. Analyze the techniques to increase information and knowledge exchange on construction projects.
6. Evaluate the role of Web portals in improving document exchange and collaboration on construction projects.
7. Analyze the role of Content Management Systems (CMSs) in the construction industry.
8. Describe the role of online plan rooms and bidding services in construction.
9. Analyze the application of Computer-Aided Design (CAD) in the construction industry.
10. Analyze the role of software in construction accounting and project cost control.
11. Analyze the use of mobile technology by the construction work force.
12. Analyze how information technology (IT) can be used to automate construction equipment and processes.

Related SCANS Objectives

1. Select a technology to achieve the desired results.
2. Communicate and interpret information.
3. Using computers, acquire, organize, analyze, and communicate information.

TEACHING STRATEGIES

The curriculum is designed to promote a variety of teaching strategies that help achieve the course objectives and foster higher cognitive skills. The delivery of lessons involves the use of various media and tools in the classroom.

To set the context for the course and to motivate the students, the first unit will begin with an overview of the content. It will include activities that will be part of the course and clarify the overall purpose and intent of construction management.

To capture and retain the students' attention, the concepts will be introduced and covered in a variety of ways. These include posing questions to the class, having the class pose questions to be answered in the unit, discussing issues in the class, and providing visual cues using the whiteboard and Microsoft PowerPoint slides.

To facilitate the learning process and to help the students retain information, the concepts covered in the class are linked to personal experience and knowledge. This is done by asking questions about previous experiences and testing the understanding of the previous content.

The overall assessment strategy for this course includes writing assignments, lab assignments, exercises, and the final exam.

COURSE RESOURCES

Student Textbook Package

- Williams, Trefor. *Construction Management Information Systems. Custom Edition. NY: Thomson Delmar Learning, 2007.*

References and Resources

ITT Tech Virtual Library

Log on to the ITT Tech Virtual Library (http://www.library.itt-tech.edu/) to access online books, journals, and other reference resources selected to support ITT Tech curriculums.

- General References

  - > Program Links> Construction Management (CM)> Professional Organizations

  - > Program Links> Construction Management (CM)> Recommended Links

Periodicals

Periodicals> EbscoHost

Journal of Construction Engineering and Management

- Other Resources

Marchman, David, and Tulio *Sulbaran. Scheduling with SureTrak, 2nd ed. Thomson Delmar Learning.*

Christofferson, Jay. *Estimating with Microsoft Excel, 2nd ed. BuilderBooks.com*

EVALUATION & GRADING

COURSE REQUIREMENTS

1. **Attendance and Participation**

   Regular attendance and participation are essential for satisfactory progress in this course.

2. **Completed Assignments**

   Each student is responsible for completing all assignments on time.

3. **Team Participation (if applicable)**

   Each student is responsible for participating in team assignments and for completing the delegated task. Each team member must honestly evaluate the contributions by all members of their respective teams.

Evaluation Criteria Table

The final grade will be based on the following weighted categories:

CATEGORY	WEIGHT
Exercises	20%
Writing Assignments	25%
Labs	30%
Final Exam	25%
Total	**100%**

Grade Conversion Table

Final grades will be calculated from the percentages earned in class as follows:

Grade	Percentage	Credit
A	90-100%	4.0
B+	85-89%	3.5
B	80-84%	3.0
C+	75-79%	2.5
C	70-74%	2.0
D+	65-69%	1.5
D	60-64%	1.0
F	<60%	0.0

COURSE OUTLINE

Unit 1: All the concepts will be covered in the class; therefore, the specified readings are merely for your reference.

For all units, except unit 1: It is recommended that you complete the readings before attending the class.

In a unit, the in-class activities that will be graded under the Exercises evaluation category are specified.

Unit #	Activities for the unit
1–IT and Construction	• Content Covered ○ Chapter 1, "Computers and the Construction Industry," pp. 1-14 • Writing Assignment: 1 • Lab: 1 • Exercises: 1 (Activity 1.4) and 2 (Activity 1.7)
2–Knowledge	• Content Covered

Unit #	Activities for the unit
Management	○ Chapter 2, "Knowledge and Information Management for Construction," pp. 17-29 • Writing Assignment: 1 • Lab: 1 • Exercises: 1 (Activity 2.1), 2 (Activity 2.2), 3 (Activity 2.3), and 4 (Activity 2.4)
3–Computerized Estimating	• Content Covered ○ Chapter 3, "Using Computers for Construction Estimating," pp. 31-47 • Writing Assignment: 1 • Lab: 1 • Exercises: 1 (Activity 3.1) and 2 (Activity 3.2)
4–Computerized Project Scheduling	• Content Covered ○ Chapter 4, "Scheduling and the Computer," pp. 49-69 • Lab: 1 • Exercise: 1 (Activity 4.1)
5–The Internet and Construction	• Content Covered ○ Chapter 5, "Internet-Based Solutions for Small Companies and Projects," pp. 71-88 ○ Chapter 6, "Construction Web Portals–For Large and Complex Projects," pp. 89-107 • Writing Assignments: 1 and 2 • Lab: 1 • Exercises: 1 (Activity 5.2) and 2 (Activity 5.6)

Unit #	Activities for the unit
6–Online Management and Bidding	• Content Covered ○ Chapter 7, "Content Management Systems for Construction Management," pp. 109-132 ○ Chapter 8, "Online Bidding and Online Plan Rooms," pp. 133-144 • Writing Assignment: 1 • Lab: 1 • Exercise: 1 (Activity 6.4)
7–CAD Applications	• Content Covered ○ Chapter 9, "3D, 4D, and 5D CAD Applications in Construction," pp. 145 -164 • Writing Assignment: 1 • Lab: 1 • Exercise: 1 (Activity 7.2)
8–Construction Accounting	• Content Covered ○ Chapter 10, "Software for Construction Accounting and Project Cost Control," pp. 165-177 • Writing Assignment: 1 • Lab: 1 • Exercise: 1 (Activity 8.1)
9–Mobile Technology	• Content Covered ○ Chapter 11, "Construction Applications of Mobile and Wireless Computing," pp. 179-199 • Writing Assignment: 1 • Lab: 1 • Exercises: 1 (Activity 9.1) and 2 (Activity 9.2)

Unit #	Activities for the unit

10–Automation and IT Implementation	• Content Covered
	  ○ Chapter 12, "Automation and Robotics in the Construction Industry," pp. 201-221
	  ○ Chapter 13, "A Roadmap for Construction IT Implementation," pp. 223-229
	• Writing Assignment: 1
	• Lab: 1
	• Exercises: 1 (Activity 10.1) and 2 (Activity 10.3)

11–Review and Final Exam	• Review Units 1- 10 • Final Exam