



Assessment Records

Program: Construction and Building Science Technology

Assessment Period: 2020-2021

Program or Department Mission:

The general mission of the construction program, as contained in the Mission of the College, is to offer programs and activities that reflect those characteristics that help define an educated person. These characteristics include a level of general education that enables the individual to understand his or her culture and environment; the development of skills in analysis, communication, quantification, and synthesis necessary for further growth as a lifelong member of society; the identification of a system of personal values based on accepted ethics that lead to civic and social responsibility; and the attainment of skills that enhance the development of leisure activities and a healthful lifestyle. These characteristics are attained not only through organized courses and programs, but also through a variety of social, cultural, civic and other educational activities that are offered based on the needs of the community.

Course Student Learning Outcomes & Assessment Plan 2020-2021

- SLO 1:** Be able to solve Construction management problems using mathematics, science, and problem-solving skills
- SLO 2.** Function effectively as a team member or as the leader of a team.
- SLO 3.** Possess an understanding of professional and ethical responsibilities present in construction management
- SLO 4.** Be able to communicate effectively using written and verbal assignments
- SLO 5.** Be able to plan, direct and coordinate construction projects

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence	Use of Results
<p>SLO 1: Be able to solve Construction management problems using mathematics, science, and problem-solving skills</p>	<p>CMT 205S Const. Management</p> <p>CMT 206S Const. Estimating</p> <p>Students are given periodic tests and projects to evaluate their abilities in Construction Estimating.</p> <p>Instructor scores Students' with a rubric from 1 to 4.</p>	<p><i>Successful outcome: 70% of Construction and Building Science Students complete this SLO with 70% or better</i></p> <p>Class outcome averages less than 3 will trigger changes in the course content or instruction prior to the next semester.</p>	<p>CMT 205S: Total of number of students enrolled: 9 8 out of 9 students completed the requirements in column 2. The average of the 8= 82.49%.</p> <p><i>88.89% of students completed this SLO with 70% or better outcome.</i> The course student learning outcomes was greater than 3.</p> <p>Total number of students scoring 3 or better (Column 3) = 9 (100%) Class average: 3.20</p> <p>CMT 206S: Total of number of students enrolled: 13 11 out of 13 students completed the requirements in column 2.</p> <p>The average of 11 = 82.80%.</p> <p><i>84.61% of students completed this SLO with 70% or better outcome.</i> The course student learning outcomes was greater than 3.</p> <p>Total number of students scoring 3 or better (Column 3) = 13 (100%) Class average: 3.80</p>	<p>Objectives for SLO 1 was met through CMT 205S and CMT 206S.</p> <p>Students in CMT 205S did so well. While Some of the students passed this course with lower grades, they still were able to performed the requirements for the courses.</p> <p>Supplementary projects will be assigned to students to have a better understand of various Construction Management topics.</p> <p>Students in CMT 206S did remarkably well. Even if Some of the students passed these courses with lower grades, they still were able to performed the requirements for the courses.</p> <p>Extra class projects will be assigned for students to work on Excel Software Program. Therefore, the students will have a better learning process of this software.</p>

<p>SLO 2. Function effectively as a team member or as the leader of a team.</p>	<p>CDT 205 Fundamental of Surveying. periodic field projects are performed by students in order to show their abilities to work as a team member and/or leader in a team.</p> <p>Instructor scores Students' SLOs from 1 to 4.</p>	<p>Successful outcome: 70% of Construction and Building Science Students complete this SLO with 70% or better.</p> <p>Class outcome averages less than 3 will trigger changes in the course content prior to the next semester.</p>	<p>CDT 205: Total of number of students enrolled: 14 12 out of 14 students completed the requirements in column 2. The average of the 12 successful students is 84.33%.</p> <p>85.71% of students completed this SLO with 70% outcome or better.</p> <p>The course student learning outcomes was greater than 3.</p> <p>Total number of students scoring 3 or better =12 Class average: 3.30</p>	<p>Objectives for SLO 2 was met through CDT 205.</p> <p>Students in CDT 205 did really well. While Some of the students passed these courses with lower grades, they still were able to performed the requirements for the courses.</p> <p>More Field Project will be assigned as additional work for students to work more accurately in the field with their teammates.</p>
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<p>SLO 3. Possess an understanding of professional and ethical responsibilities present in construction management</p>	<p>CMT 156 Contracting and Const. Law</p> <p>periodic projects and exams are performed by students in order to show their abilities to understand and work in an Ethical Construction environment.</p> <p>Instructor scores Students' SLOs from 1 to 4.</p>	<p>Successful outcome: 70% of Construction and Building Science Students complete this SLO with 70% or better.</p> <p>Class outcome averages less than 3 will trigger changes in the course content prior to the next semester.</p>	<p>CMT 156:</p> <p>Total of number of students enrolled: 15</p> <p>12 out of 15 students successfully completed the requirements in column 2. The average of the 12 successful students is 86.45%.</p> <p>80.00% of students completed this SLO with 70% outcome or better.</p> <p>The course student learning outcomes was greater than 3.</p> <p>Total number of students scoring 3 or better (column 3)</p> <p>Class average: 3.20</p>	<p>Objectives for SLO 3 was met through CMT 156.</p> <p>Students in CMT 156 did very well. Even though Some of the students passed this course with lower grades, they still were able to achieved the requirements for the courses.</p> <p>Opportunities will be granted for students in other construction course subjects to discuss Ethics in Construction Industry. Outside speakers may be invited to the class in order to familiarize students with Ethics in construction in real world industry.</p>
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<p>SLO 4. Be able to communicate effectively using written and verbal assignments</p>	<p>CMT 161 Introduction to Sustainable Construction Term project is assigned that requires the students to turn in a written research project and to present it in front of the class.</p> <p>Instructor scores Students' SLOs from 1 to 4.</p>	<p>Successful outcome: 70% of Construction and Building Science Students complete this SLO with 70% or better.</p> <p>Class outcome averages less than 3 will trigger changes in the course content prior to the next semester.</p>	<p>CMT 161: Total of number of students enrolled: 18 15 out of 18 students successfully completed the requirements in column 2. The average of the 15 successful students is 83.24%.</p> <p>83.33% of students completed this SLO with 70% outcome or better.</p> <p>The course student learning outcomes was greater than 3.</p> <p>Total number of students scoring 3 or better (column 3) Class average: 3.40</p>	<p>Objectives for SLO 4 was met through CMT 161.</p> <p>Students in CMT 161 did well. While very few students passed this course with lower grades, they still were able to execute the requirements for the courses.</p> <p>More presentations' visual aids will be required from students. Also, additional time will be assigned to class presentations. Plans may also include inviting outside individuals to sit on students' presentations.</p>
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<p>SLO 5. Be able to plan, direct and coordinate construction projects</p>	<p>CMT 217 Software Applications in Construction Various project and exams are given by the instructor periodically throughout the course.</p> <p><u>Instructor scores Students' SLOs from 1 to 4.</u></p>	<p>Successful outcome: 70% of Construction and Building Science Students complete this SLO with 70% or better.</p> <p>Class outcome averages less than 3 will trigger changes in the course content prior to the next semester.</p>	<p>CMT 217: Total of number of students enrolled: 12 12 out of 12 students successfully completed the requirements in column 2. The average of the 12= 81.30%.</p> <p>100% of students completed this SLO with 70% outcome or better. The course student learning outcomes was greater than 3 for this SLOs.</p> <p>Total number of students scoring 3 or better (column 3) Class average: 3.22</p>	<p>Objectives for SLO 5 was met through CMT 217.</p> <p>Students in CMT 217 had an excellent outcome. 100% of students performed the requirements for the courses.</p> <p><u>Even though students did well in this class, plans may include inviting guests from local construction companies to critic students class projects.</u> <u>Furthermore, let these individual guests relate the students' Construction Scheduling Projects with actual construction project schedules.</u></p>
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<p>Submission date: December 12, 2021</p>	<p>Submitted by: Mike Safavi</p>
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SLO 1: Be able to solve construction management Problems using mathematics, science, and problem-solving Skills.

CMT 205S Tests and Projects

Mid-Term Exam

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Name: _____ CMT205S - Construction Management

Date: _____ Instructor – Mike Safavi, AIC, CPC

1. List the parties involved in any Construction Project (a, b, c). Which Party identifies a need for a facility project (d)? (12 pts.)

a. _____ b. _____ c. _____

3 pts. 3 pts. 3 pts.

d. _____

3 pts.

2. Name the project phase announcing to prospective bidders that the design documents are available for consideration and that the owner is ready to receive bids. (6 pts.)

3. List two types of Bonds that owner may requires the contractor to submit along with the bid package. (8 pts.)

a. _____

b. _____

4. A set of Design Document consists of: (8 pts.):

a. _____

b. _____

5. Distinguish between “Notice to Proceed” and “Letter of Intent”. (10 pts.)

Notice to Proceed: _____

Letter of Intent: _____

6. Distinguish between “Change Order” and “Addendum”. (10 pts.)

Change Order: _____

Addendum: _____

7. List two types of Construction Contracts. (10 pts.)

a. _____ b. _____

8. Briefly explain a Changed Condition. Which part is responsible for any extra costs in this situation? (10 pts.)

9. Briefly explain Value Engineering in a construction contract. (10 pts.)

10. Explain Time Extension in a construction contract. List two situation which a contractor may request Time Extension during construction. (9 pts.)

a. _____ b. _____

11. Briefly explain how Acceptance Period (60-90 days) in a bid procedure period protects the Owner and, the Contractor as well. (7 pts.)

End of the Test

CMT 205s
Construction Management
Final Project

All proposals must be type written and neatly presented in a folder.

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You have graduated with a degree in Construction Management.
Congratulations!

Years down the road, as you love your field and working hard to succeed in your career. With your hard work, you are learning to be a great manager. After a few Real Estate transaction, you now have \$320,000.00 cash in the bank. You are sure if you could have \$1,000,000.00 in capital assets, you could use your work and managerial skills and establish a successful construction company. The industry is optimistic and you are competent in your abilities and goals. However, you need to present convincing answers to the following questions in order to promote your business idea to the interested parties:

- 1) You must have a name for your construction company.
- 2) What type of construction are you going to do (i.e. Single Family Residential, Multi-Family, Commercial, Industrial, etc.)?
- 3) What is the Business Plan for your company?
- 4) What cost range of projects will your company be performing?
- 5) Establish a Legal Structure for your company. Show the responsible key players and their hierarchy in your company.
- 6) List and explain all the solid advantages in choosing this specific legal structure versus other types.
- 7) Show tables, figures, salaries, or percentages which you recommend disbursing the monthly income of your company among the key player.
- 8) Your company requires equipment. List and describe what type of equipment you are going to purchase.
- 9) Since your company owns equipment; what method of depreciation are you going to use for these equipment. What are advantages for using this specific method vs. other methods?

ALL ABOVE QUESTIONS MUST BE SUPPORTED BY NUMBERS WHERE REQUIRED.

**Jefferson State Community College - CBST Department - Course Student Learning Outcomes (SLO)
Instructor Class Evaluation**

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CMT 205S - CONSTRUCTION MANAGEMENT

	Instructor Name	The student understands the construction management topics of project delivery methods, contract pricing, subcontracting, and material management.	The student understands the Bidding Process, submittals, project start-up, field questions, and progress payments.	The student understands the construction management topics of safety plans, change orders, and project delivery.	The student understands the different types of Legal Structure for a company. The student is able to analyze the pros and cons for such legal structures.	The student understands equipment depreciation methods and is able to calculate equipment depreciation.	Student Average	Final Grade (A,B,C,D,F)
1	Mike Safavi, AIC, CPC							
2	Instructor Name							
3	Semester							
4	Course CRN Number							
5	Student Name							
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Average class SLO #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0!

Use this chart to complete the student learning outcome evaluation for each of your students.

1=low comprehension 4=high comprehension

Please return this form to the Program Coordinator at the end of each semester

SLO 1: Be able to solve construction management Problems using mathematics, science, and problem-solving Skills.

CMT 206S Tests and Projects

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Jefferson State Community College Construction and Building Science Technology CMT 206 Construction Estimating												Page No.:		
												Sheet No.:		
												Date:		
												By:		
Project: Class Project		Quantity Sheet								FOR: MIKE SAFAVI				
Material Description: As per Required														
Division:														
REF #	Description	L	W	D	QT.	Total	Unit	Mat.	Labor	Equip.	Cost/Unit	Total Raw Cost	O&P	TOTAL Incl. O&P
EXCAVATION:														
	FOOTINGS:	56.67	1.33	0.67	2.00	101.00	C.F.							
	FOOTINGS:	22.01	1.33	0.67	3.00	58.84	C.F.							
	FOOTINGS:	4.00	1.33	0.67	2.00	7.13	C.F.							
	FOOTINGS:	19.33	1.33	0.67	1.00	17.22	C.F.							
	FOOTINGS:	2.00	2.00	0.83	3.00	9.96	C.F.							
	Total					7.19	C.Y.	8.27			\$115.00	\$950.98		
Re-inforcements:														
	Footing Re-bar	102.01		1.5	2	306.03	lbs.				\$0.88	\$269.31		
	slab on grade re-inforcement:	12	24			288.00	S.F.				\$0.38	\$108.29		
	slab on grade re-inforcement:	21.33	4			85.32	S.F.				\$0.38	\$32.08		
CONCRETE:														
	FOOTINGS Concrete:					8	C.Y.	\$99.00	\$16.30	\$5.20	\$120.50	\$964.00		
	Slabs:	12	24	0.33	1	95.04	C.F.							
	Slabs:	21.33	4	0.33	1	28.16	C.F.							
	Total Slabs Concrete:					5.00	C.Y.	\$119.00	\$64.00	\$0.55	\$183.55	\$917.75		
	Slab finishing:	12	24			288.00	S.F.		\$0.57	\$0.03	\$0.60	\$172.80		
	Slab finishing:	21.33	4			85.32	S.F.		\$0.57	\$0.03	\$0.60	\$51.19		

Jefferson State Community College - CBST Department - Student Learning Outcomes - Instructor Class Evaluation

CMT 206s - CONSTRUCTION ESTIMATING

Learning Outcome

Mike Safavi, AIC, CPC Instructor Name	The student understands the general methods and procedures that form the basis for an effective estimating system.	The student can make quantity surveys from working drawings and specifications.	The student can develop unit costs for specific segments of a building project.	The student understands how to include subcontractor costs in the overall project estimate.	The student understands the major considerations involved in the total pricing of a construction project.				Student Average	Final Grade (A,B,C,D,F)
Semester										
Course CRN Number										
Student Name										
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
Class Average	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Use this chart to complete the student learning outcome evaluation for each of your										
Please give a score of 1 to 4										
1=low comprehension 4=high comprehension										
Please return this form to the Program Coordinator at the end of each semester										

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SLO 2. Function effectively as a team member or as the leader of a team.

CDT 205 Tests and Projects

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Field Project

Jefferson State Community College
Construction and Building Science Technology

CDT 205 – Fundamental of Surveying

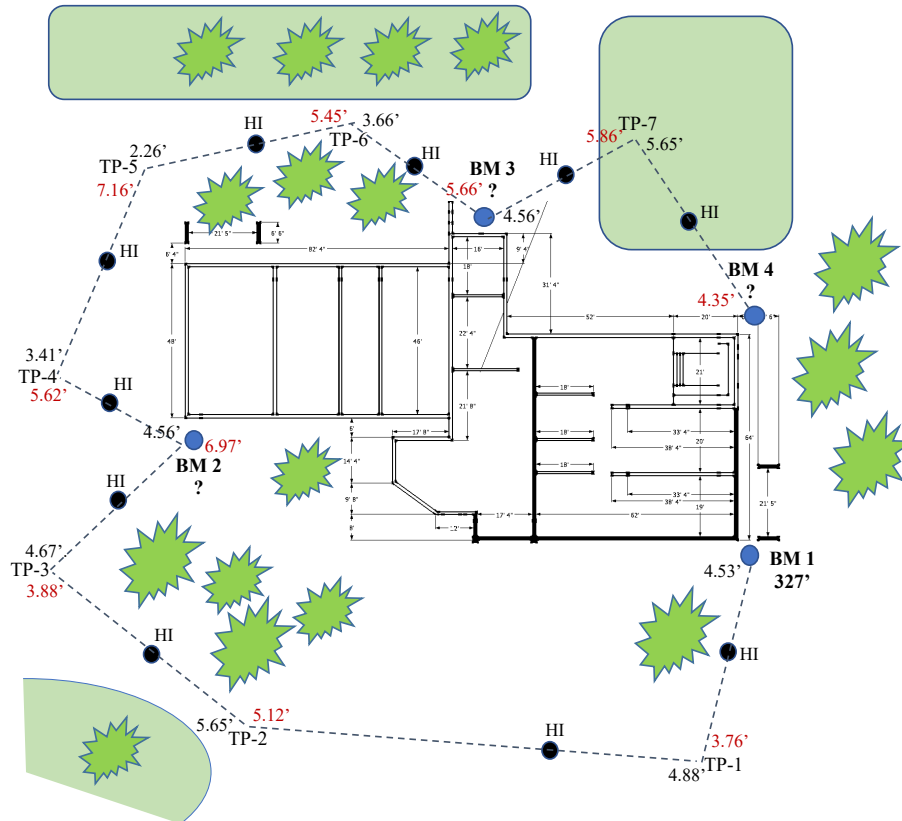
Instructor: Mike Safavi, AIC, CPC

Summer 2020

Due date: Monday, July 20, 2021

Name: _____

Use these BS and FS (in red) from the Builder's Level Transit and find the elevations for each Benchmarks (BM-2, BM-3, and BM-4). What is the differential elevation between BM 1 and BM 4?



Students must work as teams to do this field project



Jefferson State Community College - CBST Department - Course Student Learning Outcomes (SLO)

CDT 205- Fundamentals of Surveying

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Mike Safavi, AIC, CPC Instructor Name		The student is familiar with surveying instruments.	The student proficiently operates surveying equipment.	The student is knowledgeable of the correct manner for entering data in the field notebook.	The student understands the math. of surveying necessary to solve taping, transit, traverse and elevation calculations.	The student is able to layout a simple building using building dimensions and surveying notes.	The student is able to work as a team in a survey party.	Student Average	Final Grade (A,B,C,D,F)
Semester									
Course CRN Number									
Student Name									
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
Class Average		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Use this chart to complete the student learning outcome evaluation for each of your students.									
Please give a score of 1 to 4									
1=low comprehension 4=high comprehension									
Please return this form to the Program Coordinator at the end of each semester									

SLO 3. Possess an understanding of professional and ethical responsibilities present in

Construction Management.

CMT 156 Tests and Projects

Ethics Literature

Introduction

In this chapter, we will examine some of the ethical situations that one may encounter in the procurement of a construction contract or in the development of a bid or proposal for a construction project in response to a project owner's solicitation. Documents and bidding ethics is about the basic concepts and fundamental principles of decent business conduct on or before the submission of a bid or proposal.

Competitive bidding is one form of contract procurement that a project owner may use to select a general contractor for a construction project. In this process, a project is described in the bid documents, and prospective contractors are requested to submit bids or prices to construct the described project. Since price typically is the criterion used for award of bid contracts, the bidding process is seen as a "market driven" process in which the lowest bid represents the "best value."

During the bidding process, the project owner and project designer usually conduct a pre-bid meeting with prospective bidders and subcontractors to address any issues that they have identified as a consequence of reviewing the contract documents. At the conclusion of the pre-bid meeting, the project owner collects the issues identified by prospective bidders and subcontractors and provide responses to all prospective bidders in the form of a contract addendum. This use of contract addenda ensures that all prospective bidders are using the same project information when developing their bids and ensures fairness and equitable treatment of all prospective bidders during the bidding process.

Project owners may choose to select a general contractor for a project by requiring prospective general contractors to submit competitive bids or to submit proposals for a negotiated selection process. Competitive bids may be submitted on a lump-sum or unit-price basis or a combination of both. Negotiated proposals may use the same methods of pricing, or often may use a cost-plus approach in which most direct project costs are reimbursable and other contractor costs are included in the fee. Ethical issues can occur during both procurement processes as we will discuss in this chapter.

When developing bids or cost proposals to submit to project owners, the general contractors decide which scopes of work they will perform

Documents and Bidding 9

with their own work forces and which scopes of work will be subcontracted to specialty contractors. The subcontracted scopes of work are organized into subcontract bid packages, and prospective subcontractors are invited to submit quotations for each subcontract bid package. The

general contractors evaluate the subcontractor quotations and decide which ones to select as a part of their bid or proposal preparation process. Subcontracts are not awarded, however, until the general contractor receives the contract from the project owner.

There are many legal issues associated with the contract procurement process, such as the contractors meeting to discuss their bids and deciding which one would submit the lowest bid or contractors offering bribes to be selected. None of these legal issues are addressed in this chapter. We will restrict our discussion solely to ethical issues that may occur during the contract procurement process.

Introductory Case Study

A project manager for Acme Construction reviewed the construction drawings and specifications for the construction of a shopping center prior to attending a pre-bid job site tour. During the review, the project manager identified two errors in the elevations provided in the drawings. During the site visit, the project manager asked the project architect about the elevation errors and was provided the correct information. However, the project owner did not issue an addendum to all prospective bidders making the elevation corrections to the project drawings. Were the project owner's actions ethical?

The site work associated with the project was unit priced, because a portion of the site contained contaminated soil that needed to be removed and replaced, additional fill material needed to be imported, and a large asphalt parking lot constructed. In addition, major utilities were to be installed on the site. During the review of the contract drawings, Acme Construction's estimator determined that the quantity shown on the unit price bid sheet for asphalt pavement was considerably less than what would be required for completing the project. The estimator decided not to notify the project owner and to inflate the unit price for the asphalt bid item because of the anticipated overrun. Was the estimator's action ethical?

10 Documents and Bidding

Quotations were solicited from six prospective electrical subcontractors for the project. The lowest quotation was submitted by Northern Lights Electrical Contractors, but the project manager preferred to work with West Coast Electric. The project manager contacted the owner of West Coast Electric and provided the quotation received from Northern Lights and told West Coast that they could have the job if they revised their quotation to a value less than that submitted by Northern Lights. Was the project manager's action ethical?

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The shopping center structure was to be constructed of steel. Acme's estimator solicited quotations from three steel suppliers for the project. The estimator was concerned both about the cost of the steel and the ability of the suppliers to meet the required delivery dates established in the preliminary construction schedule. Continental Steel submitted the lowest quote but did not guarantee that they could meet the required delivery dates. The salesman for the steel supplier indicated to Acme's estimator that if Continental Steel received the supply contract they would host the estimator to a fishing trip. What should the estimator do in this situation?

Ethical Challenges

Ethical Challenge: Errors in Project Documents

The bidding instructions given to prospective bidders on a project typically require that the bidder consider all conditions described in the contract documents and all conditions that can be observed by physically visiting the site. Liability for hidden conditions not described in the documents or in a soils report typically is the responsibility of the project owner. These would include buried utility lines not shown on the drawings or contaminated soil not described in the documents.

During a pre-bid conference on the job site, representatives of the project designer and the project owner are present to describe the project and collect inquiries from prospective general contractors and subcontractors regarding the contract documents. To ensure that everyone who participates in the bidding process has the same information, the project owner should collect all of the questions and issue a contract addendum *Documents and Bidding 11* providing appropriate responses to each question. From the perspective of the justice approach, it is unethical to provide answers only to the party who asked the questions. Even though the issuance of a contract addendum late in the bidding process may necessitate delaying the receipts of bids, it is the ethical responsibility of the project owner to do so. It may also negate the need to issue a change order after the contract has been awarded.

Ethical Challenge: Bid Shopping

Bid shopping occurs when general contractors disclose to prospective subcontractors the price quotations received from competing subcontractors. The intent is to encourage subcontractors to lower their prices. Again, based on the justice approach, this is considered unethical because it discloses information that is confidential, and not available equally to all bidders. A likely result is subcontractors refusing to work with general contractors who use this practice. The subcontractors are being asked to provide their best price for a specific scope of work, and they provide the

price to the general contractor with the expectation that their price will not be shared among their competitors. Often subcontractors' quotations contain lists of specific inclusions and specific exclusions, which means that the scope of work addressed by each subcontractor may vary. This requires the general contractor to carefully evaluate each quotation and select the ones that provide the best value to the general contractor. Another form of bid shopping that is unethical is when a general contractor uses the quotation of one subcontractor in their bid, but selects a different subcontractor to perform the work. For example, suppose Allied Construction Company is developing a bid for the construction of a high school and solicits quotations for the electrical work associated with the project. Capital Electric submits the lowest quotation for the electrical work, and their price is used by Allied in preparing their bid to submit to the project owner. Allied receives the contract for construction of the high school, but instead of awarding the subcontract for the electrical work to Capital Electric, they contact Southwest Electric and offer them the subcontract if they will do the work for less than the price submitted by Capital Electric. This sharing of Capital Electric's proposed price *12 Documents and Bidding* with another subcontractor is considered a form of bid shopping and is unethical. It is also dishonest, and therefore violates the approach of virtue-based ethics.

Ethical Challenge: Receipt of Favors

Subcontractors may offer favors to general contractors in an effort to win a subcontract, and suppliers may offer favors to secure a contractor's business. Such practices may be unethical. Sometimes suppliers offer their good customers discounts for early payment of their invoices, and such practices are not considered unethical. However, a supplier offering a personal favor to the contractor's employees would be considered unethical. Whether or not a person's behavior is influenced by the receipt of a favor, there is a perception that such actions may occur. Anyone involved in making decisions related to award of contracts or subcontracts needs to ensure that a no-favor policy is adopted. This may include tickets to athletic events, fishing trips, meals, or other social events. It is best to not enter into a situation where there is a perception of favoritism or unfair advantage.

Applicable Standards

The applicable standards are to practice good faith and fair dealing in the solicitation of bids or proposals and in the preparation of bids or proposals for construction projects. Project owners and designers need to ensure that all prospective bidders have the same information relative to project scope and conditions. Any issues identified by the prospective bidders

SLO 4. Be able to communicate effectively using written and verbal assignments.

CMT 161 Tests and Projects

2021 CMT 161 - INTRODUCTION TO SUSTAINABLE CONSTRUCTION FALL

FINAL PROJECT

10% of your final grade



Construction and the operation of buildings in the United States accounted for more than

Sustainable Building Technology

Building a new structure is of course a challenge and to build a sustainable home is extremely challenging. There is good news in the construction industry today! We are now aware of the need for better building practices and this need is being fueled by consumer demand. The public is more aware of these new technologies and their benefits. As energy prices and pollution continue to rise, the demand for cheaper more energy efficient housing will also increase. Builders who utilize and learn from the flows of nature will leave a positive mark on the earth for many generations to enjoy.



SOLAR

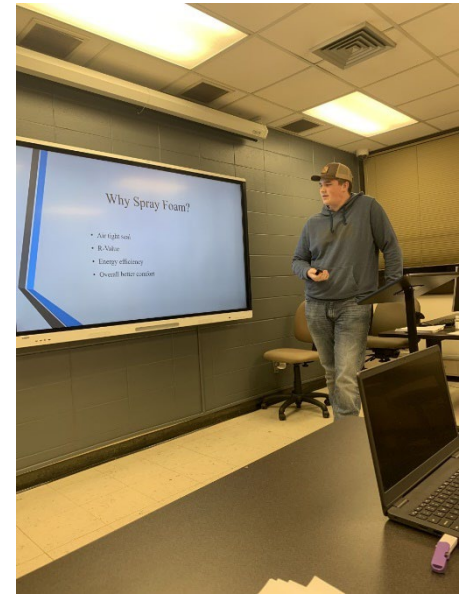



GEOTHERMAL

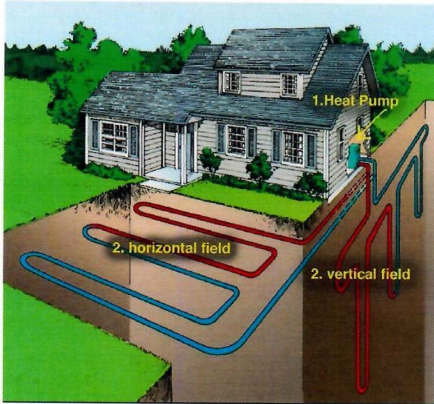


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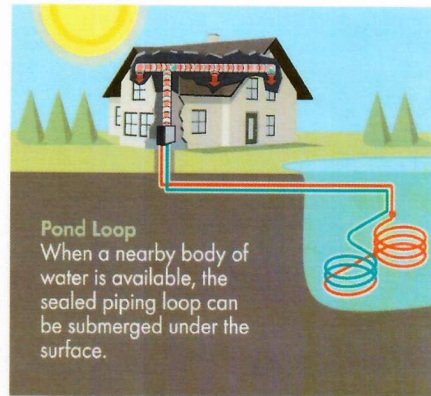
CMT 161
Students
presenting their
research projects
for the class



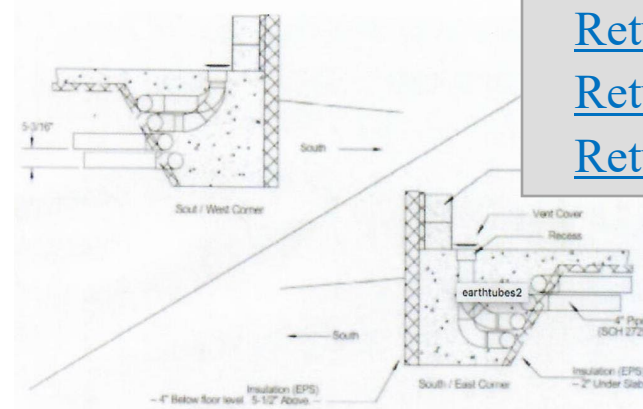
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Traditional geothermal HVAC system with a horizontal loop, vertical loop, and heat pump. The red and blue show if the temperature of the air or water inside is warm or cold, within that portion of the system (Westberg, Bren, 2016).



Water from the 'pond' as a secondary source of energy, reverting back to the ground loops when not enough water is collected (Johnston, David and Scott Gibson, 2008, pg. 189).



fittings for airflow and spaced for more contact with the warm ground ("HTM Earthtubes").

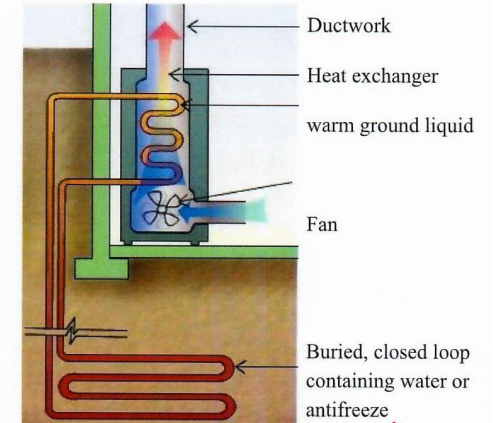


PEX being put into the ground for a geothermal HVAC system

nice slides!



Thin plastic drain vent pipe around the interior foundation, rather than in the front yard, connecting back into the house from the ground ("HTM Earthtubes").



nice slides!

Jefferson State Community College - CBST Department - Course Student Learning Outcomes (SLO)

CMT 161 - INTRODUCTION TO SUSTAINABLE CONSTRUCTION

Learning Outcome

Mike Safavi, AIC, CPC Instructor Name	The student is familiar with sustainable construction practices and related efficiency standards.	The student is knowledgeable about the building science behind green construction.	The student is able to communicate effectively through presentation of the semester research project to the class peers		Student Average	Final Grade (A,B,C,D,F)
Semester						
Course CRN Number						
Student Name						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Class Average #DIV/0! #DIV/0! #DIV/0! #DIV/0!

outcome evaluation for each of your students.

Please give a score of 1 to 4

1=low comprehension 4=high comprehension

Please return this form to the Prgram Coordinator at the end of each semester

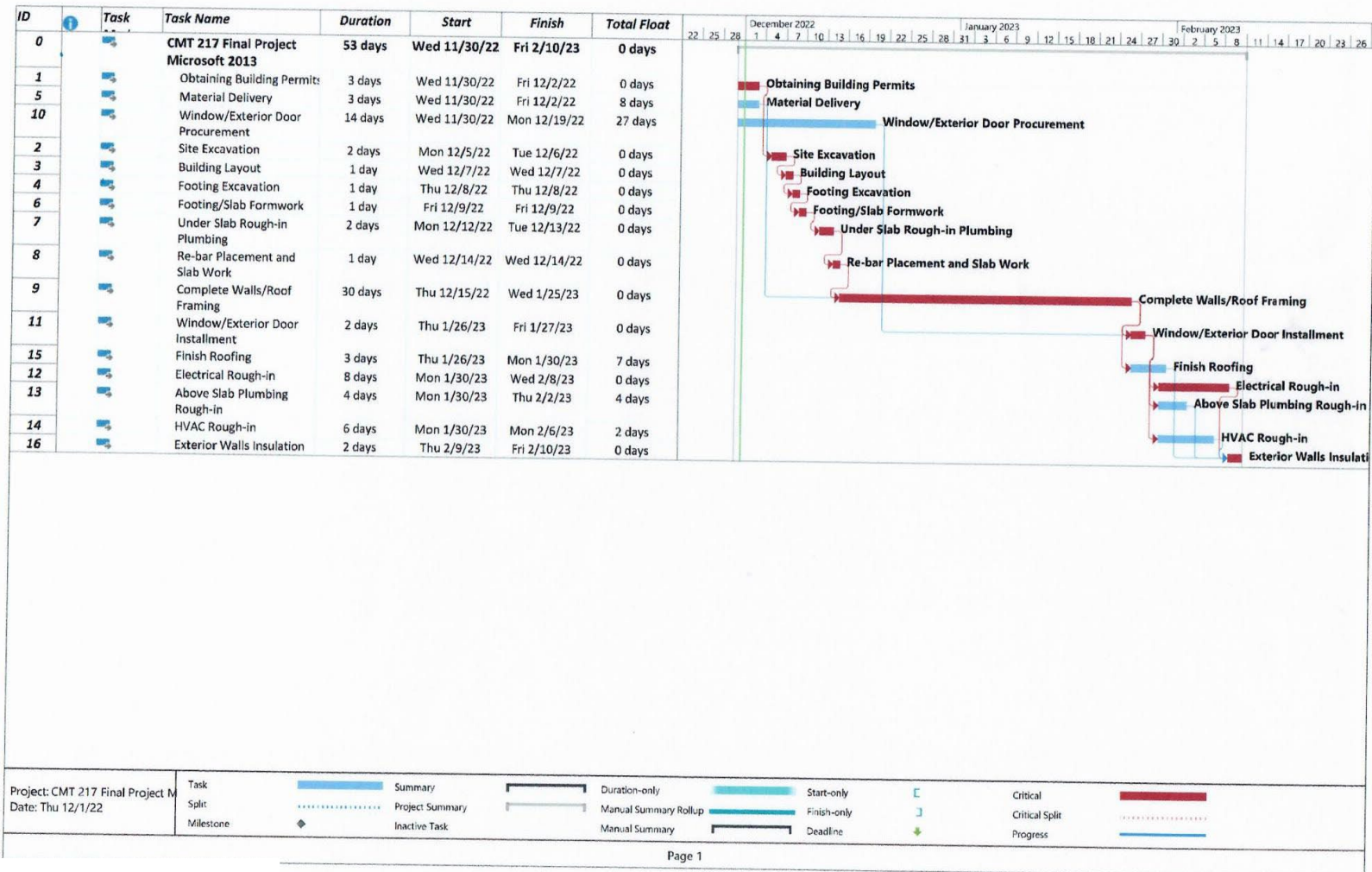
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SLO 5. Be able to plan, direct and coordinate construction projects

CMT 217 Tests and Projects

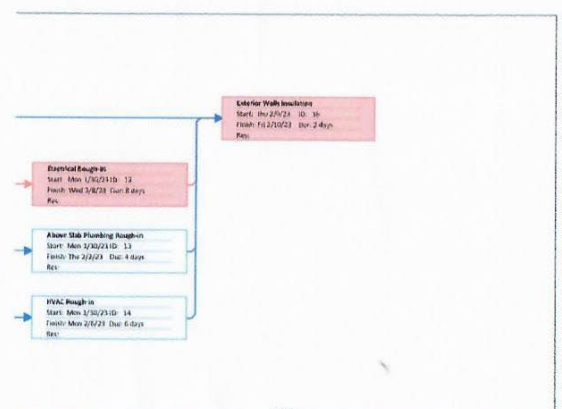
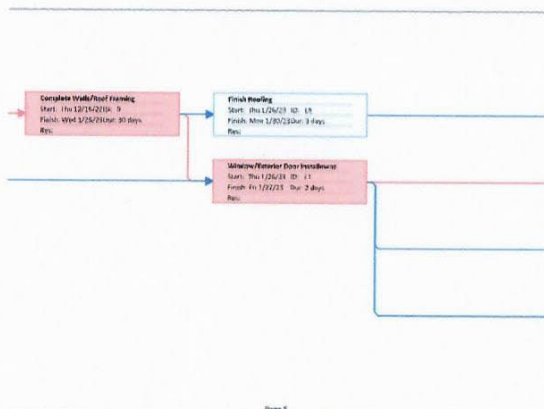
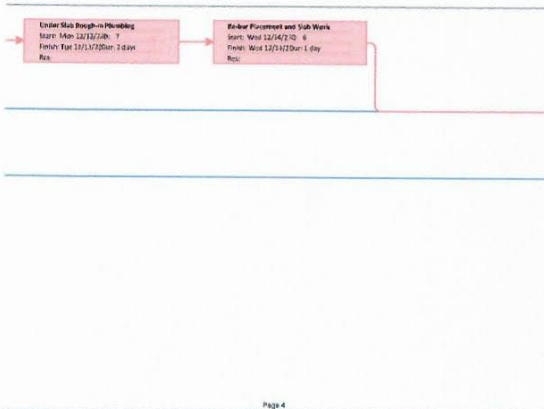
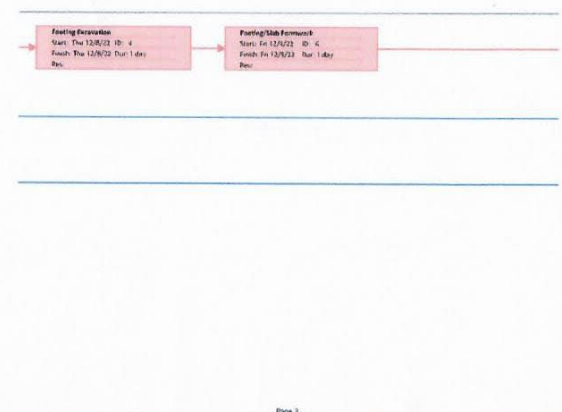
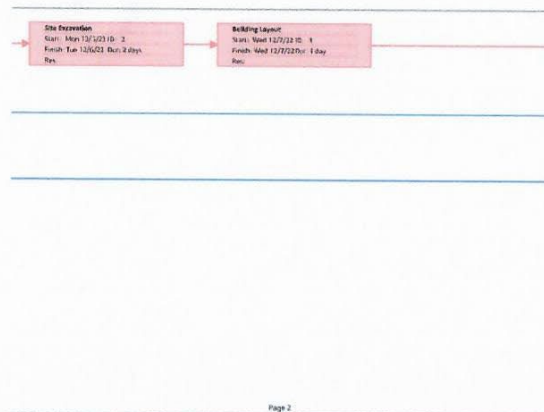
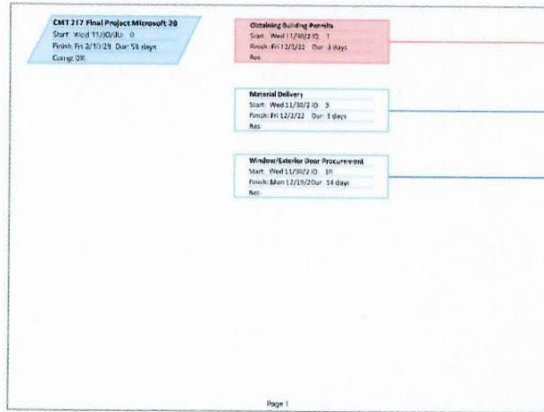
CMT 217 Final Project

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Jared Warren

CMT 217 Final Project Diagram



Jefferson State Community College
Construction and Building Science Technology

<i>CMT 217, Software Applications in Const.</i>	<i>Instructor: Mike Safavi, AIC, CPC</i>
---	--

Final Exam

NAME: _____

DATE: _____

1. As the planner for the “XYZ” construction company, you are required to do the following:
 - a. Establish the Sequence Steps for the following Activities on Table 1. (15 pts.)
 - b. Draw the Precedence Network Diagram based on the established Sequence Steps on page 2. (35 pts.)
 - c. Calculate Total Float for each Activity on the diagram. (50 pts.)

No.	Act. Description	D.U.	T (days)
1	Excavation	--	2
2	Building Layout	1	1
3	Concrete & Formwork	1,2	2
4	Wall Farming	2,3	14
5	Roofing	1,2,3,4	3
6	Exterior Finishes	3,4,5	8
7	Interior Finishes	5,6	5
8	Punch list and corrections	2, 4,5,6,7	3

Table 1:

No.	Act. Description	D.U.	Seq. Steps		
			cycl. 1	cycl.2	cycl.3
1	Excavation				
2	Building Layout				
3	Concrete & Formwork				
4	Wall Farming				
5	Roofing				
6	Exterior Finishes				
7	Interior Finishes				
8	Punch list and corrections				

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Jefferson State Community College - CBST Department - Student Learning Outcomes - Instructor Class Evaluation

CMT 217 - Software Applications in Construction

Learning Outcome

Mike Safavi, AIC, CPC Instructor Name	The student can identify Activities and their dependencies involved in a typical construction project.	The student can use the list of activities to create a schedule and identify its critical path.	The student can revise a critical path schedule.	The student can use a CPM schedule to determine the required project duration and activity floats for a construction project.	The student can create a CPM schedule on paper and by Microsoft Project Scheduling computer software.	The student can create a CPM schedule for a small typical construction project from a set of construction documents.			Student Average	Final Grade (A,B,C,D,F)
Semester										
Course CRN Number										
Student Name										
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
Class Average	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
	students.									
	Please give a score of 1 to 4									
	1=low comprehension					4=high comprehension				
	Please return this form to the Prgram Coordinator at the end of each semester									

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[Return to SLO 5](#)

Submission date: December 12, 2021 **Submitted by: Mike Safavi**