Development and Delivery of a First-Year "Construction Management Experience" Course

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Abstract

All academic programs at NDSU have a first-year (freshman) course. However, many of these courses are not "hands-on" in the sense of providing students with actual work related experiences that can be seamlessly transferred to subsequent coursework or summer internship experiences. The Department of Construction Management and Engineering has a first-year course, CM&E 111 – Introduction to Construction Management and Engineering. This course introduces students to the construction industry primarily though the use of guest speakers. However, there was a need to restructure this course to provide a hands-on "construction management experience" that mimics actual construction management job functions and responsibilities in order to prepare students for subsequent coursework and eventual employment.

The basic methodology for this "revised" course used the Tektōn Hotel Plaza Set[6] which is a girder and panel building kit. This kit was used in innovative ways to introduce students to the entire array of construction management functions and responsibilities that are required for a typical construction project, i.e., construction documents and codes, material estimating, project scheduling, procurement and delivery, actual construction, inspections, change orders, project delivery, demolition, and a final project report. The "revised" course was delivered during the 2013 Fall Semester to sixty-five (65) students. Student feedback was extremely positive.

Introduction

Current research within the engineering disciplines indicates that a first-year (freshman) hands-on course that emphasizes real-world design experiences can increase recruiting and retention rates and provide the groundwork for future academic "learning" in subsequent coursework.[3,8,14] Within the engineering disciplines, there exists a number of engineering/design projects that can be integrated into the structure of classroom activities,[4] such as, Rube Goldberg Contraptions, Leonardo da Vinci: The Engineer, Lego Robots, Battle Bots, etc. Specifically, within the construction management discipline, few examples of first-year classroom applications are provided in the literature. These hands-on application within construction education are primarily focused on the senior capstone experience.[10,12,13]

The basic purpose of this project is two-fold: first, to document current first-year construction management courses, and second, to develop and deliver a hands-on first-year "construction management experience" within the framework of CM&E 111.

Overall Objectives for Course Revision

The basic objectives for the revised CM&E 111 course are presented below.

- To expand the body of knowledge related to first-year "construction management experience" courses and to disseminate that knowledge to all Construction Management programs that are accredited by the American Council for Construction Education (ACCE).[2]

- To use a construction "toy" (Tektōn Hotel Plaza Set) in innovative ways in the classroom that introduces students to the entire array of construction management functions and responsibilities[1,9,11] that are required for a typical construction project, i.e., a "construction management experience."

- To promote team building skills and team work[15] in an environment that mimics the actual construction management process.

- To integrate within the revised course the following topics: Construction Terminology and Accreditation, Ethical Dilemmas, Resume and Career Plan, Engineering and Tech Expo (visit and summary paper), Professional & Trade Organizations, and Guest Speakers.

Methodology

The basic methodology for the development and delivery of the revised CM&E 111 is presented below.

- The author attended the ACCE[2] Mid-Year Meeting held in Phoenix (February 2012) to discuss first-year construction management courses with construction management program directors at the Baccalaureate Program Chairs Meeting. Approximately forty-five (45) ACCE accredited schools were represented at this meeting. The program chairs approved a request for a survey to collect first-year construction management course syllabi and related course materials. Information from that meeting was used to construct the survey instrument that was sent to all accredited construction management program chairs in March 2012. The survey was conducted via the NDSU Group Decision Center (GDC). Results of the survey were organized and compiled into a portfolio that is posted on the ACCE website at: http://acce-hq.org/documents/FirstCoursePortfolioPresentation.pdf

- Based on the information contained in the portfolio and a literature review, the framework for a first-year "construction management experience" was developed and integrated into CM&E 111 for the 2013 Fall Semester.

The basic concept for course revision used the Tektōn Hotel Plaza Set from Bridge Street Toys[6] to introduce students to the construction management profession and the specific job functions of a professional construction manager.[1,7,9,11] A description of girder and panel building kits can be

found in Appendix A. The phases of construction management which were integrated into CM&E 111 are located in Appendix B.

In addition to the Tektōn Hotel Plaza project, additional components of the course included assignments related to: Construction Terminology and Accreditation, Ethical Dilemmas, Resume and Career Plan, Engineering and Tech Expo (visit and summary paper), Professional & Trade Organizations, and Guest Speaker Evaluations.

Based on the overall objectives for course revision, specific course objectives were developed and are presented below.

- Define Construction Management and Construction Engineering and describe the differences.
- Describe the value of graduating from an accredited program.
- Develop a professional resume.
- Describe some of the ethical challenges that you may encounter on your employment search.
- Develop a Materials Estimate for the Tektōn Hotel Plaza project.
- Develop a basic Work-Breakdown Structure and Time Estimates the Tektōn Hotel Plaza project.
- Complete a Change Order for the Tektōn Hotel Plaza project.
- Write a Final Project Report that provides your perspectives on the Hotel Plaza project.
- Identify organizations and professional societies that are relevant to your interests and goals.
- Extract and transcribe (write down) important points presented by the guest speakers.

From these revised course objectives a number of assignments were develop. Each assignment directly correlates to each of the course objectives, as shown in Table 1.

Table 1. CM&E 111 Assignments

Assignments	Title	Points
# 1	Construction Terminology and Accreditation	10
# 2	Materials Estimate (group assignment)	10
# 3	Ethical Dilemmas	10
# 4	Work-Breakdown Structure and Time Estimates (group assignment)	10
# 5	Resume and Career Plan	10
# 6	Engineering and Tech Expo (visit and summary paper)	10
# 7	Change Order (group assignment)	10
# 8	Final Project Report (individual assignment)	10

# 9	Professional & Trade Organizations	10
	Guest Speaker Evaluations	10
	TOTAL	**100**

The highlighted assignments are those related to the Tektōn Hotel Plaza project and included the ten (10) phases of construction management as described in Appendix B. Assignment 2 - Materials Estimate incorporated Phase I (Construction Documents and Codes) and Phase II (Estimating). Assignment 4 - Work-Breakdown Structure and Time Estimates integrated Phase III (Scheduling) and Phase IV (Procurement and Delivery). Assignment 7 - Change Order focused on Phase V (Construction), Phase VI (Inspections), and Phase VII (Change Orders). Assignment 8 - Final Project Report included Phase VIII (Project Delivery), Phase IX (Demolition), and Phase X (Final Project Report).

Figure 2. Group Work

For the Tektōn Hotel Plaza component of the course, students worked in groups of three or four to construct a scale-model building employing the functions and responsibilities that are associated with the professional practice of construction management (Figure 1). Nineteen (19) groups were formed from an enrollment of 64. This classroom project was accomplished over an 8-week time frame. Student groups were given the plans (drawings) and specifications (approved materials) of the Tektōn Hotel Plaza. From the plans and specifications a quantity (material) take-off was developed which led into a construction schedule. Student groups then procured the materials (i.e., the parts that they requested for the Tektōn Hotel Plaza project) based on their quantity estimate. Actual construction followed with inspections by the course instructor (Figure 2). Once approximately 50% of the construction was complete a "change order" was issued. Student groups performed the necessary take-off estimates and additional materials for the change order were procured. Once construction was complete, the building was formally delivered to the owner. At the end of the life-cycle of the building, it was demolished and recycled. A Final Project Report was then submitted by each individual.

Figure 1. Student Construction

Outcomes and Student Impacts

CM&E 111 – Introduction to Construction Management and Engineering is a one-credit course offered in both the fall and spring semesters. Fall semester enrollment is typically 55 to 70 students, while spring semester enrollment ranges from 30 to 40 students. The four points below outline the intended outcomes and student impacts for the revised course. All four are long range outcomes. That will take some time to collect the significant data.

- *Enhance student interest in construction management and construction engineering.* Both construction and non-construction majors take CM&E 111. An initial measure of interest would be course enrollment of majors and non-majors.

- *Increase student retention in the Construction Management Program* – The literature strongly suggests that a first-year "hands-on" course (in any discipline) that directly relates to real life work experiences can contribute to student retention.5,10,12 Data will be collected from transfer students to determine if CM&E 111 was a factor in their decisions to transfer to the program.

- *Motivate learning in upper division Construction Management courses* – One of the purposes for restructuring the course was to introduce students to the responsibilities and functions of a construction manager. CM&E 111 will provide the background information and some "hands-on" experiences to stimulate motivation and learning in upper division courses. Upper division course instructors will be encouraged to add a supplemental course evaluation question to get some measure to determine if CM&E 111 was a factor in their motivation and learning in that upper division courses.

- *Enhance performance in the Construction Management Capstone Course* – This course is really just an extension (albeit quite a major extension) of the concepts, roles, and responsibilities of construction managers which were introduced in CM&E 111. The goal is to provide a road-map of sequential learning that must take place to properly prepare for and be successful in the capstone course and ultimately in the construction management profession. Data for this outcome cannot start being collected for three (3) years. At that time, supplemental course evaluation questions will be developed for the capstone course.

Course Evaluation

The primary tool used for course evaluation is the "student rating of instruction" (SROI). The SROI uses six (6) university-wide standard statements (questions), as shown below.

1. Your satisfaction with the instruction in this course.
2. The instructor as a teacher.
3. The ability of the instructor to communicate effectively.
4. The quality of this course.
5. The fairness of procedures for grading this course.
6. Your understanding of the course content.

Fifty-eight (58) students provided a response to the standard questions (class enrollment was 64). There were two (3) blank responses for each question (omit). Results of the university generated Summary Report for the six (6) standard questions are provided in Table 2.

Table 2. SROI Summary Report (Questions 1-6)

Student Rating of Instruction --- Summary Report
North Dakota State University
Data from Term=131, Report Generated on 09JAN13

Instructor Information	Number of Students:		Response Key:
Call #: 03009ABBEA	# Enrolled: This Class	64	VG= Very Good....(5)
Dept: CONSTR MGMT/ENGINEERING			G= Good....(4)
Course: 111	# Sheets Scanned: This Class	60	IB=In Between....(3)
	Your Dept	358	P= Poor....(2)
Name: Charles McIntyre	Your College ..	5849	VP= Very Poor....(1)

Frequencies (top row) and percents (bottom row) are provided to the right of each question.
S.D. is the Standard Deviation and #R is the Number of Valid Responses.

Please rate:	VG	G	IB	P	VP	OMIT	AREA	MEAN	S.D.	#R
1. your satisfaction with the instruction in this course.	42	15	0	1	0	2	Class	4.690	0.568	58
	70.0	25.0	0.0	1.7	0.0	3.3	Department	3.914	1.098	349
							College	4.053	0.928	5799
							University	4.156	0.921	42595
2. the instructor as a teacher.	48	10	0	0	0	2	Class	4.828	0.381	58
	80.0	16.7	0.0	0.0	0.0	3.3	Department	3.977	1.081	350
							College	4.128	0.934	5796
							University	4.228	0.936	42572
3. the ability of the instructor to communicate effectively.	45	11	2	0	0	2	Class	4.741	0.515	58
	75.0	18.3	3.3	0.0	0.0	3.3	Department	3.809	1.166	350
							College	4.006	0.984	5796
							University	4.152	0.972	42535
4. the quality of this course.	25	29	3	1	0	2	Class	4.345	0.664	58
	41.7	48.3	5.0	1.7	0.0	3.3	Department	3.894	1.003	350
							College	3.991	0.912	5793
							University	4.096	0.898	42512
5. the fairness of procedures for grading this course.	45	12	1	0	0	2	Class	4.759	0.471	58
	75.0	20.0	1.7	0.0	0.0	3.3	Department	4.204	0.870	348
							College	4.105	0.944	5788
							University	4.244	0.901	42548
6. your understanding of the course content.	40	15	3	0	0	2	Class	4.638	0.583	58
	66.7	25.0	5.0	0.0	0.0	3.3	Department	3.963	0.934	350
							College	4.072	0.807	5789
							University	4.094	0.870	42537

In addition to the six (6) standard questions, instructors are permitted to ask additional rating questions on the SROI. For CM&E 111 an additional ten (10) rating questions were generated. These questions were provided to the students a week before the administering the SROI so that the students had an opportunity to reflect on their learning. These ten (10) supplemental questions directly relate to the course objectives, as shown below.

7. How well can you define Construction Management and Construction Engineering and describe the differences?

8. How well can you describe the value of graduating from an accredited program?

9. How well can you develop a professional resume?

10. How well can you describe some of the ethical challenges that you may encounter on your employment search?

11. How well can you develop a Materials Estimate for the Tektōn Hotel Plaza project?

12. How well can you develop a basic Work-Breakdown Structure and Time Estimates Tektōn Hotel Plaza project?

13. How well can you complete a Change Order form for the Tektōn Hotel Plaza project?

14. How well can you write a Final Project Report that provides your perspectives on the Tektōn Hotel Plaza project?

15. How well can you identify organizations and professional societies that are relevant to your interests and goals?

16. How well can you extract and transcribe (write down) important points presented by guest speakers?

Fifty-three (53) students provided a response the supplemental questions. There were seven (7) blank responses (omit). Results of the supplemental questions are given in Table 3.

Table 3. SROI Summary Report (Questions 7-16)

Questions beyond #6 are optional, vary by department, and use the following key:
A=5 B=4 C=3 D=2 E=1

Please rate:	A	B	C	D	E	OMIT	AREA	MEAN	S.D.	#R
Item 7.	24	26	3	0	0	7	Class	4.396	0.599	53
	40.0	43.3	5.0	0.0	0.0	11.7	Department	4.000	0.866	340
Item 8.	37	15	0	1	0	7	Class	4.660	0.586	53
	61.7	25.0	0.0	1.7	0.0	11.7	Department	3.977	0.914	343
Item 9.	26	22	5	0	0	7	Class	4.396	0.660	53
	43.3	36.7	8.3	0.0	0.0	11.7	Department	3.993	0.993	305
Item 10.	28	20	4	0	1	7	Class	4.396	0.793	53
	46.7	33.3	6.7	0.0	1.7	11.7	Department	3.865	0.918	304
Item 11.	38	14	1	0	0	7	Class	4.698	0.503	53
	63.3	23.3	1.7	0.0	0.0	11.7	Department	3.915	1.045	305
Item 12.	33	18	2	0	0	7	Class	4.585	0.570	53
	55.0	30.0	3.3	0.0	0.0	11.7	Department	4.070	0.927	185
Item 13.	38	13	2	0	0	7	Class	4.679	0.547	53
	63.3	21.7	3.3	0.0	0.0	11.7	Department	4.054	1.039	147
Item 14.	33	17	2	1	0	7	Class	4.547	0.667	53
	55.0	28.3	3.3	1.7	0.0	11.7	Department	4.179	1.065	145
Item 15.	26	22	5	0	0	7	Class	4.396	0.660	53
	43.3	36.7	8.3	0.0	0.0	11.7	Department	3.888	1.152	107
Item 16.	32	20	1	0	0	7	Class	4.585	0.535	53
	53.3	33.3	1.7	0.0	0.0	11.7	Department	4.463	0.635	80

In addition to supplemental questions, course instructors are allowed to ask text-based questions where students can provide written comments. The questions used for CM&E111 are shown below.

17. What did you like most about this course?

18. What did you like least about this course?

19. What suggestions do you have for improving this course?

Once again, fifty-three (53) students provided a response to the text-based questions. The report compiled from these questions generated eight (8) typed pages of responses. Appendix C provides a sample of the written student comments.

Conclusions

Based on the results of the six (6) standard questions on the SROI, the ratings for CM&E 111 (shown under Class) were significantly greater than the average of all other courses in the University, the College, and the Department. The standard deviation was also significantly less than the standard deviations of the courses at the University, College and Department levels. This indicated that a tight grouping where these is not a tremendous deviation from the mean.

Of critical importance (in the opinion of the course instructor) is the response to Question 6 – "your understanding of the course content." Almost ninety-two (92) percent of the respondents rated their understanding as either very good or good. As a follow up to this question, the intent of the ten (10) supplemental questions was to provide more specific ratings for each of the course objectives which are a subset of overall course content. All responses for the supplemental questions were between approximately 4.4 and 4.7 indicating that the vast majority of the respondents (in their opinion) had met the course objectives and understood the course content. The scale used for the supplemental questions was A=5, B=4, C=3, D=2, and E=1. The instructor change the scale to reflect this peudo-academic scale based on his experience with survey response scales. It is easier for the students to understand the ABC… scale rather than the standard scale used by the university which is VG (very good), G (good), IB (in-between), P (poor), and VP (very poor).

While the rating scales provides important information concerning the course, the instructor believes that more valuable information can be extracted from the text-based questions (sample responses in Appendix C).

Concerning the "like most" question, responses indicated that the majority of the students enjoyed the "hands-on" approach to the Tektōn Hotel Plaza project. Several stated that the work that was done in class mimics the real-life construction management process. Most also enjoyed the group work involved in the project and understood the relevance of working in a group within the profession of construction management. Others were impressed with the Engineering and Tech Expo which they were required to attend and meet with at least three (3) of the Expo participants which were all construction and/or engineering companies. Several enjoyed the guest speakers and said they provided some excellent information concerning the profession.

With regard to the "like least" question, many stated that the project seem too easy and would like to see a more complex project or even several projects integrated into the class. Several stated that they wished this course was more than one (1) credit and could be a semester long course worth two (2) or three (3) credits. Others disliked the fact that they did not have any

"design" options where they could be creative with the building project. A few stated that they did not like that a written report was required for every assignment.

Concerning the suggestions for the "course improvement" question, many comments were related to the "dislike" comments, such as, make the assignments more challenging, make the project more complex, add some design components, and add in an additional project. Some even wanted to see more guest speakers integrated into the class including a recent graduate of the program who is actively working in the construction management profession

Based on student response and reflection by the course instructor on his experience with this restructured course, the instructor has developed a strategy for course improvement as outlined below.

- Add addition research questions to Assignment 1 - Construction Terminology and Accreditation.

- Develop two "hands-on" classroom projects (Assignments 2, 4, 7, and 8). The first would be a traditional bid-build project similar to the Tektōn Hotel Plaza project, although a bit more complex (especially the change order). The second would be a design-build project where students would have to design a structure and then build it according the requirements of the owner.

- No changes or improvements are needed for the assignment related to the resume and career plan or the Engineering and Tech Expo (visit and summary paper).

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Appendix A – Girder and Panel Building Kits

Girder and Panel Building Sets were a series of plastic toy construction kits created by Kenner Toys in the mid 1950's (Figure 3). These construction kits enabled a child to build plastic models of mid-twentieth century style buildings. Vertical plastic girders were placed in the holes of a Masonite base board and horizontal girders were then locked into the vertical columns to create the skeletal structure of a model building. Brightly colored plastic panels containing translucent "windows" would then be snapped onto the outer girders to create a curtain wall. Square navy-blue roof panels—some with translucent skylight domes molded into them—were laid on the topmost beams to complete the structure. There is an entire generation of engineers, architects, and constructors that have many fond memories of playing with this set as children.

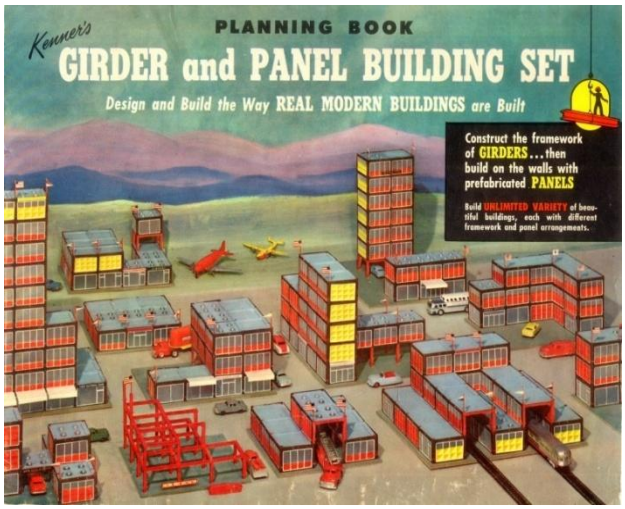

Figure 3 Girder and Panel Building Set (1950's)

The Girder and Panel construction style emulated construction techniques such as curtain walls of prefabricated panels attached to frameworks of girders, trusses, and cantilevers. While Lego is arguably the most popular contemporary construction toy, no other toy has replaced Girder and Panel as a reflection of modern building techniques. Girder & Panel differs from other construction building sets in that it allows experimentation with real engineering principles. Because the Girder & Panel buildings are actually 1/87 scale of real buildings, children investigate how to build structures that are based on actual construction techniques.

Figure 4 shows the Tektōn Hotel Plaza Set (pictured left and below) from Bridge Street Toys[6] which is the latest reincarnation of the Girder and Panel Building Sets. The set contains over 500 pieces (5 footings, 90 beams, 70 columns, 20 stubs, 9 roof panels, 36 window panels, 6 utility wall panels, 6 door panels, 4 signs, 6 flags, 8 lobby window panels, etc.).

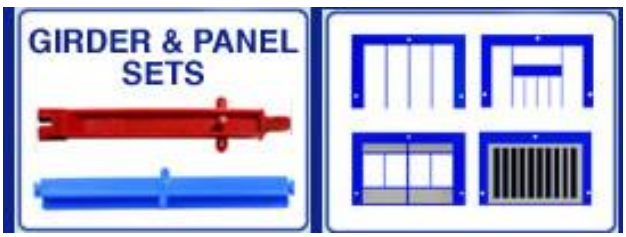

Figure 4 Tektōn Hotel Plaza Set

Appendix B – Phases of Construction Management

Phase I – Construction Documents and Codes
Student groups will be given a set of Plans" (drawings) and "project specifications" (approved materials required to construct the building, i.e., girders, wall panels, roofing, etc.).

Phase II – Estimating
Student groups will prepare a detailed "quantity take-off" to determine the type and number of materials that are required for construction of the building.

Phase III – Scheduling
Student groups will prepare a detailed "construction schedule" sequentially explaining how the structure will be constructed with corresponding time requirements.

Phase IV – Procurement and Delivery
Based on the "quantity take-off," student groups will submit a "material order." Material will be "delivered" to the student groups who must prepare a written "invoice" of materials received (quantities and quality).

Phase V – Construction
Based on the "plans" and "project specifications," student will "build" the structure, in accordance with their "project schedule."

Phase VI – Inspections
Once 50% of the building is complete (based on their "construction schedule"), the inspector (course instructor) will conduct an inspection to determine if the building meets code (based on the "plans" and project specifications").

Phase VII – Change Orders
After the initial inspection, a written "change order" from the owner will be given for the project (for example the east tower will be 5 stories instead of 3 stories). Before continuing with construction, student groups must process the "change order" to determine the impacts on the "material estimate" and the "construction schedule."

Phase VIII – Project Delivery
A "final inspection" will be conducted based on a "punch list" developed from the contract documents. Written documentation that officially transfers the building to the owner will be developed by the student groups. "As-build drawings" (pictures) will be a component of the transfer documentation.

Phase IX – Demolition
Student groups will de-construction the building which will include sorting, packaging, and recording all materials, i.e., recycling materials.

Phase X – Final Project Report
Student groups will document the overall process (What did you do? What would you do differently? What did you learn? and How do you think this experience will help you in future construction courses or in your summer internships?).

Appendix C – Written Student Comments

17. What did you like most about this course?

I liked how this course went chronologically through the steps of the construction process. I also felt like the course provided a lot of helpful information regarding exactly what our future jobs would look like.

I liked doing the Hotel Plaza Project the best and how a kids toy turned into a college project. It was a lot of fun.

The thing I liked most about this course is how we got to work hands on with the project we did. We got to see everything we did in person during this assignment.

I loved the hands on project and the real life scenarios. Unlike calculus, I will actually use what I have learned in this class in the real world. Even the assignments were real life things, and this course really will let you know if you want to be in construction for the rest of your life or not.

What I liked most about this course was the group work, because it helped to understand the dynamics of working as a team in the construction profession.

Was that it was a good way to answer questions about the major that I was a little unclear of before. In addition I am most impressed in the way we were prepared for the tech expo. (questions to ask, what to look for, resume prep, etc.). I alos got to meet a lot of new construction students in this class.

What I like most about this course is that we did a fair amount of research on engineering firms, academic programs and most of all the work we were required to do at the Engineering Expo (answering the seven questions about each company).

I liked the overall idea and content the course provided.

I like the different assignments because it gave me a general idea about some of the duties I may have to perform. The fact that it was hands on really makes a difference. I also liked the guest speakers and thought that they were very informative.

I liked how we had the hands on segment of the Hotel Plaza because who doesn't love to build something like that? I enjoy things like this and it's what made me want to pursue a career with the same kind of thing but a larger scale, Construction Engineering!

I liked that we worked in groups. I think this is very important because that's how our careers will be. We also got to meet people.

I liked using the Plaza project to demonstrate the construction management process.

I really enjoyed the entire course. I always looked forward to coming to class.

18. What did you like least about this course?

The project seemed almost too easy.

The thing I liked least about this course is how we had so many guest speakers.

I didn't like that we didn't get to really design or have any other options for building.

It's too bad that it is just an eight week course and just one credit, it would be sweet if it was a full class and three credits.

I think there are too many papers to be written.

There is not enough time to go more in depth.

I disliked having to listen to so many guest speakers.

There was nothing that I really disliked about the class, the only part I wish was different was the hotel plaza project could have been a little more complex.

I thought the work I did in this class was worth more than 1 credit, at least 2.

Make assignments slightly more challenging. Some of the stuff was too easy.

The drawings of the design of the project were very basic and there was not very many angles. A model with more complex design drawings associated with it would have made estimating and was easier and seem like more of a real world process.

Lack in "engineering" part.

There is not enough time to go more in depth with the material.

I didn't like how quick it was over.

19. What suggestions do you have for improving this course?

This course should be a semester long course and more projects like Hotel Plaza should be done.

Maybe do another building project.

I would make the change order harder. Make it so they have to rebuild an entire section.

I think that to improve this course you should limit the number of guest speakers and possibly increase the course to two hands on projects.

Adding more projects and a design phase would be beneficial.

If you could find one or two more good speakers that would be a good idea. Otherwise I loved it. I can tell that it is not your first rodeo teaching CME 111 and that is really a good thing.

I wished you would have went a little more in depth with construction engineering so I would know what my exact field is like.

In the future I would suggest a project that is a little bit harder to accomplish.

Bring in more guest speakers, go more in depth w/ the courses' content, extend the course for a full semester, talk about what a typical work schedule would look like for a construction engineer or manager, & have a much more challenging form of the hand on projects.

Maybe with the Hotel Plaza Project all groups to design a building and then construct it.

I would like to see an actual construction manager and/or engineer come in and speak about the experiences about the program at NDSU and how it prepared them for their career, and some of the tasks that they currently perform. Preferably someone who has graduated in the last 5 years.

I suggest working with a model that has more complex drawings and structure. It would make the course have a more real world approach. Although the assignments related with the Hotel project did teach me a lot about the basics of Construction Management.