

Faculty Course Assessment Report
North Dakota State University
Department of Construction Management and Engineering
CM&E 412/612, Construction Management (Capstone), 3 credits
Spring 2011 – Jeffrey Pfingsten

Catalog Description:

This course provides a discussion of the organization of project information; contract administration, project delivery systems; construction management methods; constructability review, value engineering; and construction productivity.

Grade Distribution:

A	B	C	D	F	W	I	Total
8	50	8	0	0	0	1	67

Modifications Made to Course:

I have expanded the use of the AIA Contract Document software on this project to help the students become more familiar with the AIA documents and the use of software in project management.

Course Outcomes Assessment ACCE: (matrix content)

Communications Component:

Every class period begins with a lecture of some sort and may transition into group work or discussions.

Communications are a very important part of this course. The students are required to not only communicate within their own groups, but they are also required to communicate with other groups. This is accomplished by each group conducting a “progress meeting” with a representative from all of the other groups present. During these meetings the one group acts as the construction project manager and updates the other students on the progress of the project. They are required to take minutes which are distributed to all of the other students in a timely manner.

All groups running a meeting are required to meet with me to find out what they need to cover in their meetings and the current state of the project. They are given progress, issues such as scheduling and costs and are always given an issue that they need to review. The issues are broad enough to require lots of discussion during the meeting and the students brainstorm to come up with possible solutions which are then evaluated to determine the best course of action. The non-participating students listen to the discussions and, at given times, are allowed to give input about the evaluations. This works to keep all involved and helps them learn.

When the best solution is decided upon, the groups are then given the assignment of calculating costs for the schedule, if any, and the effect on the schedule. Along with this they are required to determine how it will affect the other contractors. They present their findings, as well as a change order during the next meeting.

When bad weather hit, and I was not able to make the trip from Bismarck to Fargo, class was conducted via WIMBA classroom. Although, not the ideal way to present a lecture it did work and students were able to get information and their questions answered.

Another method of communication that I implement is videos on Hoover Dam and the Golden Gate Bridge. I choose to use these as a way to communicate how our industry has evolved and the creativity needed to overcome obstacles. These projects are prime examples of the ingenuity that comes from collaboration and sheer determination. It also emphasizes the need for coordination and communications on a construction project.

The final communication is the Group Project. The groups are required to submit a binder as their final project. This binder contains everything that the group worked on during the semester. This includes, but is not limited to, company profiles, bids, contracts, change orders, personal communications such as email, schedules, meeting minutes, closeout documents. The Group Binder is required to be organized in such a way that anyone who needs information on their project can pick up the binder and find what they are looking for easily. It is also expected to have a professional appearance as it communicates the professionalism of their company.

Ethics Component:

Ethics is taught to the students from the very first class session. The first lecture ends with approximately 1 hour on the CMAA Code of Ethics. Each section of the code of ethics is broken down and discussed so the students understand all of the canons.

Ethics is taught during the remainder of the semester in various ways. The following are a couple examples:

- The student groups are required to put together a company profile. I use this to talk to them about the importance of being honest with their capabilities as a contractor and to not promise more than they can deliver.
- During the bid process, I cover two very important topics that involve ethics: Bid Shopping and bidding the bid documents. Even though they are taught what bid shopping is in estimating, I expand on it so they understand how it is done and the ramifications if they are caught. I also discuss how some contractor use unethical methods to get the bid and then come back looking for change orders. I give examples of contractors looking for all of the mistakes in the drawings and specs, then calculating what they can make back in change orders so they can low-ball the bid. The bid documents require them to report any errors or discrepancies prior to bidding.
- In Responsibility and Authority we discuss the use of the proper personnel for the project. If they do not use personnel (especially in management positions.) decision could be made that are not in the best interest of any of the parties. We also discuss how the management personnel need to be very familiar with the Contract Documents. They are the ones that are responsible for administration of the Contract Documents and, if unfamiliar with them, may cause hardships to the contractors or the owner that should not have happened. Only by knowing and understanding the contract documents will they be able to interpret and enforce them correctly.

We also discuss Authority and the ramifications if the parties do not understand the authority that each person possesses. It is extremely important that the individual knows and understands their own authority and does not extreme their limits. They also know the limits of authority that the persons above and below them possess. I explain to the students that just because someone above them tells them to do something that is illegal, an OSHA violation, code violation, etc does not mean that they are to do it. It is a misuse of authority and should never be done.

We also discuss inspectors and the need for them. I explain that some contractors will try to get by with shoddy work by hiding it before it can be inspected. This is ethically wrong and the contractor needs to be held responsible. On the other hand, expecting them to exceed the requirements as set forth in the contract documents is also unethical as the contract documents are the standard to be met.

- In Documentation: Records and Reports we discuss the proper record keeping procedures. The reports that are prepared must be accurate and well documented on the day that they occurred. The topic of evidence in court emphasizes the importance of keeping honest records and using methods such journals that contain numbered pages so everyone can see that the pages have not been tampered with. We also discuss only putting facts in your records and not clouding is with personal assumptions which could be proven wrong by someone else's records.

We also discuss the appropriate way to submit meeting minutes. They are instructed that the meeting minutes should be written and then sent to all contractors for verification of the accuracy. They are given a period of time in which to dispute or correct statements that are incorrectly noted. This helps to eliminate the "I didn't say that" or the "I was not aware of that" defense later.

- In Meetings and Negotiations we deal with ethics in a slightly different way. We discuss the need to have meetings, such as a pre-bid or pre-construction meeting, in a way that is informative and interactive. Information is key to the successful completion of a construction project and the students are instructed that the meetings are held with all parties involved so everyone has input into and receives the same information. This helps to keep all parties informed and prevents the "I didn't know that" or the "when did this happen" syndrome. They are also told about the need for the communication to go two ways and if it doesn't it could cause delays in the project and unnecessary additional expenses to numerous parties.

We also discuss the use of group meetings and the necessity to minimize the use of Collective Thinking or "group think." By the use of group meetings, all parties can have a say in the final decision and are more likely to arrive at the best decision versus on person making the decision that is best for them. I help them to understand that there are many parties involved in a construction project and making the wrong decision can affect many adversely. Conversely, I explain how the Collective Thinking method can be just as bad. I explain that it uses pressure and/or intimidation of one or more parties to get their support and how wrong this method truly is.

- With Measurement and Payment we discuss the importance of honest and diligence when dealing with the Application for Payment. I talk to them about front end loading which is borderline unethical. I explain to them that the way to prevent front end loading, and any other over-billing is to be diligent and honest when submitting or reviewing the pay application. The contractor is not due any more than they have earned, but yet the owner should pay them for that they have completed. It is the responsibility of the CM to physically review the work that has been completed on the site, materials stored on and off site, and anything else that is being billed. If they are negligent in this duty, they may deny the contractor his due payment or may cause the owner to pay out more than they should.

The other ethical issue that we discuss is estimating the work yet to be completed during the pay period. Most pay periods have a few days included that are estimates of the amount of work that is going to be completed by the end of the pay period (ie. Pay applications are to be submitted by the 25th of the month, but the pay period is through the end of the month). I explain how many contractor may try and inflate the amount of work that they can complete by that time, but your

assumptions may be less. The ethical way to approach this or any other questions concerning the pay application is sit down with the contractor and work it out together.

Contemporary Issues Component:

I teach them the AIA Contract Document software and require them to use for their project documentation.

Demands for faster completions of projects, yet less money being available.

The decline of the economy and the affect that it has had on the construction industry, as well as the need to more rounded in education and job experience.

Student Feedback:

The feedback that I have received from many of my students is they learned more about construction management in this course than any other. The reason is because the use this course to apply everything they learned in previous courses and then are allowed to apply them to a real project while this learn new material.

Reflection:

I think that this course is a very good course and is needed to help the students apply what they have learned throughout their college career. They enjoy the fact that they are using a real project that I built and are given the chance to learn what “really happens” in the field.

Proposed Actions for Course Improvement:

This class has grown too big and only focuses on commercial construction. I would like to see it expanded to include heavy highway and residential tracks. This would be beneficial by allowing the students to take the capstone course that best suits their interest. It would also allow them the opportunity to take a fall capstone course, instead only spring. The other major benefit would be the smaller class size. This course was designed around a class of no more than 45 students, but we have had classes approaching 90 students.