

An Undergraduate Professional Construction Seminar

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At the University of Nevada, Las Vegas, with our undergraduate program, we looked for a vehicle to accomplish certain goals. Our construction program is in a major metropolitan area with an extremely active construction market. Due to the numerous work opportunities available, the majority of students in our program both work and go to school. Moreover, the average age of our students is older than that at many institutions. With older students, many of them have accumulated additional responsibilities with families and significant financial obligations such as mortgage payments. As with numerous other institutions in metropolitan area, few students live on campus and instead reside throughout the metropolitan area. Given these factors, participation by our students in extra-curricular activities such as the program's construction student chapter is poor. There is also a lack of "connectivity" between students from freshman to senior. Moreover, while students are typically working in the construction industry, they may be narrowly focused on one market or area or one type of job.

We wanted to encourage students to participate in construction professional and trade associations such as Associated General Contractors. We also wanted to expose undergraduate students to the broad spectrum of this market ranging from residential to commercial to heavy construction. In addition, we wanted students to gain insight into firms' construction problems and construction faculty research. In order to address these above concerns, we have implemented an undergraduate professional seminar.

The subject paper explores the relevant issues and problems in successfully conducting this seminar program.

Key Words: Faculty presentations, guest speaker, seminar, student chapter, student presentations

Introduction

Construction programs whether at the undergraduate or graduate level are always faced with coursework constraints when considering additional degree requirements. Many programs have system-imposed constraints on hours required for a degree. With rising tuition rates, additional courses with attached credit hours can pose a financial burden as well for students completing their degrees.

At the University of Nevada Las Vegas (UNLV), changes to the construction management program curriculum resulted in a net reduction of credit hours required for the degree in construction management. Hours were reduced by ten semester credit hours to make the construction management degree more competitive with other internal and external degree programs. Along with the reduction of credit hours to 124, the American Council of Construction Education (ACCE)-required credits in construction science and construction were slightly increased.

It was still thought that the construction management program as a whole was missing some elements. Students tend to be disconnected in our program from freshman through to their senior year. The students in their differing stages in the program obviously take different classes. However, a common meeting ground for our students was viewed as a necessary goal. This common meeting ground is often fulfilled through a student chapter of some professional organization.

The student chapter forum has not worked well on our campus for two key reasons. The first is that very few students, less than five percent of the student body, live on campus. UNLV is in a large metropolitan area and most students commute to campus from various locations in the area. The second reason is that most students in our program are older than traditional undergraduate students. The average age of undergraduate students at the University in 2007 is 23.9 years having declined from 24.4 in 2003. The average age of construction undergraduate students is presently 25.5 years old, having declined from approximately 28 years old over the past five years indicating a shift towards younger more traditional students. At our students' age, it is common to have often accumulated family and attendant financial responsibilities resulting in an effort to balance work and school. Our full-time student enrollment has grown from 50 percent to 60 percent during the last four years. Previous to this full-time enrollment had been nearly constant at close to 50% for the previous six years. While full-time enrollment is defined as 12 credits by the University, an informal survey of students in fall 2007 indicated that most construction students were enrolled in 15 or more credits. The same survey indicated that 70% of the students worked 40 or more hours per week in the local construction industry. Another 20% worked 20 or more hours per week. With work and course commitments at this level, student extracurricular activities such as student chapters are almost completely neglected. The construction faculty decided to assist student involvement by bringing this activity inside the curriculum due to the aforementioned challenging environment.

An additional key area has been a unified forum for guest speakers. Being in a major metropolitan area, with a robust commercial, hospitality, and infrastructure construction market, there are numerous specialized and innovative construction projects taking place on a continual basis. Numerous construction industry representatives have proven willing and able to participate as guest speakers. To achieve as large an audience as possible beyond the typical classroom audience is a goal in order to provide the maximum benefit for our students. Frequently, a particular course's instructor may have a guest speaker discuss a certain project in a given semester. However, the speaker's talk would have been beneficial for all students. With guest speakers, topics, while interesting in general for both students and faculty, may be broader than the scope of that particular course. The undergraduate professional seminar has no such limitations. Moreover, it will allow guest speakers to not crowd out other topics that require coverage within the tight constraints of a semester class.

Professional Seminar Format

The format for the undergraduate professional seminar is six to seven class meetings per semester and a field trip. The class meetings are for seventy-five minutes for both the Fall and Spring semesters. The field trip time frame is variable based on the type of project and travel distance for the students. Most projects are within a 10-mile radius of our central city campus

location. Students in the seminar receive a satisfactory/unsatisfactory grade for this zero credit endeavor. At the end of the eight semesters, students will receive one credit total for their continued enrollment in the seminar.

However, it is desired that students take this seminar seriously therefore mandatory attendance is a requirement. Only excused absences are allowed and at the instructor's discretion only one non-excused absence may be accepted. Course attendance is kept by the coordinating faculty member. In general all students enrolled in a given semester must attend the seminar. Presently this attendance is approximately 100 students per semester. The other grading basis consists of written assignments which are written communication in word-processed format of the speaker's presentations and upper-division student's own presentations. This will support ACCE's requirement that oral presentation, technical writing, and/or business writing must be integrated into at least 33% of the total number of Construction and Construction Science courses (ACCE, 2006). These assignments require students pay attention and take notes rather than merely occupying a chair. Upper-division students (juniors and seniors) have the added requirement of verbal/written presentations that are graded by the coordinating faculty member.

Library Literature Search

Many undergraduate programs include the requirement that the students complete various reports and papers during their course of study. Our program is no different. This requirement ensures that the students learn the ability to think independently and conduct an objective evaluation of a topic. Part of this process is the search for existing knowledge and information on the topic, an activity which typically requires long hours in the school library. Scheduled into the Fall semester seminar is a presentation from the university library staff regarding the resources available at the library for conducting literature searches. The presentation includes a discussion of what resources are available and how to use the resources. The class meeting for this presentation is actually held in the library so that the students can see first hand the location and use of the resources. This presentation provides the students with a head start for conducting the literature search as part of their report work. Making the students conduct a literature search as an assignment for the class also gives them the impetus to effectively utilize the library resources that are available. The assignment is of great benefit to program faculty who no longer have to "hold a student's hand" when conducting a library literature search.

Conducting the Seminar

We have just started the undergraduate seminar so results from this while promising are still very preliminary. With our graduate M.S. Program, seminars have been conducted each semester for the past five years (Opfer et al., 2001). Minor changes have been made in the graduate seminar with each successive offering, with several suggestions coming directly from the students, until a preferred format was developed. It is anticipated that the same process will ensue for the undergraduate seminar. The seminar time is blocked out during the semester course scheduling process by the Program's Director. Thus, there is no conflict with other construction course offerings for students or faculty. There will always be some limited conflicts as students schedule general education and supporting courses. However, students are strongly encouraged to schedule these courses around the seminar. The actual time of the offering varies but will in general be scheduled at 7:00 p.m. on Wednesdays to accommodate students, faculty, and most of all guest speakers.

Tables 1 and 2 show a representative schedule of topics taken from the course syllabus planned over two semesters. The development of the seminar has led to the realization of several issues that needed attention and benefits that have come about from this developmental effort. These issues and benefits are described in detail in the sections that follow.

Table 1. Exemplar Seminar Schedule for Fall Semester.

Week	Topic	Presenter
1	Class Introduction And The Research Process	University Faculty
2	Collections, Databases & Searches in UNLV Library / Election of Student Officers	University Library
3	Technical Communications	Industry Executive
4	Construction Estimating: Tips and Traps	ENR Top 25 Industrial Contractor
5	Construction Scheduling: Avoiding Scheduling Games [^]	Scheduling Consultant On U.S. Department of Energy Project
6	Residential Construction In Tract Housing [^] /	Top 10 U.S. Homebuilder
7	Upper-Division Student Presentations	Students
Extra	Student Chapter Field Trip To Water Resources Project ^{^^}	Public Agency

[^]Student chapter coordinated speaker

^{^^}Student chapter coordinated field trip

Table 2. Exemplar Seminar Schedule for Spring Semester

Week	Topic	Presenter
1	Clark County School District Multi-Year Multi-Billion-Dollar School Construction Program [^]	School District (Fifth Largest School District in U.S.)
2	Project Management Software	Leading Software Project Control Firm
3	New Terminal Airport Construction [^]	ENR Top 25 Heavy/Highway Contractor
4	Construction Safety	Nevada Division of Industrial Relations; Safety, Consultation and Training Section
5	Construction Defects Research	University Faculty
6	Upper-Division Student Presentations	Students
7	Upper-Division Student Presentations	Students
Extra	Student Chapter Field Trip to Freeway Interchange Construction Project ^{^^}	Public Agency

[^]Student chapter coordinated speaker

^{^^}Student chapter coordinated field trip

With the above schedule students in the program will attend eight semesters of professional seminars. Direct topics will not be repeated for the entire eight semesters over the four-year period with the exception of the first three topics in Table 1, which will be repeated every year. This requires a recording of the history of the seminar for speakers in the future. Otherwise, students can end up hearing constant repeats of certain topics. Table 3 shows the scheduling of the professional seminar.

Table 3. Seminar Course Schedule

Semester	Freshman Year	Sophomore Year	Junior Year	Senior Year
Fall	CEM 198 Construction Seminar I	CEM 298 Construction Seminar II	CEM 398 Construction Seminar III	CEM 498 Construction Seminar IV
Spring	CEM 198 Construction Seminar I	CEM 298 Construction Seminar II	CEM 398 Construction Seminar III	CEM 498 Construction Seminar IV

The University Undergraduate Catalog course description is the same for CEM 198, 298, 398, and 498. The description is:

Required of undergraduate students in construction. Undergraduate and graduate students in other disciplines welcome. Presentations and discussions with speakers from industry and government. Preparation of oral and written reports. Group-selected cases and problems. O Credit, S/F Grading only.

Student Chapter Activities

The student chapter is made responsible each semester for identifying and arranging for two of the guest speakers and the semester field trip selection and coordination. In addition, once a month within the seventy-five minute seminar period, student chapter business can be conducted for the chapter at the back-end of the seminar. While some may view this incorporation of student chapter activities into a course with criticism, the benefit to students now and in the future with involving them in association activities now is viewed as a significant benefit to the students' professional socialization by the construction faculty.

Guest Speakers

In terms of guest speakers and topics for the undergraduate seminar, UNLV is fortunate to be located in a large metropolitan area with a dynamic construction market. These two factors help to provide outside speakers to the eight semesters of this seminar program. However there are some significant problems in dealing with guest speakers.

Some of these problems that we have encountered include the fact that in the current construction industry environment there is a significant scramble for talent. At UNLV and other institutions job boards are full of recruitment ads seeking construction personnel. Faculty phones ring off the hook with calls from construction companies and search firms seeking construction talent as well. If construction students whether graduate or undergraduate are interested, there are a plethora of opportunities available. Occasionally a speaker has tried to turn their presentation to the students into a straight recruiting pitch.

It is consistently emphasized to guest speakers that we are not seeking recruiting pitches aimed at our students. The speakers can talk about their firms to provide background for their talks but a recruiting pitch is unwelcome and will not be tolerated in this context. In this seminar at UNLV we have responsibilities to students to not waste their time and always provide an educational benefit. Moreover, many students are receiving partial- or full-tuition reimbursement from their employers. The old adage about paying for employee's continuing education is, "what if we train them and they leave?" If employers feel that we are providing opportunities to other firms to recruit their employees, it leaves our construction management program with a diminished reputation.

Besides the discouragement of recruiting sometimes the most difficult problem is in getting speakers to show up once they have committed to a scheduled date. It is not uncommon for the best speakers to be the busiest and occasionally their employer responsibilities may develop into a conflict at the last moment. If we get adequate notice, these conflicts can be scheduled around and the speaker's date rearranged. Unfortunately, we have had guest speakers cancel on very short notice. Our technique in dealing with this is to loosely schedule other activities. Typically there are one or two faculty presentations scheduled during the year. The construction faculty realizes the inherent problems that speaker cancellations impose and try to work around this with "in-house" presentations. At the beginning of each semester two faculty members are given the responsibility to have an "on-call" presentation ready in the event of a last-minute cancellation. This guest speaker cancellation issue is critical to this seminar format since unlike a standard class, a faculty member can not just have students pull out their textbooks and start a lecture. Therefore we make it a point in scheduling guest speakers to emphasize that they are a key element of this seminar format.

Selection of guest speakers is based on a number of factors. Two key factors are whether they have useful information to present and then can they present it in a coherent fashion? In addition, over the course of the eight semester undergraduate seminar we want to avoid duplication of content by the guest speakers. One goal is to expose students to a broad cross section of the construction industry. Many of these students already have some construction experience however their perspectives are generally limited. Thus we seek out speakers from all industry segments whether residential, commercial, heavy/highway, and industrial. We look for firms operating under a variety of contracts from unit price, lump sum, prime contract, subcontract, general contractor, and design-build to construction management. Moreover, we look for a blend between field and office and a diversity of specialties such as estimating, scheduling, cost control, project management, quality control, and business development. In addition to construction contractors, we also look to owners, architects, engineers, lawyers, accountants, Chief Information Officers, Chief Financial Officers and governmental entities including those with large capital construction and/or maintenance/renovation budgets. Since we, as do many programs, have an industry-advisory board (representing 30 major firms), this avenue provides a source for some of our speakers. Other speaker sources have been utilized for certain construction industry-specific computer software packages. With software vendor presentations, one key caveat is that the software package coverage not be fundamental content that is already utilized in the program such as an estimating or project scheduling package course coverage. Again, we want to avoid or minimize duplication of other material. Other speaker perspectives from construction industry suppliers and manufacturers can also be useful. Unfortunately vendor representatives are often ignored by both the industry and the academic sector as a valuable source of current information. However, the typical vendor representative by the very nature of their business visits more contractors, designers, owners, and job sites in a brief period than the typical construction contractor or other does in a year. Moreover, it must be realized that much of the innovation in the construction industry has come from vendors/manufacturers developing a product to sell into construction projects.

However, it should be noted that duplication of speaker areas is sometimes beneficial. Two of the seminar speakers highlight this benefit. Both of these speakers are presidents of their own

commercial general contracting organizations. Their firms build the same types of projects and are competitors of each other in the local construction market. Yet their approach to business and how they manage their firm are diametrically opposed to each other. This is valuable exposure for the students and many have commented on the sharp contrasts between these two speakers.

From the broad variety of guest speakers supplemented by faculty and other university resources, students come to better understand and appreciate the complexity of the construction industry. Attendance of all construction-area faculty is encouraged at these seminars. Faculty keeps current in the construction field by reading, conducting research, seminar/conference attendance and consulting. This seminar provides another avenue to remain current which is often particularly valuable since many of these speakers provide current local and regional information. In many cases this is information that is not published or available through other means.

Faculty in other coursework may have guest speakers into the classroom on occasion. Obviously we try to avoid duplication thus a speaker utilized in the seminar will not also be a classroom speaker for another course. The only time that this would occur would be when the speaker would talk on two distinct and discrete subject areas.

Faculty Presentations

Construction-area faculty presentations are another useful element of the seminar. Faculty are involved in a wide range of funded and unfunded research and publication. This faculty work is typically on a narrow specific level that does not by its nature have a useful outlet in undergraduate education coursework. The faculty material is more appropriate for a seminar topic. In addition, the faculty material may not fit a presentation into any other existing construction course. The seminar by its very nature of not being topic-limited provides a venue for these faculty presentations. As noted previously, faculty presentations are loosely scheduled during the semester to help fill in gaps left by guest speaker cancellations. At the beginning of each semester two faculty members are given the responsibility to have an on-call presentation in the event of a last-minute cancellation. While it should go without saying, again, as with guest speakers faculty members should avoid duplication of material that may have been covered by one of their lectures in another course. Industry speakers tend to be more practice-oriented while faculty speakers are obviously more academic and research-oriented.

Student Presentations

Upper division student's presentations in the fall and spring semesters of the seminar are scheduled towards the end of the semesters. During student presentations, the classroom atmosphere is very interactive between students and faculty. Feedback and questioning is encouraged in both directions. In these student work presentations students are encouraged to find certain problems that require solutions. This interactive process with its give-and-take is a valuable experience for the students. It brings to light certain issues that they may not have been thought of and also provides ideas for the other students in conducting their work.

The practice in giving an oral presentation to the student's peers is of great benefit as well. So often the feedback from Industry Advisory Board members and from employer surveys is of the

need for students to have strong communications skills. Effective communication skills, both written and oral are often the one of the most important criteria considered by construction industry employers. This is especially true for construction management upper-division students who are often working at the pre-professional or professional level themselves while attending the University. These types of students are rising in their professional careers and need to be able to deliver quality presentations to prospective clients. The requirement that the students give oral presentations to the class gives them the chance to practice their technical presentation skills. Faculty have selected Jolles (2005) to recommend as source to assist students in preparing for the presentation component of the seminar.

It would be ideal to have students at all four years give presentations in this seminar. However, given the numbers of students through four years combined with the time limitations, this is not practical. Moreover, students at the upper division levels will have more knowledge on average than their counterparts from lower division. Combined with more experience, the student should be able to provide presentations containing more in-depth content. Lower division students realize that they, in turn, will have their chances later on to make their own presentations. Thus far, there have been no student concerns or complaints about the upper-division student-presentation format.

Student/Faculty Course Evaluations

Students are given evaluation forms at every session to evaluate the speakers. In addition, faculty members in attendance also evaluate the speakers. Students also complete a standard construction management program-wide course evaluation at the end of the semester for this course along with their other courses. The goal with these evaluations is to ensure speaker quality and continually improve the seminar content/format.

Conclusions and Recommendations

For a properly-situated undergraduate program, we feel that, based on our experiences, that a seminar such as described above provides a valuable educational component. Programs at university locations more remote from metropolitan areas may find this aforementioned format more difficult to implement. Programs located away from population centers may find that a guest speaker has to travel multiple hours each way in addition to making the presentation. Thus this can be a full day's assignment for the potential guest speaker in this situation. However, with adequate recruiting and the assistance of industry advisory boards, programs may be able to adequately staff an undergraduate seminar program. As an example, if an industry advisory board meets twice a year on campus in the fall and spring, "bunching" up the seminar with rescheduling for two meetings in that particular week may allow for four speaker opportunities from the advisory board. Construction personnel in their periodic recruiting trips to campus provide additional opportunities with the previously-mentioned caveat about avoiding recruiting presentations within the seminar. Thus, while it requires more effort, even isolated campuses may find an undergraduate seminar format workable. For those programs not currently utilizing this seminar venue, based on our experience, we would strongly recommend it as a useful adjunct to construction management programs. As noted above, we were able to implement this without detracting from the core credits of our base undergraduate program.

Currently, the coordinating faculty member for the seminar does the bulk of the work in scheduling speakers and managing the other aspects of the seminar. There is some assistance from other construction-area faculty in recommending guest speakers and obvious assistance in terms of UNLV faculty presentations. The students in the student chapter have been delegated the responsibilities of coordinating and scheduling at least two of the seminar speakers plus one field trip each semester. The obvious benefits are that it gets students more involved in the seminar and facilitates faculty time for other tasks. The hope is that we are developing a capable roster of speakers and that once these speakers are established in a regular pattern; the workload of the faculty member will be reduced substantially.

We considered videotaping these undergraduate seminars and having them available as a permanent resource for our program. However, one of the most valuable aspects of the guest speakers' involvement is that they talk freely and able to discuss more sensitive information should they so desire. Thus the idea for videotaped segments will not be implemented for the seminar.

References

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