Section
4

Assessment Report for the Construction Management Program

Executive Summary

The annual assessment report provides the opportunity to review the state of the construction management program at Roger Williams University. This annual report covers the academic year beginning in August 2008 and ending in July 2009 (AY 08-09). Its focus is on the academic assessment through the year. Based on a review of the course reports as well as surveys and discussion with students and recent graduates, it is evident that the state of the program is solid and continues to improve with strong enrollment numbers.

The program faculty met on May 26, 2009 to review the AY 08-09 academic year and to discuss changes for next year. At this meeting we reviewed all published program outcomes and the metrics we are using to measure each outcome. Reports were also made on our internship program, the CM club, Capstone project and the AC exam. The meeting agenda and the reports made are attached to this assessment report.

Overall this was a strong year for the Construction Management program. Some of the highlights of the year are as follows:

- The student population dropped slightly with the fall 2008 enrollment at 175 students compared to 191 students in fall 2007.
- For the first time ever, all three of our student competition teams won first place at the ASC Region 1 competition. Our Commercial Building team also won 3rd place at Nationals. Our team's activities were supported by funding provided by Rhode Island AGC and the Construction Industries of Rhode Island.
- Tom Comella, Gilbane Building Company, was seated in the fall 2008 as our first industry chair of our CM Advisory Board. Peter Holden serves as Vice Chair. An Advisory Board Alumni Sub-Committee was formed at the start of the fall 2008 semester.
- The CM club was active running both a fall and spring lecture series.
- Dr. Na Lu and Professor Ilyas Bhatti left at the end of the Spring 2009 semester. Dr. Gokhan Çelik will be joining the faculty for the start of the fall 2009 semester.
- Our Sigma Lamda Chi student chapter supported the Bristol Food Pantry and received a national award for its activities.
- The conversion of SE-125 to a dedicated CM Project Room is scheduled for the winter intersession 2009. Construction and funding will be by Shawmut Design and Construction.

- The start of the Masters of Science in Construction Management program has been pushed back to the fall 2010.

1. Introduction

The Construction Management program was reaccredited by the ACCE in spring 2005.The First Year Interim Report was submitted in AY 2005-2006 and the Third Year Interim Report was submitted in AY 2007-2008. One published ACCE concern was outcomes assessment. In October 2006 the SECCM published a comprehensive Assessment Plan that detailed the assessment process for the school and each program. The Construction Management program has submitted annual assessment reports in compliance with this plan for AY 2005-2006, AY 2006-2007 and AY 2007-2008.This report will address the 2008-2009 academic year.

Each year the program faculty reviews the instruments used to gather assessment data making the necessary adjustments to streamline the effort and to attain better information. Next, program faculty members use these data to measure our success in meeting our defined objectives and outcomes as they have been described in the SECCM Assessment Plan. Successes, failures and metric adjustments are discussed on an annual basis. Programmatic adjustments made in previous years are also assessed on an annual basis as well as changes that are implemented for the following year.

The generation of formal reports (written for the first time in AY 2006-2007) for the Internship program, Construction Management Student Club, and the Associate Constructor exam and review course was continued this year. These reports, along with inputs from course transcripts, exit surveys, capstone juror reports, student competition performance, course binders and advisory board communications were used to perform this annual assessment. The program faculty met on May 26th, 2009 to discuss the above reports and to conduct this annual assessment. The agenda for this assessment meeting is included at Tab D. At this meeting program performance for AY 2008-2009 was assessed and adjustments in outcomes and metrics were made for coming year. Faculty also discussed ways to strengthen the Construction Management Student Club, the Internship and newly formed Externship programs, CM Capstone Project and the Associate Constructor exam and review course. All of the above topics are addressed further within the body of this report.

2. Analysis of Evaluation Instrument Data

Present

This assessment report considered both formal and informally gathered data. The formally gathered input information included transcript review, Senior Exit Survey results, Associate Constructor Report including exam performance (Tab E), CM Club report (Tab F), Internship Report (Tab G) and Student Job Search Survey (Tab H). Informal data included informal conversations between faculty and faculty, faculty and students and between faculty and industry. The Associated Schools of Construction student competition serves as an excellent assessment input – our student's work is formally assessed and scored by industry professionals. Program faculty also video tape our student team presentations as well as some of our competitors.

For the first time, the CM advisory board through the academic subcommittee conducted the senior exit surveys noted above. The program faculty see this as a positive first step, but the process needs to be better organized next year. The industry panel did not utilize a formal survey instrument nor interview every graduating senior. For next year a survey instrument needs to be prepared that is correlated to the program outcomes and a process needs to be established so every graduating senior is surveyed.

Program faculty also gather input from professional associations such as AGC, ASC, CSI, ACCE and ASCE. At these meetings faculty stay abreast of changes in accreditation standards and construction education "best practices" as regularly reported at these venues. Both permanent and intern employers provided feedback to the faculty on student performance. Formal internship reports are particularly valuable. Professional Advisory Board members also provide valuable support and feedback to the faculty. Program faculty meet with the board each semester. (Tab I includes copies of the meeting minutes)

Within each course assessment report students are provided the opportunity to evaluate their accomplishment of course objectives. This information is used by instructors to modify courses from semester to semester. Faculty provide formal course reports after each semester and a summary of each course is reviewed and discussed with other faculty from the program. This discussion facilitates adjustment in course coverage and adjustments in the overall program.

Adjustments for Next Year

Program faculty will work with Ronald Simoneau, Co-chair CM Advisory Board Academic Committee, to make the necessary Senior Exit Interviews adjustments before next year. The changes include the creation of a survey instrument that is correlated with the program outcome metrics. The interview process will also be adjusted to guarantee that every graduating senior is surveyed.

Stated in last year's report was the intention to more formally survey internship employers with regards to both student internship performance as well as student interview performance. Though the Career Center conducts employer interviews the focus tends to be on "for credit" RWU internship courses. Prior to next year, Dr. Brunnhoeffer, SECCM Internship Coordinator, will work with the Career center to develop a survey instrument that works for the CM program. Dr. Brunnhoeffer will incorporate the survey results into the annual Internship report he already provides.

The faculty discussed possible alternatives for incorporating feedback on graduate performance with companies that have formal training programs such as Shawmut and Gilbane. This will be discussed further over the year.

It is important that a formal employer and graduate survey be conducted next year. The CM program faculty will work with both the Engineering Program and Advisory Board Alumni Sub-Committee to accomplish this next year.

3. Program Assessment

The program educational objectives were first presented in that format for the 2007-2008 academic year. These objectives are shown in the table below.

Table 4.3-1 RWU Construction Management Program Educational Objectives

Objectives – Three to Five Years After Graduation, We Expect Our Graduates To:
1. Demonstrate exemplary technical knowledge and skills while achieving success as a practicing constructor and leader, and always displaying the highest standards of ethical conduct.
2. Value the concept of life-long leaning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.
3. Advance the construction management profession by becoming actively involved in professional associations and societies, serving in professional and community volunteer positions, and acting as a role model for the future generation of constructors and the Roger Williams University Construction Management students.

Assessment of CM Program Educational Objectives

Current plans call for the CM program in conjunction with the other SECCM programs to conduct a formal interview of both our recent (3-5 year) graduates and graduate employers during the upcoming 2009-2010 Academic year. Without this survey, the program coordinator reached out to Gilbane Building Company, Shawmut Design and Construction, Hensel Phelps Construction Company and Whiting Turner Construction Company. These four companies are the largest employers of our graduates. Company representatives were asked to comment on graduate performance with respect to our stated program objectives. A summary of their comments is cited below:

1. Demonstrate exemplary technical knowledge and skills while achieving success as a practicing constructor and a leader, and always displaying the highest standards of ethical conduct.

Graduates display a high level of success in all of the in-house management training programs conducted by these established companies. Quite a few of our graduates were promoted ahead of peers to advanced leadership positions. Our graduates display a solid grasp of computer software and have the technical skills to perform the job requirements. In summary we are graduating well-rounded students who are immediately ready for contribution to the construction industry with a strong foundation for advancement to leadership positions.

2. Value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.

Graduates display the ability to grasp new concepts and technologies well and also show a strong interest in teaching others. Graduates embrace learning and take regular advantage of in house training offered by their employers. Graduates show the ability to be cross trained to various industry roles. Graduates have demonstrated the ability to be quick learners and have a willingness to seek advanced degrees.

3. Advance the construction management profession by becoming actively involved in professional associations and societies, serving in professional and community volunteer positions, and acting as a role model for the future generation of constructors and the Roger Williams University Construction Management students.

Graduates have demonstrated a willingness to become involved in community and professional organizations. Graduates have joined Habitat for Humanity, ACE Mentoring, United Way and Rebuilding MA to name a few. Our graduates have become active in AGC's young constructor program in MA, RI and CT. Graduates have also displayed a willingness to mentor others both outside and within their companies.

To better identify the interrelationship between the program educational objectives and the program outcomes, Table 4.3-2, is presented below.

Table 4.3-2 Program Educational Objectives linked to Construction Management Program Outcomes

● = Weak Relationship
● = Moderate Relationship
● = Strong Relationship

a – k Outcomes	Technical knowledge, success as a practicing constructor and leader, display the highest standards of ethical conduct	Lifelong learning	Advance the construction management profession, service, role model, assist SECCM
a. an ability to apply knowledge of mathematics and science to typical Construction Management tasks	●	●	●
b. effective research and problem solving skills applied to typical Construction Management tasks	●	●	●
c. an ability to plan, organize and control a construction project	●	●	●

a – k Outcomes	Technical knowledge, success as a practicing constructor and leader, display the highest standards of ethical conduct	Lifelong learning	Advance the construction management profession, service, role model, assist SECCM
d. an ability to lead and/or function as a member of a team	●	●	●
e. students will experience and educationally benefit from quality facilities and equipment, strong industry support, and comprehensive extra-curricular activities	●	●	●
f. an understanding of professional and ethical responsibility	●	●	●
g. an ability to communicate effectively	●	●	●
h. the broad education necessary to understand the impact of construction in a global, economic, environmental, and societal context	●	●	●
i. a recognition of the need for, and an ability to engage in lifelong learning	●	●	●
j. a knowledge of contemporary issues	●	●	●

Program graduates continue to stay involved with the construction management program as members of the advisory board, mentors to our competition teams, guest speakers and employers of our most recent graduates. All of these graduates speak highly of the education they received at Roger Williams University and, given the overall success they have had in their careers, it is evident that our graduates are attaining our program objectives.

Based on the anecdotal information collected from our graduates' employers as well as the feedback received from the graduates themselves, the program faculty members believe that the Program Educational Objectives are being satisfied. The planned alumni survey to be administered in 2009 should help better quantify this position.

Assessment of CM Program Outcomes

In our assessment plan metrics were defined to assess each program outcome on an annual basis. The tables below outline each program outcome, defined metrics, and a summarization with comments as to whether or not the identified metric was met. The outcomes and metrics as defined in the table are what the faculty evaluated for the 2008-2009 academic year. However, as each outcome was evaluated, program faculty examined the outcomes and metrics and made adjustments to better evaluate program performance. The newly defined outcomes and metrics are located in Appendix A and will be utilized for the 2009-2010 academic year.

Table 4.3-3 Outcome "a" Metrics with Evaluations

Outcome a: an ability to apply knowledge of mathematics and science to typical Construction Management tasks			
Metrics Associated with Outcome a:	**Where Measured**	**Met**	**Comments**
1. CM student pass rate of the AC exam meets or exceeds the national average	AC Exam	Yes	RWU 79% National 66%
2. For each required construction course with a prerequisite in mathematics, science or engineering, at least 75% of the students who have C or better in the prerequisite course pass the course on the first attempt.	Transcript Review	Yes	
3. All graduating seniors report that they have achieved proficiency in the ability to apply knowledge of mathematics and science to solve construction problems. Proficiency is defined as a score of 1 or 2.0 on a 5 point scale where 1 means proficiency achieved and 5 means proficiency not achieved.	Course Student Survey Student Exit Survey	Yes	No formal survey this year. Faculty feel confident this outcome has been met
4. Faculty report adequate application of mathematics in construction coursework.	Course Assessment Report	Yes	Seniors report positively via course surveys
5. At least 85% of all alumni rate their preparation by RWU for the workplace in the ability to apply knowledge of mathematics and science as good to excellent.	Alumni Survey Employer Survey	N/A	

Table 4.3-4 Outcome "b" Metrics with Evaluations

Outcome b: effective research and problem solving skills applied to typical Construction Management tasks			
Metrics Associated with Outcome b:	**Where Measured**	**Met**	**Comments**
1. 100% of CM students will successfully complete applications in coursework involving research aspects and problem solving techniques.	Transcript Review	Yes	
2. At least 10% of all Construction Management seniors will participate in a competition where their ability to research and solve problems and will be externally judged and assessed.	Student Competitions CM Capstone	Yes	
3. Graduating seniors report that they have achieved proficiency in the ability to solve construction problems. Proficiency is defined of at least a score of 1 or 2 on a 5 point scale where 1 means proficiency achieved and 5 means proficiency not achieved.	Student Exit Survey	N/A	Exit survey in transition to Industry lead – survey instrument needs to pick up this metric in the future
4. At least 85% of all alumni rate their preparation by RWU for the workplace in the ability research and solve problems	Alumni Survey Employer Survey	N/A	

Table 4.3-5 Outcome "c" Metrics with Evaluations

Outcome c: an ability to plan, to organize and to control a construction project			
Metrics Associated with Outcome c:	**Where Measured**	**Met**	**Comments**
1. 100% of Construction students participate in a Capstone Project Class that involves a semester long industry sponsored project that demonstrates their ability to successfully plan, organize and control a project.	Capstone Project Juror Evaluations Transcript Review	Yes	Either within the Capstone project or at a regional and/or national competition
2. Employment Interviewers favorably rate (2 or better) applicants for internship and permanent placement in the applicant's ability to plan, organize and control a construction project.	Employer Interview Survey	N/A	Will institute an employer interview questionnaire for our October 7th Career Fair
3. Employers favorably rate (2 or better) previous Construction Management hires graduate's ability to plan, organize and control a construction project.	Employer Survey	N/A	
1. 100% of Construction students participate in a Capstone Project Class that involves a semester long industry sponsored project that demonstrates their ability to successfully plan, organize and control a project.	Capstone Project Juror Evaluations Transcript Review	Yes	Either within the Capstone project or at a regional and/or national competition

Table 4.3-6 Outcome "d" Metrics with Evaluations

Outcome d: an ability to lead and/or function as a member of a team			
Metrics Associated with Outcome d:	**Where Measured**	**Met**	**Comments**
1. 100% of students participate as a team member as they complete their Capstone project. Each team member brings different construction experiences to the project.	Transcripts Capstone Project juror evaluations Course Assessment Report	Yes	
2. 100% of all Construction students will participate in the university CORE sequence and University Senior Interdisciplinary Experience.	Transcripts	Yes	
3. At least 50% of construction courses will give students the opportunity to work on collaborative team projects.	Course Binders Course Assessment Report	Yes	CNST 130, 250, 260, 304, 445, 475 & 480
4. At least two student-led teams will participate in the Associated Schools of Construction Region 1 student competition	Student Competitions	Yes	All 3 teams won first place at the Regional level
5. At least 100% of construction management students will have held a construction related summer position, internship or co-op, or construction management work study related position by the time of graduation.	Senior Exit Survey	No	This metric may be met, but a more complete program/career center survey instrument needs to be developed. Informally 48/53 students participated

Table 4.3-7 Outcome "e" Metrics with Evaluations

Outcome e: an understanding of professional and ethical responsibility			
Metrics Associated with Outcome e:	**Where Measured**	**Met**	**Comments**
1. 25% of graduating seniors, will sit for the AC exam.	AC Examination	Yes	49%
2. All students will develop and present a case that focuses on professional and ethical responsibility.	Course Binders	Yes	Course requirement for CNST 480
3. At least 25% of all construction management classes will address, and students will demonstrate an understanding of professional and ethical responsibility.	Course Binders Course Student Surveys	Yes	7 program courses include professional ethics

Table 4.3-8 Outcome "f" Metrics with Evaluations

Outcome f: an ability to communicate effectively			
Metrics Associated with Outcome f	**Where Measured**	**Met**	**Comments**
1. At least 85% of all mentors and potential employers agree that graduating seniors possess the ability to communicate effectively.	Professional Advisory Board Meeting Employer survey Graduate employer survey	Yes	Oral stronger than written – faculty plan to integrate more writing into CNST coursework
2. 100% of seniors will have the opportunity in construction classes to make an oral presentation at least twice a month in their senior year.	Course Binders Course Assessment Report	Yes	
3. 100% of all freshmen will have the opportunity to make an oral presentation in a construction class at least 2 times per semester.	Course Binders Course Assessment Report	No	
4. 100% of graduates will produce an acceptable senior capstone oral report as evaluated by external and internal review.	Transcript Review	Yes	
5. At least 90% of alumni report that their RWU education has prepared them extremely well in communication skills for the workplace. "Extremely well" is defined as a 1 or 2 on a five point scale where 1 means proficiency achieved and 5 means proficiency not achieved.	Alumni Survey	N/A	

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Table 4.3-9 Outcome "g" Metrics with Evaluations

Outcome g: the broad education necessary to understand the impact of construction in a global, economic, environmental, and societal context			
Metrics Associated with Outcome g	**Where Measured**	**Met**	**Comments**
1. 100% of construction students fulfill the Multidisciplinary Core Education component as well as the Core Concentration component of study to include the Core Senior Seminar.	Transcripts	Yes	
2. At least 25% of construction courses address this outcome.	Course Assessment Report Course Binders	Yes	
3. At least 1 guest speaker per semester will address the above outcome.	CM Club Report	Yes	

Table 4.3-10 Outcome "h" Metrics with Evaluations

Outcome h: a recognition of the need for, and an ability to engage in lifelong learning			
Metrics Associated with Outcome h	**Where Measured**	**Met**	**Comments**
1. 25% of graduating seniors, will sit for the AC exam.	AC Exam Results	Yes	49%
2. At least 50% of CM students will be active members in the CM club.	CM Club Report	Yes	Need to develop a membership list
3. At least 75% of surveyed alumni indicate participation in professional training, professional societies or a graduate school since graduating from RWU.	Alumni Survey	N/A	

Table 4.3-11 Outcome "i" Metrics with Evaluations

Outcome i: a knowledge of contemporary issues related to the construction industry			
Metrics Associated with Outcome i	**Where Measured**	**Met**	**Comments**
1. All (100%) of construction students will be exposed to contemporary issues through the Multidisciplinary Core Education component as well as the Senior multidisciplinary Core course	Course Binders	Yes	
2. At least 25% of construction courses will address this outcome.	Course Binders Course Assessment Report.	Yes	
3. At least 85% of graduating seniors will rate their proficiency in knowledge of contemporary issues at a score of 1 or 2 on a five point scale where 1 means proficiency developed and 5 means proficiency not developed.	Construction Student Exit Survey	N/A	Exit Survey Instrument will be adjusted for next year
4. All (100%) of construction students will be exposed to contemporary issues through the Senior Seminar class.	Course Binders	Yes	
5. All (100%) of construction students will participate in the Feinstein Service Learning Requirement of at least 5 hours in the surrounding community.	Transcripts	Yes	

4. Assessment of Previously Implemented Program Changes

Three of the five curriculum changes initiated for the 2007-2008 academic year deserve comment.

AY0708-1: Launched a Master of Science in Construction Management (MS in CM) program scheduled for the start with the fall 2009 semester. The program is designed to incorporate both on-line, classroom, and resident instruction. The program will be two years in length, 36 credits, with the students operating as a cohort. Unfortunately, current enrollment is not adequate to start the program on 2009. The program has been pushed back to a fall 2010 start providing time to engage more corporate support and students and create a sustainable cohort class.

AY0708-3: Math 131, Applied Precalculus, was added as a required course to the Construction Management program. This course is a required course in the first year, fall semester. Entering students who test into MATH 207, however, will not be required to take MATH 131 and will be allowed to graduate with 126 credits. The CM program became one credit short in the ACCE-mandated Math/Science category when it replaced Math 213, Calculus I and Lab (4 credits) with Math 207, Applied Calculus (3 credits). Math 207 has been a positive change for the program since the content and focus of this class is good match for the CM student. Also, since the majority of entering freshmen were already placing into MATH 131 or lower this curriculum change just formalizes what is already happening.

AY0708-11: Adding CNST 116 Computer Applications for Construction, as a perquisite for CNST 250 ensures that the students in CNST 250 will have a solid understanding of both CAD and Excel which are utilized throughout the course. This change also supports increased rigor in CNST 250.

5. Discussion of Recommended Program Changes

No curriculum changes were made during the 2008-2009 academic year.

As mentioned in Section 2, a number of formal reports were made this year which were reviewed and discussed be the faculty:

Internship Program

Student interest and participation in internships continues to be strong. Approximately 76% of eligible CM students worked a construction related job over the summer. Eligible is defined as students who will be entering their sophomore, junior or senior year. Some students worked non-construction jobs and some did not complete the survey that Dr. Brunnhoeffer prepared (see Tab G.)

Working with the Career Center, Dr. Brunnhoeffer continues to be successful in getting all program freshmen to get approved resumes on the Career Center's Hawk Hunt web site. This sets up the freshmen to take advantage of the many internship and services offered by the Career Center.

Interest in the Externship program improved this year, though more positions are available than students willing to fill them.

The program has scheduled a Career Fair for October 7th next fall. This fair has purposely been scheduled early to provide as many opportunities as possible for our students for both internship and full time positions. The fall Advisory Board meeting has also been scheduled that evening to involve them in the Career Fair and strengthen the connection between the students and the board. The board has been discussing the establishment of a mentoring program which will be promoted at this time.

Construction Management Student Club

The CM Student Club under the leadership of Professor Bhatti had a very successful year. See Professor Bhatti's report and the club fall and spring semester reports under Tab F. These reports outline in detail the guest speakers and topics covered during both semesters. The club also arranged a number of preparatory activities during the fall semester for our competition teams which included a presentation skills workshop and dry run session to include judges. This year's club did a much better job of spreading out the guest lectures and promoting the lectures to the school. The club was also successful in establishing next year's slate of officers before the end of the spring semester which should allow next year's club activities to begin immediately with the commencement of the fall semester.

Capstone Project

Capstone project results this year were again excellent. Professor Bhatti, with the support of our advisory board, assembled an excellent panel to review our senior capstone projects.

Two changes discussed last year were implemented this year and were found to be for the most part successful. One change was that seniors who were part of a winning regional competition team were excused from the project portion of the class. The students clearly appreciated this, but unfortunately since we had three winning teams the industry panel did not see a true representative sample of our graduates' ability. Also, since we performed our senior exit interview on the day of the capstone presentations many of our best students were not interviewed. Adjustments will be made on both accounts next year. The second change that was made was to have all student projects be the same. This created a competitive feel to the presentations and an equal level of work for the teams. It also allowed Professor Bhatti to and the jurors to better prepare to judge the project and perform a more critical review.

Next year's plan is to involve our regional winners (assuming they win) more as mentors to the other project teams. Another idea is to require our winners to present their national presentation to the jury to demonstrate the quality of their work. All seniors will be in interviewed next year. The faculty also agreed to provide a five percent "bump" to those seniors who take and pass the AC exam.

Associate Constructor Exam and Review Course

The program faculty felt that our previously implemented changes worked well. Unlike previous years the exam was promoted by the faculty to all seniors and they were encouraged to attend, but not required. This move delivered a self selected, motivated group - 49% of eligible students took the exam - as compared to the previous year when students were required to take the exam, but not everyone was prepared. This change increased our pass rate to well above the national average – 79% versus 66% (see Tab E.)

The program fully reimbursed the students for their exam fee if they passed. No formal review course was offered, but Dr. Brunnhoeffer ran an informal review course. To encourage students a little more next year all students that pass next year's AC exam will be awarded a 5% bonus in CNST 480.

Other Topics

Efforts continue to be made to strengthen the CM Advisory Board. Tom Comella was seated in the fall as the first industry Chair. Peter Holden was selected as Vice Chair. The board created a new standing sub-committee that focuses on Alumni relations. This new sub-committee has begun to engage our alumni and involve them in team mentoring efforts, senior exit surveys, and as capstone jurors. Once our mentoring program is formally launched, the Alumni committee will provide the mentors needed. To date the board has been very successful in the implementation of various

activities that support academics and less successful in fundraising. It is Tom's goal to strengthen the board's development efforts over the coming year. Tom plans to discuss this topic with both the President and the VP of Enrollment and Advancement.

Thanks to a potential gift from Shawmut Design and Construction a dedicated Construction Management laboratory is scheduled to be constructed starting in the AY 2009-10 winter intercession. This space will be utilized for courses in estimating, scheduling, project control, project management and capstone. The space would also support club and competition activities and serve as the center for the Construction Management program.

The scheduled start of the CM Master's degree program has been pushed back from the fall 2009 semester to 2010. Pushing the program back should provide more time to engage more industry partners and develop a sustainable cohort class.

Over the spring 2008 semester the program faculty undertook a complete review of the CM program to ensure complete coverage of all ACCE mandated essential elements of instruction (EEI's). The faculty paid particular attention to changes made to the ACCE standards since the time of the last visit such as the requirement to cover ethics in a minimum of five construction courses. The results of this review were presented in the AY 2007-2008 assessment report. In preparation for ACCE's next visit an effort will be made next year to formally document course coverage as spelled out on the matrix.

Appendix A: Revised Program Outcomes and Metrics

The following pages reflect the adjusted outcomes that will be used to assess the CM program starting in Academic Year 2009-2010. Indicated on each page is a brief note of the changes made.

Outcome a: an ability to apply knowledge of mathematics and science to typical Construction Management tasks			
Metrics Associated with Outcome a:	**Where Measured**	**Met**	**Comments**
1. CM student pass rate of the AC exam meets or exceeds the national average	AC Exam		
2. For each required construction course with a prerequisite in mathematics, science or engineering, at least 75% of the students who have C or better in the prerequisite course pass the course on the first attempt.	Transcript Review		
3. All graduating seniors report that they have achieved proficiency in the ability to apply knowledge of mathematics and science to solve construction problems. Proficiency is defined as a score of 1 or 2.0 on a 5 point scale where 1 means proficiency achieved and 5 means proficiency not achieved.	Course Student Survey Student Exit Survey		
4. Faculty report adequate application of mathematics in construction coursework.	Course Assessment Report		
5. At least 85% of all alumni rate their preparation by RWU for the workplace in the ability to apply knowledge of mathematics and science as good to excellent.	Alumni Survey Employer Survey		

Outcome b: effective research and problem solving skills applied to typical Construction Management tasks			
Metrics Associated with Outcome b:	**Where Measured**	**Met**	**Comments**
1. 100% of CM students will successfully complete applications in coursework involving research aspects and problem solving techniques.	Transcript Review		
2. At least 10% of all Construction Management seniors will participate in a competition where their ability to research and solve problems and will be externally judged and assessed.	Student Competitions CM Capstone		
3. Graduating seniors report that they have achieved proficiency in the ability to solve construction problems. Proficiency is defined of at least a score of 1 or 2 on a 5 point scale where 1 means proficiency achieved and 5 means proficiency not achieved.	Student Exit Survey		.
4. At least 85% of all alumni rate their preparation by RWU for the workplace in the ability research and solve problems	Alumni Survey Employer Survey		

Outcome c: an ability to plan, to organize and to control a construction project			
Metrics Associated with Outcome c:	**Where Measured**	**Met**	**Comments**
1. 100% of Construction students participate in a Capstone Project Class that involves a semester long industry sponsored project that demonstrates their ability to successfully plan, organize and control a project.	Capstone Project Juror Evaluations Transcript Review		
2. Employment Interviewers favorably rate (2 or better) applicants for internship and permanent placement in the applicant's ability to plan, organize and control a construction project.	Employer Interview Survey		
3. Employers favorably rate (2 or better) previous Construction Management hires graduate's ability to plan, organize and control a construction project.	Employer Survey		

Outcome d: an ability to lead and/or function as a member of a team			
Metrics Associated with Outcome d:	**Where Measured**	**Met**	**Comments**
1. 100% of students participate as a team member as they complete their Capstone project. Each team member brings different construction experiences to the project.	Transcripts Capstone Project juror evaluations Course Assessment Report		
2. 100% of all Construction students will participate in the university CORE sequence and University Senior Integrative Experience.	Transcripts		
3. At least 50% of construction courses will give students the opportunity to work on collaborative team projects.	Course Binders Course Assessment Report		
4. At least two student-led teams will participate in the Associated Schools of Construction Region 1 student competition	Student Competitions		
5. At least 100% of construction management students will have held a construction related summer position, internship or co-op, or construction management work study related position by the time of graduation.	Senior Exit Survey		

Outcome e: an understanding of professional and ethical responsibility			
Metrics Associated with Outcome e:	**Where Measured**	**Met**	**Comments**
1. 25% of graduating seniors will sit for the AC exam.	AC Examination		
2. All students will develop and present a case that focuses on professional and ethical responsibility.	Course Binders		
3. At least 25% of all construction management classes will address, and students will demonstrate an understanding of professional and ethical responsibility.	Course Binders Course Student Surveys		

Outcome f: an ability to communicate effectively			
Metrics Associated with Outcome f	**Where Measured**	**Met**	**Comments**
1. At least 85% of all mentors and potential employers agree that graduating seniors possess the ability to communicate effectively.	Professional Advisory Board Meeting Employer survey Graduate employer survey		
2. 100% of seniors will have the opportunity in construction classes to make an oral presentation at least twice a month in their senior year.	Course Binders Course Assessment Report		
3. 100% of all freshmen will have the opportunity to make an oral presentation in a construction class at least 2 times per semester.	Course Binders Course Assessment Report		
4. 100% of graduates will produce an acceptable senior capstone oral report as evaluated by external and internal review.	Transcript Review		
5. At least 90% of alumni report that their RWU education has prepared them extremely well in communication skills for the workplace. "Extremely well" is defined as a 1 or 2 on a five point scale where 1 means proficiency achieved and 5 means proficiency not achieved.	Alumni Survey		

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Outcome g: **the broad education necessary to understand the impact of construction in a global, economic, environmental, and societal context**			
Metrics Associated with Outcome g	**Where Measured**	**Met**	**Comments**
1. 100% of construction students fulfill the Multidisciplinary Core Education component as well as the Core Concentration component of study to include the Core Senior Seminar.	Transcripts		
2. At least 25% of construction courses address this outcome.	Course Assessment Report Course Binders		
3. At least 1 guest speaker per semester will address the above outcome.	CM Club Report		

Outcome h: **a recognition of the need for, and an ability to engage in lifelong learning**			
Metrics Associated with Outcome h	**Where Measured**	**Met**	**Comments**
1. 25% of graduating seniors will sit for the AC exam.	AC Exam Results		
2. At least 50% of CM students will be active members in the CM club.	CM Club Report		
3. At least 75% of surveyed alumni indicate participation in professional training, professional societies or a graduate school since graduating from RWU.	Alumni Survey		

Outcome i: a knowledge of contemporary issues related to the construction industry			
Metrics Associated with Outcome i	**Where Measured**	**Met**	**Comments**
1. All (100%) of construction students will be exposed to contemporary issues through the Multidisciplinary Core Education component as well as the Senior multidisciplinary Core course	Course Binders		
2. At least 25% of construction courses will address this outcome	Course Binders Course Assessment Report		
3. At least 85% of graduating seniors will rate their proficiency in knowledge of contemporary issues at a score of 1 or 2 on a five point scale where 1 means proficiency developed and 5 means proficiency not developed.	Construction Student Exit Survey		
4. All (100%) of construction students will be exposed to contemporary issues through the Senior Seminar class.	Course Binders		
5. All (100%) of construction students will participate in the Feinstein Service Learning Requirement of at least 5 hours in the surrounding community.	Transcripts		