

## Assessment Report for the Construction Management Program

### Executive Summary

The annual assessment report provides the opportunity to review the state of the construction management (CM) program at Roger Williams University (RWU). This annual report covers the academic year beginning in August 2015 and ending in July 2016 (AY 15-16). Its focus is on the academic assessment through the year. Based on a review of the course assessment reports in addition to various surveys, examinations, and discussions with students, alumni and the construction industry professionals, it is evident that the state of the program remains to be strong.

The program faculty met on May 11, 2016 and May 25, 2016 to review the 2015-2016 academic year and to discuss changes for the upcoming year. During this meeting, CM faculty reviewed all eleven (11) program objectives and twenty (20) program learning outcomes and the metrics associated with each. Reports were also made on the status of internship, the CM club, Sigma Lambda Chi (SLC) student association, RWU US Green Building (USGBC) Student Group, Capstone project, Senior exit surveys, Alumni Survey and the Associate Constructor (AC) Level 1 exam. The meeting agenda, and the reports made are attached to this assessment report. Overall this was another strong year for the Construction Management program. Some of the highlights of the year are as follows:

- Our 6th annual Alumni and Senior Banquet was held on April 29, 2016. At this event our Capstone Project winners were announced and our graduating senior class (Img 4.0.1) were introduced to our program alumni.



*Image 4.0.1. Class of 2016 with some of the CM faculty at the 6<sup>th</sup> Annual Alumni and Senior Banquet*

- CM Program utilized and assessed the new ACCE Student Learning Outcomes as the new Program Learning Outcomes. New outcomes were adopted by the end of 2014-2015 academic year.
- CM Program utilized and assessed the new Program Objectives New outcomes were adopted by the end of 2014-2015 academic year.
- The student population increased with the fall 2015 enrollment at 140 students more than the fall 2014 enrollment of 121.
- Our CM Design-Build (DB) team won 2<sup>nd</sup> Place in the Associated Schools on Construction (ASC) Region 1 Student Competition.
- Our CM Heavy-Highway (HH) team won 2<sup>nd</sup> Place in the Associated Schools on Construction (ASC) Region 1 Student Competition.
- Our CM Commercial Construction (CC) team won 2<sup>nd</sup> Place in the Associated Schools on Construction (ASC) Region 1 Student Competition.
- Our Design Build Institute of America (DBIA) Student Team won 1<sup>st</sup> Place in the Northeast Region and 5<sup>th</sup> place in the National Student Competition.
- Dr. Amine Ghanem joined Dr. Celik's CM Research Group. The group employed four (4) CM students, one (1) Web Development student and one (1) industry mentor. Together they had nine publications and all five students traveled to international and national conferences. Their expenses were funded by the Provost's Office, SECCM, and the CMPAB.
- Employment rate of graduating seniors remained at a strong 100% among those reported their status which was 97% of all the graduating seniors.
- The CM program started to utilize Program Learning Outcome Mentors, a group of industry professionals volunteering to be mentors for specific PLOs based on their expertise.
- The CM Professional Advisory Board (CMPAB) awarded its sixth endowed scholarship to CM Junior Mr. George Peabody (Image 4.0.2)



**Image 4.0.2.** CM Junior, George Peabody receiving her scholarship from William Thumm (Chair – CMPAB) and Danielle Crawford (Board Member – Development Committee/CMPAB)

## 1. Introduction

The Construction Management program was reaccredited by the ACCE in spring 2005 and in Spring 2011. 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, AY 2007-2008, AY 2008-2009, 2009-2010, 2010-2011, 2011-2012, 2012-2013, 2013-2014 and 2014-2015. This report will address the 2015-2016 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, the Associate Constructor exam, Capstone Project, Sigma Lambda Chi and the USGBC was continued this year. Over the last two years, CM Alumni were surveyed using an online survey with support from RWU Development department as well as a growing reach we have built over our social media accounts. All of this led to a better number of responses, but still not a broad, representative cross-section of alumni. Beginning in 2012-2013, faculty decided to focus on a specific year group – graduates 4 years out from graduation. We targeted 2010 graduates last year, and continued with 2011 graduates this year. For the first time this year, we started to assess and report CM Research Group activities, a freshmen survey and a faculty survey. These reports, along with inputs from course transcripts, exit surveys, alumni surveys, capstone juror reports, student competition performance, course assessment reports and binders and advisory board communications were used to perform this annual assessment.

The program faculty met on May 11, 2016 followed by another meeting on May 25, 2016 to discuss the above reports and to conduct this annual assessment. At these meetings, program performance for AY 2015-2016 was assessed and adjustments in outcomes and metrics were made for coming year. Faculty used a new set of metrics for the newly adopted twenty (20) ACCE student learning outcomes as the program outcomes in affect for the AY 2015-2016. During the assessment, faculty discussed several potential curriculum change drafts to be pursued in AY 15-16. In addition to the CM assessment meetings in May 2016, during the 2015-2016 academic year, starting in the term of Spring 2016, CM faculty started to have official monthly general business meetings. During these monthly meetings, we were able to track action items from previous assessment years and address any other relevant general business matters

A complete list of all CM faculty meetings along with the meeting themes during the 15-16 AY are given below:

- 2015-2016-001: September 9, 2015 (Start of AY 15-16 – General meeting)
- 2015-2016-002: February 3, 2016 (Start of Spring 2016 – General Meeting)
- 2015-2016-003: March 17, 2016 (General Meeting)
- 2015-2016-004: April 21, 2016 (General Meeting)
- May 11, 2016 (Program Assessment)
- May 25, 2016 (Program Assessment)

Tab A includes meeting minutes for the general business meetings shown above. Program assessment results from May 2016 meetings are available at the end 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, course assessment reports, Senior Exit Survey results (Tab B), Senior Capstone Report (Tab C), Associate Constructor Report including exam performance (Tab D), CM Club Report (Tab E), USGBC, SLC and Internship Reports (Tab F), Alumni Survey results (Tab G), CM Research Group Report (Tab J), Freshmen Survey results (Tab K) and the Faculty Survey results (Tab L). 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.

Senior exit surveys were performed both by CM faculty as well as the industry members. For the seventh time, the CM advisory board through the academic subcommittee coordinated our senior exit surveys. Two program alumni formed the panel, which met with all but graduating seniors. Seniors also filled out an electronic survey. Both the written survey results and a report from the alumni panel can be found at Tab B.

For the sixth time, as recommended for the first time in our AY 2009-2010 assessment process, this year's two capstone projects were held in a competition format and with each focusing on a different project type. The projects were corporate sponsored and a SECCM alumni team of industry professionals coordinated each project. The capstone project winners were announced at our 6<sup>th</sup> Annual CM Alumni and Senior Banquet. Tab C provides additional details on the Capstone Project.

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. Faculty continued to attend regional, national, and international meetings and conferences including ACCE, ASC and ASCE meetings. Both permanent and intern employers provided feedback to the faculty on student performance results of which can be found within Tab F. Formal internship reports are particularly valuable. Professional Advisory Board members also provide valuable support and feedback to the faculty. Tab H includes copies of our CMPAB meeting minutes.

This year, changes continued to be made to course syllabus format as well as the course assessment reports in order to standardize course documentation and assessment across all CM courses. Within each course assessment report instructors evaluate each course learning outcome (CLO) with direct and indirect assessment measures. Faculty members also provide baseline performance standards and whether the students meet them. As a part of a continuous quality improvement plan, within the course assessment reports, faculty members provide an action plan to be utilized in the upcoming semesters. Faculty members provide formal course reports for each course they taught after each semester. The Program Coordinator and the Dean review these reports and further discussions take place in regular program meetings among the CM faculty to facilitate adjustment in course coverage and the overall program.

### Adjustments for Next Year

As suggested two years ago, we continued to contact all 2011 alumni using an online (Qualtrics) survey. With the help of our extended reach via our LinkedIn database, Unfortunately, we were able to increase the number of responses to 11 compared to 3 from last year's survey. We continue to find ways to increase participation while we appreciate this year's increase to approximately 32% compared to 8% in AY 2014-2015. Our CMPAB Alumni Committee, RWU Alumni committee and the CM faculty continue to work to strengthen the CM alumni database to reach more graduates. Additionally, our new website provides more ways to connect with the students and our alumni. Combined with the alumni database from the Development Office, we are hoping to increase participation rates significantly. See outcome / objective detailed assessments for further information.

# 3. Program Assessment

Starting in 2012-2013, CM students were invited to join a LinkedIn CM group to allow the program faculty and administration to stay in touch post their graduation. Since many of our graduates continue to update their resumes online, we have been collecting better and more reliable data for the past few years. Targeting graduates that are 4 years out from graduation will produce better results significantly in the 2017-2018 academic year assessment since more than 80% of the Class of 2013 are registered for the online group. This report also utilizes data from the Linked-in group, specifically the 21 members of the Class of 2011. Class of 2011 represents the class that is 4-5 years out of college and data collected specifically from them is used to assess program educational objectives. Figure 4.3.1 illustrates the basic demographics of the Class of 2011 including what they do, where they work, and what they report as their strongest skills.

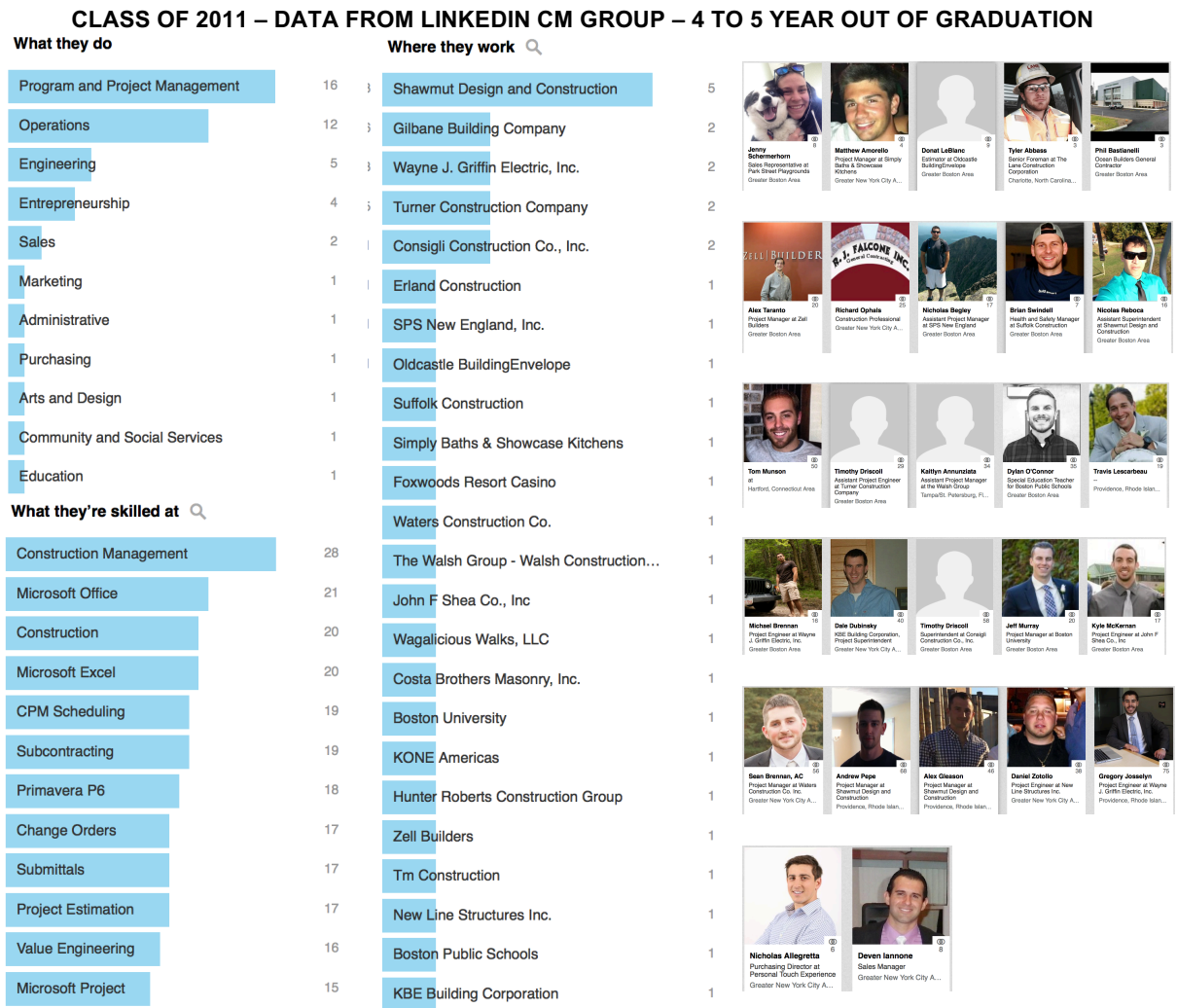


Figure 4.3.1 Class of 2011 Representative Statistics as of Fall 2016

Based on data from the Linked-in group, approximately 40% of the Class of 2011 is holding a minimum of a Project Manager and/or Superintendent level position. These levels of positions in the construction industry usually require a minimum of 5+ years of experience and in many companies that our graduates work, experience requirement is much higher. Having a high ratio of our sample having already achieved these positions is an indicator of their technical knowledge and skills as well

as their role as leaders in the industry. The alumni survey administered to the Class of 2011 indicates that 100% of the respondents agree that the CM program has helped them with associated program educational objectives.

One of the challenges has been the rate of graduate degree and/or certificate program completion among the class that graduated 4-5 years ago. Among the 11 who answered the alumni 2011 survey, none of them completed a graduate degree or a certificate program. This specific issue is highlighted in the detailed assessment of program objectives along with action items in 2016-2017 that include more emphasis on educating the current body of students on the value of continuing and lifelong education/learning. CM club will take the major lead on this task and we hope to improve this year's results in the upcoming years. We understand that pursuing a graduate degree is not the only metric of measuring this objective.

31% of the alumni who responded to the alumni survey stated that they are a member of at least one professional organization which is a 1% increase from the previous year. Many of the RWU alumni based on their LinkedIn profiles continue to volunteer and participate in various service activities. Alumni involvement on our CM Advisory Board and as members of our capstone review panel has been significantly growing in the past few years. The alumni subcommittee of our CM Advisory Board sponsored the sixth annual CM Alumni and Senior banquet on April 29<sup>th</sup> (Img 4.3.1).



**Image 4.3.1** Fifth CM Alumni and Senior Banquet – May 1, 2015 – Bristol Yacht Club, Bristol, RI

The event was organized by CM alumni and culminated a day filled with CM alumni program involvement. Alumni participated both as capstone project judges and volunteered to meet with all graduating seniors as part of the senior “exit survey” process (Img 4.3.2).



**Image 4.3.2.** Capstone project presentations – May 1, 2015

William Tracey, TRAC Builders Inc. Founder and President and an RWU CM Alum received this year's Alumni Distinguished Person Award (ADPA) (Img. 4.3.3).



**Image 4.3.3.** RWU CMPAB Chair, William Thumm receiving his Alumni Distinguished Person Award from Prof. Gould (ADPA 2015 Recipient) – April 29, 2016, Bristol, RI

Joshua Snarski was recognized as the top CM graduate among the Class of 2016. Joshua also was the recipient of the Presidential Medallion (Img. 4.3.4)



**Image 4.3.4.** Top CM graduate Antonio Papadopoulos receiving her certificate from Dr. Celik

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.

As mentioned in Section 2 a number of formal reports were made this year which were reviewed and discussed with the faculty. Below are summaries of these reports that presented in various tabs at the end of this report:

### **Internship Program**

In the AY 2015-2016, faculty and administration as well as the RWU Career Center continued to encourage all students to get involved with internships specifically during the summer periods. Approximately 89% of all students (who took the survey) in the CM program reported to have a paid employment experience during the Summer of 2015. This is an increase from 78% that was reported in the previous academic year. 100% of all seniors had paid summer employment in 2015 which is an increase from 85% in the previous academic year. This year, our program continued to meet the 100% internship goal with the graduating class of 2015. This is a great achievement compared to a couple of years ago. It means that every single student of the graduating class of 2015 had at least one internship experience prior to graduation. The average internship experience for this class was 2.14 prior to graduation.

In addition to surveying sophomores, juniors, and seniors, we have continued to survey the employers to get feedback about our students. Every fall semester, a survey is sent out to the most recent employers of our current senior class. Seven of the employers of the graduating class have responded to the survey this year. Employers were asked to evaluate our students based on 20 different areas such as “responsibility”, “CAD proficiency”, and “technical knowledge”. Among the 20 areas, our students scored highest in “dependability”, “attendance”, “punctuality”, “cad skills”, and “excel proficiency”. Some of the areas that can be further improved included “maturity/poise”, “quantity of work” and “technical knowledge”. Based on the performance evaluation of the students by the employers in each of the 20 areas, each student receives an average performance score. Internship average performance score of our seniors, as determined by their immediate supervisors this year was 85.11% compared to the 86.4% AY 2013-2014. CM program will continue to evaluate the feedback from employers, as well as the students themselves to further improve the internship rates and seniors’ performance scores in the upcoming years.

See Tab F for Internship Survey data.

### **CM Student Club activity: CM Club, Sigma Lambda Chi and USGC Student Chapter**

The CM club ran a spring and fall lecture series, managed elections for next year’s officers, and helped select next year’s competition teams. CM Club facilitated a total of six (6) guest speakers in addition to managing workshops to train competition team members as well as any other interested students. The complete CM club report can be found at Tab E. SLC continued to work on their efforts to reconnect with past SLC members and work with the program to create a more complete and active alumni database. They have not been as active as they were in previous years but the new group of inductees showed great enthusiasm to be active in the following academic year. See Tab F for the complete SLC report. This year’s USGBC group not as active as the previous year due to a change of advisor as well as many group board members who graduated. Major accomplishments included students traveling to a Green Building Conference in Hamburg, Germany. See Tab F for a complete report.

### **Capstone Project**

Like last year, projects were run in a competition format; students were given a choice on project type; all projects were corporate sponsored and headed by alumni. Additionally, the competition winners were recognized at our sixth annual Student Alumni dinner at the Bristol Harbor Yacht club. Program alumni conducted senior exit surveys in parallel with capstone presentations. This year, the course was taught for the first time Prof. Brunnhoeffer. Prof. Gould has been teaching this course in the past and was out for sabbatical in Spring 2016. Prof. Prunnhoeffer worked with Prof. Gould in the fall semester to ensure a smooth process and the results were very impressive.



Shawmut Design and Construction and Gilbane Building Company voted for this year's capstone project winners.

As was suggested last year, to provide more preparation time projects were introduced at the end of the fall semester. Other course requirements, for example research paper guidelines, were also announced allowing students to take advantage of the winter intercession period. Overall this year's capstone course received excellent feedback from both the judges and the students. A complete report on the student Capstone Project experience can be found at Tab C.

### **Senior Exit Survey**

Complete results of two senior exit surveys conducted by two members of our Construction Management Professional Advisory Board (CMPAB) Peter Holden and John Puniello, can be found in Tab B.

Noted strengths included the following:

- The value of relationships and the repeated theme of "connection" with fellow CM students viewed as the beginning of many long term professional relationships that students look to embrace and build off of.
- Small class sizes and students' ability to reach out to others, especially faculty, for assistance for a multitude of issues.
- Student competitions such as the ASC Regional Competitions continue to be a staple to the students' overall learning experiences while at RWU.
- Internships that have created true awareness of the "real ways" of industry, allowing many students to appreciate what they need to do and master while in the classroom.
- Methods and Materials courses were viewed as instrumental to the students' educational experience.
- The quality and professional experience of the faculty as well as the personal level of commitment and connection that the faculty deliver to the overall education of the students, both within and outside the classroom.
- Career Services specifically Ms. Susan Caizzi is revered as a tremendous resource and advocate for both the individual students' needs and the overall success of the CM program.

Many ideas for improvement were mentioned. Some include:

- Improvement of technology and software applications which is currently being assessed by a committee including a CM faculty who represents the program.
- Improvement of physical resources of the program which is being addressed with the design and construction of a new SECCM experiential learning center that is programmed to include
- Providing more MEP instruction possibly earlier in the curriculum.
- Increasing in class training regarding specific roles and tasks students are exposed to during their internships
- Developing more construction management electives.

### **Associate Constructor Exam and Review Course**

Ten students from the graduation class decided to take the exam which is an increase compared to only 6 students in the previous academic year. 8 out of 10 students passed the exam. The full AC Exam report is included at Tab D.

### **CM Research Group Activities**

Construction Management Program at RWU has a mission to advance the body of construction knowledge through instruction, research and service, and through resourceful graduates who possess the moral foundation and technical skills to lead the profession. CM is a dynamic field that is continually evolving as new approaches and technologies emerge. CM Research Group was founded in 2011-2012 academic year by Dr. Celik upon receipt of his first Foundation to Promote Scholarship

and Teaching grant from RWU's Provost's Office. Through this grant, Dr. Celik was able to employ three CM undergraduate students who ended up completing the grant project and traveled to an international conference to present their work. Since then the group grew into two faculty members, five student researchers and one industry mentor and has published numerous research articles and presented at numerous national and international conferences.

In 2015-2016 the research group welcomed Dr. Amine Ghanem as the second faculty member assisting the group in addition to Dr. Celik. Both Dr. Celik and Dr. Ghanem were able to secure research grants for 2015-2016 to continue supporting CM Research Group's activities. Group focused on two projects this year:

- Case Studies from Construction Industry to Support CM Education and Training
- Building a Green Building Index to Measure Countries' Sustainability in the Building Industry.

All five students were able to travel to a national or international conference. Two students traveled to and presented at the ASC International Conference in Utah. Two of the students traveled to Hawaii for an international conference in education. One student traveled to Hamburg for a major international green building conference. Overall the CM Research Group had a total of nine academic presentations/publications during the 2015-2016 Academic Year. Please see Tab J for a more detailed discussion on the CM Research Group's activities.

### **Freshmen Survey**

2015-2016 academic year was the first year we started to collect official assessment data via a freshmen survey. The goal of this survey is to support the assessment and improvement of multiple program objectives specifically the following ones:

- Recruit and retain a committed, qualified, passionate and diverse body of students
- Maintain a reputation within the local, national and international communities as a leading academic provider of construction education.

Due to its first time administration the participation rate remained at 42% with 24 of the 41 freshmen responding to the survey. Results were encouraging such as 82% of freshmen reporting that RWU was their first choice of university. Also, 73% of all CM freshmen declared construction management major as their first choice of major which was discussed in the CM assessment meetings in May and actions were identified to improve this rating to 80%. More details on program objectives, outcomes and assessment of all associated metrics are discussed in more detail by the end of this report. The results of the freshmen survey are provided in Tab K.

### **Faculty Survey**

2015-2016 academic year was the first year we started collecting official survey data from the CM full time faculty. The goal of this survey is to support some of the metrics used in the assessment and improvement of multiple program objectives specifically the following ones:

- Recruit and retain exceptional and diverse faculty and staff to support program, school, and university objectives.
- 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 future generations of constructors.
- Embrace a culture of professionalism, innovation, collaboration, and tolerance.
- Maintain convenient, well equipped, and state-of-the-art facilities and resources to support learning and research.

Below are some of the results reported in the formal assessment by the end of this report:

- 100% of the full time faculty were involved in at least one academic conference by attending or presenting or published a journal article.
- 50% of full time faculty conducted at least one consulting activity for the construction industry OR research with industry support OR faculty internship. The target for this metric was 50% thus the faculty met their target in 2015-2016 academic year.
- 100% of full time CM faculty were involved with least one construction related professional association.
- 5.7% of all CM students participated in faculty led student research outside of class prior to graduation. Target for this metric is 5% thus the faculty exceeded their goal in the 2015-2016 academic year.

63% of CM faculty report to be satisfied or very satisfied with the facilities. This is below the target for this metric. However, the CM faculty assessed this issue during their May 2016 assessment meeting with the understanding that the SECCM and RWU are in the process of building a new academic building which will address all space and facility issues. Thus the faculty decided to table this concern until the building plans are clarified. CM faculty and the program coordinator were also significantly involved in the building program development which if approved is expected to include a 5000 sf new space for the Methods and Materials Labs with crane support as well as additional spaces for MEP, Estimating, Scheduling and BIM courses. See Tab L for the results of the Faculty Survey.

### **Other Topics**

There were two career fairs this year similar to the previous academic year. One in Fall 2015 (October 7, 2015) and the other in Spring 2016 (March 23, 2016). 17 construction companies attended the Fall 2015 career fair. 18 construction companies attended the Spring Career fair. We are continuously working alongside the Career Center to increase the number of companies as well as the students attending the career fairs. CM Program's social media accounts were launched in the 2014-2015 academic year. This year we continued to grow our reach via the social media accounts and added an Instagram account in addition to our existing Facebook, LinkedIn, and Twitter accounts. Our reach using these accounts grew substantially during 2015-2016 academic year.

CM Program Coordinator finalized the new program website in Spring 2016 with help from other faculty as well as the marketing and IT departments at RWU. The new site has been available for general public and the program constituencies at <http://seccm.rwu.edu/cm> since the beginning of Spring 2016. Bill Thumm, Hensel Phelps Construction Company, continues as the chair of our CMPAB. This year the CMPAB presented a sixth scholarship, conducted mock interviews, participated in senior exit surveys, supported student internships and externships, organized the Alumni and Senior banquet and supported student guest lecture and laboratory activities. Our CMPAB endowed scholarship continues to grow and has been funded to a level where two scholarships may be provided. Program enrollment improved significantly. The entering freshmen class in Fall 2015 was 41 compared to 25 in the previous fall semester. This is a direct result of our efforts and planned actions to strengthen our alumni database, improving our program web site, increasing our reach via social media and reaching out to targeted high schools. These actions were taken with the support of Alumni, Admissions, and our CMPAB. Last year, CMPAB requested specific data points from the program to put together an informative RWU performance dashboard that has helped the board and the program with identifying strengths and concerns. The dashboard as of 2015-2016 is provided in Tab I. This table will continue to be updated and included in the upcoming years' assessments. This year was also the first year during which the program started utilizing the newly developed Program Learning Outcome Mentor (PLOM) list. The list is made up of industry professionals who volunteer to serve as industry mentors for specific PLOs based on their professional experiences. A full list of current PLOMs can be found in Tab M.

Based on the anecdotal information collected from our graduates' employers, online resumes as well as the feedback received from the graduates themselves, the program faculty members believe that the Program Objectives and the Program Learning Outcomes are being satisfied as we continue to improve individual metrics with the action items listed in Table 4.3.3 and 4.3.4. As alumni involvement

grows and the enrollment numbers are improved we continue to seek more and improved ways to engage with the program constituencies and improve our objectives and outcomes in a collaborative environment. It is important to note again that the CM program objectives and the program learning outcomes were modified with a participatory process during the 2014-2015 academic year. Table 4.3.1 lists all program objectives and Table 4.3.2 lists all program learning outcomes that support our recently updated program mission to *“Advance the body of construction knowledge through instruction, research and service, and through resourceful graduates who possess the moral foundation and technical skills to lead the profession.”*

All of the newly updated CM Program objectives as well as the new twenty (20) program learning outcomes were assessed by the end of 2015-2016 AY and are presented in this report. Tables 4.3.3 and 4.3.4 illustrate the detailed assessment of every program objective and outcome along with the performance and action items determined during the 2015-2016 assessment. These action items will be tracked via general monthly business meetings that the CM program faculty will conduct in the upcoming academic year.

**Table 4.3.1 RWU Construction Management Program Educational Objectives**

<b>FACULTY AND STAFF:</b>
Recruit and retain exceptional and diverse faculty and staff to support program, school, and university objectives.
<b>EDUCATIONAL:</b>
Three to five years after graduation, we expect that our graduates:
<ul style="list-style-type: none"> <li>▪ Demonstrate exemplary cutting edge technical knowledge and skills.</li> <li>▪ Value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.</li> <li>▪ Are recognized as regional, national, and international construction industry leaders.</li> <li>▪ Always display the highest standards of ethical conduct.</li> </ul>
<b>SERVICE:</b>
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 future generations of constructors.
<b>ALUMNI:</b>
Grow and maintain an engaged network of alumni to support and advance program mission and goals.
<b>STUDENTS:</b>
Recruit and retain a committed, qualified, passionate and diverse body of students.
<b>CULTURE:</b>
Embrace a culture of professionalism, innovation, collaboration, and tolerance.
<b>BRANDING:</b>
Maintain a reputation within the local, national and international communities as a leading academic provider of construction education.
<b>FACILITIES &amp; RESOURCES:</b>
Maintain convenient, well equipped, and state-of-the-art facilities and resources to support learning and research.

**Table 4.3.2 RWU CM Program Learning Outcomes**

OUTCOME #1 - Create written communications appropriate to the construction discipline.
OUTCOME #2 - Create oral presentations appropriate to the construction discipline.
OUTCOME #3 - Create a construction project safety plan.
OUTCOME #4 - Create construction project cost estimates.
OUTCOME #5 - Create construction project schedules.
OUTCOME #6 - Analyze professional decisions based on ethical principles.
OUTCOME #7 - Analyze construction documents for planning and management of construction processes.
OUTCOME #8 - Analyze methods, materials, and equipment used to construct projects.
OUTCOME #9 - Apply construction management skills as a member of a multi-disciplinary team.
OUTCOME #10 - Apply electronic-based technology to manage the construction process.
OUTCOME #11 - Apply basic surveying techniques for construction layout and control.
OUTCOME #12 - Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
OUTCOME #13 - Understand construction risk management.
OUTCOME #14 - Understand construction accounting and cost control.
OUTCOME #15 - Understand construction quality assurance and control.
OUTCOME #16 - Understand construction project control processes.
OUTCOME #17 - Understand the legal implications of contract, common, and regulatory law to manage a construction project.
OUTCOME #18 - Understand the basic principles of sustainable construction.
OUTCOME #19 - Understand the basic principles of structural behavior.
OUTCOME #20 - Understand the basic principles of mechanical, electrical and piping systems.

## Assessment of CM Program Educational Objectives

Below is a detailed assessment of all program objectives:

The following pages reflect the adjusted objectives based on the newly adopted CM Program Mission and Objectives that will be used to assess the CM program starting in Academic Year 2015-2016.

FACULTY & STAFF			
Objective #1: Recruit and retain exceptional and diverse faculty and staff to support program, school, and university objectives.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors report to be satisfied or very satisfied with the helpfulness of CM staff.	Senior Exit Survey	Yes	Mean: 4.31 88.89%
At least 80% of graduating seniors report to be satisfied or very satisfied with the helpfulness of CM faculty.	Senior Exit Survey	Yes	Mean: 4.05 86.11%
CM faculty and staff demographics are comparable to ACCE accredited peer institutions in ASC's Region 1.  <i>Note: On 5/11/16 CM faculty voted to use peer institutions in the region as the baseline for this metric.</i>	Diversity Stats – Peers 85% M; 15% F 3%B; 3%A; 3%H	Yes No	RWU CM Fac & St: 82% M; 18% F 0%B; 0%A; 0%H
<b><i>ACTION: CM faculty agreed to continue working to improve this objective. It was also noted that RWU stats did not take into account the diversity among guest speakers, lecturers and capstone mentors. CM faculty will work to improve in all of these categories and report back in 16-17.</i></b>			
At least one academic conference presentation or journal paper published by 80% of full time tenured or tenure track faculty. <i>Note: 5/11/16 CM faculty voted to require 80% as the baseline. On 5/25/16 CM faculty voted to include conference attendance as a part of this metric.</i>	Faculty Survey	Yes	100%
At least one academic conference presentation or publication co-authored by at least one full-time CM faculty and an undergraduate CM student.	CM Research Group Report	Yes	B.G. Celik, A. Ghanem, J. Snarski, A. Miller, K. Peahl, J. Hentze
50% of full time faculty conducted at least one consulting activity for the construction industry OR research with industry support OR faculty internship.	Faculty Survey	Yes	M. Emmer, A. Ghanem, F. Gould

EDUCATIONAL			
Objective #2: Graduate students who demonstrate exemplary cutting edge technical knowledge and skills.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors answer the following question as satisfied or very satisfied: CM Program increased my technical knowledge and skills.	Senior Exit Survey	-	The question was excluded from the exit survey. Add this to the exit survey for 16-17
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: The RWU CM Program helped me to demonstrate exemplary cutting edge technical knowledge and skills.	Alumni Survey	Yes	Mean: 4.46 100%
CM Program Learning Outcome (PLO) assessment indicates 100% of PLOs to be satisfactory OR lists specific action plans to address any PLOs that are indicated as weaknesses.	PLO Assessment	Yes	An action plan can be found in the PLO assessment report for any PLOs that did not meet the baselines.
At least 80% of the employers report interns': <ul style="list-style-type: none"> <li>- Technical Knowledge as outstanding or In tune</li> <li>- Estimating skills as very or moderately knowledgeable</li> <li>- Scheduling skills as very or moderately knowledgeable</li> <li>- CAD skills as extremely or moderately proficient</li> <li>- Excel skills as extremely or moderately proficient</li> </ul>	Employer Internship Survey -	Yes	Technical Knowledge: 10/12  Estimating: 12/12  Scheduling: 12/12  CAD: 12/12  Excel: 12/12

<b>EDUCATIONAL</b>			
Objective #3: Graduate students who value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: The CM Program has got me interested in lifelong learning or continuing education.	Senior Exit Survey	Yes	Mean: 4.11 80.56%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me recognize the value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.	Alumni Survey	Yes	Mean: 4.62
At least 50% of CM seniors sit in for the AC Level I exam.	AC Exam Attendance	No	28.6%
	<b>ACTION: GC to ask Career Center to interview potential employers and determine their willingness to help promote the exam during the interviews and career fairs.</b>		
At least 20% of alumni (5 years out) report to have received a graduate degree or a certificate.  <i>Note: On 5/11/16 CM Faculty agreed to add "are you currently in..." to the metric and the survey.</i>	Alumni Survey	No	0%
	<b>ACTION: Relatively low participation rate in the alumni survey makes this data statistically insignificant. CM faculty also noted that based on linked in data, there are a number of CM alumni (5 years out) who have received certifications such as LEED, OSHA, etc. However, faculty also decided that the CM Club will put together an event in the next AY where the students will learn more about certification opportunities post graduation.</b>		

*NOTE: Linked in data regarding this outcome had to be removed from the metrics with the approval of the CM faculty on 5/11/16 (Motion by GC, 2<sup>nd</sup> by JB, 5/6 voted yes to remove, 1/6 was absent). The reason for removal is the discontinuation of the linked in service that made the particular data point available thus not having access to the intended data.*



<b>EDUCATIONAL</b>			
Objective #4: Graduate students who are recognized as regional, national, and international construction industry leaders.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: CM Program has increased my enthusiasm to become a leader in the construction industry.	Senior Exit Survey	Yes	Mean: 4.63 94.29%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me obtain the skills necessary to become a regional, national, and international construction industry leader.	Alumni Survey	Yes	Mean: 4.38 92.3%
At least 5% of all RWU alumni with a profile on LinkedIn is holding an executive or higher position in the construction industry.	LinkedIn Data	Yes	22.78% (200 out of 878 hold Owner, Partner, Director, CXO, VP positions)  <i>Note: CM Faculty to consider increasing the baseline for this obj. if it exceeds the target in two consecutive assessments.</i>
At least 1% of all RWU alumni with a profile on LinkedIn has worked or is working in a construction related area outside of the US.	LinkedIn Data	Yes	1.48%
At least one RWU CM alum was nominated as the current academic year's CMPAB Distinguished Person of the Year Award.	CM Coordinator	Yes	William Tracey '00 received the award.

*Note: Consider increasing the bar for International and Executive position metrics*

*Note: on 5/11/16 CM faculty approved a motion by JB (2<sup>nd</sup>: ME) to remove the question "do you know an RWU CM alum whom you would consider to be a regional, national, or international leader in the construction industry?" from the alumni survey. Motion was accepted: 5/6 voted yes to remove, 1/6 was absent).*

EDUCATIONAL			
Objective #5: Graduate students who always display the highest standards of ethical conduct.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors answer the assessment question for PLO #6 (Ethical Principles) as agree or strongly agree.	Senior Exit Survey	Yes	Mean: 4.42 91.67%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me to always display the highest standards of ethical conduct.	Alumni Survey	Yes	Mean: 4.38 92.3%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: It is as important to be ethical as it is to follow the law.	Alumni Survey	-	Was not included in the alumni survey. Add: in 16-17
CM Program Learning Outcome (PLO) assessment indicates PLO #6 to be satisfactory OR lists specific action plans to address any PLOs that are indicated as weaknesses.	PLO Assessment	Yes	All metrics in PLO #6 assessment are met
Capstone course assessment report indicates that the direct assessment of its ethics CLO is equal to or higher than 80%.	Capstone Ethics Outcome	Yes	86%

*Note: CMPAB Academic committee is considering to add an ethics question to the employer internship survey. If so, CM faculty agreed to add the survey question as a metric with a target of 0% complaint regarding unethical behavior/attitude from the employers.*

SERVICE			
Objective #6: 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 future generations of constructors.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors answer the following question as agree or strongly agree: The CM Program has motivated me to join a relevant professional society.	Senior Exit Survey	No	Mean: 3.61 52.78%
At least 80% of graduating seniors answer the following question as "YES": Are you actively involved in professional associations or societies or serving in professional or community volunteer positions?	Alumni Survey (5 yr out)	No	30.77% answer yes 4 out of 13 alum.
			<b>ACTION: On 5/11/16 CM faculty voted to charge the CM club to put together an event in the next AY to introduce CM students to construction related organizations and service opportunities.</b>
At least 5% of all CM alumni with a profile on LinkedIn to list "skilled volunteering" or "board service" as an interest.	LinkedIn Data	Yes	4.67 ~5%
100% of full time CM faculty are active members of at least one construction related professional association.	Faculty Survey	Yes	100%
100% of CM students received Feinstein Service Learning credit prior to graduation.	Transcripts	Yes	100%
At least one CM student group was involved with construction related community service.	Student Club Reports	Yes	SLC students helped with ACE program.

*Note: Added "board service" to the volunteering metric on 5/11/16 with CM faculty consent. Added "full time" faculty to the metric on 5/11/16 with CM faculty consent to bring consistency to faculty data.*

STUDENTS			
Objective #7: Recruit and retain a committed, qualified, passionate and diverse body of students.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors answer the following question as good or very good: Please rate the quality of the CM student body. At least 80% report good or very good.	Senior Exit Survey	Yes	Mean: 4.14 88.89%
Diversity statistics of CM students are comparable to RWU or RI race/ethnic/gender data.	Registrar / Institutional Research	No Yes No No Yes	F: 6% / 48% B: 1.4% / 1.1% H: 4% / 5.2% A: 0% / 1.35% Int: 6.4% / 5.6%
	<b><i>ACTION: GC to send a document to the admissions describing the challenges and the above statistics asking asking for support in minority and female recruitment for the CM program.</i></b>		
Maintain a minimum of 90% retention rate for the 6-yr graduation rate.	Registrar / Institutional Research	No	57.69%
	<b><i>ACTION: Data regarding the reason behind those who did not complete the program. Research and identify factors that affect students' success in the CM program, identify at risk students, and craft program to assist them. JB to take on the assessment portion of this task while SLC develop a mentorship program to formally track and assist all freshmen through their 4 years all in an effort to increase retention and success in the program.</i></b>		
At least 10% of all graduating CM students participated in student competitions.	Senior Exit Survey	Yes	25.71%
Average GPA of all CM students who started at RWU in the fall semester and were still enrolled by Spring 2016 is at least 2.75.	Transcripts	Yes	2.77
At least 80% of all CM freshmen declare construction management major as their first choice of major.	Freshmen Survey	No	73%
	<b><i>ACTION: GC to contact admissions and discuss the admissions criteria and their opinions on the applications regarding this data.</i></b>		

<b>ALUMNI</b>			
Objective #8: Grow and maintain an engaged network of alumni to support and advance program mission and objectives.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: I am planning to support and advance RWU CM program mission and objectives by staying involved after graduation.	Senior Exit Survey	No	Mean: 3.81 64%
	<b><i>ACTION: Rearrange the exit survey by adding a “why not” question after a subject respond negatively. Also consider adding a “what would have changed your mind” question. This will allow the program to better understand the issue and develop associated actions.</i></b>		
At least 80% of graduating seniors answer the following question as “YES”: Have you had any direct engagement with the RWU CM program since graduation?	Alumni Survey	No	38%
	<b><i>ACTION: Rearrange the exit survey by adding a “why not” question after a subject respond negatively. Also consider adding a “what would have changed your mind” question. This will allow the program to better understand the issue and develop associated actions.</i></b>		
At least 50% of the Program Learning Outcome Mentors (PLOM) are graduates of the RWU CM program.	PLOM List	Yes	78.57% 11 out of 14
At least 30% of the CM Professional Advisory Board (CMPAB) to be the graduates of the RWU CM program.	CMPAB List	Yes	57.89% 11 out of 19 Excluding found.
The number of CM Annual Alumni Banquet attendees exceed 80% of the number of students registered in the CM program as of the preceding Fall semester.	RWU Advancement Data	Yes	80% 48 alumni out of 112 total 140 is CM size
The number of donations to the CMPAB scholarship and the CM Programmatic Gift Fund increased compared to the previous AY.	RWU Advancement Data	<i>First time we collected data regarding donations.</i>	4 (Alumni) 21 (Employees) 27 (Other) ----- \$1,455 Gift Acct \$8,862 Scholarship

CULTURE			
Objective #9: Embrace a culture of professionalism, innovation, collaboration, and tolerance.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 20% of graduating seniors answer the following question as "YES": Did you participate in a short or long term study abroad program or any other academic activities abroad during your education at RWU?  <i>Note: Added "any other academic activities abroad" with faculty vote on 5/22/16.</i>	Senior Exit Survey	No	2.86%
<b><i>ACTION: CNST 100 to arrange a guest panel of those CM students who did go abroad to talk about their experience and study abroad opportunities.</i></b>			
At least 80% of graduating seniors answer the following question as agree or strongly agree: RWU CM community encourages and welcomes individuals with different opinions.	Senior Exit Survey	Yes	80%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM community encouraged and welcomed individuals with different opinions.	Alumni Survey	Yes	92.3%
At least 80% of employers report their interns: - as completely dependable or dependable above average - quite poised and confident or has appropriate self-assurance - always on time - exceptionally well-accepted or works well with others.	Employer Internship Survey	Yes No Yes Yes	Dependable: 100% Maturity: 63.64% Punctual: 100% Relations: 91.67%
<b><i>ACTION: CMPAB Foundation members to arrange a get together to develop relationships and potential mentorship opportunities with the CM students, in Fall 2016.</i></b>			
At least 5% of all CM students participated in faculty led student research outside of class prior to graduation.	CM Research Group Report & Faculty Survey	Yes	J. Snarski A. Miller 5.71%
CM club arranged at least 4 guest speakers/workshops AND the attendance at these events included at least 25% of all CM students.	CM Club Report	Yes	See CM Club Report

<b>BRANDING</b>			
Objective #10: Maintain a reputation within the local, national and international communities as a leading academic provider of construction education.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as likely or very likely.	Senior Exit Survey	Yes	94.29%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: I believe the RWU CM program is a leading academic provider of construction education.	Alumni Survey	Yes	100%
Social media account followers increased by 50% compared to the previous AY.	Social Media Data	Yes	As of May 10, 2016: FB: 202 Likes (110%) TW: 244 followers INSTA: 70 followers LinIN: 273 members
At least 80% of all CM freshmen report RWU as their first choice.	Freshmen survey	Yes	82%
All student teams competing in competitions placed in top 3.	CM Club Report	Yes	Commercial: 2 <sup>nd</sup> DB: 2 <sup>nd</sup> Civil: 2 <sup>nd</sup> DBIA: 1 <sup>st</sup>
At least 2 faculty (or faculty led students) to present CM related work at peer reviewed international conferences.	CM Club Report	Yes	Ghanem.HongKong Celik.HongKong Snarski.Hamburg

Note: SM account performance data is being collected starting this year except FB.

<b>FACILITIES</b>			
Objective #11: Maintain convenient, well equipped, and state-of-the-art facilities and resources to support learning and research.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: Please rate the quality of overall SECCM classrooms and labs.	Senior Exit Survey	No	74.28%
	<b>ACTION: SECCM is in the process of building a major extension to the existing facility. Plan is to proceed by May 2017. Will re-discuss afterwards.</b>		
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: Please rate the quality of the SECCM "rCloud".	Senior Exit Survey	No	33.33%
	<b>ACTION: RWU administration announced a plan to upgrade technology. There is also a new committee to assess rCloud performance and recommend actions. Prof. Brunnhoefer of CM program is a member of this new committee. CM faculty to wait and assess the results of the new plans and reevaluate accordingly in the next AY.</b>		
100% of CM faculty report to be satisfied or very satisfied with the facilities.	Faculty Survey	No	63%
	<b>ACTION: SECCM is in the process of building a major extension to the existing facility. Plan is to proceed by May 2017. Will re-discuss afterwards</b>		
No CNST laboratory section exceeds 16 students AND No CNST lecture exceeds 36 students AND no CNST course with a computer software related outcome exceeds 24 students.	Registrar	Yes	None exceeded

## 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 AY 15-16. These are the outcomes and objectives that were updated in AY 14-15 and were assessed for the first in the AY 15-16.

Outcome 1: Create written communications appropriate to the construction discipline.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. 100% of CM students successfully complete at least two writing courses.	Transcript	Yes	They all had to take at least WTNG 102 and WTNG 220
2. 100% graduating seniors report that they are proficient in creating written communications appropriate to the construction discipline.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency achieved and 1 means proficiency not achieved.</i>	Student Exit Survey	Yes	Mean: 4.19
3. At least 50% of all CM courses require "creating written communications appropriate to the construction discipline".	Course Syllabi	Yes	CNST 100,116,130,200,201, 260,321,450,475,455, 480 73%
4. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades (D)	Yes	Indirect: 4.29 Direct: 4.1
5. 100% of employers who take a survey will report CM rising senior interns' writing communication to be either "Concise, factual, effective" or "Outstanding"	CM Intern Employer Survey	No	Only 75% (9 out of 12)
		<b><i>ACTION: Invite writing professor Mel Topf as well as the PLOs in the Fall to meet with the CM faculty to develop curricular actions to address this PLO.</i></b>	

<b>Outcome 2:</b> Create oral presentations appropriate to the construction discipline.			
<b>Metrics Associated with Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
1. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Clearly communicating ideas” or “Very articulate”.	CM Intern Employer Survey	No	75% (9 out of 12)
		<b>ACTION: Add presentation component to CNST 260.</b>	
2. 100% of seniors will have the opportunity in construction classes to make an oral presentation at least twice a semester during their senior year.	CARs	Yes	CNST 480 – 3 Pres. CNST 445 – 3 Pres. CNST 450 – 1 Pres. CNST 455 – 1 Pres.
3. 100% of all freshmen, sophomore and juniors will have the opportunity to make an oral presentation in a construction class at least 1 time a year.	CARs	Yes No Yes	FR: CNST100,116,200 SO: - JU: CNST321,450
		<b>ACTION: Add presentation component to CNST 260 to address the sophomore year.</b>	
4. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades (D)	Yes	Indirect: 4.66 Direct: 4.3
5. 100% of graduating seniors report that their RWU education has prepared them proficiently in communication skills for the workplace.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency achieved and 1 means proficiency not achieved.</i>	Student Exit Survey	Yes	4.44



Outcome 3: Create a construction project safety plan.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades (D)</p>	Yes	<p>Direct: 4.6</p> <p><i>Note: Safety was not included in the end of semester survey to students. Will do in 16-17. Senior exit survey included indirect assessment. See Item #3.</i></p>
<p>2. At least 30% of all construction courses will include a construction project safety related CLO and will assess the CLO in their course assessment reports with at least one direct and one indirect measure.</p>	<p>Course Syllabi CARs</p>	No	<p>CNST 201 CNST 250 CNST 445 CNST 450 (?) CNST 480</p> <p><b>ACTION: CNST 450 covers safety considerations in scheduling however does not have a CLO listed. CNST 450 to add the safety topic already covered in class to the syllabus as a CLO next AY and assess with at least one direct and one indirect measure.</b></p> <p><b>ACTION: CNST 445 and 445L to evaluate current associated CLOs and report back in Fall 2016. Consider adding a safety plan component.</b></p>
<p>3. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	<p>Student Exit Survey</p>	Yes	<p>4.11</p>

Outcome 4: Create construction project cost estimates.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades (D)</p>	Yes	<p>Indirect: 4.0</p> <p>Direct: 4.3</p>
<p>2. CNST 321 – Advanced Building Estimating will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>CNST 321 CAR – Avg. of Grades for CLO 7, 8, 9 (D)</p>	Yes	<p>4.21/5 (Indirect)</p> <p>4.33/5 (Direct)</p> <p>Average of CLO 7, 8, &amp; 9</p>
<p>3. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Moderately knowledgeable” or “Very knowledgeable” in estimating.</p>	<p>CM Intern Employer Survey</p>	Yes	<p>100%</p>
<p>4. 100% graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	<p>Student Exit Survey</p>	Yes	<p>4.22</p>

Outcome 5: Create construction project schedules.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades (D)</p>	Yes	<p>Indirect: 4.3</p> <p>Direct: 4.2</p>
<p>2. CNST 450 – Construction Planning and Scheduling will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>CNST 450 CAR – Avg. of median final exam and semester project grades (D)</p>	Yes	<p>Indirect: 4.20</p> <p>Direct: 4.09</p> <p>Average of median final exam and semester project grades</p>
<p>3. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Moderately knowledgeable” or “Very knowledgeable” in scheduling.</p>	<p>CM Intern Employer Survey</p>	Yes	<p>100%</p>
<p>4. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency</i></p>	<p>Student Exit Survey</p>	Yes	<p>4.33</p>

Outcome 6: Analyze professional decisions based on ethical principles.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. 100% of graduating senior will have developed and presented an ethics case that focuses on professional and ethical responsibility.	Course Syllabi CARs	Yes	CNST 480
2. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus Capstone Ethics Assignment (D)	Yes	Indirect: 4.5 Direct: 4.3
3. At least 25% of all CNST courses will include an ethics related course learning outcome in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 100 (Should add to syllabus) CNST 321 CNST 445 CNST475 CNST 480
4. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey	Yes	4.42
5. Alumni rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Alumni Survey (5-yr out)	Yes	4.69
6. 100% of surveyed alumni agree or strongly agree that it is as important to be ethical as it is to follow the law.	Alumni Survey (5-yr out)	-	<b>ACTION: This question was left out from the survey. Should be added for next year.</b>

Outcome 7: Analyze construction documents for planning and management of construction processes.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 100 CNST 116 CNST 130 CNST 200 CNST 201 CNST 260 CNST 321 CNST 450 CNST 455 CNST 480
2. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.5 or above on a 5-point scale on both direct and indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades (D)	Yes	Indirect: 4.3 Direct: 4.2
3. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey	Yes	4.25

Outcome 8: Analyze methods, materials, and equipment used to construct projects.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 130 CNST 200 CNST 201 CNST 250 CNST 450 CNST 455 CNST 480 ENGR 210
2. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades (D)	Yes	Indirect: 4.1 Direct: 4.3
3. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey	Yes	4.42
4. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “In tune with the requirements” or “Outstanding” in technical skills.	CM Intern Employer Survey	No	66.67% (8 out of 12)
<b>ACTION: CNST 200 and 201 Labs to be updated to ensure currency of the material. ME to provide a course map for 200 and 201 by beginning of Fall 2016.</b>			

Outcome 9: Apply construction management skills as a member of a multi-disciplinary team.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 445 Construction Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>CNST 445 CAR – IPD Assignments 1, 2, 3 and the Final Assignment (D)</p>	No	<p>4.01 (Direct) 3.77 (Indirect) Based on IPD 1,2,3 &amp; Final assignments</p>
<p><b>ACTION: CNST 445 and ARCH 488 to revise the IPD workshop process and improve the experience in the next AY. FG and Gary Graham from Arch have been on sabbatical specifically focusing on this matter.</b></p>			
<p>2. At least three student-led teams will participate in a construction related student competition.</p>	<p>Student Competition info from the CM Club report</p>	Yes	<p>ASC Commercial ASC DB ASC HH DBIA</p>
<p>3. All graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	<p>Senior Exit Survey</p>	Yes	<p>4.5</p>
<p>4. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Gets along with others”, “Works well with others” or “Exceptionally well accepted”.</p>	<p>CM Intern Employer Survey</p>	Yes	<p>100%</p>
<p>5. At least 10% of all Construction Management seniors will participate in a student team competition where their performance will be externally judged and assessed.</p>	<p>Student Competition info from the CM Club report Capstone Presentations</p>	Yes	<p>100%</p>
<p>6. 100% of work eligible CM students will hold at least one construction related employment, internship or co-op during their studies at RWU, prior to graduation.</p>	<p>Senior Exit Survey</p>	Yes	<p>97% 1 out of 35 Note: One ROTC student who was not eligible for internship or summer employment</p>

Outcome 10: Apply electronic-based technology to manage the construction process.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades (D)</p>	Yes	<p>Indirect: 4.2</p> <p>Direct: 4.2</p>
<p>2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	Senior Exit Survey	Yes	4.17
<p>3. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Extremely” or “Moderately” proficient regarding software program proficiency.</p>	CM Intern Employer Survey	Yes	100% CAD & Excel
<p><b>ACTION: CM Faculty agreed on 5/11/16 to add “BIM Related Software” to the survey. ME to propose a BIM curriculum integration and recruit 2 PLOMs. (5/11)</b></p>			
<p>4. At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs	Yes	<p>CNST 116</p> <p>CNST 130</p> <p>CNST 260</p> <p>CNST 321</p> <p>CNST 450</p> <p>CNST 445</p> <p>CNST 455</p> <p>CNST 475</p> <p>CNST 480</p>
<p>5. All estimating and scheduling courses will include at least one electronic based technology related CLO in the course syllabus. CLO will be assessed by at least one direct and one indirect assessment method.</p>	<p>CNST 260 CAR (D)</p> <p>CNST 321 CAR (D)</p> <p>CNST 450 CAR (D)</p>	Yes	<p>CNST260 D:3.8</p> <p>ID:3.6</p> <p>CNST321 D:4.6</p> <p>ID:4.2</p> <p>CNST450 D:3.6</p> <p>ID:4.4</p>



Outcome 11: Apply basic surveying techniques for construction layout and control.			
Metrics Associated with Outcome:	Where Measured	Met	Comments
1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey	No	3.50
<b>ACTION: On 5/11/16 CM faculty agreed for the CNST 302 instructor to investigate the issue with the help of PLOMs during Summer 2016 and propose a plan by the first CM Faculty meeting in the Fall of 2016.</b>			
2. At least three CNST courses will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 116 CNST 130 CNST 201 CNST 302
3. CNST 302 – Surveying will adopt this outcome. CNST 302 final course grade mean and/or median will be equal to or higher than 3.75 on a 5-point scale where 5 means proficiency.	CNST 302 CAR – Final Course Grade Avg. (D)	No	Direct: 3.6
<b>ACTION: On 5/11/16 CM faculty agreed for the CNST 302 instructor to investigate the issue with the help of PLOMs during Summer 2016 and propose a plan by the first CM Faculty meeting in the Fall of 2016.</b>			

<b>Outcome 12:</b> Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.			
<b>Metrics Associated with Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey	Yes	4.42
2. At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 100 CNST 130 CNST 260 CNST 445
3. At least 10% of all graduating seniors will participate in a student competition.	Student Competition info from the CM Club report  Capstone competition	Yes	100%
4. 100% of CM students report to have participated in at least one interdisciplinary workshop in collaboration with a non-CM program such as architecture, engineering, business, etc. prior to graduation.	Student Exit Survey	No	86%
	<b><i>ACTION: All CM students went through at least one collaborative workshop in CNST 445. There may be a problem with this data point. FG and GC to investigate this issue and comment by Fall 2016 on any actions that need to be taken.</i></b>		
5. CNST 445 – Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.5 or above on a 5-point scale on both direct and indirect assessment.</i>	CNST 445 CAR – Lab #3 Grades (D)	Yes	4.1/5 (indirect) 4.4 (Direct – Lab #3)

Outcome 13: Understand construction risk management.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades (D)</p>	No	<p>Indirect: 3.8 Direct: 4.5</p>
<p><b>ACTION: 5/11/16: FG to work with CM faculty and PLOM over summer 2016 to investigate and define basic components of risk management in construction to develop a proposal to present at the next CM Meeting (2016-2017-001) on how to better integrate risk management in to the CM curriculum.</b></p>			
<p>2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	Senior Exit Survey	Yes	4.17
<p>3. At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs	Yes	<p>CNST 100 CNST 130 CNST 321 CNST 450 CNST 445 CNST 475 CNST 480</p>

<b>Outcome 14:</b> Understand construction accounting and cost control.			
<b>Metrics Associated with Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
<p>1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	Senior Exit Survey	No	3.86
	<p><b>ACTION: On 5/11/16, CM faculty agreed to charge GC to work with the CM faculty and PLOMs to develop a set of accounting questions and instructional strategies to be presented at the next CM Meeting (2016-2017-001) on how to better integrate accounting and cost control in to the CM curriculum.</b></p>		
<p>2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs	Yes	CNST 116 CNST 130 CNST 250 CNST 445 CNST 475
<p>3. CNST 475 – Construction Project Control will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	CNST 475 CAR – CLO 4, 7, 8 Grades (D)	No	Direct 3.64 (CLOs 4,7,8) Indirect 4.33
	<p><b>ACTION: On 5/11/16, CM faculty agreed to charge GC to work with the CM faculty and PLOMs to develop a set of accounting questions and instructional strategies to be presented at the next CM Meeting (2016-2017-001) on how to better integrate accounting and cost control in to the CM curriculum.</b></p>		

Outcome 15: Understand construction quality assurance and control.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus	No	Indirect: 3.9 Direct: 4.2
	Capstone Final Project Rubric & CLO Grades (D)		
2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey	Yes	4.08
3. At least 25% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 130 CNST 201 CNST 450 CNST 445 CNST 475 CNST 480

<b>Outcome 16:</b> Understand construction project control processes.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. CNST 475 – Construction Project Control will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CNST 475 CAR – Avg. of Course Final Grades (D)	Yes	77.68% (Direct - Mean - CNST 475 Course Grade) 4.52 (Indirect from CNST 475 survey)
2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.	Senior Exit Survey	Yes	4.36
3. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 116 CNST 450 CNST 445 CNST 475

<b>Outcome 17:</b> Understand the legal implications of contract, common, and regulatory law to manage a construction project.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.	Senior Exit Survey	Yes	4.11
2. At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 100 CNST 130 CNST 200 CNST 445
3. 100% of all CM students will successfully complete at least one legal elective course prior to graduation.	Transcripts	Yes	BUSN 305 or LS 220
4. CNST 445 – Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CNST 445 CAR – Law Case and Law Assignment Grade Avg (D)	No	Direct: 4.6 (Law Cases and Law Assignment) Indirect: 3.64 / 5
	<b><i>ACTION: On 5/25/16 CM faculty agreed CNST 445 to create a specific Lab session to include students to address legal matters in construction projects</i></b>		

<b>Outcome 18:</b> Understand the basic principles of sustainable construction.			
<b>Metrics Associated with Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.	Senior Exit Survey	Yes	4.06
	<b>ACTION: Add a question in the exit survey to identify those who took CNST 540.</b>		
2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs	Yes	CNST 100 CNST 200 CNST 260 CNST 445 CNST 455
3. At least 5% of graduating seniors will report to have been actively involved with the RWU USGBC Student Group.	Senior Exit Survey	Yes	16%
4. The RWU USGBC Student Group will sponsor at least one educational activity focusing on sustainable construction. The activity will be open to all CM students with no restrictions on eligibility to attend.	RWU USGBC Student Group Report	No	No educational workshops were held. However, the group sponsored 3 students to travel to an international Green Building conference in Hamburg, Germany.
	<b>ACTION: Organize an educational workshop next AY</b>		
5. CNST 465/540 – Sustainable Construction will adopt this outcome and the average of course final grade will be a minimum of 75 out of 100.	CNST 465/540 CAR – Avg. of Final Course Grades	Yes	85.15%
6. CNST 445 – Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CNST 445 CAR – Final IPD Grade Avg. (D)	No	4.45 (Dir. / Final IPD) 3.81 (Indirect)
	<b>ACTION: CNST 445 offered sustainability component for the first time in Fall 15. It will be improved based on feedback from both students and the faculty in the next AY.</b> <b>ACTION: 5/11/16: CM Faculty charged GC to investigate the curriculum &amp; present a proposal at 2016-2017-001 to better integrate sustainability into the CM curriculum.</b>		



Outcome 19: Understand the basic principles of structural behavior.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</p>	Senior Exit Survey	Yes	4.17
<p>2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs	Yes	CNST 130 CNST 201 ENGR 210 CNST 304
<p>3. CNST 304 – Applied Structures will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.</p>	CNST 304 CAR (Average of all CLOs) (D)	No	Direct: 3.40 (Avg of all CLOs) Indirect: 4.16
<p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p><b>ACTION: CNST 304 instructor to integrate problem solutions into videos and post online for students to review. Instructor to also track statistics of video views.</b></p>		

Outcome 20: Understand the basic principles of mechanical, electrical and piping systems.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</p>	Senior Exit Survey	Yes	4.19
<p>2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs	Yes	CNST 130 CNST 200 CNST 321 CNST 455
<p>3. CNST 455 – Mechanical / Electrical Design will adopt this outcome into its CLOs and report average of the semester project grades to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p> <p><i>Note: On 5/11/16, CM faculty voted to use the semester project grades as the direct assessment from CNST 455 for this CLO.</i></p>	CNST 455 CAR – Semester Project Grades. (D)	Yes	Direct: 4.28 Indirect: 4.55

## 4. Assessment of Previously Implemented Program Changes

The CM Masters program initiated during the 2007-2008 academic year deserves 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 was not adequate to start the program in 2009. Due to tough economic times, corporate support did not materialize as planned, so starting in the fall 2010 the program temporarily moved away from the "corporate sponsored," cohort model. Entrance requirements were also changed allowing students to enter the program with less than 3 years of work experience. The program officially started with a fall 2010 class of 12 students. Enrollment for the fall 2011 did not generate a full class necessitating the combination of the entering CM students with the 2010 cohort CM students and graduate architecture and historical preservation Masters students. Fall 2012 enrollment continued at less than a full class. Starting AY 13-14 MS program went on a hiatus status and has been in that status since then. There have been a few proposals developed to be reviewed by the program, SECCM and the university. As of the end of Spring 2016, program decided to move forward with a 4+1 graduate degree proposal which is yet to be approved by the university administration. Currently there are no graduate students in the CM program.

Discussion of changes made last year follows:

AY 1415-1. Take CNST 445 – Construction Project Management and Safety out of required courses for the CM Minor and add it to the list of electives for the minor. This change allowed a wider range of options for non-CM students minoring the CM program. Many of them still register for CNST 445 but some choose to focus on advanced estimating and scheduling or the newly added mechanical and electrical course depending on their specific interest. This increased the popularity of the CM minor where currently there are over 20 non-CM majors minoring in the CM program. All of this allows better marketing for the construction management degree and the program among other majors.

AY 1415-2. Add CNST 455 Mechanical and Electrical Design to the list of electives for the CM Minor. Adding the CNST 455 course as an elective allowed non-CM majors minoring the CM program to have more elective options. Multiple CM minors already signed up and successfully completed the CNST 455 course in the Spring of 2016.

AY 1415-3. Change the "Required Four Courses" to "Required Three Courses" in the CM Minor Requirements. This change did not change the required six courses for the CM minor. Instead of 4 electives and 2 required courses, CM minors can now have 3 electives and 3 required courses.

AY 1415-4. Change the CM minor electives from "Select two" to "Select three". This change did not change the required six courses for the CM minor. Instead of 4 electives and 2 required courses, CM minors can now have 3 electives and 3 required courses.

## 5. Discussion of Recommended Program Changes

Two curriculum changes were made and approved this year:

AY 1415-1. New course code for CNST 540 as CNST 465.

AY 1415-2. Approval of a second construction senior elective course in addition to CNST 540 Sustainable Construction. The new course is CNST 430 Building Information Modeling and was taught by Prof. Michael Emmer in the Fall of 2015. This allowed students have an elective option for both semesters since CNST 540 Sustainable Construction was offered in the Spring semester. We continue to develop more elective options which include proposals for the following courses that are still in development phase and will be proposed for CM faculty and the Dean's approval in the upcoming academic year:

- Estimating for Heavy Construction
- Construction Business Development
- Residential Construction
- Transportation

## Appendix A: Revised Program Objectives and Metrics

The following pages reflect the program objectives that will be used to assess the CM program starting in Academic Year 2016-2017.

<b>FACULTY &amp; STAFF</b>			
Objective #1: Recruit and retain exceptional and diverse faculty and staff to support program, school, and university objectives.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors report to be satisfied or very satisfied with the helpfulness of CM staff.	Senior Exit Survey		
At least 80% of graduating seniors report to be satisfied or very satisfied with the helpfulness of CM faculty.	Senior Exit Survey		
CM faculty and staff demographics are comparable to ACCE accredited peer institutions in ASC's Region 1.	Diversity Stats – Peers 85% M; 15% F 3%B; 3%A; 3%H		
At least one academic conference attendance or presentation or journal paper published by 80% of full time tenured or tenure track faculty. At least one academic conference presentation or journal paper published by 80% of full time tenured or tenure track faculty.	Faculty Survey		
At least one academic conference presentation or publication co-authored by at least one full-time CM faculty and an undergraduate CM student.	CM Research Group Report		
50% of full time faculty conducted at least one consulting activity for the construction industry OR research with industry support OR faculty internship.	Faculty Survey		

EDUCATIONAL			
Objective #2: Graduate students who demonstrate exemplary cutting edge technical knowledge and skills.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors answer the following question as satisfied or very satisfied: CM Program increased my technical knowledge and skills.	Senior Exit Survey		
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: The RWU CM Program helped me to demonstrate exemplary cutting edge technical knowledge and skills.	Alumni Survey		
CM Program Learning Outcome (PLO) assessment indicates 100% of PLOs to be satisfactory OR lists specific action plans to address any PLOs that are indicated as weaknesses.	PLO Assessment		
At least 80% of the employers report interns': <ul style="list-style-type: none"> <li>- Technical Knowledge as outstanding or In tune</li> <li>- Estimating skills as very or moderately knowledgeable</li> <li>- Scheduling skills as very or moderately knowledgeable</li> <li>- CAD skills as extremely or moderately proficient</li> <li>- Excel skills as extremely or moderately proficient</li> </ul>	Employer Internship Survey -		

<b>EDUCATIONAL</b>			
Objective #3: Graduate students who value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: The CM Program has got me interested in lifelong learning or continuing education.	Senior Exit Survey		
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me recognize the value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.	Alumni Survey		
At least 50% of CM seniors sit in for the AC Level I exam.	AC Exam Attendance		
At least 20% of alumni (5 years out) report to have received a graduate degree or a certificate.	Alumni Survey		

<b>EDUCATIONAL</b>			
Objective #4: Graduate students who are recognized as regional, national, and international construction industry leaders.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: CM Program has increased my enthusiasm to become a leader in the construction industry.	Senior Exit Survey		
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me obtain the skills necessary to become a regional, national, and international construction industry leader.	Alumni Survey		
At least 5% of all RWU alumni with a profile on LinkedIn is holding an executive or higher position in the construction industry.	LinkedIn Data		
At least 1% of all RWU alumni with a profile on LinkedIn has worked or is working in a construction related area outside of the US.	LinkedIn Data		
At least one RWU CM alum was nominated as the current academic year's CMPAB Distinguished Person of the Year Award.	CM Coordinator		



EDUCATIONAL			
Objective #5: Graduate students who always display the highest standards of ethical conduct.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors answer the assessment question for PLO #6 (Ethical Principles) as agree or strongly agree.	Senior Exit Survey		
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me to always display the highest standards of ethical conduct.	Alumni Survey		
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: It is as important to be ethical as it is to follow the law.	Alumni Survey		
CM Program Learning Outcome (PLO) assessment indicates PLO #6 to be satisfactory OR lists specific action plans to address any PLOs that are indicated as weaknesses.	PLO Assessment		
Capstone course assessment report indicates that the direct assessment of its ethics CLO is equal to or higher than 80%.	Capstone Ethics Outcome		

<b>SERVICE</b>			
Objective #6: 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 future generations of constructors.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: The CM Program has motivated me to join a relevant professional society.	Senior Exit Survey		
At least 80% of graduating seniors answer the following question as "YES": Are you actively involved in professional associations or societies or serving in professional or community volunteer positions?	Alumni Survey (5 yr out)		
At least 5% of all CM alumni with a profile on LinkedIn to list "skilled volunteering" or "board service" as an interest.	LinkedIn Data		
100% of full time CM faculty are active members of at least one construction related professional association.	Faculty Survey		
100% of CM students received Feinsein Service Learning credit prior to graduation.	Transcripts		
At least one CM student group was involved with construction related community service.	Student Club Reports		

STUDENTS			
Objective #7: Recruit and retain a committed, qualified, passionate and diverse body of students.			
Metrics Associated with Objective	Where Measured		
At least 80% of graduating seniors answer the following question as good or very good: Please rate the quality of the CM student body. At least 80% report good or very good.	Senior Exit Survey		
Diversity statistics of CM students are comparable to RWU or RI race/ethnic/gender data.	Registrar / Institutional Research		
Maintain a minimum of 90% retention rate for the 6-yr graduation rate.	Registrar / Institutional Research		
At least 10% of all graduating CM students participated in student competitions.	Senior Exit Survey		
Average GPA of all CM students who started at RWU in the fall semester and were still enrolled by Spring 2016 is at least 2.75.	Transcripts		
At least 80% of all CM freshmen declare construction management major as their first choice of major.	Freshmen Survey		

<b>ALUMNI</b>			
Objective #8: Grow and maintain an engaged network of alumni to support and advance program mission and objectives.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: I am planning to support and advance RWU CM program mission and objectives by staying involved after graduation.	Senior Exit Survey		
At least 80% of graduating seniors answer the following question as "YES": Have you had any direct engagement with the RWU CM program since graduation?	Alumni Survey		
At least 50% of the Program Learning Outcome Mentors (PLOM) are graduates of the RWU CM program.	PLOM List		
At least 30% of the CM Professional Advisory Board (CMPAB) to be the graduates of the RWU CM program.	CMPAB List		
The number of CM Annual Alumni Banquet attendees exceed 80% of the number of students registered in the CM program as of the preceding Fall semester.	RWU Advancement Data		
At least 80% of graduating seniors answer the following question as agree or strongly agree: I am planning to support and advance RWU CM program mission and objectives by staying involved after graduation.	RWU Advancement Data		

CULTURE			
Objective #9: Embrace a culture of professionalism, innovation, collaboration, and tolerance.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 20% of graduating seniors answer the following question as "YES": Did you participate in a short or long term study abroad program or any other academic activities abroad during your education at RWU?	Senior Exit Survey		
At least 80% of graduating seniors answer the following question as agree or strongly agree: RWU CM community encourages and welcomes individuals with different opinions.	Senior Exit Survey		
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM community encouraged and welcomed individuals with different opinions.	Alumni Survey		
At least 80% of employers report their interns: - as completely dependable or dependable above average - quite poised and confident or has appropriate self-assurance - always on time - exceptionally well-accepted or works well with others.	Employer Internship Survey		
At least 5% of all CM students participated in faculty led student research outside of class prior to graduation.	CM Research Group Report & Faculty Survey		
CM club arranged at least 4 guest speakers/workshops AND the attendance at these events included at least 25% of all CM students.	CM Club Report		

<b>BRANDING</b>			
Objective #10: Maintain a reputation within the local, national and international communities as a leading academic provider of construction education.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as likely or very likely.	Senior Exit Survey		
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: I believe the RWU CM program is a leading academic provider of construction education.	Alumni Survey		
Social media account followers increased by 50% compared to the previous AY.	Social Media Data		
At least 80% of all CM freshmen report RWU as their first choice.	Freshmen survey		
All student teams competing in competitions placed in top 3.	CM Club Report		
At least 2 faculty (or faculty led students) to present CM related work at peer reviewed international conferences.	CM Club Report		

<b>FACILITIES</b>			
Objective #11: Maintain convenient, well equipped, and state-of-the-art facilities and resources to support learning and research.			
<b>Metrics Associated with Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: Please rate the quality of overall SECCM classrooms and labs.	Senior Exit Survey		
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: Please rate the quality of the SECCM "rCloud".	Senior Exit Survey		
100% of CM faculty report to be satisfied or very satisfied with the facilities.	Faculty Survey		
No CNST laboratory section exceeds 16 students AND No CNST lecture exceeds 36 students AND no CNST course with a computer software related outcome exceeds 24 students.	Registrar		

## Appendix B: Revised Program Learning Outcomes and Metrics

<b>Outcome 1:</b> Create written communications appropriate to the construction discipline.			
<b>Metrics Associated with Outcome</b>	<b>Where Measured</b> (*Direct Assessment)	<b>Met</b>	<b>Comments</b>
1. 100% of CM students successfully complete at least two writing courses.	Transcript		
2. 100% graduating seniors report that they are proficient in creating written communications appropriate to the construction discipline.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency achieved and 1 means proficiency not achieved.</i>	Student Exit Survey		
3. At least 50% of all CM courses require “creating written communications appropriate to the construction discipline”.	Course Syllabi		
4. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades		
5. 100% of employers who take a survey will report CM rising senior interns’ writing communication to be either “Concise, factual, effective” or “Outstanding”	CM Intern Employer Survey		

Outcome 2: Create oral presentations appropriate to the construction discipline.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Clearly communicating ideas” or “Very articulate”.	CM Intern Employer Survey		
2. 100% of seniors will have the opportunity in construction classes to make an oral presentation at least twice a semester during their senior year.	CARs		
3. 100% of all freshmen, sophomore and juniors will have the opportunity to make an oral presentation in a construction class at least 1 time a year.	CARs		
4. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades		
5. 100% of graduating seniors report that their RWU education has prepared them proficiently in communication skills for the workplace.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency achieved and 1 means proficiency not achieved.</i>	Student Exit Survey		



<b>Outcome 3:</b> Create a construction project safety plan.			
Metrics Associated with Outcome	Where Measured (*Direct Assessment)	Met	Comments
1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades		
2. At least 30% of all construction courses will include a construction project safety related CLO and will assess the CLO in their course assessment reports with at least one direct and one indirect measure.	Course Syllabi CARs		
3. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency</i>	Student Exit Survey		

Outcome 4: Create construction project cost estimates.			
Metrics Associated with Outcome	Where Measured (*Direct Assessment)	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades</p>		
<p>2. CNST 321 – Advanced Building Estimating will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>CNST 321 CAR – Avg. of Grades for CLO 7, 8, 9</p>		
<p>3. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Moderately knowledgeable” or “Very knowledgeable” in estimating</p>	<p>CM Intern Employer Survey</p>		
<p>4. 100% graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency</i></p>	<p>Student Exit Survey</p>		

<b>Outcome 5:</b> Create construction project schedules.			
<b>Metrics Associated with Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades		
2. CNST 450 – Construction Planning and Scheduling will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CNST 450 CAR – Avg. of median final exam and semester project grades		
3. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Moderately knowledgeable” or “Very knowledgeable” in scheduling.	CM Intern Employer Survey		
4. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency</i>	Student Exit Survey		

<b>Outcome 6:</b> Analyze professional decisions based on ethical principles.			
<b>Metrics Associated with Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
1. 100% of graduating senior will have developed and presented an ethics case that focuses on professional and ethical responsibility.	Course Syllabi CARs		
2. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus Capstone Final Project Rubric & CLO Grades Capstone Ethics Assignment		
3. At least 25% of all CNST courses will include an ethics related course learning outcome in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs		
4. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency.</i>	Senior Exit Survey		
5. Alumni rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency.</i>	Alumni Survey (5 yr out)		
6. 100% of surveyed alumni agree or strongly agree that it is as important to be ethical as it is to follow the law.	Alumni Survey (5 yr out)		

<b>Outcome 7:</b> Analyze construction documents for planning and management of construction processes.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs		
2. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.5 or above on a 5-point scale on both direct and indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades		
3. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency.</i>	Senior Exit Survey		

Outcome 8: Analyze methods, materials, and equipment used to construct projects.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs		
2. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus  Capstone Final Project Rubric & CLO Grades		
3. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey		
4. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “In tune with the requirements” or “Outstanding” in technical skills.	CM Intern Employer Survey		

Outcome 9: Apply construction management skills as a member of a multi-disciplinary team.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 445 Construction Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	CNST 445 CAR – IPD Assignments 1, 2, 3 and the Final Assignment		
2. At least three student-led teams will participate in a construction related student competition within the assessed academic year.	Student Competition info from the CM Club report		
2. At least three student-led teams will participate in a construction related student competition.	Senior Exit Survey		
<p>3. All graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	CM Intern Employer Survey		
4. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Gets along with others”, “Works well with others” or “Exceptionally well accepted”.	Student Competition info from the CM Club report Capstone Presentations		
5. At least 10% of all Construction Management seniors will participate in a student team competition where their performance will be externally judged and assessed.	Senior Exit Survey		

Outcome 10: Apply electronic-based technology to manage the construction process.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades</p>		
<p>2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	<p>Senior Exit Survey</p>		
<p>3. 100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Extremely” or “Moderately” proficient regarding software program proficiency.</p>	<p>CM Intern Employer Survey</p>		
<p>4. 100% of CM students will complete a computer applications course.</p>	<p>CARs</p>		
<p>4. At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	<p>CNST 260 CAR</p> <p>CNST 321 CAR</p> <p>CNST 450 CAR</p>		



Outcome 11: Apply basic surveying techniques for construction layout and control.			
Metrics Associated with Outcome:	Where Measured	Met	Comments
1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i>	Senior Exit Survey		
2. At least three CM courses will address this outcome at some level and the courses will assess the associated outcome with direct and/or indirect assessment methods.	CARs		
2. At least three CNST courses will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CNST 302 CAR – Final Course Grade Avg.		

<b>Outcome 12:</b> Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  <i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency.</i>	Senior Exit Survey		
2. At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs		
3. At least 10% of all graduating seniors will participate in a student competition.	Student Competition info from the CM Club report  Capstone competition		
4. 100% of CM students report to have participated in at least one interdisciplinary workshop in collaboration with a non-CM program such as architecture, engineering, business, etc. prior to graduation.	Student Exit Survey		
5. CNST 445 – Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.5 or above on a 5-point scale on both direct and indirect assessment.</i>	CNST 445 CAR – Lab #3 Grades		

Outcome 13: Understand construction risk management.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades</p>		
<p>2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency.</i></p>	<p>Senior Exit Survey</p>		
<p>3. At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	<p>CARs</p>		

Outcome 14: Understand construction accounting and cost control.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</i></p>	Senior Exit Survey		
<p>2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs		
<p>3. CNST 475 – Construction Project Control will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	CNST 475 CAR – CLO 4, 7, 8 Grades		

Outcome 15: Understand construction quality assurance and control.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. CNST 480 – Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	<p>Capstone Syllabus</p> <p>Capstone Final Project Rubric &amp; CLO Grades</p>		
<p>2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p><i>Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency.</i></p>	<p>Senior Exit Survey</p>		
<p>3. At least 25% of all CNST classes will include a course learning outcome related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	<p>CARs</p>		

<b>Outcome 16:</b> Understand construction project control processes.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. CNST 475 – Construction Project Control will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CNST 475 CAR – Avg. of Course Final Grades		
2. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  Proficiency is defined as a mean and median score of 4 or above on a 5 point scale where 5 means proficiency.	Senior Exit Survey		
3. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs		

<b>Outcome 17:</b> Understand the legal implications of contract, common, and regulatory law to manage a construction project.			
Metrics Associated with Outcome	Where Measured	Met	Comments
1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.  Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.	Senior Exit Survey		
2. At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.	CARs		
3. 100% of all CM students will successfully complete at least one legal elective course prior to graduation.	Transcripts		
4. CNST 445 – Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment.  <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CNST 445 CAR – Law Case and Law Assignment Grade Avg.		

Outcome 18: Understand the basic principles of sustainable construction.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</p>	Senior Exit Survey		
<p>2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs		
<p>3. At least 5% of graduating seniors will report to have been actively involved with the RWU USGBC Student Group.</p>	Senior Exit Survey		
<p>4. The RWU USGBC Student Group will sponsor at least one educational activity focusing on sustainable construction. The activity will be open to all CM students with no restrictions on eligibility to attend.</p>	RWU USGBC Student Group Report		
<p>5. CNST 465/540 – Sustainable Construction will adopt this outcome and the average of course final grade will be a minimum of 75 out of 100.</p>	CNST 465/540 CAR – Avg of Final Course Grades		
<p>6. CNST 445 – Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	CNST 445 CAR – Final IPD Grade Avg.		



Outcome 19: Understand the basic principles of structural behavior.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</p>	Senior Exit Survey		
<p>2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs		
<p>3. CNST 304 – Applied Structures will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	CNST 304 CAR (Average of all 7 CLOs)		

Outcome 20: Understand the basic principles of mechanical, electrical and piping systems.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. 100% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.</p> <p>Proficiency is defined as a mean and median score of 4 or above on a 5-point scale where 5 means proficiency.</p>	Senior Exit Survey		
<p>2. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus. All CLOs to be assessed using at least one direct and/or indirect assessment in the course assessment reports.</p>	CARs		
<p>3. CNST 455 – Mechanical / Electrical Design will adopt this outcome into its CLOs and report average of the semester project grades to be satisfactory based on at least one direct and one indirect assessment.</p> <p><i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i></p>	CNST 455 CAR – Avg. of Semester Project Grades.		