

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 2018 and ending in July 2019 (AY 18-19). Its focus is on the academic assessment throughout the year. Based on a review of our assessment tools including but not limited to course assessment reports, various surveys administered to program constituents, examinations, and construction industry professionals' observations, it is evident that the state of the program continues to get stronger in a variety of aspects during another particularly challenging year with only 5 full-time faculty.

The program faculty and the program coordinator reviewed the 2018-2019 academic year using a number of tools and meetings in order to identify strengths and weaknesses of the program and recommend action items for the upcoming year. During this process, 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, Capstone project, Senior exit surveys, CMPAB's senior exit interview, Alumni Survey, Freshmen Survey and the Associate Constructor (AC) Level 1 exam. The faculty meetings' minutes, and other reports are also attached to this assessment report. Overall 2018-2019 was a very strong year for the Construction Management program. It is important to note that the most critical challenge for the program continues to be the low number of full-time faculty members¹. There were only 5 full-time faculty during Fall 2018 and Spring 2019, its lowest number in the last decade, with a student population that has reached its highest level in the history of the program and doubled in the last five years from approximately 100 students to over 200 as of Fall 2019. Below are further highlights of the 2018-2019 academic year:

- Dr. Bilge Gokhan Celik announced that he will be stepping down from the Program Coordinator role by the end of Summer 2019. He has served as the coordinator for 5 academic years. Dr. Michael Emmer agreed to serve as the new coordinator starting in the 2019-2020 academic year.
- Our 9th annual Alumni and Senior Banquet was held on May 3, 2019 (Img 4.0.1). At this event our Capstone Project winners were announced and our graduating senior class were introduced to our program alumni (Img 4.0.2). This was the first year this event was held on campus (at the Global Heritage Hall). The event had the highest number of attendees ever including many alumni, industry professionals, academics and RWU faculty, staff and administrators.

¹ **October 2019 Update:** RWU administration has recently approved one (1) new faculty position for the CM program. A search committee is formed to hire the new faculty to start at the beginning of Fall 2020 as the 6th full-time CM faculty.



Image 4.0.1. 9th annual Alumni and Senior Banquet was held on May 3, 2019, GHH, RWU Bristol Campus



Image 4.0.2. Construction Management Class of 2019

- The CM student population continued to increase for the 5th year in a row with the Fall 2018 enrollment at 179 students, more than the Fall 2017 enrollment of 170. The program is on track to accommodate 201 students by the beginning of Fall 2019. Program also had 5 graduate students in the Fall 2018 which brought the total CM student population to 184 students during the 2018-2019 AY. This is a 8.24% increase compared to the 14.8% increase the previous year. This marked the fifth year of continuous increase in CM student population. Figure 4.01 illustrates the percentage of increase/decrease in the last 5 academic years.

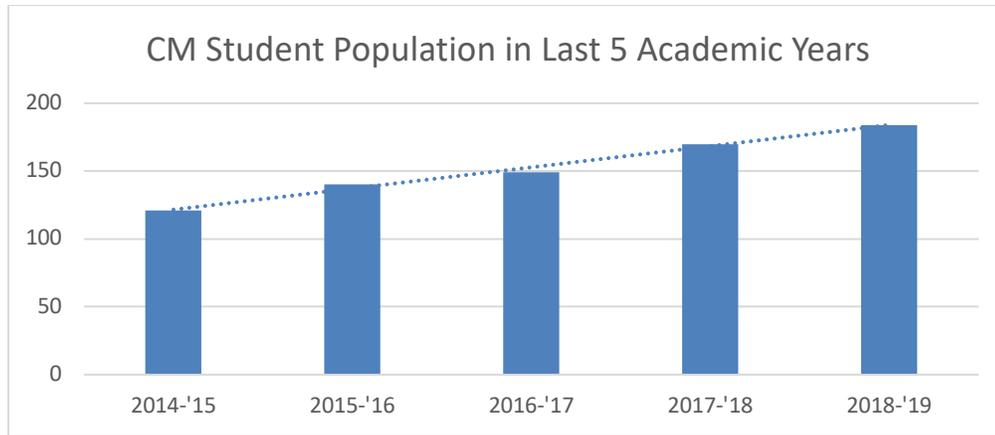


Figure 4.0.1. CM Student Population Increase/Decrease

- Total CM student population per full-time faculty member continued to increase for 5th year in a row from 28.33% in 2017-2018 to 36.8% in 2018-2019. Figure 4.0.2 illustrates this data point for the last 6 academic years.

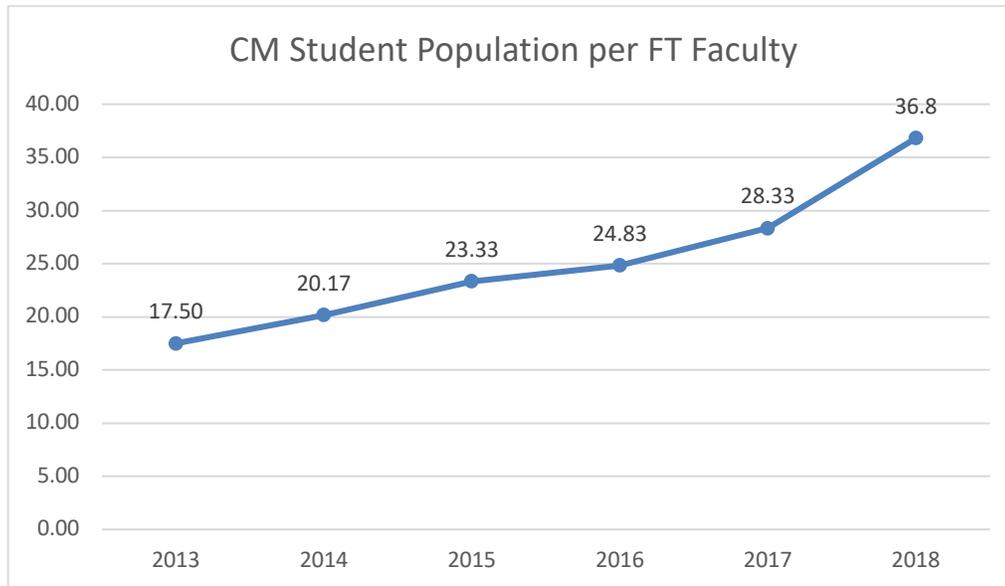


Figure 4.0.2. CM Student Population Trend in the Last Six Years

- All student competition teams placed in top three with Heavy-Highway (HH) team taking the 2nd place and Design Build and Preconstruction Teams taking the 3rd place at the Associated Schools of Construction (ASC) Region 1 Student Competition.
- Our preconstruction team placed 2nd in the ASC Region 6-7 Open Student Competition in Reno, Nevada.
- Approximately 90% of the graduating students accepted a job offer prior to graduation. We are in the process of gathering the full employment statistics. The full statistics including company names, positions and the median salary will be published on the program website by the end of Spring 2020 semester.

- The CM Professional Advisory Board (CMPAB) awarded its tenth endowed scholarship to CM junior Mr. Ruben Fonseca and CM sophomore Ms. Julia Pateman (Img. 4.0.3)



Image 4.0.3. CM sophomore Ms. Julia Pateman and CM junior Mr. Ruben Fonseca - CMPAB scholarship recipients

- Dr. Bilge Gokhan Celik received CMPAB's "The Mallet", the Professor with the Most Impact on the Graduating Students Award.
- 6-year graduation rate has increased to an all-time high of 68.18% (an increase from 58% 3 years ago). This is a significant accomplishment that has begun in 2015 when the 6-year graduation rate was adapted as one of the hundreds of new metrics in the program's annual assessment.
- The ratio of graduating seniors who has a study abroad experience has exceeded our program target of 20% by reaching an all-time high of 22%. This is another example of the impact of our strategic plan. 5 years ago the program set this as one of the many metrics to ensure our students embrace a culture of professionalism, innovation, collaboration, and tolerance. The ratio was only 2 percent in 2015-2016 AY.
- The percentage of alumni (5-year out) who have completed a graduate or certificate degree has increased an all-time high of 25% which is 5% over our target of 20%. This is a significant increase for one of the metrics that measures our graduates' commitment to life-long learning. The metric normally fluctuated between 0% and 18% in the last 5 years.
- Senior dinner sponsored by CM Professional Advisory Board has reached its greatest number of attendees in the history of the program with 174 attendees (an increase from 112 last year). The number of CM alum has also reached an all-time high this year with 70 RWU CM alum (compared to 48 last year) attending the event.
- Dr. Issa Ramaji started as the newest addition to full-time faculty as the Assistant Professor of Construction Management. He taught undergraduate and graduate courses including CNST 100, 116 and 462 during Fall and Spring semesters.
- Curriculum Change: Removed MATH 124 from the list of prerequisites of CNST 450. Added ARCH 484 to the list of prerequisites, as ARCH 484 is dual listed with CNST 260. Added permanent codes for CNST senior electives as CNST 462 and 463.

1. Introduction

The Construction Management program was reaccredited by the ACCE in Spring 2005, Spring 2011, and Spring 2017. In 2015 the SECCM published a comprehensive Assessment Plan as well as Strategic Plan that identified a Program Mission and 11 Program Objectives that detailed the assessment process for the CM program. The Construction Management program has submitted annual assessment reports for AY 2005-2006, AY 2006-2007, AY 2007-2008, AY 2008-2009, 2009-2010, 2010-2011, 2011-2012, 2012-2013, 2013-2014, 2014-2015, 2015-2016 and 2016-2017. This report addresses the 2018-2019 academic year and is in compliance with the strategic and assessment plan approved in 2015.

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 three 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 4-5 years out from graduation. We targeted 2013 graduates last year, and continued with 2014 graduates this year. For the fourth 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 advisory board communications were used to perform this annual assessment.

This year's assessment continued to focus on metrics for twenty (20) ACCE student learning outcomes and eleven (11) program objectives. Program assessment results 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, Faculty Meeting Agenda/Minutes (Tab A), Senior Exit Survey results (Tab B), Senior Capstone Report (Tab C), Associate Constructor Report including exam performance (Tab D), CM Club Report (Tab E), Internship Report (Tab F), Alumni Survey results (Tab G), CMPAB Meeting Minutes (Tab H), RWU Performance Dashboard (Tab I) and Freshmen Survey results (Tab J). 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 ninth time, the CM advisory board through the academic subcommittee coordinated our senior exit surveys. Two program alumni formed the panel, which met with all 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 eighth 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 9th 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. This year the program could not collect data from intern employers due to lack of faculty resources but it is the intent of the program to continue employer data collection when and if one more full-time faculty is hired. CM Professional Advisory Board (CMPAB) provides valuable support and feedback to the faculty and the students. CMPAB continued to hold formal meetings once a semester. This year the meetings were held on September 26, 2018 and April 3, 2019. Tab H includes copies of the CMPAB meeting minutes from two meetings held in 2018-19 AY.

This year, we are a step closer to the standardization of course syllabi as well as the course assessment reports 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 2014 alumni using an online survey. Due to the limited number of full-time faculty members this year, we were not able to reach as many alumni as we did the year before. We had only a few responses from the Class of 2014. Our CMPAB Alumni Committee, RWU Alumni committee and the CM faculty will continue to work to strengthen the CM alumni database to reach more graduates.

In an effort to assess our faculty and staff objective (#1) in a more comprehensive way, full-time faculty per student ratios to be added as a metric in next year's assessment. CM program coordinator will research peer programs' ratios at RWU to identify a reasonable and effective target for this new metric. Target for this metric will be set during the final CM assessment meeting of 2018-2019 academic year. Regarding retention rates, instead of retention rates from Institutional Research, for second year in a row, we continued to track graduation of those through transcript analysis of those who started the program in the Fall 2013 (6 years ago). We will continue to use same approach for future assessments for consistency.

3. Program Assessment

Overall program enrollment continued to improve while faculty to student ratio continued to increase (Refer to Figures 4.0.1 and 4.0.2). The entering freshmen class in Fall 2018 was 37 compared to 42 in Fall 2017. Although there was a slight decrease in the number of freshmen compared to Fall 2018, this year's freshmen class remained to be a large population as the fourth largest one in the last 10 years. 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. 6-year graduation rate has shown unprecedented improvement two years in a row with an increase from 59.2% in 2017-2019 to 63.6% this year. The increase in graduation rate is a great example of how our strategic plan along with our continuous improvement plan launched in 2015 affected program accountability which in return continuous to make considerable impacts on program success.

We continued to update metrics on the RWU performance dashboard for the CMPAB, which has helped the board and the program with identifying major strengths and concerns for the past 3 years. Some of the key data points from the Performance Dashboard covering the last 3 academic years are provided below in Tables 4.3.1, 4.3.2 and 4.3.3. The full dashboard with data points dating back to 2005-2006 academic year is provided in Tab I.

Table 4.3.1 Summary of Program Student & Faculty Population

Program Size	2016-'17	2017-'18	2018-'19
Overall Undergrad Program	149	170	179
Freshman Class (UG)	51	42	37
Senior Class (UG)	34	34	44
GR Population as of Oct. 1	0	0	5
TOTAL CM POPULATION (UG+GR)	149	170	184
Tenured Faculty	6	6	4
Tenure-Track Faculty	0	0	1
Total Tenured/Tenure-Track Faculty	6	6	5
# of students per full-time faculty	24.83	28.33	36.8

Table 4.3.2 Student GPA averages and Senior AC Exam Pass Rate

GPA Average (UG)	2015-'16	2016-'17	2017-'18
Overall Program at Start of Fall	2.73	2.71	2.8
Senior Class	2.73	2.87	2.64
Overall RWU at Start of Fall	3.08	3.067	3.13
AC Exam Results	2015-'16	2016-'17	2017-'18
RWU Seniors	80.0%	83.3%	77.8%
National Average	51.2%	69.7%	59.0%

Table 4.3.3 CM Seniors' Employment Metrics

Avg. # Internships as Senior	2015-'16	2016-'17	2017-'18
Avg. # Internships as Senior	2.2	2.1	2.38
Employer Internship Score	2015-'16	2016-'17	2017-'18
Employer Score of Seniors	87.06	87.89	N/A
Job Placement / Grad School	2015-'16	2016-'17	2017-'18
Seniors @ Graduation	100%	93%	100%
Salary Range (UG)	2015-'16	2016-'17	2017-'18
Low	\$ 45,000	\$ 45,000	\$ 40,000.00
High	\$ 73,200	\$ 72,000	\$ 85,000.00
Mean	\$ 59,751.00	\$ 59,926.00	\$ 62,361.11
Median	\$ 60,000.00	\$ 60,000.00	\$ 61,000.00

Table 4.3.4 CM Student Competition Results

ASC Reg. Competition Placement	2016-'17	2017-'18	2018-'19
Commercial	2	4	3
Design-Build	2	4	3
Heavy Highway	4	3	2
DBIA Competition Placement	2016-'17	2017-'18	2018-'19
DBIA Regional	-	1	1
DBIA National	-	-	-

This year was also the fourth 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..

80% (compared to 33% in 2018) of the alumni who responded to the alumni survey stated that they are a member of at least one professional organization. This is a big success for the program and a direct result of strategic planning and assessment that took place in the last 5 years. This number along with many other metrics continued to grow in the last 5 years from less than 10% 5 years ago to 80% this year. Alumni involvement on our CM Advisory Board and as members of our capstone review panel has been significantly growing and the alumni subcommittee of our CM Advisory Board continues to sponsor the annual CM Alumni and Senior banquet. This year's banquet was held on May 3rd at the Bristol Yacht Club (Img 4.3.1).



Image 4.3.1 8th CM Alumni and Senior Banquet – May 3, 2019 – Global Heritage Hall, RWU

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. Eugene Kennedy, Lee Kennedy Company received this year’s CMPAB Distinguished Person Award (Img. 4.3.2).



Image 4.3.2. Eugene Kennedy receiving his CMPAB Distinguished Person Award, May 4, 2018, Bristol, RI

Mr. Matthew Henning was recognized as the top SECCM graduate among the Class of 2019 (Img. 4.3.3). Mr. Nicholas Morrison was recognized as the top CM graduate among the Class of 2019 (Img. 4.3.4). Mr. Jonathan Gomes was the recipient of the Presidential Core Values Medallion (Img. 4.3.5).



Image 4.3.3. 2019 Top SECCM graduate Matthew Henning receiving his award from Dr. Celik



Image 4.3.4. 2019 Top CM graduate Nicholas Morrison receiving his award from Dr. Celik



Image 4.3.5. 2019 Presidential Medallion Recipient Jonathan Gomes, RWU Commencement Ceremony

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 provided in various tabs at the end of this report:

Internship Program

In the AY 2018-2019, 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. One of the challenges for the CM program has continued to be the staff changes at the RWU Career Center. We are currently working with the new staff at the career services in order to return to previously established strong relations between CM faculty and students and the career services staff.

Approximately 75% of all students who took the survey in the CM program reported to have a paid employment experience during the Summer of 2018. This is a decrease from 84% that was reported in the previous academic year. 100% of all employment eligible seniors had at least one paid construction related internship prior to graduation. Faculty agreed to check on internship status of all juniors during advising sessions in the fall and spring semester and report any juniors without any internship experience, to the program coordinator. This will give us enough time to address any future "no internship prior to graduation" issue. The average number of internships prior to graduation was 2.05 for the Class of 2019, compared to last year's 2.38.

In addition to surveying sophomores, juniors, and seniors, every year we also 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. It has always been a challenge to contact employers and receive detailed survey responses from them regarding our students. The challenge got bigger this year as two faculty members retired with only one faculty added to the team. This resulted in not being able to conduct this important survey. Consequently, we do not have any updated data regarding metrics associated with this survey, two years in a row. CM program continues to value feedback from employers and will attempt to conduct this survey in the upcoming year depending on the availability of faculty and staff resources.

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 four (4) 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 complete and active alumni database. They received a Silver Accomplishment Award from the International Honor Society during the convention at the ASC Conference in Denver, CO. This year's USGBC group was not active due to lack of faculty advisor support.

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 ninth annual CM alumni dinner at the Global Heritage Hall on Bristol Campus. Program alumni conducted senior exit surveys in parallel with capstone presentations. This year, the course was taught by Dr. Emmer for the first time. He has done many revisions to improve

the overall capstone experience for both judges and the students. Shawmut Design and Construction and Gilbane Building Company voted for this year's capstone project winners.

As was suggested in the previous years, 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 continued to receive positive feedback from both the judges and the students with room for improvement in assessment and logistics. A complete report on the student Capstone Project prepared by Dr. Emmer can be found in Tab C.

Senior Exit Survey

Complete results of senior exit surveys conducted by a member of our Construction Management Professional Advisory Board (CMPAB) Mr. John Puniello who was assisted by one of our recent alumni, Mr. Greg Josselyn, can be found in Tab B.

Noted strengths included the following:

- 1.) The students largely felt that the faculty promoted discipline, critical thinking, and problem solving. The students felt supported and engaged by the faculty, some even working on research alongside faculty.
- 2.) The students felt they were leaving the university prepared to enter industry with broad construction knowledge. Many students participated in competition teams and all students took some form of public speaking courses, so the students felt well rounded and very confident presenting.
- 3.) Students agreed that the program largely promotes the value of teamwork.

Many ideas for improvement were also mentioned. Below is a list of a few examples of what's included in more detail in the exit survey report:

- 1.) Invest into the faculty of the program. This was the loudest resounding suggestion from the students. The students felt the program was significantly understaffed, and noticed the untimeliness in the return of their assignments and tests, due to faculty workload.
- 2.) Students complained about the university cloud server, and said the system was very unreliable.
- 3.) Students felt like MEP should be better incorporated into other classes throughout the 4 years.
- 4.) Students wished they could have visited the Capstone projects more, and wished the Capstone industry leaders were more engaged.

Associate Constructor Exam and Review Course

11 students from the graduation class decided to take the exam which is an increase compared to 7 students in the previous academic year. 7 out of 11 students passed the exam for an 64.7% success rate compared to 77.8% of the previous academic year. It is important to note that this year the passing score was increased by AIC and the passing score would have been 81.8% if there was no change. The RWU average score was 226 compared to last year's 219 and compared to the national average score of 219. These numbers are significantly better than last year's data. Going forward, faculty aims to focus on increasing the number of students who sit for the exam as well as the passing rate.

Based on the AC Exam report, some of the strengths of our students were as follows:

- Outcome #12: Understand different project delivery methods
- Outcome #16: Understand construction project control processes

- Outcome #17: Understand legal implications of contracts

The full AC Exam results are 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 to work on the research project. Those students also had the opportunity to travel to an international conference to present their work. Since then the group grew into multiple faculty members, six student researchers and has published numerous research articles and presented at numerous national and international conferences.

In 2018-2019, due to Dr. Celik's absence in the previous year and the limited number of tenured or tenure-track faculty members, CM research group was not able to generate any scholarly work through the center. This is a significant weakness that can only be addressed with hiring of additional tenure-track faculty members. In addition, as Dr. Celik passes the torch on the coordinator position, he is planning to focus on his research center once again in the upcoming academic year.

Freshmen Survey

2016-2017 academic year was the second year we started to collect official assessment data via a freshmen survey conducted by the end of Spring semester. 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.

This year's participation rate was 45% compared to last year's 88%. 100% of surveyed freshmen reported that RWU was their first choice of university (an increase from 67% in the previous AY). Also, 67% of all CM freshmen declared construction management major as their first choice of major compared to 78% last year. These results were discussed in depth in the program objectives assessment section by the end of this document where actions were identified to improve the CM selection rating to our 80% target. More details on program objectives, outcomes and assessment of all associated metrics are discussed by the end of this report. The complete results of the freshmen survey are provided in Tab J.

Faculty Survey

2018-2019 academic year was the third year since 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. This is an increase from 50% last year.
- 60% 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 2018-2019 academic year.
- 100% of full time CM faculty were involved with least one construction related professional association.
- 4.88% of all CM students participated in faculty led student research outside of class prior to graduation (decrease from 6.89% in the previous academic year). Target for this metric is 5% thus the faculty is almost at target with this goal. We expect this number to increase in the upcoming year with Dr. Celik's return to leading his CM Research Group.
- 67% of CM faculty report to be somewhat satisfied with SECCM facilities. This is below the target for this metric.

Other Topics

Career Services:

There were two career fairs this year similar to the previous academic year. One in Fall 2018 (September 26, 2018) and the other in Spring 2019 (April 3, 2019). 36 construction companies attended the Fall 2018 career fair (compared to 33 in Fall 2017 and 29 in Fall 2016). 14 construction companies attended the Spring 2019 Career fair (compared to 25 Spring 2018 and 18 in Spring 2017 career fair). A total of 50 times construction companies have attended the career fair in the 2018-2019 academic year compared to 58 and 47 in Spring 2018 and Spring 2017 respectively. We are continuously working alongside the Career Center to increase the number of companies as well as the students attending the career fairs. It is also important to note that the career center has been going through some significant staffing changes. As the number of CM program full-time faculty is at a historic low and the number of CM students continues to rise, it is extremely critical for the program to strengthen relations with the new career center personnel in an effort to utilize their services to meet our employment and internship targets.

Marketing:

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. Our reach in every social media platform grew substantially during 2016-2017 academic year. In 2018-2019 the growth of our social media accounts improved compared to 2017-2018 with the return of Dr. Celik from his sabbatical as he manages these accounts on a regular basis. For example, our facebook, twitter, and Instagram followers increased by 9%, 13.2% and 25.3% respectively compared to the previous year. It is still important to note that the faculty need to discuss adjusting follower growth goals to accommodate for the following changes in the program:

- Lack of full-time faculty to invest time to develop, curate and post content on our social media accounts.
- Reaching a plateau of followers as expected after a significant growth within first 2 years of our social media presence.

CM faculty are working on developing means to get more students involved with our marketing efforts specifically in the digital world. See assessment of "Program Objective #10 – Branding" for further details.

CMPAB:

John Puniello, Arden Engineering, and John Bulman, Pierce Atwood, served as the chair and co-chair (respectively) of the CMPAB for the first time during the 2018-2019 academic. This year the CMPAB presented their ninth scholarship, conducted mock interviews, participated in senior exit surveys, supported student internships and externships, organized the Alumni and Senior banquet, updated the board bylaws and supported student guest lecture and laboratory activities. Our CMPAB endowed scholarship continued to grow and has been funded to a level where two scholarships were awarded. CMPAB programmatic gift fund continued to grow although the program did not utilize any of the gift funds during 2018-2019 academic year. This was due to a lower number of student research and club activities during this academic year, as a consequence of historically low full-time faculty members in the program.

Assessment of Program Objectives and Program Learning Outcomes

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 Tables 4.3.7 and 4.3.37. 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. Table 4.3.5 lists all program objectives and Table 4.3.6 lists all program learning outcomes that support our program mission which is 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 eleven (11) CM Program objectives as well as the twenty (20) program learning outcomes were assessed by the end of 2018-2019 AY and are presented in this report. Tables 4.3.7 through 4.3.37 illustrate the detailed assessment of every program objective and outcome along with the performance and action items determined during the 2018-2019 assessment. These action items are tracked via general monthly business meetings that the CM program faculty conducts during the fall and spring semesters of the academic year.

Table 4.3.5 RWU Construction Management Program Educational Objectives

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

Table 4.3.6 RWU CM Program Learning Outcomes

#	Outcome
1	Create written communications appropriate to the construction discipline.
2	Create oral presentations appropriate to the construction discipline.
3	Create a construction project safety plan.
4	Create construction project cost estimates.
5	Create construction project schedules.
6	Analyze professional decisions based on ethical principles.
7	Analyze construction documents for planning and management of construction processes.
8	Analyze methods, materials, and equipment used to construct projects.
9	Apply construction management skills as a member of a multi-disciplinary team.
10	Apply electronic-based technology to manage the construction process.
11	Apply basic surveying techniques for construction layout and control.
12	Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
13	Understand construction risk management.
14	Understand construction accounting and cost control.
15	Understand construction quality assurance and control.
16	Understand construction project control processes.
17	Understand the legal implications of contract, common, and regulatory law to manage a construction project.
18	Understand the basic principles of sustainable construction.
19	Understand the basic principles of structural behavior.
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. These objectives and their metrics along with our mission statement were published in 2015 after a full year of extensive strategic planning process in collaboration with the program faculty, administration, students, industry advisory board and the alumni.

The following pages (Tables 4.3.7 through 4.3.17) display the 2018-2019 CM program assessment of eleven (11) CM program objectives in accordance with their associated metrics and targets.

Table 4.3.7 CM Program Objective #1, Metrics and Targets

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	85%
	Senior Exit Survey	Yes	78%
At least 80% of graduating seniors report to be satisfied or very satisfied with the helpfulness of CM faculty.	ACTION: Work on adding a faculty line at least at visiting level this summer to help in AY 19-20. We need at least 3 faculty members (full-time) in order to increase this metric (and many others) to the satisfactory levels in future academic years.		
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	No	100% M; 0%F; 0%B; 0%A; 0%H
	<p>ACTION: Faculty will do their best to address this issue in the upcoming potential hiring opportunities. Adjunct pool is limited due to the MSc requirements. The Board will help with expanding the adjunct pool. We should also note that we have a good number of international faculty who are adding to our diversity goals although that percentage is not part of traditional diversity statistics calculations.</p> <p>ACTION: Faculty will target through their professional connections qualified minority candidates to apply for a potential visiting position in the summer. Faculty will also research opportunities for the grad students to be more involved in undergrad courses.</p>		
At least one academic conference attendance or presentation or journal paper published by 80% of full time tenured or tenure track faculty.	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.	Faculty Survey	Yes	AG with J. Gomes
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	No	40%
	ACTION: Next year this will be addressed as two faculty members have projects with the industry in the pipeline.		

Table 4.3.8 CM Program Objective #2, Metrics and Targets

EDUCATIONAL			
Three to five years after graduation, we expect that our graduates:			
Objective #2: 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	Yes	92.7%
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	80%
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	Developed action items for any and all the metrics that were identified as weaknesses.
At least 80% of the employers report interns': <ul style="list-style-type: none"> - Technical Knowledge as outstanding or In tune - Estimating skills as very or moderately knowledgeable - Scheduling skills as very or moderately knowledgeable - CAD skills as extremely or moderately proficient - Excel skills as extremely or moderately proficient 	Employer Internship Survey	N/A	Did not conduct an internship employer survey this year.

Table 4.3.9 CM Program Objective #3, Metrics and Targets

EDUCATIONAL			
Three to five years after graduation, we expect that our graduates:			
Objective #3: Value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.			
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 got me interested in lifelong learning or continuing education.	Senior Exit Survey	Yes	88%
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	80%
At least 50% of CM seniors sit in for the AC Level I exam.	AC Exam Attendance	No	42.9%
	ACTION: This is an increase from 31% last year. Continue to promote the exam.		
At least 20% of alumni (5 years out) report to have received a graduate degree or a certificate.	Alumni Survey	Yes	25%

Table 4.3.10 CM Program Objective #4, Metrics and Targets

EDUCATIONAL			
Three to five years after graduation, we expect that our graduates:			
Objective #4: Are recognized as regional, national, and international construction industry leaders.			
Metrics Associated with Objective	Where Measured	Met	Comments
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	92%
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	100%
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	382/1416 26.98%
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	No	0.7%
	ACTION: Develop an international construction course as an elective for seniors.		
At least one RWU CM alum was nominated as the current academic year's CMPAB Distinguished Person of the Year Award.	CM Coordinator	Yes	3 people

Table 4.3.11 CM Program Objective #5, Metrics and Targets

EDUCATIONAL			
Three to five years after graduation, we expect that our graduates:			
Objective #5: 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	92.5%
At least 80% of graduating seniors answer the following question as agree or strongly agree: It is as important to be ethical as it is to follow the law.	Senior Exit Survey	Yes	95%
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	100%
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.	Senior Exit Survey	Yes	100%
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	
Capstone course assessment report indicates that the direct assessment of its ethics CLO is equal to or higher than 80%.	Capstone Ethics Outcome	Yes	Dir: 4.15/5 Ind: 4.2/5

Table 4.3.12 CM Program Objective #6, Metrics and Targets

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	60%
	ACTION: CM Club to continue presentations about different professional organizations. CNST 100, CNST 445, CNST 321 (AAACE assignment). Ask foundation members to incorporate professional membership.		
At least 50% of alumni 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)	Yes	80%
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 Feinsein 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	No	-
	ACTION: CM Club to pursue habitat for humanity activities. ME to contact student Dan about habitat for humanity.		

Table 4.3.13 CM Program Objective #7, Metrics and Targets

STUDENTS			
Objective #7: Recruit and retain a committed, qualified, passionate and diverse body of students.			
Metrics Associated with Objective	Where Measured	Yes	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	No	85%
Diversity statistics of CM students are comparable to RWU or RI race/ethnic/gender data.	Registrar / Institutional Research	No Yes Yes Yes Yes	F: 7.4%/54% B: 1.2%/0.014% H: 4.1%/0.06% A: 1.2%/0.01% Int: 5.29%/0.04%
	ACTION: WIC is currently working on a marketing video for women in construction. Charge CMPAB with a task to increase female population as a new charge in 19-20. ME to work with our peers in NJ and MA to put together CM activities to promote it to female candidates, also work with NEWIC (Khalid's student is heading it) and Kiewit. Survey to our own female students and graduates. Update the main CM page by the university to reflect WIC and female participation.		
Maintain a minimum of 60% 6-yr graduation rate.	Census Data / Transcripts (Class entered in Fall 2013)	Yes	68.18%
At least 10% of all graduating CM students participated in student competitions.	Senior Exit Survey	Yes	10%

Table 4.3.13 CM Program Objective #7, Metrics and Targets

Average GPA of all CM students who started at RWU in the fall semester and were still enrolled by Spring 2018 is at least 2.75.	Transcripts	Yes	2.83
At least 80% of all CM freshmen declare construction management major as their first choice of major.	Freshmen Survey	No	66.7%
	ACTION: Faculty to discuss this during 2019-2020 AY		

Table 4.3.14 CM Program Objective #8, Metrics and Targets

ALUMNI			
Objective #8: Grow and maintain an engaged network of alumni to support and advance program mission and objectives.			
Metrics Associated with Objective	Where Measured	Yes	Comments
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	Yes	83%
At least 80% of alumni answer the following question as "YES": Have you had any direct engagement with the RWU CM program or a faculty member since graduation?	Alumni Survey	Yes	40%
	ACTION: Increase alumni participation rate. Consider holding events for different classes (Class of 2013, etc.)		
At least 50% of the Program Learning Outcome Mentors (PLOM) are graduates of the RWU CM program.	PLOM List	Yes	54.17%
At least 30% of the CM Professional Advisory Board (CMPAB) to be the graduates of the RWU CM program.	CMPAB List	Yes	60.87%
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	No	35% 70 alumni 184 is CM size
	ACTION: Program coordinator to discuss with the board and the advancement office to increase the number of alumni. Faculty to decide if they would like to revise the 80% number as the number of students in the program doubled in the last 5 years.		
The number of donations to the CMPAB scholarship and the CM Programmatic Gift Fund increased compared to the previous AY.	RWU Advancement Data	Yes No	2017 Numbers 54 (Alumni) 11 (Employ.) 16 (Other) ----- \$1,500 Gift \$5,024 Scholarship
			2018 Numbers 5 (Alumni) 23 (Employ.) 14 (Other) ----- \$400 Gift \$4,091 Scholarship
ACTION: No action until SECCM Labs project is completed.			

Table 4.3.15 CM Program Objective #9, Metrics and Targets

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	Yes	22% (Notable Improvement)
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	85.4%
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	No	40%
	ACTION: Continues to be a weakness. CM Faculty to discuss this issue during 19-20 meetings to determine an action plan.		
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	N/A	Did not conduct an internship employer survey this year.
At least 5% of all CM graduating students participated in faculty led student research outside of class prior to graduation.	CM Research Group Report & Faculty Survey	Yes	4.88%
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	4 guests on average 30%

Table 4.3.16 CM Program Objective #10, Metrics and Targets

BRANDING			
Objective #10: Maintain a reputation within the local, national and international communities as a leading academic provider of construction education.			
Metrics Associated with Objective	Where Measured	Met	Comments
At least 80% of graduating seniors answer the following question as likely or very likely. How likely are you to recommend the RWU CM program to others	Senior Exit Survey	Yes	85.36%
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. LinkedIn is only open to RWU CM students thus the increase is limited to the number of new students each year. The goal for LinkedIn will be 20%.	Social Media Data	No	As of October 10, 2019: FB: 396 Likes (9%) TW: 480 followers (13.2%) INST: 396 followers (25.32%) LinIN: 328 members (no increase)
	ACTION: IR will work with freshmen to get more involved. Check with Linked account to make sure searchable. ME to spare time last week of capstone to get the graduating class to become a member of the linked in group.		

Table 4.3.16 CM Program Objective #10, Metrics and Targets

At least 80% of all CM freshmen report RWU as their first choice.	Freshmen survey	Yes	100%
All student teams competing in competitions placed in top 3.	CM Club Report	Yes	HH, Precon, DB all placed 2 nd at ASC Region I. DBIA placed 1 st in the region. Precon at Region 6-7 Open Comp places 2 nd . Keith Catanzaro will be coaching the HH team due to AG being on sabbatical. All teams to have an industry mentor for next year. Precon mentor will be Greg Garvin. DB mentor will be John Puniello. DBIA still needs a mentor.
At least 2 faculty (or faculty led students) to present CM related work at peer reviewed international conferences.	Research Group Report	Yes	3 faculty / 1 student

Table 4.3.17 CM Program Objective #11, Metrics and Targets

FACILITIES			
Objective #11: Maintain convenient, well equipped, and state-of-the-art facilities and resources to support learning and research.			
Metrics Associated with Objective	Where Measured		
At least 80% of seniors answer the following question as satisfied or very satisfied: Please rate the quality of overall SECCM classrooms and labs.	Senior Exit Survey	No	60%
	ACTION: In the process of building a new lab building and renovating the current building.		
	Exit Survey	No	24%
At least 80% of seniors (5 years out) answer the following question as satisfied or very satisfied: Please rate the quality of the SECCM rcloud	ACTION: Increase from 16%. IR is now on the technology committee and states that the university has invested a lot of money into r-cloud. IR to draft a minimum spec sheet for freshmen computer requirements to be published on our website. He will also determine a specific model at a reasonable price for additional computers for competitions and the advanced BIM courses.		
100% of CM faculty report to be satisfied or very satisfied with the facilities.	Faculty Survey	No	75%
	ACTION: This item will be kept on pending status until the new SECCM building project is completed. Project is expected to be completed by Spring 2020.		
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. AG made a motion to lower the cap for lectures from 36 to 24. KA seconds the motion. IR made a friendly amendment as follows: CM Faculty states that the ideal number for lectures is 24. CM Faculty understands that until we get a new faculty line, we will keep this number at 30. AG accepted the amendment. Unanimously accepted.	Registrar	No	CNST 321, 450, 455, more than 24 CNST 302 had 37 students
	ACTION: Look for adjuncts for 445, 200, 201, 100, 250, 302. Ask the dean to check with the faculty member AND the program coordinator about adding more people into their courses.		

Assessment of CM Program Outcomes

In our assessment plan metrics are defined to assess each program outcome on an annual basis. Tables 4.3.18 through 4.3.37 outline each program outcome, defined metrics, and a summary of comments as to whether or not the identified metric was met in the 2018-2019 AY.

Table 4.3.18 SLO/PLO #1 - Metrics, Targets, and Assessment Tools

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	Mandatory
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	4.24
3. At least 50% of all CM courses require “creating written communications appropriate to the construction discipline”.	Course Syllabi	Yes	CNST 100, 200,201,450,445, 455,475,480
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	ID: 4.2/5 D: 4.75/5
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	N/A	Did not conduct an internship employer survey this year.

Table 4.3.19 SLO/PLO #2 - Metrics, Targets, and Assessment Tools

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	N/A	Did not conduct an internship employer survey this year.
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 445, and CNST 480
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 Yes Yes	FR: CNST 100,116,200 SO: CNST 201, 260 JU: 302, 450
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	Direct: 5/5 Indirect: 4.45/5
5. 100% of graduating seniors report that their RWU education has prepared them proficiently in communication skills for the workplace.	Student Exit Survey	Yes	4.73/5

Table 4.3.20 SLO/PLO #3 - Metrics, Targets, and Assessment Tools

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 & CLO Grades (D)</p>	Yes	<p>Direct:4.25 Ind: 4.4/5</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>	Course Syllabi CARs	Yes	<p>CNST 116 CNST 201 CNST 250 CNST 445 CNST 450 CNST 480</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>	Student Exit Survey	Yes	4.41

Table 4.3.21 SLO/PLO #4 - Metrics, Targets, and Assessment Tools

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 & CLO Grades (D)</p>	Yes	<p>Dir: 4.00 Ind: 4.03</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>	CNST 321 CAR – Avg. of Grades for CLO 7, 8, 9 (D)	Yes Yes	<p>4.07/5 (Indirect)</p> <p>4.26/5 (Direct)</p> <p>Average of CLO 7, 8, 9</p>
<p>3. 90% 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>	CM Intern Employer Survey	N/A	<p>Did not conduct an internship employer survey this year.</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>	Student Exit Survey	Yes	4.29

Table 4.3.22 SLO/PLO #5 - Metrics, Targets, and Assessment Tools

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 & CLO Grades (D)</p>	No Yes	Dir: 3.75 Ind: 4.20
ACTION: There was an instructor change in 2017-2018 during the sabbatical of the regular scheduling instructor. Will observe this metric next year.			
<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>	CNST 450 CAR – Avg. of median final exam and semester project grades (D)	Yes	4.02
<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>	CM Intern Employer Survey	N/A	Did not conduct an internship employer survey this year.
<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>	Student Exit Survey	Yes	4.41

Table 4.3.23 SLO/PLO #6 - Metrics, Targets, and Assessment Tools

Outcome 6: Analyze professional decisions based on ethical principles.			
Metrics Associated with Outcome	Where Measured	Met	Comments
<p>1. 100% of graduating senior will have developed and presented an ethics case that focuses on professional and ethical responsibility.</p>	Course Syllabi CARs	Yes	All Capstone students had ethics presentation
<p>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.</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 Ethics Assignment (D)</p>	Yes	Dir: 4.5/5 Ind: 4.15/5
<p>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.</p>	CARs	Yes	CNST 100 CNST 321 CNST 445 CNST475 CNST 480
<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>	Senior Exit Survey	Yes	4.4
<p>5. Alumni 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>	Alumni Survey (5-yr out)	Yes	4.80/5
<p>6. 100% of surveyed alumni agree or strongly agree that it is as important to be ethical as it is to follow the law.</p>	Alumni Survey (5-yr out)	Yes	100%

Table 4.3.24 SLO/PLO #7 - Metrics, Targets, and Assessment Tools

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 3.75 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	Dir: 4.5/4 Ind: 4.20/5
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	4.34

Table 4.3.25 SLO/PLO #8 - Metrics, Targets, and Assessment Tools

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	Dir: 4.5/4 Ind: 4.10/5
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. Target changed to 90%.	CM Intern Employer Survey	N/A	Did not conduct this survey this year.

Table 4.3.26 SLO/PLO #9 - Metrics, Targets, and Assessment Tools

Outcome 9: Apply construction management skills as a member of a multi-disciplinary team.			
Metrics Associated with Outcome	Where Measured	Met	Comments
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. <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 – IPD Assignments 1, 2, 3 and the Final Assignment (D)	Yes	Dir: 4.18/5 Ind: 4.03/5
2. At least three student-led teams will participate in a construction related student competition.	Student Competition info from the CM Club report	Yes	4
3. All 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	4.51
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”. Changed to 90%	CM Intern Employer Survey	N/A	Did not conduct this year.
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.	Student Competition info from the CM Club report Capstone Presentations	Yes	10%
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.	Senior Exit Survey	Yes	

Table 4.3.27 SLO/PLO #10 - Metrics, Targets, and Assessment Tools

Outcome 10: Apply electronic-based technology to manage the construction process.			
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	Dir: 3.75/5 Ind: 3.88
	Capstone Final Project Rubric & CLO Grades (D)		
ACTION: Faculty to assess use of software in Capstone course during 2019-2010 AY.			
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	4.29
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. New target is 90%.	CM Intern Employer Survey	N/A	Did not conduct
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.	CARs	Yes	CNST 116, 130, 260, 321, 450, 455, 475, 480
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.	CNST 260 CAR (D) CNST 321 CAR (D) CNST 450 CAR (D)	Yes	RS Means On-Screen MS Project

Table 4.3.28 SLO/PLO #11 - Metrics, Targets, and Assessment Tools

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	Yes	4.02
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 201L 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)	Yes	Dir: 4.85/5

Table 4.3.29 SLO/PLO #12 - Metrics, Targets, and Assessment Tools

Outcome 12: 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	Yes	4.37
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	10%
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	Yes	100% Mandatory in CNST 445 with Architecture
5. 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 – Lab #3 Grades (D)	Yes Yes	Dir: 4.21 Ind: 4.26/5

Table 4.3.30 SLO/PLO #13 - Metrics, Targets, and Assessment Tools

Outcome 13: Understand construction risk management.			
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 Capstone Final Project Rubric & CLO Grades (D)	Yes	Dir: 4.00/5 Ind: 4.15/5
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	4.41
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.	CARs	Yes	CNST 100, 130, 321, 450, 445, 475, 480

Table 4.3.31 SLO/PLO #14 - Metrics, Targets, and Assessment Tools

Outcome 14: Understand construction accounting and cost 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	Yes	4.02
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 116, 250, 445, 475
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. <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 – CLO 4, 7, 8 Grades (D)	Yes	4.02

Table 4.3.32 SLO/PLO #15 - Metrics, Targets, and Assessment Tools

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 & Final Project Rubric & CLO Grades (D)	Yes	Dir: 4.5/5 Ind: 4.33/5
ACTION: ME took over this course. Will keep monitoring.			
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	4.49
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 302, 450, 445, 475, 480

Table 4.3.33 SLO/PLO #16 - Metrics, Targets, and Assessment Tools

Outcome 16: 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	3.86
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	4.22
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

Table 4.3.34 SLO/PLO #17 - Metrics, Targets, and Assessment Tools

Outcome 17: 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	No	3.83
ACTION: Ask Chris Gordon if he can develop a CNST law course for us. In the meantime, we will research impacts of removing BUSN 305.			
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	Dir: 4.25/5 Ind: 3.8/5
ACTION: GC to contact John Bulman to help with law case reviews.			

Table 4.3.35 SLO/PLO #18 - Metrics, Targets, and Assessment Tools

Outcome 18: Understand the basic principles of sustainable construction.			
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	Yes	4.24
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, 200, 260, 445, 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	17%
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	None
	ACTION: Ask USGBC Club to contact the board for speakers.		
5. CNST 465/540 will adopt this outcome and its final course grade mean and/or median will be 75% or higher.	CNST 465/540 CAR – Avg. of Final Course Grades	Yes	Mean: 82.71%
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 – Avg of Sust Lab and Forum	Yes	Dir: 4.11/5 Ind: 4.0/5

Table 4.3.36 SLO/PLO #19 - Metrics, Targets, and Assessment Tools

Outcome 19: Understand the basic principles of structural behavior.			
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	Yes	3.88
	ACTION: Motion to substitute Calculus I with a Construction Math course in collaboration with Koray, a Math professor of SECCM (ME). AG seconds. Unanimously approved by all in attendance. KA, IR, ME, AG and GC.		
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 130, 200, 201, 210, 304
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. <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 304 CAR (Average of all CLOs) (D)	No	Dir: 3.61/5 Ind: 3.67/5
	ACTION: To be tabled until AG returns from sabbatical and parental leave.		

Table 4.3.37 SLO/PLO #20 - Metrics, Targets, and Assessment Tools

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	No	3.93
	<p>ACTION: Look into eliminating seniors having to take Structures, MEP and Capstone and Scheduling all at the same time. ME to use more lecture period as lab section to apply what they have learned. IR to research ways to incorporate more MEP related activities into his BIM elective.</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 130 CNST 201 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>	CNST 455 CAR – Semester Project Grades. (D)	Yes	4.67/5

4. Assessment of Previously Implemented Program Changes

AY0708-1 The CM Master's program initiated during the 2007-2008 academic year, went on hiatus as of the end of 2013-2014. This year the program got launched again with a new class of 5 graduate students. Below is a brief history of the program:

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. As of the end of Spring 2016, program decided to move forward with a 4+1 graduate degree proposal and the new class of graduate students started their MSCM program in Fall 2018.

AY 1718-1. Remove BIO 103 from list of Science Electives. This change was made with feedback from Biology department as they stated BIO 104 to be more appropriate for CM students. CM faculty unanimously agreed with the change. With this change CM students will be able to choose from the following list of science courses with a 3+1 lab requirement:

- CHEM 191 + Lab
- BIO 104 + Lab
- NATSC 103 + Lab

AY 1718-2. New course: CNST 430 Applied Statics for CM. CM faculty unanimously approved a proposal by Dr. Brunnhoeffer and Dr. Ghanem to offer a Statics course in lieu of ENGR 210 specifically developed for the CM students. Our goal is to offer this course for the first time in Fall 2018. Dr. Ghanem who is also the instructor of CNST 304 – Structures course, will be the instructor of this course. He will be able to prepare CM students precisely for his CNST 304 course and faculty expect a significant increase in student and faculty satisfaction related to PLO #19 – Understand the basic principles of structural behavior.

5. Discussion of Recommended Program Changes

Curriculum changes were made and approved this year:

AY 1819-1. Assigning a permanent code for all CNST 430 courses including:

- Applied Statics
- Residential Construction
- Building Information Modeling

AY 1819-2. Removed Math 124 from the prerequisite list of CNST 450. Added ARCH 484 to the prerequisite list of the same course.

AY 1819-3. Modified the prerequisites for CNST 250 as CNST 200 or CNST 201 or ARCH 231.

In addition to the above changes, CM faculty will be working on the following future curricular changes in the upcoming academic year:

- Evaluating the existing CM minor requirements
- Evaluating ways to integrate Building Information Modeling (BIM) into the curriculum
- Reviewing and modifying prerequisite requirements for CNST 304
- Evaluating prerequisites for capstone. Consider adding CNST 450 as a prerequisite since scheduling is a critical component of the capstone requirements and some students end up taking CNST 450 (Scheduling) and CNST 480 (Capstone) at the same time which is not ideal.