

**Annual Assessment and Public
Information Dissemination
Report for Construction
Management**

Academic Year (AY) 2019-2020



**Missouri State University
Construction Management
Public Information Dissemination
As Required for ACCE Standard Section VIII**

I. Program Goals and Objectives

The Department of Technology & Construction Management has developed a comprehensive plan to achieve the academic and non-academic goals as embodied in program outcomes, student learning outcomes, course learning objectives, and strategic plan goals and objectives. At a program level, a student, upon completion of this degree program, will be able to:

- PLO #1. Demonstrate the application of oral, written, and graphic communication skills to present data/information and support decision making. (*Technical Communication*)
- PLO #2. Demonstrate the effective utilization of discipline specific technical knowledge and skills. (*Technology*)
- PLO #3. Utilize critical thinking, math, statistics, and science skills for problem solving. (*Application of Math and Scientific Principles*)
- PLO #4. Demonstrate leadership, participation, and problem-solving skills in a team environment. (*Teamwork*)
- PLO #5. Utilize applied management topics to manage, control, and improve corporate environments. (*Applied Management*)
- PLO #6. Demonstrate knowledge of safety, ethics, non-discrimination, and diversity in the workplace. (*Professional Responsibility*)

These program outcomes are embodied throughout the twenty student learning outcomes designated by ACCE and adopted by the program. These student learning outcomes are:

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

Lastly, the strategic plan for the Technology and Construction Management department operationalizes select strategies and action plans to assure the program learning outcomes and student learning outcomes are met. The goals that summarize this strategic plan are:

- TCM Goal 1: Achieve academic excellence in departmental programs
- TCM Goal 2: Attract and retain quantity and quality of students
- TCM Goal 3: Strengthen community and industry engagement
- TCM Goal 4: Enhance the research environment of the Department
- TCM Goal 5: Support and promote faculty development

II. Program admission requirements

Students may declare the construction management major any time prior to completing 75 credit hours. After declaring construction management as their major and upon obtaining a passing grade in either MTH 261 or MTH 287, students are admitted into the degree program upon completion of the application to a degree program form.

III. Program Assessment Measures

The construction management program collects and analyzes data from ten assessment measures as outlined below. These measures, their frequency, and their relationship to the department goals and program outcomes are also indicated below.

Instrument Number	Instrument	Direct Indirect	Program Level Course Level SLO Level	Where\when Implemented	Frequency	Feedback	Implementation of Changes	Goals (Strategic Plan) and Program Outcomes
1	Senior Exit Examination	D	C,S	Completed in capstone course by all students	Fall and Spring	Summary and objective specific feedback supplied to all faculty	Faculty adjust courses and evaluate questions under direction of assessment committee	Goal 1 Program Outcomes 2,3,6
2	Capstone Course	D	P	Presentation and paper completed by all students in senior capstone course	Fall and Spring	Results are summarized by course faculty and discussed at end of semester meeting	Weaknesses are identified by grading matrix and a strategy is discussed at fall faculty retreat to correct deficiencies	Goal 1 Program Outcomes 1-6
3	Course Folders	D	C, S	All course folders are to be current at end of academic year, placed in departmental office, with Instructor Course Evaluations completed	Spring	Folders are reviewed by department head and department assessment committee with feedback provided to faculty	Department head and curriculum committee formally request course changes and monitor for corrections	Goal 1

4	Advisory Board Course Review	D	C, S	All courses folders are evaluated by advisory board curriculum subcommittee.	5-Year Rotation, 4 SLOs per year	Advisory council provides feedback using feedback form	Department head reviews suggestions individually with impacted faculty and corrective strategy is formulated	Goal 1
5	Strategic Plan Progress Review	D	P	Week before Fall classes at departmental planning meeting	Fall Faculty Planning Session	Department as a whole reviews progress toward goals.	Department head monitors and adjusts plan as needed in consultation with faculty	Goals 1-5
6	Course Evaluations	I	C	Completed by all students in every course	Fall and Spring	Compiled by university. Feedback provided to individual faculty and department head	Faculty discuss changes to address concerns with department head and monitor for improvements	Goal 1
7	Senior Exit Surveys	I	P, S	Completed prior to exit interview by all graduating seniors	Fall and Spring	Department Head compiles results which are discussed with faculty	Department Head discusses feedback with faculty to determine if a problem exists and corrective strategy is formulated	Goal 1
8	Senior Exit Interview	I	P, C	Completed by all graduating seniors, conducted by department head	Fall and Spring	Department Head summarized feedback which is discussed in general with all faculty and when needed with specific faculty	Department Head discusses feedback with faculty to determine if a problem exists and a corrective strategy is formulated and monitored.	Goal 1
9	Alumni Surveys	I	P, S	Completed by all alumni from prior five years	Every five Years	Department Head compiles results which are discussed at fall planning session	Department Head discusses feedback with faculty to determine if a problem exists and corrective strategy is formulated and monitored.	Goal 1
10	Employer Survey	I	P, S	Completed by employers hiring graduates from prior five years	Every five years	Department Head compiles results which are discussed at fall planning session	Department Head discusses feedback with faculty to determine if a problem exists and corrective strategy is formulated /monitored.	Goal 1

IV. Information Obtained from Assessment Measures

A. *Senior Exit Exams*

The senior exit exam is administered as the final exam in the required capstone course – TCM 499, Senior Project. The instrument provides a measures of student learning outcomes at the analyze, apply and understand level. It is a compilation of all the standardized examination questions administered at the course level and provides feedback to the faculty on student performance. While these measures do not form the basis of whether corrective action is required at the course level, they do provide an invaluable longitudinal look at student progress and knowledge retention. For fall 2019, the mean score on the senior exit exam was 59.45% and for spring 2020, the mean score was 58.9%.

B. *Capstone Course*

Spring 2020

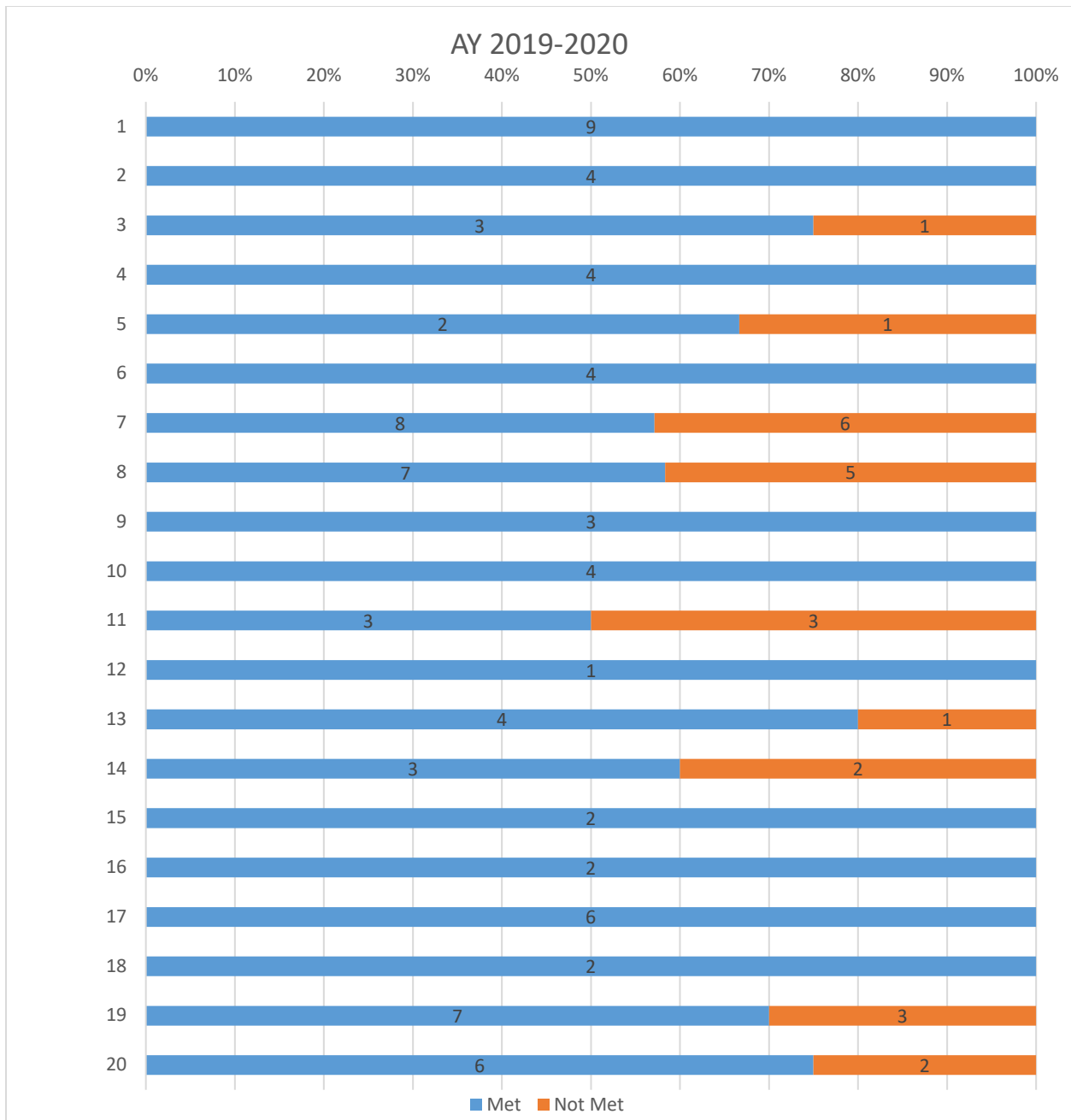
This semester's project utilized a local school project (~\$15M), so it introduced tax exemption, prevailing wage, MBE/WBE requirements as a new topic most courses do not cover. This provided an added aspect of projects that involve bond issues, community support/disapproval. This semester marked the first time when industry guest speakers were brought in to speak on a specific topic. In this semester we were able to have the superintendent who ran the project emphasizing site logistics and schedule creation. This addition created increased interest in the majority of the students and created a better connection to the project in general. The continuation of guest speakers should be maintained. COVID caused coursework to be conducted virtually, which worked remarkably well.

Fall 2019

The project selection was adequate, while small in value (~\$3.8M). This project had an incredibly small site, adjacent to an operational hotel, conference center and parking garage with limited access, restricted hours, and noise implications. This proved challenging for the students in a couple major ways. The logistics necessary of this site lent itself toward a more seasoned superintendent for the "best way" to handle. Additionally, since this project included demolition and tie into existing conference center, many students have not experienced this level of construction in their careers yet. This proved difficult but provided an easy learning opportunity. Projects should continue to be selected that provide unique features or restrictions.

C. *Course Folders*

Course folders were collected and updated with syllabi, instructor course evaluation forms, and representative work samples for all major assignments/exams. As the majority of student learning outcomes have multiple direct measures, the chart below shows the number of direct measures that were above and below the target level of 70% as detailed in the Assessment Implementation Plan.



V. Advisory Board Course Review

During AY 2019-2020, the Construction Management Advisory Board (CMAB) reviewed two courses in accordance with the Advisory Board Course/SLO Review Schedule published in Appendix K of the ACCE Self-Study. The courses slated for review in Spring of 2020 were moved to fall 2020 because of COVID-19.

In fall 2019, the CMAB Curriculum Subcommittee reviewed TCM 267 – Statics and TCM 425 – Construction Planning and Scheduling. A summary of the feedback for each course is listed below:

- TCM 267 – Statics
 - Appropriateness (4.67/5.00) and Adequacy (4.00/5.00)

- Improve: 7 comments (252 words)
- Sustain: 2 comments (54 words)
- Noteworthy:
 - The course content was relatively rich in determining the centroid and moment of inertia.
 - The lecture files for this course appears to be slim, but it is assumed that the instructor provides more detail in class other than just definitions.
 - I found the content lacking in determining the center of gravity of masses.
 - Four suggestions on activities to improve center of gravity understanding were listed.
- TCM 425 – Construction Planning and Scheduling
 - Appropriateness (4.71/5.00) and Adequacy (4.25/5.00)
 - Improve: 7 comments (396 words)
 - Sustain: 3 comments (49 words)
 - Noteworthy:
 - Overall, I believe this is a great course and one of the most important one that students will need for construction management. The curriculum establishes a great foundation to begin understanding how to create and manage a schedule.
 - Pull planning is well introduced, but students should have a more hands-on exercise to better experience the process.
 - More should be included on developing activity durations.
 - More effort on understanding design details and then generating sequencing information is needed. An example of building an arch for a project.
 - More attentions should be focused on the submittal and delivery schedule that happens in the up-front part of the project that supports later activities in the CPM schedule.

A. *Strategic Plan Progress Reviews*

Goals and objectives of the department and the construction management degree program are listed below. Strategies are indicated under each related objective with yearly updates as applicable.

Goal 1: Achieve Academic Excellence in Departmental Programs

Departmental Objectives:

- 1.1 Encourage and support accreditation of departmental programs
 - 1.1.1 ACCE re-accreditation 2016
 - February 2017: Successfully completed; continue to follow through on updates and interim reports
 - August 2019 – Collect alumni and employer survey data needed for ACCE during 2019-2020
 - August 2020 – Collected data and used in the preparation of this report.
 - 1.1.2 PMI re-accreditation 2019
 - 1.1.3 ABET accreditation for MET in 2019 (begin preparation in 2016) ABET accreditation preparation has begun - drafts of program educational objectives, student outcomes, and performance indicators have been generated as of December 2015

- 1.1.4 Explore possibility of CIDA accreditation and decide by May 2016
- 1.2 Maintain up-to-date and relevant laboratories, equipment, and software
 - 1.2.1 Conveyor, surveying equipment repair, 2nd plan box, etc.
 - August 2016: Conveyor, plan box purchased and surveying equipment repaired as of summer 2015; Conveyor installed as of December 2015
 - August 2017: MEP lab updates in progress; HVAC ductwork and equipment donated.
 - August 2018: MEP lab growth continues (Nelson successful with equipment grant); competition computers obtained; space swap with CNAS in progress and scheduled for completion in Summer 2019
 - August 2019: Space swap was completed. Equipment grant for Spyder crane was successful. Delivery of equipment should be during AY 2019-2020
 - August 2020: Spyder crane was delivered but was unable to be fully implemented in any courses because of COVID delays.
 - 1.2.2 Robotics purchase, etc. 2016
 - 1.2.3 Develop a coordinated plan for lab and equipment use (Joswick and committee, December 11, 2015) (committee formed August 2015)
- 1.3 Maintain a faculty that is current on the latest and most relevant teaching topics and methods
 - 1.3.1 Target 1 faculty presentation on technical or academic developments each semester starting fall 2015 (Callahan) – Continue to spring 2016
 - August 2016: completed – Mehany; Continue to Spring 2017
 - August 2017: completed – Bezhadan graduate student; continue to Spring 2018
 - August 2018: completed – Sauer & Nelson presented use of laser scanning in class
 - August 2019: completed – Perspective faculty candidates presented including Dr. Peterson on drones.
 - August 2020: Dr. Sauer presented current research work on Sense of Community within the CM student population. Follow-up work will attempt to improve the SOC score and report back on comparisons to other institutions.
- 1.4 Develop a more diverse department
 - 1.4.1 Encourage student diversity by participating in at least one targeted event or activity per year
 - April 2016: a record 2,983 middle and high school students attended the event in Kansas City
 - April 2017: Participated in 1st Annual Build My Future event in Springfield targeting high potential regional students
 - August 2018: Participated in 2nd Annual Build My Future event in Springfield targeting high potential regional students; more than 1200 students present
 - August 2019: Participated in 3rd Annual Build My Future event in Springfield targeting high potential regional students; more than 1800 students present. Also, attended iBuild in KC – participants were a diverse group of high potential students; more than 1200 participated.
 - August 2020: Participation in both iBuild and Build My Future were cancelled for this academic year because of COVID-19. Anticipate return to these events ASAP.

Construction Management Program Objectives:

- 1.1 CM - Offer programs and opportunities that stimulate interest and grow the CM program
 - 1.1.1 Maintain ACCE accreditation and evaluate alternatives (May 2016) (CM faculty attended the annual and mid-year ACCE meetings.
 - August 2016: Based upon the current situation, the CM Program will seek ACCE accreditation in 2016 and re-evaluate other options as the MET program nears its accreditation period.)
 - August 2019: CM program anticipates staying with ACCE accreditation for the foreseeable future.
 - 1.1.2 Investigate the possibility of either a CM emphasis in the MPM or a new M.S. in CM (May 2018)
 - August 2017: Continue investigation in AY 2017-2018
 - August 2018: Continue investigation in AY 2017-2018; in progress because of faculty openings
 - August 2019: The MPM has submitted program changes that may eventually permit this to be an option, but implementation should be discussed further in next strategic plan iteration.
 - August 2020: Awaiting new strategic plan from University and COB to see how this priority may be affected.
 - 1.1.3 Finalize collaborative program with Drury's architecture program (May 2017)
 - August 2017: While collaborative efforts still remain (ASC Design-Build team partnership), attempts at allowing students to take courses at each other's universities has stalled – May 2017
 - August 2018: This continues to diminish as a priority to the program. Consider its removal on the next strategic plan
 - 1.1.4 Implement a study abroad program to increase student awareness of international construction methods and job opportunities (May 2019)
 - May 2017: In progress target of 2019 still possible; continue work with ID instructors who currently conduct such a trip
 - May 2018: In progress target pushed to 2020 because of faculty openings; continue work with ID instructors who currently conduct such a trip
 - August 2019: This has been a difficult target to achieve. Discussion among CM faculty is encouraged to see if this should be included in the next strategic plan iteration.
- 1.2 CM - Improve the facilities used by CM students to better promote student success and recruitment
 - 1.2.1 Explore options for using existing and/or new building designated funding for renovation or an addition to Kemper Hall (May 2020)
 - August 2018: Renovations for Kemper Hall are in works. Space swap with CNAS is finalized and "Phase 1" work in ongoing this coming academic year. Moving forward, we will need to develop a long-range set of plans for the building.
 - August 2019: Space swap was successfully completed. Dean Meinert is supportive of future work in Kemper Hall, but we are currently in a holding pattern awaiting further discussions with CNAS on their proposed laboratory building.
 - August 2020: CMAB support for an Alumni focused fundraising campaign has started a working group on the Board to identify a suitable project.

- 1.2.2 Update Kemper 207 to have key card access (May 2016)
 - May 2016: A request for the key card reader will be put in for a planned summer 2016 installation.
 - August 2016: Key card reader successfully installed
- 1.3 CM - Strengthen oral and written communication skills in CM courses
 - 1.3.1 Develop exercises in at least five CM courses that have students write significant papers or give significant presentations where detailed feedback is returned to students (May 2016)
 - August 2016: Completed; TCM 499, 494, 454, 320, and 226 have significant papers where detailed feedback is returned to students.
 - August 2020: As a result of CMAB input and the AY 2018-2019 assessment meeting, TCM 401 was added to focus on soft skills including oral and written communication.
- 1.4 CM - Infuse a multidisciplinary perspective across the curriculum
 - 1.4.1 Increase the opportunities for CM, FM, and ID students to work together on cross-disciplinary projects. (May 2017)
 - August 2017: FM program was deleted. ID students are still highly integrated in CM courses and look to make more contributions/interactions in upcoming ASC competition teams.
- 1.5 CM - Obtain feedback on how we can improve the quality of graduates.
 - 1.5.1 Survey advisory board members and primary employers every five (5) years to determine their level of satisfaction with quality of CM student and their level of preparation. (AY 2015-16)
 - August 2016: Completed in fall 2015, Results of all surveys analyzed as part of annual retreat in August 2016
 - August 2018: Completed in fall 2015, Results of all surveys analyzed as part of annual retreat in August 2018
 - August 2019: Need to complete this AY.
 - August 2020: Completed and incorporated into continuous improvement efforts.
 - 1.5.2 Every four years, survey CM graduates who have been in the workforce for at least one (1) year regarding their satisfaction with their academic preparation from the program. (AY 2015-16)
 - August 2016: Completed in fall 2015, Results of all surveys analyzed as part of annual retreat in August 2016
 - August 2018: Completed in fall 2015, Results of all surveys analyzed as part of annual retreat in August 2018
 - August 2019: Need to complete this AY.
 - August 2020: Completed and incorporated into continuous improvement efforts.
 - 1.5.3 Survey graduating seniors every semester regarding their satisfaction with their academic preparation from the program. (ongoing)
 - December 2015: Converted to online survey
 - August 2016: Completed all surveys and analyzed as part of annual retreat in August 2016
 - August 2017: Completed in each semester this academic year. Results were discussed in August 2017 CM retreat
 - August 2018: Completed in each semester this academic year. Results were discussed in August 2018 CM retreat
 - August 2019: Completed in each semester this academic year. Results were discussed in August 2019 CM retreat.

- **August 2020:** Completed in each semester this academic year. Results were discussed in September 2020 CM retreat.

Goal 2: Grow enrollment – attract and retain quantity and quality of students

Departmental Objectives:

- 2.1 Develop and maintain a departmental website that effectively helps with student recruitment
 - 2.1.1 Form TCM website development committee (Callahan, fall 2015)
 - **August 2015:** Committee formed; maintenance program delegated to individual program coordinators
- 2.2 Develop and strengthen relationships with community colleges (articulation agreement with East Central C.C. in progress fall 2015, MET program)
 - **August 2017:** Contact made with State Fair Community College, an ACCE 2-year program, to begin articulation agreement process
 - **August 2019:** A 1+3 program with State Fair CC was mapped out and presented. Follow up with State Fair is needed to see if this is beneficial.
 - **August 2020:** MSU faculty maintain an advisory board seat with SFCC, but no additional students from this path have been identified.
- 2.3 Develop and maintain printed material
 - 2.3.1 Select a departmental folder and have a supply available to hold departmental literature for recruiting and informational purposes (Callahan and staff, August 2015)
 - August 2015: Completed 1000 folders
- 2.4 Strengthen relations with MSU Admissions and Advising
 - **March 2016:** Met with university advisors for non-declared majors
 - **August 2017:** Target Kathy J. Davis, Director, Academic Advisement Center, on featured major posters for AY 17-18

Construction Management Program Objectives:

- 2.1 CM - Attract and retain high potential students
 - 2.1.1 Implement student recruitment and retention plan (with student input) by August 2017.
 - **August 2017:** met with Melissa Price on possible recruiting idea in summer – need more effort and action; investigate living-learning communities; complete by August 2018
 - **August 2018:** Formal recruitment and retention plan started; target final completion by Spring 2019
 - **August 2019:** Formal recruitment and retention plan needs more work. Push completion date to Spring 2020.
 - **August 2020:** Given COVID-19 environment, this item may need to be moved to the next plan iteration.
 - 2.1.2 Participate in four major recruiting events (ongoing)
 - **August 2016:** iBuild, Bearfest, MBU, and Industrial Arts Competition (MBU and Bearfest Village complete – December 2015) (iBuild and Industrial Arts Competition – May 2016)
 - **August 2017:** Build My Future, Bearfest, Industrial Arts Competition, and MoACTE teachers conference on campus; majors fair; FanFest
 - **August 2018:** ACE Mentor Program; Build My Future, Bearfest, Industrial Arts Competition, and MoACTE teachers conference on campus; majors fair; FanFest
 - **August 2019:** ACE Mentor Program; Build My Future, iBuild, Bearfest, Industrial Arts Competition, majors fair, and FanFest

- **August 2020: ACE Mentor Program; Bearfest Village, Industrial Arts Competition, majors fair, and FanFest. Other events cancelled because of COVID-19.**
 - 2.1.3 Implement a scholarship program for incoming students (August 2019)
 - **August 2018:** While not specifically targeting incoming students, the CMAB established a \$2000 scholarship for the next 5 years with the goal of finding endowed funding by the end of that period.
 - 2.1.4 Continue to investigate and develop long-term recruitment strategies
 - 2.1.4.1 PLTW (May 2016)
 - **August 2016:** not complete; Move to May 2019
 - **August 2019:** PLTW for CM appears to be losing steam. However, CM Faculty serve on the advisory board for the SPS Technology and Design Academy. This may serve as an excellent conduit for students into the program. Consider revising this objective in next strategic plan iteration.
 - 2.1.4.2 CTCs (May 2017)
 - **August 2017:** Hosted MoACTE teachers on campus to make them aware of program and its opportunities. Small turnout, but future potential should be investigated in the recruitment and retention plan.
 - **August 2018:** Featured speaker for MoACTE construction teacher track. Small turnout, but future potential should be investigated in the recruitment and retention plan.
 - 2.1.4.3 Specific high schools, etc. (May 2020)
 - **August 2018:** MSU was an active sponsor of the ACE Mentor program in Springfield. Students not only toured the facilities, but their final presentations were also in Glass Hall.
 - **August 2019:** MSU was again an active sponsor of the ACE Mentor program in Springfield.
 - **August 2020: MSU was again an active sponsor of the ACE Mentor program in Springfield. In addition, Dr. Gebken was asked to serve of the Glendale Construction Career Academy Advisory Board.**
 - 2.1.5 Grow number of endowed student scholarships.
 - **August 2017:** Bailey scholarship received and recognized; continue efforts moving into AY 2017-18
 - **August 2018:** While not yet endowed, the CMAB established a \$2000 scholarship for the next 5 years with the goal of finding endowed funding by the end of that period.
 - 2.1.6 Investigate MSU's "crowd funding" tool as a way to develop a Construction Club endowed scholarship fund (May 2016) -Move to May 2017
 - **August 2017:** Attended MSU Foundation workshops on crowdfunding; after meeting with foundation staff, recommend this effort remain "on tap" when right effort arises; Continue investigation into May 2020
 - **August 2020: CMAB support for an Alumni focused fundraising campaign has started a working group on the Board.**
- 2.2 CM - Offer programs and opportunities that stimulate interest and grow the CM program
 - 2.2.1 Increase student extracurricular involvement in student organizations (ongoing)
 - **August 2016:** Tracking began fall 2015; compare year-over-year numbers ongoing as part of annual retreat in August 2016

- August 2017: During annual retreat analysis, realized that tracking was not as detailed in AY 2016-2017; Need to investigate better options to collect data by May 2018
 - August 2018: Students leaders attended AGC Annual Meeting in New Orleans. Students also were actively engaged in multiple ASHRAE and MCA events around the country. Student engagement appears to be on the rise, but tracking data is still an issue. Student groups were able to collect meeting attendance each semester, but names and hours of students working on extracurricular events was not as detailed. New push this year will focus on getting underclass (especially those in TCM 121 and TCM 221) engaged in club activities early in the fall semester.
 - August 2019: Students leaders attended AGC Annual Meeting in Denver. Students also were actively engaged in multiple ASHRAE and MCA events around the country. Student engagement appears to be on the rise, but tracking data is still an issue. Efforts to focus on getting underclass involved seem to be working.
 - August 2020: Students leaders attended AGC Annual Meeting in Las Vegas where they earned a national award for Emerging Student Chapter. Students also were actively engaged in multiple ASHRAE and MCA events around the country. Student engagement appears to be on the rise, but the impacts of COVID-19 will likely cause long-term setbacks. Continue as much effort in this area as possible.
- 2.2.2 Investigate the possibility of adding course offerings to increase concentration areas (May 2018)
- August 2018: Concentration areas were deleted because of feedback from students and employers. In addition, faculty noted that students were not taking full advantage of the different areas. Approved program changes now require BIM, Soft Skills, and an advanced MEP course instead of the 9 hours of emphasis.

Goal 3: Strengthen Community and Industry Engagement

Departmental Objectives:

- 3.1 Strengthen advisory boards and promote advisory board coverage of all programs
 - 3.1.1 CM Advisory Board (ongoing, Callahan and CM faculty)
 - 3.1.2 MET Advisory Board (form by June 2016, Callahan and MET faculty) - Ongoing: Spring 2016: A list of corporate targets has been generated.
- 3.2 Increase industry participation in the career fair and other means of recruiting for all TCM programs (ongoing): Career Fair 2014 – 28 companies, 2015 – 40 companies, 2016 – 37 companies; 2017 – 41 CM companies; 2018 – 35 companies; 2019 – 38 companies
- 3.3 Support the University's Public Affairs Mission by leading and participating in community engagement and/or service events
 - August 2018: CM program built a pergola-type structure for the Betty and Bobby Allison Dream Center. Students were also engaged in multiple other smaller-scale projects throughout the school year (see 3.3.3 below).

Construction Management Program Objectives:

- 3.1 CM - Improve and enhance communications with alumni, the CM community, and friends and supporters of the program
 - 3.1.1 Increase the number of alumni participating in the annual golf tournament (ongoing) (24 companies (primarily alumni players))

- participated in the May 2016 tournament – largest to date); 2018 – Maxed out course single flight limit of 104 players.
- 3.1.2 Hold at least one alumni event each year (alumni gala or other???)
- February 2016: alumni event at men's basketball game
 - February 2017: alumni event at men's basketball game
 - August 2018: alumni event at men's basketball game; alumni fall golf tournament; alumni party after spring golf tournament; alumni event in STL
 - August 2019: alumni event at men's basketball game; alumni fall golf tournament; alumni event in STL & KC
 - August 2020: alumni event at men's basketball game; alumni fall golf tournament
- 3.1.3 Explore ways to regularly communicate with alumni (social media, newsletters, etc.) (May 2016)
- August 2016: (social media efforts and newsletters continue; efforts will continue and due date on this activity should extend potentially 2 years to coincide with work of advisory board on alumni relations)
 - August 2017: First newsletter published in Spring 2017; publication to be a twice per year event assisted by CMAB
 - August 2018: Two newsletters published in 2017-18; publication to be a twice per year event assisted by CMAB
 - August 2019: Two newsletters published in 2018-19.
 - August 2020: One newsletter published in 2019-20. COVID-19 impacted the second issue.
- 3.2 CM - Grow and develop CM advisory board
- 3.2.1 Increase membership in advisory board by one (1) company each year (ongoing)
- August 2016: Completed – 3 companies added
 - August 2017: Completed – 1 company added
 - August 2018: Completed – 2 companies added; 1 honorary member added
 - August 2019: Completed – 1 company added
 - August 2020: Completed – 2 companies added
- 3.2.2 Implement sub-committees to the advisory board to spread the workload and maintain engagement throughout the year (May 2017)
- August 2017: Completed – Bylaws changed and four (4) new subcommittees very active
- 3.2.3 Institute a young alumni track for recent graduates to become involved (May 2017)
- August 2017: Completed – one subcommittee of CMAB dedicated to this effort; continue to 2020
- 3.2.4 Review advisory board bylaws (May 2016) (A very productive spring advisory board has begun review of bylaws in coordination with strategic planning efforts for the board. Final draft of revised bylaws should be voted upon in May 2017.)
- August 2017: Completed – Bylaws changed and approved
 - August 2018: Revision made to add honorary language
- 3.2.5 Encourage CM advisory board member(s) to participate in ACCE activities (December 2015)
- August 2017: Completed – CMAB president attended ACCE IAB event in February
 - August 2018: Completed – CMAB president & VP attended ACCE IAB event in February

- August 2019: two CMAB members attended February event (Tim & Tim)
 - August 2020: one CMAB member attended February meeting (Brian R).
- 3.3 CM - Support MSU's Public Affairs Mission
- 3.3.1 Host Boy Scout Merit Badge University
- August 2015: Completed 2014
 - August 2016: Completed 2015
 - August 2017: Completed 2016
 - August 2018: MBU has ended for now
- 3.3.2 Periodically undertake major public affairs project (May 2017)
- August 2017: no significant project identified; continue to May 2018
 - August 2018: Pergola-type structure built for Betty & Bobby Allison Dream Center
- 3.3.3 Engage faculty and students in community service by targeting 3 different activities each year (ongoing)
- August 2015: Adopt-a-street, food bank, SCA Chicken BBQ, (Completed adopt-a-street, SCA Chicken BBQ, Sammy's Window, and Operation Christmas Child
 - August 2016: ramp build, pinewood derby build day; Gen Next Bass Bash events; SCA chicken BBQ and Pig Roast
 - August 2017: Operation Christmas child, pinewood derby build day; Gen Next Bass Bash events; SCA chicken BBQ and Pig Roast; Bass Pro Marathon
 - August 2018: Operation Christmas child, pinewood derby build day; Gen Next Bass Bash events; SCA chicken BBQ and Pig Roast; Bass Pro Marathon; Betty and Bobby Allison Dream Center Pergola; NAWIC Block Kids Judging; Toys for Tots;
 - August 2019: Operation Christmas child, pinewood derby build day; Gen Next Bass Bash events; SCA chicken BBQ; Bass Pro Marathon; NAWIC Block Kids Judging; Toys for Tots; ACE Mentor Program; adopt-a-street; and Holland Elementary
 - August 2020: Operation Christmas child, pinewood derby build day; SCA chicken BBQ; Bass Pro Marathon; NAWIC Block Kids Judging; Toys for Tots; ACE Mentor Program; adopt-a-street
- 3.4 CM - Grow the reputation of the CM program through professional engagement
- 3.4.1 Encourage faculty to hold regional, national, and international officer positions within professional organizations (ongoing)
- August 2016: Gebken held Board positions with ASC and Sigma Lambda Chi; Mehany elected to research committee vice-chair; Behzadan served as ASCE CIMS committee secretary and ASCE JCEM special editor on quantitative methods)
 - August 2017: Gebken held Board positions with ASC and Sigma Lambda Chi; Mehany served on ASC committee; Behzadan served on ASCE Journal boards
 - August 2018: Gebken held Board positions with ASC and Sigma Lambda Chi; Nelson held regional position with ASC and ASHRAE
 - August 2019: Gebken held Board positions with ASC and Sigma Lambda Chi; Nelson held regional position with ASHRAE
 - August 2020: Gebken held Board positions with Sigma Lambda Chi; Nelson held regional position with ASHRAE. Gebken was named ASC International Outstanding Educator for 2020.

- 3.4.2 Develop Missouri Construction Hall of Fame and induct first group (May 2020)
 - August 2020: This item MUST be moved to next strategic plan iteration. It has been discussed with the CMAB on multiple occasions and may be a key to funding expansion to Kemper Hall.
- 3.5 CM – Increase student success in job placement
 - 3.5.1 Increase the number of employers participating in the Career Fair from prior year. (ongoing): 2014 – 28 companies, 2015 – 40 companies; 2016 – 37 companies; 2018 – 41 companies
 - 3.5.2 Investigate the possibility of holding an additional spring career fair event (with student input). (December 2015)
 - August 2016: 10 construction companies and approximately 50 students attended the all-university career fair event in the spring semester. This event will be encouraged for both employers and students as hiring trends continue upward.
 - August 2017: Students and companies were again encouraged to attend the spring all-university career fair. Accurate data on company and student attendance was not collected; improve for AY17-18.
 - August 2018: Students and companies were again encouraged to attend the spring all-university career fair. Tracking of this event is not a priority currently. Suggest re-evaluating this strategy in the next strategic plan.
 - 3.5.3 Increase student participation in the Career Fair from prior year. (ongoing): 2014 – 84, 2015 – 110; 2016 – data not collected; 2017 – 132; 2018 – 145; 2019 – Data unavailable; must do better to track with COB staff.
 - 3.5.4 Personally visit 2 employers each year who either do not or have not recently recruited at MSU to grow number of employers on campus. (ongoing)
 - August 2016 - Visited Murphy Mechanical and Clayco on our spring field trip. Also visited Gold's Mechanical and SECO offices in town
 - August 2017 – Visited Hoar Construction, Walsh, and Alberici during spring field trip
 - August 2018 – Visited with Paric Construction and Garney Construction
 - August 2019 – Visited with Newkirk Novak and Hartmann Construction
 - August 2020 – Unable to complete this year because of COVID-19 impacts.

Goal 4: Enhance the research environment of the program

Departmental Objectives:

- 4.1 All TCM tenured or tenure track faculty members maintain SA status as required by the College of Business
 - 4.1.1 Promote collaborative writing/multiple authorships within the department
 - 4.1.1.1 Schedule departmental meeting to discuss collaborative research (Callahan, October 2015)
 - 4.1.2 Promote collaborative writing across multiple disciplines/institutions
- 4.2 Develop a research focus area that could support participation from all TCM programs
- 4.3 Reposition C-PRIME to strengthen its platform for supporting externally funded research
 - 4.3.1 Redefine C-PRIME's mission by May 2016 after assessing current and new faculty members' strengths and interests. Update: Dr. Behzadan

appointed C-PRIME director spring 2016. Initial thoughts on new vision presented to faculty May 2016.

Construction Management Program Objectives:

- 4.1 CM - Increase the amount of funded research
 - 4.1.1 Increase the number of co-authored papers by faculty members (ongoing) –
 - August 2017 – Mehany, Gebken – 1 journal, 1 conference; Behzadan – 2 journal articles, 4 conference papers
 - August 2018 – Gebken, Sauer -> 1 conference paper & 1 journal article; Nelson -> 2 conference papers
 - August 2020 – Sauer, Gebken – 1 journal
 - 4.1.2 Secure \$250,000 funding for grants or research projects by May 2020
 - August 2016: Completed - Dr. Behzadan - Approximately \$300,000 from NSF grants
 - 4.1.3 Enhance relationships with potential funding agencies (May 2018)
 - August 2018 – faculty changes have pushed this a strategy; reevaluate in August 2019
 - August 2019 – Dr. Peterson was hired and shows an interest in this area. Coordinate direction with feedback from Jim.
- 4.2 CM - Develop resources needed to facilitate research
 - 4.2.1 Increase student involvement in research by involving 5 undergraduate students in research projects by May 2018
 - August 2018 – faculty changes have pushed this a strategy; reevaluate in August 2019
 - 4.2.2 Acquire additional research equipment
 - August 2016: 3-D Laser Scanner in May 2016
 - August 2017: VR headset acquired by Dr. Behzadan; Mechanical equipment received for MEP lab and possible research; continue into 2018
 - August 2018 – MEP lab equipment grant funded (Nelson); new equipment should help both research and classroom activities
 - August 2020 – Advanced survey equipment donation facilitated by Dr. Peterson was successful.

Goal 5: Support and Promote Faculty Development

Departmental Objectives:

- 5.1 Develop faculty members who are current and engaged in their academic areas
 - 5.1.1 Fund and encourage participation in professional organizations, conferences, and other professional endeavors
 - 5.1.2 Encourage faculty members to pursue leadership roles in regional and national professional organizations (goal: at least 1 faculty member from each program in a regional or national office, position, or committee by May 2017)
- 5.2 Implement faculty mentoring and development program
 - 5.2.1 Assign newly hired faculty a mentor within one month of hire
 - 5.2.2 Provide opportunities /resources for faculty internships and short courses
 - 5.2.2.1 Present Information to the TCM faculty relating to the AGC faculty internship and other opportunities (Dr. Mehany, August 2015; Dr. Sauer & Dr. Hari, August 2018)

Construction Management Program Objectives:

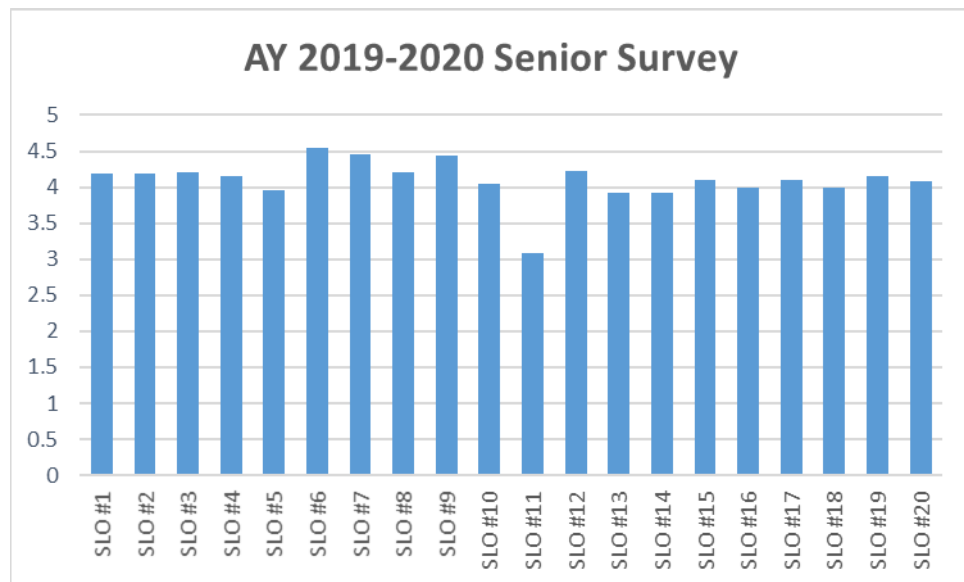
- 5.1 CM - Grow Endowed chairs for faculty
 - 5.1.1 Seek funding for new endowed professorship (May 2020)

B. *Course Evaluations*

For AY 2019-2020, student evaluations of teaching were only collected in the fall semester because of COVID-19. The university as a whole did not collect any student evaluations of teaching for that semester. The mean and median student evaluation of teaching score for CM courses was 4.25/5.00. The standard deviation for the same time period was 0.37 points. The mean student evaluation of teaching score for the Technology and Construction Management department was 4.20/5.00 with a standard deviation of 0.35.

C. *Senior Exit Surveys*

Each semester, graduating seniors are asked to complete a survey that assesses their perceived level of preparedness across each of the 20 student learning outcomes. In addition, this instrument also collects information about the courses and/or individuals who most contributed to these outcomes and job placement information. For AY 2019-2020, the mean perceived level of preparedness for all SLOs was 4.10/5.00 with a standard deviation of 0.29 points. The figure below shows the distribution of scores for the senior exit surveys. SLO #11 (surveying) appears to be significantly lower than other areas and will be discussed in section five.



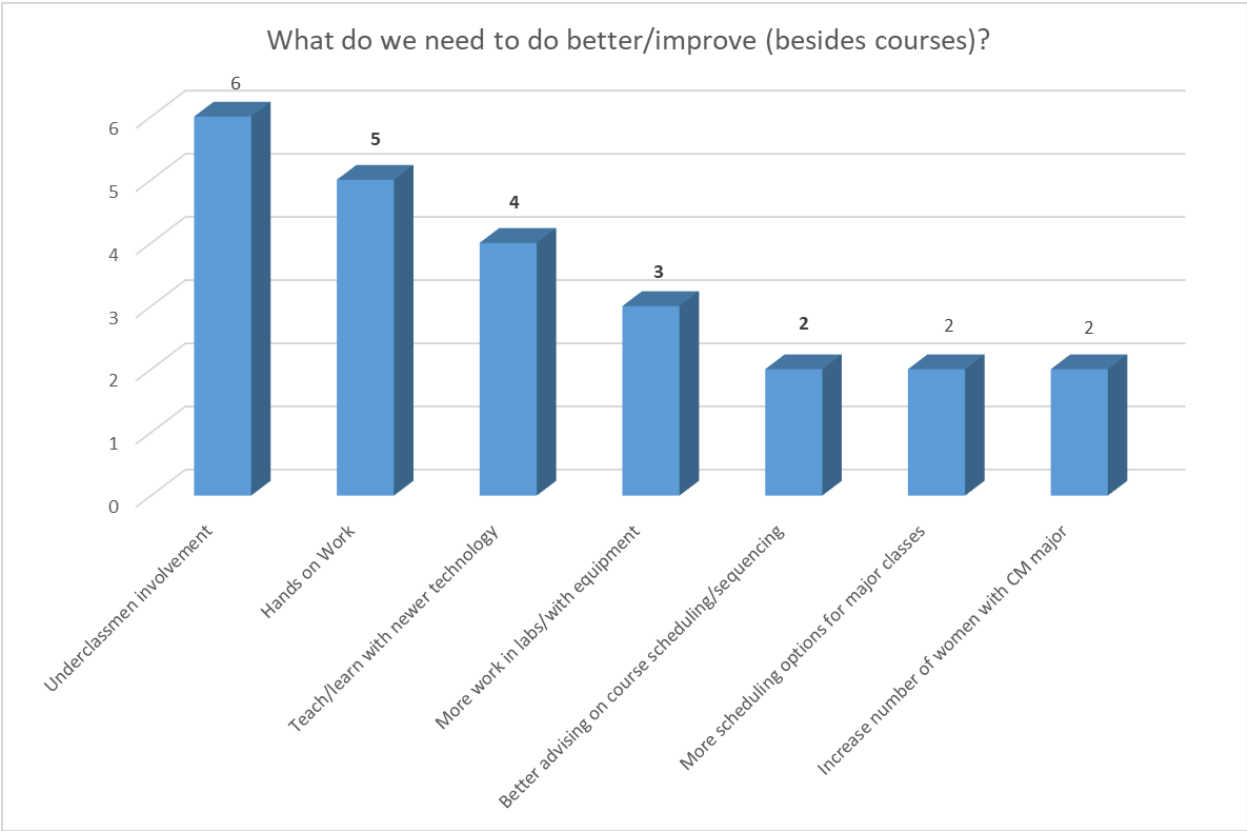
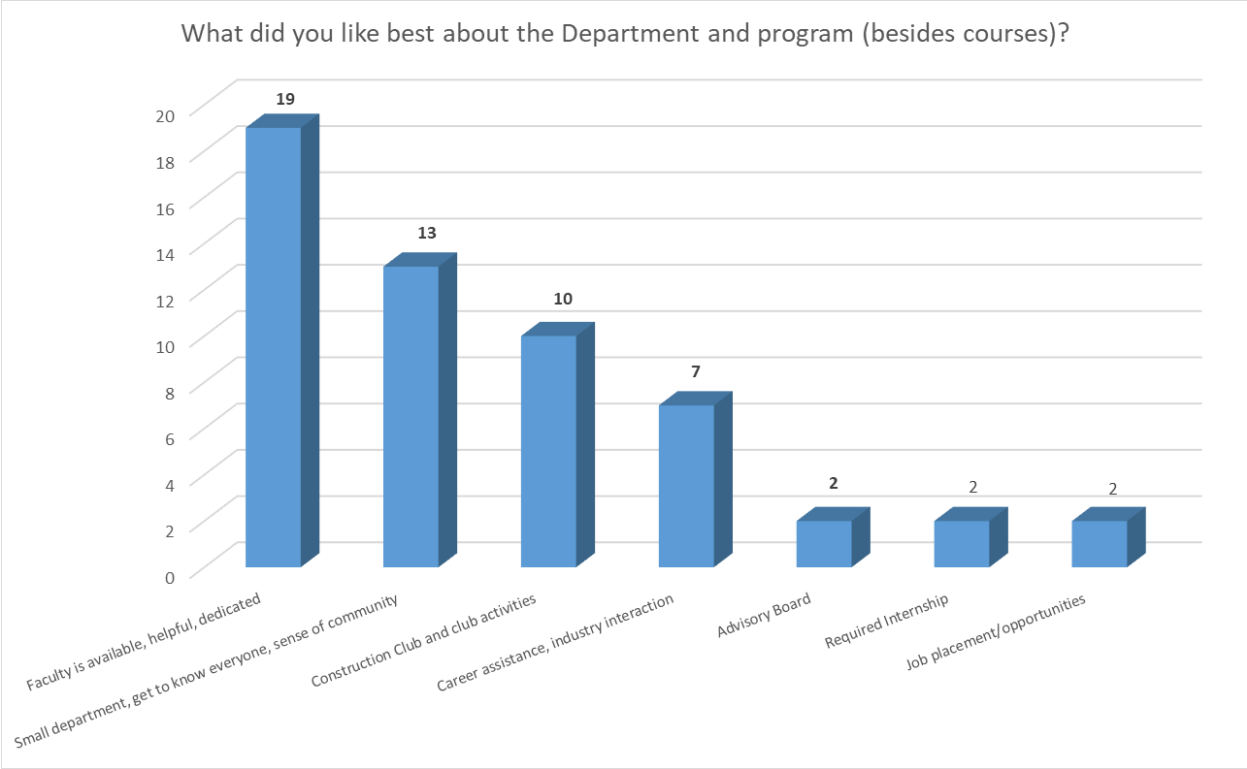
D. *Senior Exit Interview*

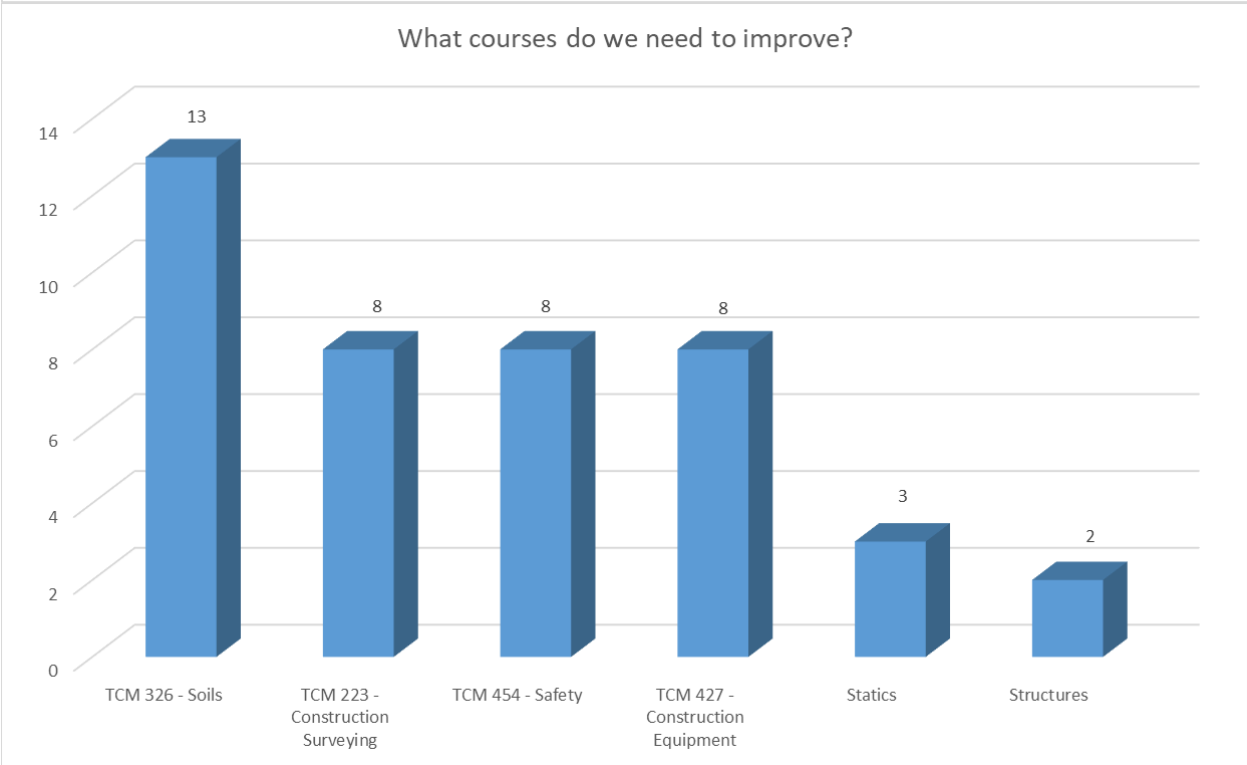
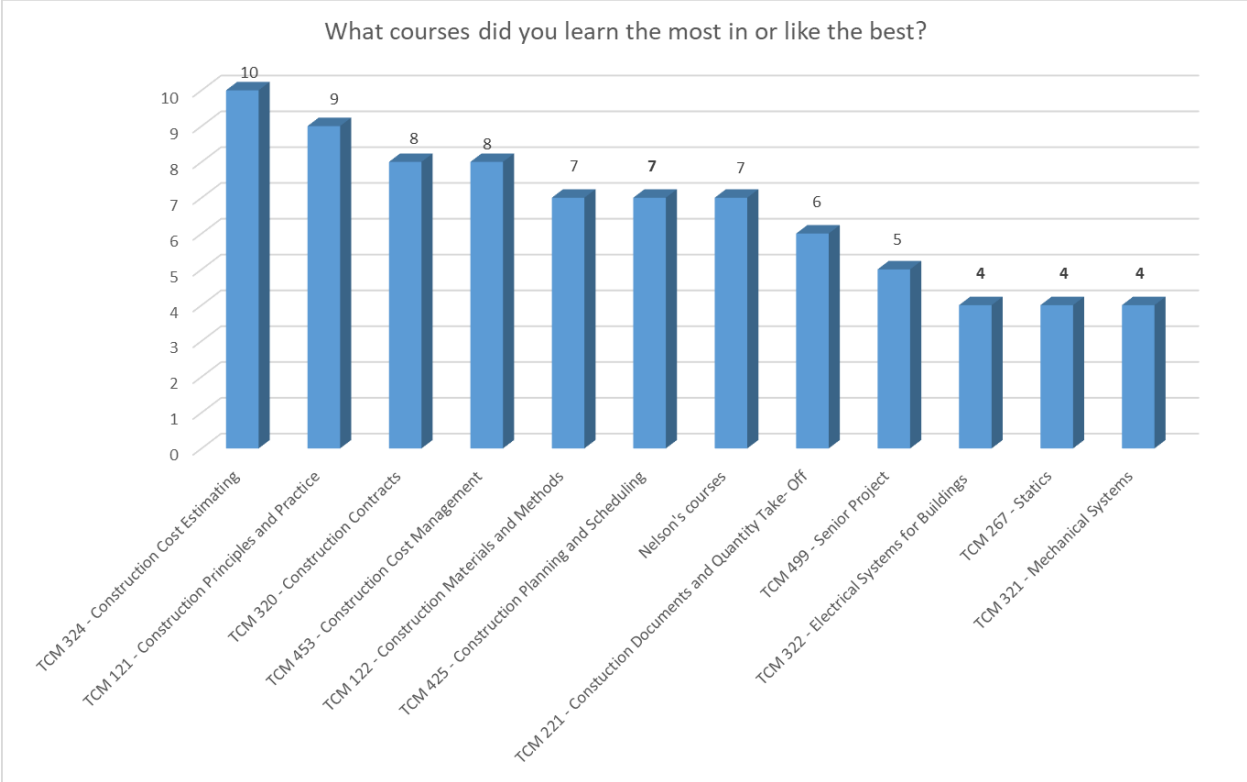
In addition to the senior exit survey, graduating senior also individually sit down for exit interviews with the department head each semester. The questions asked during the exit included the following:

1. What did you like best about the Department and program (besides courses)?
2. What do we need to do better/improve (besides courses)?
3. What courses did you learn the most in or like the best?
4. What courses do we need to improve?

Pareto charts for the top responses from these interviews are presented below for the entire academic year.

Fall 2019/Spring 2020

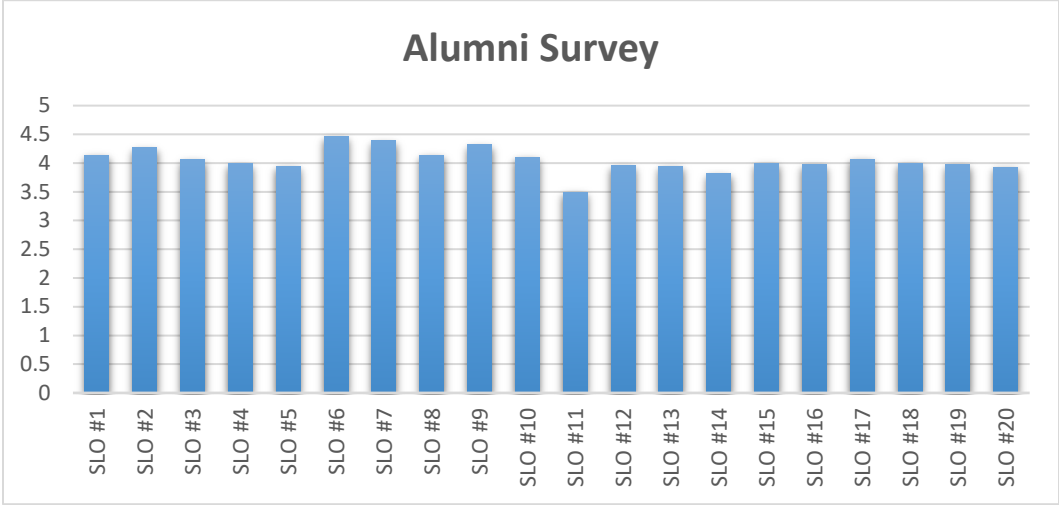




E. Alumni Survey

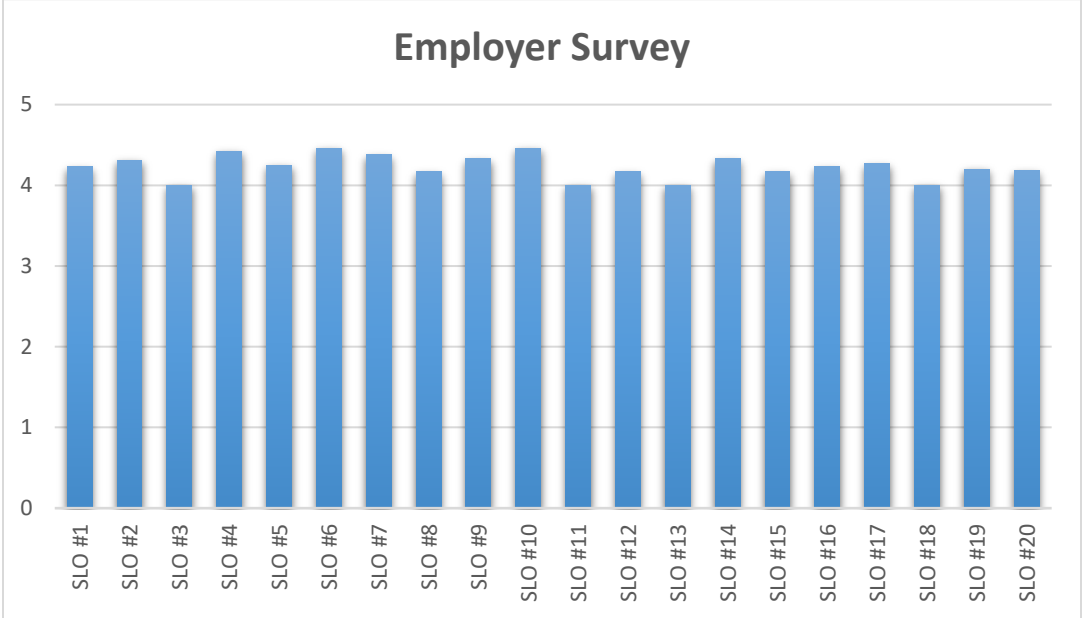
Every five years, recent alumni are asked to complete a survey that assesses their perceived level of preparedness across each of the 20 student learning outcomes. In addition, this instrument

also collects information about the overall satisfaction with their undergraduate experience, perceived department strengths/weaknesses, and contact information. In the most recent cycle (2020), the mean perceived level of preparedness for all SLOs was 4.05/5.00 with a standard deviation of 0.21 points. The figure below shows the distribution of scores for the alumni survey.



F. Employer Survey

Every five years, employers are asked to complete a survey that assesses their level of satisfaction with the preparedness of Missouri State University construction management graduates across each of the 20 student learning outcomes. In addition, this instrument also collects information about the overall likelihood to continue to hire graduates from the MSU CM program, the perceived department strengths/weaknesses, and contact information. In the most recent cycle (2020), the mean level of satisfaction for employers across all SLOs was 4.23/5.00 with a standard deviation of 0.15 points. The figure below shows the distribution of scores for the employer survey.



VI. Actions Taken as a result of assessment data collected

The construction management faculty met virtually in September 2020 to discuss the findings of the AY 2019-2020 assessment cycle. All ten measures identified in the ACCE self-study were reviewed and discussed. Overall, the CM program appears to be meeting the majority of student and program learning outcomes. Course-level corrective actions are taken anytime a single direct measure fall below the 70% target level detailed in the Assessment Implementation Plan. The CM course binders contain the instructor course evaluation and improvement plan forms where these actions are documented and tracked.

For the AY 2019-2020 cycle, the faculty first investigated the areas of concern from the AY2018-2019 cycle. These items included: 1) SLO #18 (Understand the basic principles of sustainable construction) had equal or more direct measures fail to meet rather than meet the 70% target level; 2) improving printing capabilities in Kemper 207; and 3) improving soft skills education for students.

For issue #1, SLO #18 no longer appears to be an area of concern as all measures were above the 70% target level. Each course where learning objectives on safety are covered seemed to have effectively raised student performance. However, due to the few measures of this SLO, the faculty should still watch this knowledge area and take student/alumni/industry perceptions into how well this concern is being addressed. This issue should continue to be monitored in AY 2020-2021. For issue #2, the printer in the downstairs computer lab (Kemper 126) appears to be functioning well; however, the printer in Kemper 207 still needs attention. This issue should continue to be monitored in AY 2020-2021 until funds become available for a suitable replacement. For issue #3, the initial offering of TCM 401 is fall 2020. Student, faculty, and CMAB input should be examined in AY 2020-2021 to see if the additional class is beginning to address the lack of some soft skills.

Only one new area of concern was identified during the September 2020 meeting – this was regarding ACCE SLO #11 (Apply basic surveying techniques for construction layout and control). As this is the first time that this measure has had so many measures fail to meet the 70% target level (3 of 6 were below 70%), the CM Faculty should judiciously implement the corrective actions plans described in the course assessment forms. As this was the first year where the current faculty member taught this course in the department and the impacts of COVID-19 were particularly hard hit on the surveying course, this issue should continue to be monitored in AY 2020-2021.

Overall, the construction management faculty are encouraged by the continued growth and development of the program. Improvements within the CMAB, the growing demand for graduates, and positive industry growth are all signs that the program will continue its success in the coming years.

VII. Student Achievement

A. *Awards and Accomplishments*

2020 – The Construction Club was recognized as the Outstanding Emerging Student Chapter and was honored at the AGC of America's convention in Las Vegas, NV.

2020 – The MEP Club was again awarded multiple grants from ASHRAE and MCA for its student group and additional MEP lab equipment.

2020 – The MEP Club's competition placed 5th in the MCAA National Competition.

2019 – At the Associated Schools of Construction Region 4 Competition, the Commercial 1 team placed 3rd, the Heavy/Civil team placed 2nd, and the specialty teams placed 2nd.

B. Student scholarships

The department and local industry annually award approximately \$30,000 to CM students. On average \$15,000 has been received by CM students on a regional or national level by CM students. The list of university-housed scholarships, awards, and annual award amounts are listed below.

Scholarships	Amount
Armin F. and Vivian M. Gimbel Achievement Award	\$ 1,000
Bailey Family Construction Management Scholarship	\$ 1,000
Construction Management Advisory Board Scholarship	\$ 2,000
Doyle Kemper Memorial Scholarship	\$ 1,000
EFCO Corporation Scholarship	\$ 1,000
JE Dunn Construction Scholarship	\$ 1,000
Missouri Concrete Association (MCA) Scholarship	\$ 500
Orin R Robinson Scholarship	\$ 500
Roger G. Killian Memorial Scholarship	\$ 1,000
S. Strong Memorial Scholarship	\$ 500
S. Strong Memorial Scholarship	\$ 500
Springfield Contractors Association Scholarship	\$ 523
Technology and Construction Management Department Scholarship	\$ 600
Technology and Construction Management Department Scholarship	\$ 500
Technology and Construction Management Department Scholarship	\$ 600
Technology and Construction Management Department Scholarship	\$ 600
Technology and Construction Management Department Scholarship	\$ 600
Ted Smith Endowment Scholarship	\$ 1,000
Wilbur Shank Memorial Scholarship	\$ 600
Total	\$ 15,023

VIII. Rate and Types of Employment of Graduates

A. Student employment numbers for graduates during AY 2019-2020 including starting salary information.

Type of Employer	No. of Graduates
Commercial GC	22
Specialty Contractor	5
Residential Contractor	1
Heavy/Civil Contractor	3
Industrial	3
Total	34

The average starting salary for CM graduates with a position in a related field during AY 2019-2020 was \$59,105 (n=34).

IX. Data to support qualitative claims made by the program
Not applicable.