Haskell & Irene Lemon Construction Science Division

SLO Assessment Outcomes

2018-2019 academic year

This document serves as the assessment report for the Bachelor of Science – Construction Science program for the 2018/2019 school year. This report is based on the undergraduate assessment and academic quality plan for the Construction Science Division, as approved by the CNS faculty in February 2018.

1. Student Learning Outcomes Summary

Instructors were asked to submit what they used to assess SLOs and the outcomes of that assessment. The Division of Construction Science Undergraduate Assessment and Academic Quality Plan (approved by faculty 2/2018) establishes a target of 70% or higher for all SLO assessments. The following are the direct and indirect assessment data for each SLO.

SLO #1: *Create written communications appropriate to the construction discipline*
- In CNS 4993, the instructor uses the final project to assess SLO #1. Out of 31 students the average grade for SLO #1 was 79%,
- An average score of 3.4 (85%) resulted from indirect assessment of students.
- An average score of 3.47 (86.75%) resulted from indirect assessment of industry professionals.

SLO#2: *Create oral presentations appropriate to the construction discipline*
- In CNS 3413, the instructor uses an oral presentation from project #2 to assess SLO #2. Out of 40 students the average grade on the presentation was 79%.
- An average score of 3.2 (80%) resulted from indirect assessment of students.
- An average score of 3.53 (88.25%) resulted from indirect assessment of industry professionals.

SLO#3: *Create a construction project safety plan*
- In CNS 3883, the instructor uses the final project to assess SLO #3. Out of 40 students the average score on the project was 90%.
- An average score of 3.2 (80%) resulted from indirect assessment of students.
- An average score of 3.21 (80.25%) resulted from indirect assessment of industry professionals.

SLO#4: *Create construction project cost estimates*
- In CNS 3512, the instructor uses question #11 on the final exam to assess SLO #4. Out of 46 students only 19 (41%) got the question correct.
- In CNS 4993, the instructor uses the final project to assess SLO #4. Out of 31 students the average grade for the SLO #4 portion of the project was 83%.
- An average score of 2.9 (72.5%) resulted from indirect assessment of students.
- An average score of 3 (75%) resulted from indirect assessment of industry professionals.

SLO #5: Create construction project schedules
- In CNS 4993, the instructor uses the final project to assess SLO #5. Out of 31 students the average grade for the SLO #5 portion of the project was 78%.
- An average score of 2.7 (67.5%) resulted from indirect assessment of students.
- An average score of 3.21 (80.25%) resulted from indirect assessment of industry professionals.

SLO#6: Analyze professional decisions based on ethical principles
- In CNS 3512, the instructor uses an in class assignment to assess SLO #6. Out of 46 students the average grade was 90%.
- An average score of 3.4 (85%) resulted from indirect assessment of students.
- An average score of 3.8 (95%) resulted from indirect assessment of industry professionals.

SLO#7 Analyze construction documents for planning and management of construction processes
- In CNS 2813 The instructor uses two exams (exam 1 and the final exam) to assess SLO #7.

Out of 35 students, the average grade on the two exams was 79%.
- An average score of 3.4 (85%) resulted from indirect assessment of students.
- An average score of 3.53 (88.25%) resulted from indirect assessment of industry professionals.

SLO#8 Analyze methods, material and equipment used to construct projects
- In CNS 2812, the instructor uses journal entries documenting work performed on-site each week to assess SLO #8. Out of 36 students enrolled in the course the average grade was 93%.
- In CNS 2833, the instructor uses the mid-term exam to assess SLO #8. Out of 52 students the average score was 77%.
- An average score of 3 (75%) resulted from indirect assessment of students.
- An average score of 3.2 (80%) resulted from indirect assessment of industry professionals.

SLO#9 Apply construction management skills as a member of a multi-disciplinary team
- In CNS 2363, the instructor uses a group assignment where students work in an interdisciplinary team. Out of 55 students, the average grade was 96%.
- An average score of 3.4 (85%) resulted from indirect assessment of students.
- An average score of 3.5 (87.5%) resulted from indirect assessment of industry professionals.

SLO #10 Apply electronic-based technology to manage the construction process
- In CNS 4133, the instructor uses in class activities, homework, exams, and a final project to assess SLO #10. Out of 31 students the average score on these was 89%.
- An average score of 3.1 (77.5%) resulted from indirect assessment of students.
- An average score of 3.73 (93.25%) resulted from indirect assessment of industry professionals.

SLO #11 Apply basic surveying techniques for construction layout and control
- In CNS 3101, the instructor uses a combination of lab assignments and two exams to assess SLO #11. Out of 41 students the average score from these labs and exams was 85%.
- An average score of 3.3 (82.5%) resulted from indirect assessment of students.
- An average score of 2.93 (73.25%) resulted from indirect assessment of industry professionals.

SLO #12 Understand different methods of project delivery and the roles and responsibilities of all
- In CNS 1111, the instructor uses quizzes 1, 5, and 12 to assess SLO #12. Out of 58 students, the average grade on the quizzes was: 71%.
- In CNS 4523, the instructor uses the mid-term exam to assess SLO #12. Out of 33 students the average mid-term grade was 86%.
- An average score of 3.2 (80%) resulted from indirect assessment of students.
- An average score of 3.31 (82.75%) resulted from indirect assessment of industry professionals.

SLO #13 Understand construction risk management
- In CNS 4523, the instructor uses the final exam to assess SLO #13 Out of 33 students the average grade on the final exam was 86%.
- An average score of 3.2 (80%) resulted from indirect assessment of students.
- An average score of 2.92 (73%) resulted from indirect assessment of industry professionals.

SLO #14 Understand construction accounting and cost control
- In CNS 3823 The instructor uses a combination of homework, exam #2, and the final exam to assess SLO #14. Out of 40 students the average grade on these materials was 87%
- An average score of 2.8 (70%) resulted from indirect assessment of students.
- An average score of 3.08 (77%) resulted from indirect assessment of industry professionals.

SLO #15 Understand construction quality assurance and control
- In CNS 4523, the instructor uses the final exam to assess SLO #15 Out of 33 students the average grade on the final exam was 86%.
- An average score of 3 (75%) resulted from indirect assessment of students.
- An average score of 3.57 (89.25%) resulted from indirect assessment of industry professionals.

SLO #16 Understand construction project control processes
- In CNS 3823, the instructor uses exam #1 to assess SLO #16. Out of 40 students the average grade was 86%.
- An average score of 3.1 (77.5%) resulted from indirect assessment of students.
- An average score of 3.29 (82.25%) resulted from indirect assessment of industry professionals.

SLO #17 Understand the legal implications of contract, common and regulatory law to manage a construction project
- In CNS 4153, the instructor uses a combination of two exams (a midterm and a final) to assess SLO #17. Out of 33 students the average score on the two exams was 85%.
- An average score of 3 (75%) resulted from indirect assessment of students.
- An average score of 3.08 (77%) resulted from indirect assessment of industry professionals.

SLO #18 Understand the basic principles of sustainable construction
- In CNS 2211, the instructor uses quiz #4 to assess SLO #18. Out of 37 students, the average grade on the quiz was 92%.
- An average score of 3 (75%) resulted from indirect assessment of students.
- An average score of 3.38 (84.5%) resulted from indirect assessment of industry professionals.

SLO #19 Understand the basic principles of structural behavior
- In CNS 4193, the instructor uses all graded assignments in the course to assess SLO #19. Out of 31 students enrolled the average grade was 84%.
- In CNS 4233, the instructor uses all graded assignments in the course to assess SLO #19. Out of 31 students enrolled the average grade was 84%.
- In CNS 4613, the instructor uses all graded assignments in the course to assess SLO #19. Out of 33 students enrolled the average grade was 91%.
- An average score of 3 (75%) resulted from indirect assessment of students.
- An average score of 3.46 (86.5%) resulted from indirect assessment of industry professionals.

SLO #20 Understand the basic principles of mechanical, electrical, and piping systems
- In CNS 2433 the instructor uses exam #2 to assess mechanical system knowledge under SLO #20. Out of 39 exams taken, the average grade was 89%.
- In CNS 2433 the instructor uses exam #3 to assess plumbing system knowledge under SLO #20. Out of 39 exams, the average grade was 88%.
- In CNS 3443 the instructor uses the mid-term exam to assess electrical system knowledge under SLO #20. Out of 41 students the average grade on the mi- term was 81%.
- An average score of 3.3 (82.5%) resulted from indirect assessment of students.
- An average score of 3.36 (84%) resulted from indirect assessment of industry professionals.

Of the assessment data collected, two SLOs were below the target of 70%.
- Indirect assessment of SLO #5: *Create construction project schedules* had a score of 67.5%.
  - Because this assessment only narrowly missed the target, and because the direct assessment of this SLO, and the indirect assessment via industry professionals were both well above the target no immediate action will be taken. The Division will monitor the SLO this year and make adjustments if the deficiency persists.
- Direct assessment of SLO#4: *Create construction project cost estimates* had a score of 41% (19 out of 46 gave the correct response).
  - Because both indirect measures and the second direct measure of this SLO all met the target, this assessment is not a serious concern. We believe this result occurred from using a different project and thus set of project documents on the final exam, which caused problems for the student in finding the information they needed. In the future the instructor plans to use more in class activities calculating overhead and introducing students to multiple projects to increase their ability to navigate a new set of documents and extract information.

2. Faculty involved with the program

The following table lists the faculty teaching in the program in the 2018/2019 academic year, as well as the SLOs assessed in their courses.

Course	Name	Instructor	SLO assessed/Notes
Fall 2018			
CNS 1111	Introduction to Construction Mgmt.	Bigelow	12
CNS 2211	Sustainability	Blooms	18
CNS 2363	Materials and Methods I	Bloom	9
CNS 3103	Construction Surveying	Reyes	11
CNS 3413	Construction Communication	McCuen	2
CNS 3443	Electrical Systems	Perrenoud	20
CNS 3512	Cost Estimating	Ghosh	4,6
CNS 3612	Project Controls Lab	Ghosh	No SLO assessed
CNS 3812	Project Planning & Scheduling	Ghosh	5
CNS 4133	BIM for Constructors	McCuen	10
CNS 4223	Structures II	Shadravan	19
CNS 4523	Pre-Construction Services	McCuen	12,13,15
CNS 4613	Soils & Foundations	Marakah	No SLO assessed
CNS 4970	Residential Construction	Blooms	No SLO assessed
Spring 2019			
CNS 1213	Computers in Construction	Rahman	No SLO assessed
CNS 2433	Mechanical Systems	Perrenoud	20
CNS 2812	Construction Fundamentals Lab	Bloom	7, 15
CNS 2813	Construction Docs & Quantity Survey	Ghosh	7
CNS 2833	Materials & Methods II	Bloom	8
CNS 3823	Project Controls Management	Reyes	14,16
CNS 3883	Construction Safety	Reyes	3
CNS 4153	Legal Issues in Construction	Laws	17
CNS 4193	Structures I	Shadravan	19
CNS 4213	Design Build Principles	McCuen	No SLO assessed
CNS 4303	Lean Construction Management	Ghosh	No SLO assessed
CNS 4403	Leadership	Perrenoud	No SLO assessed
CNS 4970	Construction Education	Bigelow	No SLO assessed
CNS 4993	Construction Science Capstone	McCuen	1,4,5
Summer 2019			
CNS 3943	Field Work	Ghosh	No SLO assessed
CNS 4943	Field Work	Ghosh	No SLO assessed

3. Course notebooks

A sample of course notebooks were collected in the 2018/19 academic year. Following is a summary of the notebooks collected.

i. Total number of course notebooks collected for the 2018/19 academic year: 22. Following is the list of courses for which course notebooks were collected:

(1) Fall 2017: CNS 1111, CNS 2211, CNS 2363, CNS 3103, CNS 3413, CNS 3443, CNS 3512, CNS 3612, CNS 3812, CNS 4133, CNS 4233, CNS 4523, CNS 4970 (13 courses).

(2) Spring 2018: CNS 2433, CNS 2812, CNS 2813, CNS 2833, CNS 3823, CNS 3883, CNS 4213, CNS 4303, CNS 4993 (9 courses).

     ii.   Total number of courses for which course notebooks were <u>not</u> collected for the 2018/2019 academic year: 2. The following is the list of courses:

        (1) Fall 2018: CNS 4613

        (2) Spring 2019: CNS 1213, CNS 4153, CNS 4403, CNS 4970 (3 courses)

     iii.   All course notebooks are available in electronic format.

  (2) Each course notebook was expected to consist of the following materials:

     i.   Course Syllabus (following University of Oklahoma requirements)
     ii.   ACCE SLO Summary Form
     iii.   CNS Division Course Summary Form
     iv.   Course lectures or other presentation materials
     v.   Course assignments and tests with grading rubrics or keys
     vi.   1 example of student work for each assignment (student names removed)
     vii.   Any other materials the instructor deems appropriate to include

4. Direct Assessment of Student Learning Outcomes and Course Summaries

Instructors were asked to submit information to evaluate their courses and collect assessment data for SLOs. The following are the responses collected, organized by the course (Assessment information organized by SLO is provided in section 5):

(1) CNS 1111 – The instructor uses quizzes 1, 5, and 12 to assess SLO #12. Out of 58 students, the average grade on the quizzes was: 71%. The grade distribution in the course was: A – 12, B – 29, C – 12, D – 2, F – 3.
The instructor plans to spend more time encouraging student to study the chapter (not just read it) so they are ready for the quizzes early in the semester, and to provide them with strategies to engage in their reading.

(2) CNS 1213 - SLOs are not assessed in this course. Out of 54 students enrolled, the grade distribution in the course was: A – 28, B – 14, C – 8, D – 1, F – 3.
No suggestions for improvement were provided.

(3) CNS 2211 – The instructor uses quiz #4 to assess SLO #18. Out of 37 students, the average grade on the quiz was 92%. The grade distribution in the course was: A – 23, B – 10, C – 3, D – 0, F – 1.
The instructor did not have suggestions for improvement for next year.

(4) CNS 2363 – For SLO #9, the instructor uses a group assignment where students work in an interdisciplinary team. Out of 55 students, the average grade was 96%. The grade distribution in the course was: A – 10, B – 38, C – 3, D – 1, F – 2.

(5) CNS 2433 – For SLO #20, the instructor uses exam #2 to assess mechanical system knowledge. Out of 39 exams taken, the average grade was 89%. The instructor used exam #3 to assess plumbing system knowledge. Out of 39 exams, the average grade was 88%. The grade distribution in the course was: A – 16, B – 16, C – 6, D – 1, F – 0.
The instructor suggested the following improvement for next year: Bring in more hands on activities related to MEP systems

(6) CNS 2812 – The instructor uses journal entries documenting work performed on-site each week to assess SLO #8. Out of 36 students enrolled in the course the average grade was 93%. The grade distribution in the course was: A – 32, B – 2, C – 2, D – 0, F – 0.
The instructor suggested the course would benefit from having more contiguous working hours with fewer students. Upper level junior and senior students may be more equipped to execute a built project. The course as it stands may be more successful by reverting to its previous format of

smaller groups of students working with industry professionals to construct mock-ups with building materials.

(7) CNS 2813 – The instructor uses two exams (exam 1 and the final exam) to assess SLO #7. Out of 35 students, the average grade on the two exams was 79%. The grade distribution in the course was: A – 7, B – 18, C – 9, D – 1, F – 0.
The instructor suggested the following improvement for next year: Coordinate more with the Fundamentals Lab and have some of the QTO assignments tie with the lab assignments.
Use more 3D navigable virtual environments to facilitate visualization of the students.

(8) CNS 2833 – The instructor used exam 1 and exam 2 to assess SLO #8. Out of 52 students the average score was 77%. The grade distribution in the course was: A – 18, B – 27, C – 3, D – 2, F – 2.
The instructor suggested the following improvement for next year: This course would benefit from splitting content with Materials and Form.

(9) CNS 3103 – The instructor uses a combination of lab assignments and two exams to assess SLO #11. Out of 41 students the average score from these labs and exams was 85%. The grade distribution in the course was: A – 21, B – 19, C – 1, D – 0, F – 0.
The instructor suggested the following improvement for next year: I will spend an additional lab with the total station to better cover some horizontal layout concepts.

(10) CNS 3413 – The instructor uses the oral presentation from project #2 to assess SLO #2. Out of 40 students the average grade on the presentation was 79%. The grade distribution in the course was: A – 15, B – 24, C – 1, D – 0, F – 0. The instructor suggested the following improvement for next year: To continue development of activities to transition student's 'generic' communication knowledge to industry specific communication skills.

(11) CNS 3443 – The instructor uses the mid-term exam to assess SLO #20. Out of 41 students the average grade on the mi- term was 81%. The grade distribution in the course was: A – 13, B – 26, C – 1, D – 0, F – 0.
The instructor suggested the following improvement for next year: Bring in more hands on activities related to the MEP systems.

(12) CNS 3512 – The instructor uses question #11 on the final exam to assess SLO #4. Out of 46 students only 19 (41%) got the question correct. The instructor uses an in class assignment to assess SLO #6. Out of 46 students, the average grade on this assignment was 90%. The grade distribution in the course was: A – 10, B – 24, C – 12, D – 0, F – 0.
The instructor suggested the following improvement for next year: Will increase the number of home-works to provide more practice to the students.

(13) CNS 3612 - SLOs are not assessed in this course. Out of 44 students enrolled, the grade distribution in the course was: A – 22, B – 22, C – 0, D – 0, F – 0.
The instructor suggested the following improvement for next year: I will share examples of subcontractor's quotes that student teams receive on the Bid Day so that the students can get more familiar with the Bid Day simulation.

(14) CNS 3812 - The instructor uses the final exam to assess SLO #5. Out of 46 students the average grade on the final exam was 71%. The grade distribution in the course was: A – 8, B – 31, C – 7, D – 0, F – 0.
The instructor suggested the following improvement for next year: Will increase the number of home-works to provide more practice to the students.

(15) CNS 3823 – The instructor uses a combination of homework, exam #2, and the final exam to assess SLO #14. Out of 40 students the average grade on these materials was 87%
For SLO #16 the instructor uses exam #1 for assessment. Out of 40 students the average grade was 86%. The grade distribution in the course was: A – 17, B – 21, C – 2, D – 0, F – 0.
The instructor suggested the following improvement for next year: Expanded use of digital

document and cost control tools (such as Procore)

(16) CNS 3883 – The instructor uses the final project to assess SLO #3. Out of 40 students the average score on the project was 90%. The grade distribution in the course was: A – 35, B – 5, C – 0, D – 0, F – 0.
The instructor suggested the following improvement for next year: Incorporate the OSHA 30 outreach training into the course.

(17) CNS 4133 – The instructor uses in class activities, homework, exams, and a final project to assess SLO #10. Out of 31 students the average score on these was 89%. The grade distribution in the course was: A – 19, B – 9, C – 3, D – 0, F – 0.
The instructor suggested the following improvement for next year: Improve student knowledge about conceptual estimating & Increase emphasis on construction phasing and work sequencing.

(18) CNS 4153 –The instructor uses a combination of two exams (a midterm and a final) to assess SLO #17 out of 33 students the average score on the two exams was 85%. The grade distribution in the course was: A – 8, B – 17, C – 8, D – 0, F – 0.
The instructor did not have suggestions for improvement for next year.

(19) CNS 4193 – The instructor uses all graded assignments in the course to assess SLO 19. Out of 31 students enrolled the average grade was 84%. The grade distribution in the course was: A – 19, B –19, C – 7, D – 0, F – 0.
The instructor did not have suggestions for improvement for next year.

(20) CNS 4213 - This course is an elective, as such SLOs are not assessed in this course. Out of 16 students enrolled, the grade distribution in the course was: A – 0, B –11, C – 5, D – 0, F – 0.
The instructor suggested the following improvement for next year: Students need more knowledge about commercial construction practices from proposal through construction and handover.

(21) CNS 4233 – The instructor uses all graded assignments in the course to assess SLO 19. Out of 31 students enrolled the average grade was 84%. The grade distribution in the course was: A – 3, B –21, C – 7, D – 0, F – 0.
The instructor suggested the following improvement for next year: Access to a lab to do some welding, bolting, testing and doing tension tests would have impact on visually learning process.

(22) CNS 4303 – This course is an elective, as such SLOs are not assessed in this course. Out of 20 students enrolled, the grade distribution in the course was: A – 2, B – 18, C – 0, D – 0, F – 0.
The instructor suggested the following improvement for next year: The software I selected for the assignment related to linear scheduling/location-based scheduling did not work out as well. I am planning to use a different software (preferably Vico) next year. The layout of Room 390 in Gould Hall worked well for this course. I will like to have the same/similar room next year.

(23) CNS 4403 – This course is an elective, as such SLOs are not assessed in this course. Out of 29 students enrolled, the grade distribution in the course was: A – 22, B – 7, C – 0, D – 0, F – 0.
The instructor suggested the following improvement for next year: Make this a required class, so all CNS students learn how to develop their leadership potential.

(24) CNS 4523 - The instructor uses the mid-term exam to assess SLO #12. Out of 33 students the average mid-term grade was 86%. The instructor uses the final exam to assess SLO #13 and SLO #15. Out of 33 students, the average grade on the final exam was 86%. The grade distribution in the course was: A – 11, B – 19, C – 3, D – 0, F – 0.
The instructor did not have suggestions for improvement for next year.

(25) CNS 4613 – The instructor uses all graded assignments in the course to assess SLO #19. Out of 33 students enrolled the average grade was 91%. The grade distribution in the course was: A – 17, B –15, C – 1, D – 0, F – 0.
The instructor did not have suggestions for improvement for next year.

(26) CNS 4970 - This course is an elective, as such SLOs are not assessed in this course. Out of 7 students enrolled, the grade distribution in the course was: A – 7, B – 0, C – 0, D – 0, F – 0. The instructor did not have suggestions for improvement for next year.

(27) CNS 4970 - This course is an elective, as such SLOs are not assessed in this course. Out of 6 students enrolled, the grade distribution in the course was: A – 5, B – 0, C – 0, D – 0, F – 2. The instructor did not have suggestions for improvement for next year.

(28) CNS 4993 – The instructor uses the capstone final project to assess SLOs #1, #4, & #5. Out of 31 students the average grade for SLO #1 was 79%, the average grade for SLO #4 was 83%, the average grade for SLO #5 was 78%. The grade distribution in the course was: A – 11, B – 12, C – 8, D – 0, F – 0.
No suggestions for improvement were provided.

5. Indirect Assessment of Student Learning Outcomes via student exit surveys

Each graduating student was given a departmental exit survey, and was asked to fill it out online. Out of the 30 students who graduated in May 2019, 30 responses were collected. Accounting for a 100% response rate. Students were asked how confident they are in their ability to apply each SLO on a 4-point scale. The table below summarizes the student responses regarding each SLO. An average score out of 5 is provided as well as the number of responses for each level of confidence ("Very Confident", "Confident", "Somewhat Confident", and "Not Confident")

SLO	Average	Very Confident	Confident	Somewhat Confident	Not Confident
#1 Written Communication	3.4	15	12	2	1
#2 Oral Presentations	3.2	9	19	1	1
#3 Safety Plan	3.2	13	11	6	0
#4 Cost Estimates	2.9	7	15	7	1
#5 Project Schedules	2.7	6	12	10	2
#6 Ethics	3.4	13	15	2	0
#7 Documents	3.4	13	15	2	0
#8 Materials & Methods	3	8	16	4	2
#9 Multi-Disciplinary Team	3.4	13	16	1	0
#10 Electronic Technology	3.1	8	17	5	0
#11 Surveying	3.3	10	17	2	0
#12 Project Delivery	3.2	11	14	4	1
#13 Risk Management	3.2	9	17	4	0
#14 Acct. & Cost Control	2.8	7	10	12	1
#15 QA/QC	3	8	15	6	1
#16 Project Control	3.1	6	21	3	0
#17 Legal	3	7	17	6	0
#18 Sustainable	3	8	16	5	1
#19 Structural Principles	3	7	18	3	2
#20 MEP	3.3	10	17	3	0

6. Indirect Assessment of Student Learning Outcomes via Industry/Alumni Surveys

A sample of 15 industry representatives were surveyed. Representatives were asked to rate the performance of graduates they had hired on each of the 20 student learning outcomes. The table below summarizes the responses collected. An average score out of 4 is provided as well as the number of responses for each option ("Very good", "Good", "Poor", "Very Poor").

SLO	Average	4- Very Good	3- Good	2- Poor	1- Very Poor
#1 Written Communication	3.47	7	7	1	0

#2 Oral Presentations	3.53	8	5	1	1
#3 Safety Plan	3.21	4	8	2	0
#4 Cost Estimates	3.00	5	5	4	0
#5 Project Schedules	3.21	5	8	1	0
#6 Ethics	3.80	12	1	1	1
#7 Documents	3.53	9	4	2	0
#8 Materials & Methods	3.20	5	7	3	0
#9 Multi-Disciplinary Team	3.50	8	4	2	0
#10 Electronic Technology	3.73	11	2	1	1
#11 Surveying	2.93	2	9	2	1
#12 Project Delivery	3.31	5	8	0	0
#13 Risk Management	2.92	1	9	3	0
#14 Acct. & Cost Control	3.08	3	9	1	0
#15 QA/QC	3.57	9	3	2	0
#16 Project Control	3.29	6	5	3	0
#17 Legal	3.08	3	8	1	1
#18 Sustainability	3.38	7	5	1	0
#19 Structural Principles	3.46	7	4	2	0
#20 MEP	3.36	6	8	0	0

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