

Clemson University
**Nieri Family Department of Construction Science &
Management (N_JCSM) – Master’s Program**

2020-2021 Quality/Outcome Assessment Results

The Nieri Family Department of Construction Science and Management (N_JCSM) faculty and staff use information obtained through program and course-level assessment mechanisms and perception surveys to continuously evaluate and improve on the quality of the program curriculum and operations. Modifications are made only after careful consideration of data are obtained from all constituencies, including students, employers, alumni, advisory board members, and faculty. The continuous improvement plan employed by the N_JCSM master’s degree program is outlined below in Figure 1.

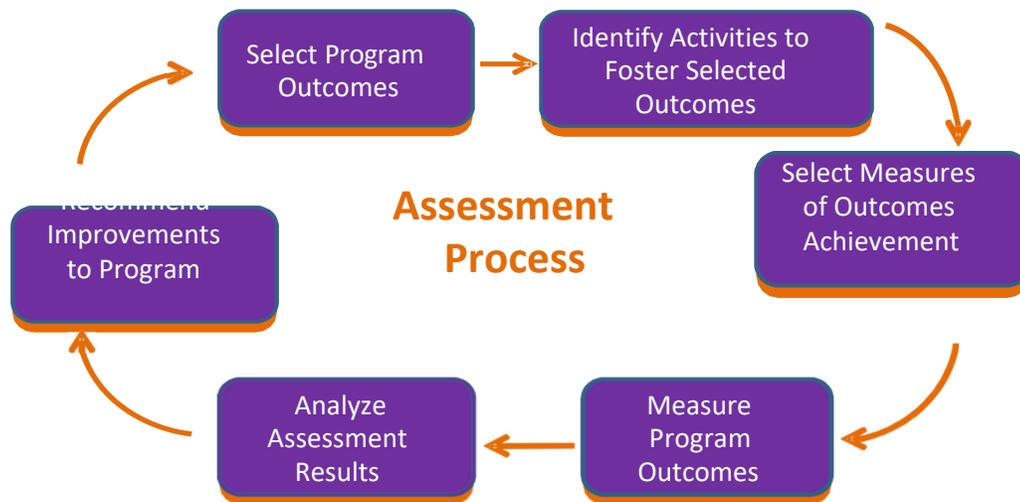


Figure 1. N_JCSM Master’s Degree Program Quality/Outcome Assessment Process

N_JCSM Master’s Degree Program Mission/Purpose - The mission of the Nieri Family Department of Construction Science and Management master’s degree program is to offer a comprehensive program of education, scholarly and service activities, consistent with the Mission of Clemson University and the College of Architecture, Arts and Humanities, for the purpose of improving the quality of the construction industry and thus the built environment.

N_JCSM Master’s Degree Program Goals (G’s)

- G 1: Excel in the education of Construction Science and Management graduate students through a vigorous program of academic learning designed to produce motivated, well-educated, and responsible citizens with the management and technical skills requisite for advanced leadership positions in the construction industry.
- G 2: Foster Clemson University's service mission by providing outreach activities for the construction industry and the public, both nationally and internationally.

- G 3: Assist in attaining Clemson University's funded research goals by conducting and disseminating the results of research and development, and/or conducting educational courses for the construction industry.

N₇CISM Graduate Degree Program Objectives/Outcomes (PO's)

- PO 1: Advanced knowledge of construction management - Upon graduation, students, using sound research methodology, shall be able to analyze and interpret the application of advanced construction management concepts including information and communication technology, risk assessment, ethical considerations and critical thinking for the improvement of the profession (G1).
- PO 2: Application of advanced construction practices - Upon graduation, students using effective communication skills to solve practical construction problems, shall be able to explain and defend the application of advanced construction practices associated with planning, staffing, scheduling and controlling construction projects (G1).
- PO 3: Assessment of Construction Best Practice - Upon graduation, students exemplifying professional integrity, shall be able to evaluate construction best practices of effective management of personnel, materials, tools and equipment, cost and time (G1).
- PO 4: The MCSM program will retain its accreditation by the American Council for Construction Education (G1 & G2).
- PO 5: Faculty will have papers published in peer-reviewed publications (G2 & G3).

N₇CISM Master's Degree Program Student Learning Outcomes (10 ACCE SLO's):

- SLO 1: Create effective and professional written communications
- SLO 2: Apply critical thinking
- SLO 3: Apply problem solving techniques
- SLO 4: Apply decision making techniques
- SLO 5: Apply research methods
- SLO 6: Apply advanced communication technology
- SLO 7: Apply professional ethics
- SLO 8: Apply advanced construction management practices
- SLO 9: Understand risk management
- SLO 10: Understand the principles of leadership in business

Table 1 Correlations between N_JCSM Goals, Program Outcomes, and Student Learning Outcomes

N _J CSM Master's Degree Program Goals (G 1-G 3)	N _J CSM Master's Degree Program Objectives/Outcomes (PO 1- PO 5)	N _J CSM Master's Degree Program Student Learning Outcomes (SLO 1-SLO 10)	Other N _J CSM Master's Degree Program Requirements / Activities
G 1 – Excellent Graduate CSM Education	PO 1 – Advanced Knowledge of Construction Management	SLO 2 & SLO 4 – SLO 9	<u>Thesis Option:</u> Master's Thesis and Defense <u>Non-Thesis Option:</u> N _J CSM Department Graduate Comprehensive Exam
	PO 2 – Application of Advanced Construction Practices	SLO 1 & SLO 3 – 4 & SLO 8	
	PO 3 – Assessment of Construction Best Practice	SLO 7 – SLO 10	
G 1, G 2 & G 3	PO 4 – Maintain Program National Accreditation	SLO 1 – SLO 10	ACCE Accreditation
G 2 - Industry Outreach & G 3 - Research	PO 5 – Faculty Publications		1) Annual Clemson Construction Symposium 2) Annual N _J CSM Department Alumni Golf Tournament 3) Faculty Publications

Constituencies: N_JCSM Students, Faculty, Industry Advisory Board Members, Alumni, and Employers.

Targets: At least 70% achieve/respond \geq 70% on all noted measures.

Frequency of Data Collection: Student performance data from N_JCSM department courses, master's thesis defense, and the graduate comprehensive exam are collected and assessed annually.

Frequency of Comprehensive Program Assessment: N_JCSM Program Assessment is conducted on a three-year cycle, (i.e. Fall 2018 and again in Fall 2021).

Measures: See Figure 2, and the following pages for specific ACCE Student Learning Outcomes (SLO's), as measured and assessed annually.

Quality Assessment Results for 2020-2021

Student Learning Outcomes/Objectives, Measures and Achievement Targets:

1. Create effective and professional written communications.

(ACCE SLO #1/PO 2,4)

Direct Measure: Student performance on specific written sections of project 2, exam questions, class exercises in CSM 8520 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8520.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8520-Construction Management Research - Direct	97%			88%
CSM 8680- Emerging Technologies in the Built Environment - Direct			83%	
CSM 8650- Project Management		88%		
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8680- Indirect (Post)			100%	
CSM 8650 – Indirect (Post)		100%		
CSM 8520 - Indirect (Post)				86%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

2. Apply critical thinking.

(ACCE SLO #2/PO 1,4)

Direct Measures: Student performance on (1) specific written sections of projects 1 and 3 in CSM 8520 using a standard rubric and on (2) specific exam questions in CSM 8650 using a standard rubric.

Indirect Measure: Student perception survey in (1) CSM 8520 and in (2) CSM 8650.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8520-Construction Management Research - Direct	97%			100%
CSM 8650-Project Management - Direct		78%	96%	100%
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8520 - Indirect (Post)				87%
CSM 8650 - Indirect (Post)		86%	100%	92%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

3. Apply problem solving techniques.

(ACCE SLO #3/PO 2,4)

Direct Measure: Student performance on specific exam questions in CSM 8650 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8650.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8650-Project Management - Direct	93%	88%	87%	100%
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8650 – Indirect (Post)		100%	100%	92%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

4. Apply decision making techniques.

(ACCE SLO #4/PO 1-2,4)

Direct Measure: Student performance on specific exam questions in CSM 8650 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8650.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8650-Project Management - Direct	93%	88%	83%	100%
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8650-Project Management – Indirect (Post)		100%	100%	92%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

5. Apply research methods

(ACCE SLO #5/PO 1,4)

Direct Measure: Student performance on specific written sections of project 2, exam questions, and class exercises in CSM 8520 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8520.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8520-Construction Management Research - Direct	97%			74%
CSM 8650-Project Management - Direct		78%	100%	
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8520 – Indirect (Post)				74%
CSM 8650 – Indirect (Post)		86%	100%	

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

6. Apply advanced communication technology.

(ACCE SLO #6/PO 1,4)

Direct Measure: Student performance on specific written sections of project 2 and class exercises in CSM 8520 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8520.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8520-Construction Management Research - Direct	97%			89%
CSM 8650- Project Management		78%		
CSM 8680- Emerging Technologies in the Built Environment - Direct			89%	
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8650 – Indirect (Post)		86%		
CSM 8680- Indirect (Post)			100%	
CSM 8520 – Indirect (Post)				85%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

7. Apply professional ethics.

(ACCE SLO #7/PO 1,3-4)

Direct Measures: Student performance on (1) specific exam question in CSM 8520 using a standard rubric and on (2) specific exam questions in CSM 8650 using a standard rubric.

Indirect Measure: Student perception survey in (1) CSM 8520 and in (2) CSM 8650.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8520-Construction Management Research - Direct	97%			79%
CSM 8650-Project Management - Direct		87%	92%	100%
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8520 - Indirect (Post)				92%
CSM 8650 - Indirect (Post)		93%	100%	92%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

8. Apply advanced construction management practices.

(ACCE SLO #8/PO 1-4)

Direct Measure: Student performance on specific exam questions in CSM 8650 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8650.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8650-Project Management - Direct	93%	87%	100%	100%
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8650 – Indirect (Post)		95%	100%	100%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

9. Understand risk management

(ACCE SLO #9/PO 1,3-4).

Direct Measures: Student performance on specific exam questions in CSM 8650 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8650.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8650-Project Management - Direct	93%	87%		92%
CSM 8660-Contractor Role in Development - Direct			96%	
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8650 – Indirect (Post)		93%		92%
CSM 8660 – Indirect (Post)			100%	

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

10. Understand the principles of leadership in business.

(ACCE SLO #10/PO 3-4)

Direct Measures: Student performance on specific exam questions in CSM 8650 using a standard rubric.

Indirect Measure: Student perception survey in CSM 8650.

Courses/Measures:	2017-18	2018-19	2019-20	2020-21
CSM 8650-Project Management - Direct	93%	95%	92%	100%
Thesis Defense or Graduate Comprehensive Exam- Indirect	100%			
CSM 8650 – Indirect (Post)		100%	100%	100%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

11. N₇CSM Master’s Program Learning Outcome (PO 1-3).

Direct Measure: Overall student performance on their thesis defense or the graduate comprehensive exam.

Indirect Measures: Graduating Student Exit Interview Perception Survey.

Program Measures:	2017-18	2018-19	2019-20	2020-21
Student Exit Interview Survey - Indirect	100%	100%	100%	100%
Thesis Defense or Graduate Comprehensive Exam - Direct	100%	100%	100%	100%

Notes: Targets met in 2020-21 – Continue to Monitor Student Performance in 2021-22.

12. N₇CSM Master’s Program Objectives/Outcome (PO 4)

The MCSM program was re-accredited in 2017 with no weaknesses and two concerns. The program is going for re-accreditation in 202.

13. N₇CSM Master’s Program Objectives/Outcome (PO 5)

For the 2020-2021 Faculty publications, please see each Faculty’s CV in Appendix A for a list of their publications. Target met in 2020-2021-continue to monitor Faculty performance in 2021-2022.

May 1, 2021