

PROGRAM MODIFICATION PROPOSAL FORM

Name of Institution: **Clemson University**

Briefly state the nature of the proposed modification (e.g., adding a new concentration, extending the program to a new site, curriculum change, etc.): **Change of CIP Code to USCIS/DHS STEM designation (Proposed change to 15.1001). We also request that an extant non-thesis option be recorded in the CHE program inventory. We also request that the 1997 site modification be reflected in the CHE program inventory.**

Current Name of Program (include degree designation and all concentrations, options, and tracks):
Master of Construction Science and Management

Proposed Name of Program (include degree designation and all concentrations, options, and tracks):
Master of Construction Science and Management [non-thesis option; this is the only option under the parent thesis-based program and is extant; we request it simply be recorded in the CHE program inventory]

Program Designation:

- | | |
|---|--|
| <input type="checkbox"/> Associate's Degree | <input checked="" type="checkbox"/> Master's Degree |
| <input type="checkbox"/> Bachelor's Degree: 4 Year | <input type="checkbox"/> Specialist |
| <input type="checkbox"/> Bachelor's Degree: 5 Year | <input type="checkbox"/> Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA) |
| <input type="checkbox"/> Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.) | |

Does the program currently qualify for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes
 No

If No, should the program be considered for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes
 No

Proposed Date of Implementation: **August 15, 2020**

CIP Code: **52.0201 (Proposed change to 15.1001)**

Current delivery site(s) and modes: **Clemson Main Campus (50104)**

Proposed delivery site(s) and modes: **Clemson Main Campus (50104), Online Degree Programs (85750), Blended Distance Education (85500)**

Program Contact Information (name, title, telephone number, and email address):

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Institutional Approvals and Dates of Approval:

Board of Trustees Approval- 11 October 2019, 23 April 2020

Background Information

Provide a detailed description of the proposed modification, including target audience, centrality to institutional mission, and relation to strategic plan.

Clemson University's Nieri Family Department of Construction Science and Management (CSM) requests that the CIP code for the Master of Construction Science Management be changed from 52.0201 (Business Administration and Management, General) to 15.1001 (Construction Engineering Technology/Technician), which is better aligned with the program goals and curriculum, and is better aligned with various occupational codes associated with our graduates.

Clemson's master's program in Construction Science is highly respected, and the programs' graduates are highly recruited nationally and internationally by some of the world's largest and most prestigious Construction firms. This "employability" is a significant factor in attracting high-achieving domestic and international students. Indeed, the program's enrollment has been strong and stable (17, 25, 21, and 23 students in the all 2013, 2015, 2017, and 2019 semesters).

However, Clemson's international graduate students in Construction Science are currently only allowed 12 months of OPT training after graduation, given the current CIP classification of 52.0201 (Business Administration and Management, General). It is becoming increasingly difficult for international graduates to obtain work and a permanent work visa in the US, even when they are filling positions where there is a shortage of qualified Construction Science graduates. Even with shortages in the workforce, employers are cautious about making an investment in an employee whose tenure is limited to 12 months.

Moreover, a CIP code change would be better aligned with program goals and aspirational occupations of graduates as described below. Additionally, the requested CIP code change is in accord with that requested for our BS Construction Science and Management degree program.

Assessment of Need

Provide an assessment of the need for the program modification for the institution, the state, the region, and beyond, if applicable.

CIP Change:

By changing the Master of Science degree program to the more appropriate CIP code 15.1001 (Construction Engineering Technology/Technician), a STEM classification, graduate students majoring in Construction Science would benefit. Graduate students would be allowed up to 36 months of OPT, which would allow them to further their Construction Science training/education.

Clemson's international graduate students have petitioned to implement this change. They are at a disadvantage compared to graduates from other prestigious Construction Science programs in the US that already have the STEM designation, and with whom the Clemson CSM department regularly competes for students, including, but not limited to: Arizona State University, Virginia Tech., Auburn University, Texas A&M University, Louisiana State University, and the University of Florida.

The 15.1001 Construction Engineering Technology/Technician code is also better aligned with the program *A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers, engineering contractors and other professionals engaged in the construction of buildings and related structures. Includes instruction in basic structural engineering principles and construction techniques, building site inspection, site supervision, construction personnel supervision, plan and specification interpretation, supply logistics and procurement, applicable building codes, and report preparation.*

Moreover, the crosswalking of the proposed CIP code with standard extant occupational codes is better aligned with graduates' jobs. The crosswalking of CIP 15.1001 to Census, BLS, OMB/SOC, O*NET, USDOE, and National Skill Standards Board-Industry Cluster includes construction managers, engineering technicians, cost estimators, architecture & construction, and manufacturing.

Non-Thesis Option Recording:

The program has an extant non-thesis option. This single option, under current CHE policy, requires no approval. We simply request here that it be recorded in the CHE program inventory.

Site/Modality:

The current CHE inventory lists the current program with site code 50104 (Clemson main campus) and separately with the same site code but "(via distance Ed)" in the Concentration field. This seems to stem from actions taken in the fall of 1997, when the University submitted a modification proposal that outlined methods of delivery that a) included "Computer-based internet instruction via the world wide web", b) noted that the plan was to "transfer some of the instructional packages into computer format and to deliver instruction over the internet", and c) also noted that this delivery would be supplemented by "examinations administered during and/or at the end of the semester".

That 1997 modification proposal, the associated ACAP minutes, and the final CHE approval letter were included with this proposal submission. The final CHE approval letter noted the site identifier code of 85000 in response to this modification proposal. What happened to that site code in the CHE program inventory is not clear.

While terminology may have been distinctly different 23 years ago due to understandable differences in technological capabilities and platforms, and while higher education still remains subject to compliance associated with now rather antiquated definitions of distance education in even older (but still applicable) federal rules, we believe that 1997 proposal clearly and unquestionably described online ("internet instruction", "instruction over the internet") and hybrid modalities that may not have had an applicable CHE code at the time. Historical notions of federally-defined distance education, including televised lectures, mailed VCR tapes, etc, were included in the 1997 proposal but are no longer utilized.

Accordingly, we request that the current second listing of the program in the CHE program inventory be recognized as that associated with both an online and a blended site code based on the historical documentation, and that those replace the second listing in the inventory. In order to assure the Commission of proper institutional authorization associated with this request, the Clemson University Board of Trustees affirmed these historical modalities/site locations by formal vote at its 23 April 2020 meeting.

Transfer and Articulation

Identify any special articulation agreements for the modified proposed program. Provide the articulation agreement or Memorandum of Agreement/Understanding.

N/A

Description of the Program

The MCSM is a 30 credit hour graduate program that provides students with a high level of skills and knowledge in the technical areas of construction project administration and control. Substantial emphasis is placed on advanced study in new and emerging techniques for construction project delivery systems and in the administration of construction firms. Fall enrollment for the fall 2013-2019 time period has averaged 23 students.

While the requested CIP change, non-thesis option recognition, and extant modality recognition request do not have direct enrollment or budgetary impacts *per se*, we believe it important to share with the Commission the expected derivative exogenous impacts on the Master's program, and assure the Commission of the continued financial sustainability of the program.

Given: a) that the Master's program enrollment is about 10-15% of that of the BS program b) current and emerging philanthropic support opportunities supporting graduate education, and c) a CIP code change may have a significant impact on international recruitment and enrollment (which is likely not to occur for the BS program), we employ the detailed and summary CHE enrollment models below in our budget calculations.

Projected Enrollment – Detailed Model (Master Construction Science and Management)												
Year	Fall Headcount				Spring Headcount				Summer Headcount			
	New	Continuing	Lost	Graduate	New	Continuing	Lost	Graduate	New	Continuing	Lost	Graduate
2020-21	6	20	0	4	3	22	0	5	0	0	0	0
2021-22	7	20	0	4	3	23	0	6	0	0	0	0
2022-23	8	20	0	4	4	24	0	7	0	0	0	0
2023-24	9	21	0	5	4	25	0	7	0	0	0	0
2024-25	10	22	0	6	4	26	0	7	0	0	0	0

Projected Enrollment						
Year	Fall Headcount		Spring Headcount		Summer Headcount	
	New	Total	New	Total	New	Total
2020-21	6	26	3	25	0	0
2021-22	7	27	3	26	0	0
2022-23	8	28	4	28	0	0
2023-24	9	30	4	29	0	0
2024-25	10	32	4	30	0	0

Explain how the enrollment projections were calculated.

The enrollment model baseline utilizes the empirical scaling relationship over the past 8 years, in which MCSM enrollment is approximately 11% of the entire department student enrollment. Assuming year 1 (beginning Fall 2020) departmental enrollment is consistent with that of Fall 2019, as suggested by current admission commitments, this leads to a "Continuing" enrollment of 20 MCSM students for Fall 2020. The model then assumes 1-2 additional new students each year (split between fall and spring arrival) due to the factors noted above the enrollment tables. Historical graduation rates, projected to remain steady, are employed throughout the model. Net growth in total fall enrollment of 6 students (about 25%) is reflected in the model.

Curriculum

Attach a curriculum sheet identifying the courses required for the program.

There are no changes to the Master of Construction Science and Management curriculum.

Curriculum Changes

Courses Eliminated from Program	Courses Added to Program	Core Courses Modified

New Courses

List and provide course descriptions for new courses.

There are no new courses or other curriculum changes associated with this proposal

Similar Programs in South Carolina offered by Public and Independent Institutions

Identify the similar programs offered and describe the similarities and differences for each program.

There are no graduate-level construction engineering/science programs in SC that we could identify from the CHE program inventory.

Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences
BS Construction Engineering	138	The Citadel		Undergraduate program CIP 14.3301 Construction Engineering
BPS Professional Studies (concentration in Construction Mgmt)		College of Charleston		Undergraduate program CIP 30.9999 Multi-/Interdisciplinary Studies, Other
BS Construction Science and Management	125	Clemson University		Undergraduate program CIP 52.0201 Business Administration and Management, General [current] CIP 15.1001 Construction Engineering Technology/Technician [proposed]

Faculty

State whether new faculty, staff or administrative personnel are needed to implement the program modification; if so, discuss the plan and timeline for hiring the personnel. Provide a brief explanation of any personnel reassignment as a result of the proposed program modification.

No new faculty or staff are needed to effect the CIP change, to recognize the extant non-thesis option, or to continue delivery via current modalities in use.

Resources

Identify new library, instructional equipment and facilities needed to support the modified program.

Library Resources: None

Equipment: None

Facilities: None

Impact on Existing Programs

Will the proposed program impact existing degree programs or services at the institution (e.g., course offerings or enrollment)? If yes, explain

Yes

No

Financial Support

Estimated Sources of Financing for the New Costs						
Category	1st	2nd	3rd	4th	5th	Total
Tuition Funding	\$194,310	\$207,988	\$226,354	\$245,634	\$265,868	\$1,140,153
Program-Specific Fees						
Special State Appropriation						
Reallocation of Existing Funds						
Federal, Grant, or Other Funding						
Total	\$194,310	\$207,988	\$226,354	\$245,634	\$265,868	\$1,140,153
Estimated New Costs by Year						
Category	1st	2nd	3rd	4th	5th	Total
Program Administration and Faculty and Staff Salaries	\$136,200	\$140,689	\$145,338	\$150,152	\$155,137	\$727,517
Facilities, Equipment, Supplies, and Materials						
Library Resources						
Other (specify)	\$38,862	\$41,598	\$45,271	\$49,127	\$53,174	\$228,031
Total	\$175,062	\$182,287	\$190,609	\$199,279	\$208,311	\$955,548
Net Total (i.e., Sources of Financing Minus Estimated New Costs)	\$19,248	\$25,701	\$35,745	\$46,355	\$57,557	\$184,606

Budget Justification

Provide a brief explanation for all new costs and sources of financing identified in the Financial Support table.

The program is extant and resourced sustainably within the Department of Construction Science and Management. The enrollment growth of 6 students in our model will lead to no new incremental direct costs since the instruction and advising of those students will be covered by personnel and instructional capacity in the existing program. The program budget is based on the enrollment model with tuition growth estimated at 3% per annum. Salary costs are the portion of extant sunk expenses that are devoted to the master’s program delivery.

Revenue Highlights:

- **Tuition Funding:** The master’s program uses Graduate Tier 2 tuition at \$635 per credit hour. Tuition revenue for the program is estimated at \$194K in Year 1 and \$266K by Year 5.

Expense Highlights:

- **Program Administration and Faculty and Staff Salaries:** Existing faculty and staff salaries for the program are estimated at a cost of \$10K plus fringe per 3 program student credit hour. The personnel costs are approximately \$136K in Year 1 and \$155K by Year 5. These represent extant sunk costs that will be expended irrespective of the modification—there are no incremental new personnel expenses associated with the requested program modification.
- **Administrative Overhead:** Administrative Overhead is calculated as 20% of tuition revenue and supports overhead costs associated with the program at both the College and University level.

Evaluation and Assessment

Program Objectives	Student Learning Outcomes Aligned to Program Objectives	Methods of Assessment
<p>The MCSM program will prepare students to attain the program learning outcomes and obtain jobs in the construction industry or continue with their formal education.</p>	<p><u>SLO 1:</u> Students will interpret and analyze the application of advanced construction management concepts.</p>	<p><u>CSM 8650-Project Management Research Project</u> A student must successfully complete a research project incorporating oral and written components. Faculty rate students on a scale of 1 (very ineffective) to 5 (very effective) for the oral component: “The student, using sound research methodology, effectively demonstrated that he/she was 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 through their oral presentation of their CSM 8650 project.”</p> <p><u>Comprehensive Examination</u> Students will successfully complete a written (or oral, if applicable) comprehensive examination. The questions contained on the examination assess the various required components of the respective student learning outcomes. The individual student performance is then aggregated the entire cohort of students in order to conduct analysis as to whether the respective targets for</p>

	<p><u>SLO 2:</u> Students will demonstrate effective communication skills to solve practical construction problems.</p>	<p>the student learning outcomes were met.</p> <p><u>CSM 8650-Project Management Research Project</u> A student must successfully complete a research project incorporating oral and written components. Faculty rate students on a scale of 1 (very ineffective) to 5 (very effective) for the oral component: "The student using effective communication skills to solve practical construction problems, effectively demonstrated that he/she was able to explain and defend the application of advanced construction practices associated with planning, staffing, scheduling and controlling construction projects through their oral presentation of their CSM 8650 project."</p> <p><u>Comprehensive Examination</u> Students will successfully complete a written (or oral, if applicable) comprehensive examination. The questions contained on the examination assess the various required components of the respective student learning outcomes. The individual student performance is then aggregated the entire cohort of students in order to conduct analysis as to whether the respective targets for the student learning outcomes were met.</p>
	<p><u>SLO 3:</u> Students will be able to evaluate construction best practices of effective management of personnel, materials, tools and equipment, cost and time.</p>	<p><u>CSM 8650-Project Management Research Project</u> A student must successfully complete a research project incorporating oral and written components. Faculty rate students on a scale of 1 (very ineffective) to 5 (very effective) for the oral component: "The student, exemplifying professional integrity, effectively demonstrated that he/she was able to evaluate construction best practices of effective management of personnel, materials, tools and equipment, cost and time through their oral presentation of their CSM 8650 project."</p> <p><u>Comprehensive Examination</u> Students will successfully complete a written (or oral, if applicable) comprehensive examination. The questions contained on the examination assess the various required components of the respective student learning outcomes. The individual student performance is then aggregated the entire cohort of students in order to conduct analysis as to whether the respective targets for the student learning outcomes were met.</p>

Will any the proposed modification impact the way the program is evaluated and assessed? If yes, explain.

- Yes
 No

Will the proposed modification affect or result in program-specific accreditation? If yes, explain; and, if the modification will result in the program seeking program-specific accreditation, provide the institution's plans to seek accreditation, including the expected timeline.

Yes

No

Will the proposed modification affect or lead to licensure or certification? If yes, identify the licensure or certification.

Yes

No

Explain how the program will prepare students for this licensure or certification.

If the program is an Educator Preparation Program, does the proposed certification area require national recognition from a Specialized Professional Association (SPA)? If yes, describe the institution's plans to seek national recognition, including the expected timeline.

Yes

No