

**BOARD OF HIGHER EDUCATION
REQUEST FOR BOARD ACTION**

BHE BHE 23- 50

BOARD DATE: June 20, 2023

**APPROVAL OF LETTER OF INTENT OF FITCHBURG STATE UNIVERSITY TO
AWARD THE MASTER OF SCIENCE IN CONSTRUCTION MANAGEMENT AND
AUTHORIZATION FOR FAST TRACK REVIEW**

MOVED: The Board of Higher Education (BHE) has evaluated the Letter of Intent of Fitchburg State University to award the **Master of Science in Construction Management** and has determined that the proposal aligns with BHE criteria. Accordingly, the BHE authorizes the Commissioner to review the program and to make a final determination on degree-granting authority pursuant to the Fast Track Review protocol.

VOTED: Motion approved and advanced to the full BHE by the Executive Committee on 6/12/2023; and adopted by the BHE on 6/20/2023.

Authority: Massachusetts General Laws Chapter 15A, Section 9(b), AAC 18-40

Contact: Winifred M. Hagan, Ed.D., Senior Associate Commissioner for Strategic Planning and Public Program Approval

BOARD OF HIGHER EDUCATION

June 20, 2023

Fitchburg State University

Letter of Intent

Master of Science in Construction Management

DEGREE TITLE ABSTRACT ON INTENT AND MISSION OF PROGRAM

Fitchburg State University (FSU) intends that the proposed Master of Science in Construction Management (MS/CM) degree program will expand opportunities and streamline pathways in a critical workforce area for the Commonwealth of Massachusetts. The mission of the Construction Management program is to provide students with the comprehensive academic and technical skills necessary for them to meet the needs of regional, national, and global industries. FSU expects that the M.S. in Construction Management program will prepare students to manage complex construction projects and enhance their decision-making processes; provide pathways to students to advance into the field of construction management from related disciplines and/or prior construction experience; provide employers with a well-educated and skilled workforce, capable of performing valuable construction management services and ready to serve in managerial and leadership positions; and contribute to scholarly activity in the discipline. FSU intends that graduates of the proposed program will be ready to meet the workforce needs of the construction industry.

The proposed Master of Science in Construction Management was approved by the Fitchburg State University Board of Trustees on April 28, 2022. The LOI was circulated on April 19, 2023. No comments were received.

A. ALIGNMENT WITH MASSACHUSETT'S GOALS FOR HIGHER EDUCATION

Address Gaps in Opportunity and Achievement in Alignment with Campus-Wide Goals

FSU has planned that the proposed program is aligned to the university's goals to reduce gaps in opportunity through its design and goals for recruitment. Specifically, the program will (i) advertise broadly, including international students, (ii) collaborate with construction companies and enroll their diverse employees in our program (e.g., run co-op program to build relationship with industry and also employ a "Prior Learning Assessment" approach to attract construction professionals), (iii) recruit students from diverse disciplines (such as civil engineering, construction management, architecture, engineering, business with construction industry experiences), and (iv) recruit students from undergraduate construction management program at FSU and other universities through 4+1 plan of study. FSU has identified affinity groups (e.g., National Association of Women in Construction, National Black Contractors Association) that will provide it with opportunities to advertise the proposed program more broadly.

FSU has further designed the program to align to the university goal of reducing opportunity and achievement gaps. The program includes a rigorous curriculum that is planned to be taught with evidence-based instruction, career mentorship, and a focus on students' needs (academic, career, social, and personal sense of belonging). To remove these gaps, FSU has expanded its student success initiatives for advising and career support, designed curriculum with a focus on supporting critical learning outcomes, instituted a Faculty Academy providing professional development for inclusive teaching, and introduced the Student Success Collaboration (SSC) relationship management software and Degree Works audit tool to facilitate high-touch advising and data-informed monitoring of academic achievement. The program embraces the central mission of education justice which has been highlighted in FSU's most recent strategic plan. With a focus on accessibility and flexibility, the streamlined program of study will be delivered online, offering students the chance to craft a unique

pathway through various undergraduate majors, such as Engineering, Architecture, Construction Management, and Business Administration Management (with construction work experiences). FSU anticipates that the program will help to narrow gaps between junior and senior professionals in the construction industry by positioning graduates for upper-level management positions in the construction industry. The proposed program is designed to improve competency in project and organization management for positions such as construction managers, project managers, coordinators, estimators, schedulers, safety specialists, construction business development managers, and senior-level executive positions. FSU (2022a, 2022b) reports that it has a diverse student population, with fall 2021 enrollment data showing that, out of 3,349 students, 65.2% were White, 14.5% Hispanic/Latino, 12.8% Black/African American, 2.7% Asian, and 4.8% from other groups. In the Construction Management undergraduate program, the academic year 2022 data showed that 63.4% are White, 12.2% are Black/African American, 19.5% are Hispanic/Latino, and 4.9% others. Additionally, FSU reports that 32.68% of its students qualified for a Pell grant in fall 2021, and 91% of that class received financial assistance. FSU also plans to apply Prior Learning Assessment opportunities to eligible students whose documentation will be worth 3 credits towards a construction management graduate program.

FSU expects that students will be engaged in high-impact practices, such as civic engagement, intensive project work, and research activities. Graduate-level research activities are planned to include master thesis presentations, publications, and project study. A 2013 AAC&U report¹ highlights the positive impact of such practices for student learning and retention. The report also cites work by George Kuh (2008) which found particular benefit of high-impact practices for traditionally underserved populations while, at the same time, citing evidence from the National Survey of Student Engagement² (NSSE) that students from underserved populations are precisely those

¹ (Finley & McNair, 2013 *Assessing Underserved Students' Engagement in High-Impact Practices*. AAC&U

² Through its student survey, [The College Student Report](#), NSSE annually collects information at hundreds of four-year colleges and universities about first-year and senior students' participation in programs and activities that institutions provide for their learning and personal development. The results provide an estimate of how

who tend to lack access to these types of high-impact practices. The proposed MS/CM program faculty are committed to providing educational experiences from which students will produce professional, reflective portfolio pieces that will demonstrate comprehensive knowledge that will assist students with their ongoing and shifting careers. FSU plans that students will have the choice of a thesis option or a special project, with both opportunities ensuring students have a capstone experience that requires critical thinking and communication skills, along with the synthesis of knowledge from their prior coursework.

Program or Department Supports to Ensure Student Retention and Completion

The proposed MS/CM is designed such that students will connect with the university prior to admission into the program with the connection continuing through to completion of the degree. The program chair and School of Graduate, Online, and Continuing Education (SGOCE) staff will offer information sessions that will enable students to meet with faculty, answer questions about the program and the process for application and admission. These sessions will be offered in-person and/or virtually to accommodate all students and their needs. Students will meet with the program chair and faculty advisors to discuss their academic background and career goals. Fitchburg State University uses EAB Navigate³, providing advisors with critical information about a student's academic progress, registration status, grades, and predicted risk. The program chair, faculty advisors, and the SGOCE staff will regularly analyze such data to help identify and eliminate potential barriers to student retention and graduation for specific identity groups. Faculty and staff can also use this platform to create alerts that facilitate quick interventions for students who may need assistance. The faculty advisor

undergraduates spend their time and what they gain from attending college. Retrieved 5/11/23
<https://nsse.indiana.edu/nsse/>

³ *EAB (formerly the Education Advisory Board) is a private company, which promotes transformative change through data-driven insights and capabilities in five major areas: enrollment; student success; data & analytics; institutional strategy; and diversity, equity, and inclusion. Retrieved 5/11/23* <https://eab.com/about>

also uses DegreeWorks⁴ to track students' progress towards degree completion and to progress-monitor remaining requirements. Recognizing the need for multiple forms of communication to meet the requirements of the graduate student population, it is planned that the SGOCE will develop program specific social media outreach programs, student coordinator outreach programs, and utilize other additional resources that are available on campus and relevant to Construction Management. FSU has a well-equipped SSC navigation platform to track and analyze students' performance, and the links to available resources and websites from Blackboard will be provided for students. Virtual orientation and advising sessions led by faculty advisors and the Construction Management Program Chair will also be provided. FSU plans to collaborate with the Center for Diversity and Inclusiveness to build support systems into the major and the advising process in order to better retain students. Students will be encouraged to connect with the Writing Center, Disabilities Services, International Service Office, and Career Services and Advising Center as needed and appropriate. FSU expects collaborations between the proposed MS/CM staff and the Academic Coaching and Tutoring Center to support students who need academic services. FSU has also launched a grant-funded Hispanic Male Mentoring program designed to boost retention for students by providing support in Spanish that is focused on helping students schedule classes and explore career options.

Alliances and Partnerships with PK-12, Other IHE's, Community Employers

FSU plans to build the proposed MS/CM upon the established with PK-12 districts including the surrounding Gateway Cities' communities (e.g., Fitchburg, Leominster, and Gardner), as well as industry partners referenced in the LOI. Fitchburg, Leominster, and Gardner school districts are diverse, with 56.9%, 41.3%, and 26.7% Hispanic students, respectively. FSU has fostered strong relationships with

⁴ *Elucian Degree Works is a web-based tool to help students and advisors navigate degree requirements and monitor progress toward degree completion. Degree Works offers advising support, degree audit and student planning on an accessible platform. Retrieved 5/11/23 <https://www.elucian.com/solutions>*

Montachusett Regional Vocational Technical High School, Fitchburg High School, Leominster High School, Oakmont Regional High School, Gardner High School, Lunenburg High School, North Middlesex Regional High School, Worcester Technical High School, Billerica Memorial High School, Wachusett Regional High School, Murdock Middle/High School, Methuen High School, Nashoba Valley Technical High School, and Ayer Shirley Regional High School. FSU provided examples of how its Engineering Technology Department actively engages with surrounding high schools and community colleges in outreach activities that include robotics, dual enrollment course development, science fair judging, STEM Shadow Days, Transfer Academy and Scholars (funded by DHE/STEM Starter). Faculty and staff frequently visit schools when recruiting and a newly implemented Student Ambassador program provides for FSU student visits to district classrooms for conversations and engagements about college life, academic topics, and available club and extracurricular learning. Additionally, FSU reports that it maintains strong relationships with Mount Wachusett, Quinsigamond, Mass Bay, Middlesex, and Northern Essex Community Colleges, as well as with Worcester State University and the Universities of Massachusetts Amherst and Dartmouth.

FSU also reports that the Engineering Technology Department has deep connections with industry partners. A comprehensive list of 15 different construction partners were included in the full LOI as well as two letters of support from Associated General Contractors of Massachusetts -MA (AGC-MA)⁵ and Colantonio, Inc⁶. In addition, FSU already has a Construction Management Industry Advisory Board, which was formed in 2017 for the undergraduate program with a concentration in Construction Management. This advisory board's charge expanded to include the proposed MS/CM and is comprised of FSU faculty and staff, faculty/scholars from Monty Tech, MWCC, QCC

⁵ *AGC-MA is a commercial construction association in Massachusetts that provides member benefits and business resources for the state's building industry.* Retrieved 5/11/23 www.agcmass.org/about

⁶ *Colantonio Construction Inc is headquartered in Holliston MA and manages complex construction and renovation projects spanning private and public sectors, including Mara Village 8 Residence Hall at FSU, which won a Silver award for LEED.* Retrieved 5/11/23 <https://www.colantonioinc.com>

and other universities, and industry partners (e.g., AGC-MA, Walsh Brothers, Madigan Company, Inc., Central Ceilings, Inc. and Colantonio, Inc. etc. Advisors have influenced program requirements, employer needs, and student progression strategies and will receive aggregated data regarding admissions and graduation rates, as well as student feedback and evaluation data. The Advisory Board will also establish short- and long-term goals for program review, internships, and curricular innovations to ensure the proposed program will meet the needs of both students and employers. FSU is a partner with the City of Fitchburg as well as state and local entities to support downtown revitalization and growth through the ReImagine North of Main and In Town Fitchburg⁷ projects. These initiatives present opportunities for student internships and research. Faculty from multiple departments, including Engineering Technology, have been involved with the ReImagine North of Main initiative, a partnership with local business, the university, government nonprofits, and residents that is committed to improving the Fitchburg community. FSU's LOI for the MS/CM provided compelling examples of faculty engagement with the community and industries from multiple departments, joining with students and the community to develop interdisciplinary research grants and community service projects, including solar energy, advanced manufacturing, technology transfer and training, urban structure, regional economic development, mapping analysis and crime hotspots. In addition to the academic benefits of the partnerships described above, students also benefit from FSU's relationship with the Crocker Center for Civic Engagement -- a center whose mission is to foster partnerships between the University and local organizations through the creation of civic-learning and

⁷ *ReImagine North of Main is a partnership—local businesses, government, nonprofits and, residents, committed to making a collective impact, and dedicated to improving the quality of life in the neighborhood. The collaboration is focused in six key areas: public safety, economic development & entrepreneurship, education, housing, health and community engagement. Through resident and stakeholder engagement, policy advocacy and responsible development, the project aims to improve the quality of life in these six areas. Retrieved 5/11/23 <https://www.mocinc.org/reimagine>. The Fitchburg Strategic Plan for Economic Development provides a vision for a successful economic future for Fitchburg. One action of the plan is to develop a downtown Fitchburg arts and culture district in the heart of the North of Main neighborhood. Retrieved 5/11/23 <https://www.intownfitchburg.com>*

community-based research and internships--to seek out additional partnerships with industry, public artists, historical sites, local governments, marketing & publishing companies, and science museums and Ecotarium⁸.

Relationship to MassHire Regional Blueprints

FSU reports that the construction industry is one of the largest industries in the United States with the involvement of over 7.31 million workers and generating more than \$1.73 trillion in annual revenue (Statistics Brain, 2017). There is a growing need for construction management professionals in both consulting firms and constructing firms (general contractors and subcontractors). According to the Associated Builders and Contractors (ABC, 2022), about 32,000 construction jobs were added on net in the month of July, 2022. In one year, construction related employment increased by 4.2% totally approximately 311,000 jobs (ABC, 2022). The STEM Occupation Projection Report (STEM Report, 2022) in Massachusetts showed that the employment of construction managers was projected to grow 5% from 2014 to 2024. According to a published database of the Commonwealth of Massachusetts, about 11,218 construction jobs were posted between January and March in 2017. As per Occupational Employment Statistics (OES), the average annual wage in 2016 for a Construction Manager is \$145,000. The American Society of Civil Engineers (ASCE) in their 2017 infrastructure evaluation report card, assigned United States infrastructure a grade of D+ underscoring the need for large investments in infrastructure, including a high demand for engineers and construction managers. FSU also reports that AGC-MA finds a significant demand for construction managers in the state, asserting 415,000 construction industry jobs were added by the end of March 2022 which was 20% higher than March 2021. The LOI includes a letter of support from John Ferrante, CEO of the

⁸ *The Ecotarium is a private, non-profit institution founded in 1825 as the Worcester Lyceum of Natural History and was incorporated in 1884 as the Worcester Natural History Society- EcoTarium's legal identity. The transition from the New England Science Center to the EcoTarium in 1998 refocused the museum on its roots in the natural sciences with a focus on hands-on exploration and discovery. Retrieved 5/17/23 <https://www.ecotarium.org/about>*

AGC-MA which indicated that many companies have been hiring graduates with other degrees and training them because of a lack of construction management professionals, further asserting “...*there is a significant gap in the construction management workforce between the baby boomers and the millennial-zoomers....*” Ferrante notes that a graduate-level construction management program would allow for faster transfer of expertise and skills than transfer of skills through industry experience only.”

Duplication

FSU expects it would be the first state university in Massachusetts to offer an MS/CM program. In Massachusetts, the Wentworth Institute of Technology is the only institution that offers an MS/CM Southern New Hampshire University offers an M.S. in Management with a concentration in Construction Management. Roger Williams University in Rhode Island and Central Connecticut State University in Connecticut do offer the M.S. in Construction Management program. Similar degrees are offered at three institutions in Massachusetts. Worcester Polytechnic Institute offers an M.S. in Construction Project Management and a Graduate Certificate in Construction Project Management. Northeastern University offers an M.S. in Project Management. The University of Massachusetts Amherst offers an M.S. and Ph.D. in Sustainable Building Systems and Graduate Certificate in Sustainable Building Construction.

Innovative Approaches to Teaching and Learning

FSU expects that the proposed program will set itself apart from existing programs in the region as an affordable and accessible program and delivered completely online. As such, FSU plans to offer courses over the summer terms and to provide an accelerated format as needed by students. A recent increase (85% 2022) in international graduate students in FSU’s Computer Science program underscores that the institution is prepared to provide the proposed program in international markets, as well as attracting

FSU undergraduate students by implementing an accelerated B.S. to M.S. (4+1) pathway.

The curriculum structure of the proposed MS/CM is unique as students will be able to graduate with 30 credit hours with a choice between one of two proposed plans of study: (i) thesis option, and (ii) special project option. In the thesis option, students will take 9 courses including a 6-credit thesis option, whereas in the special project option they will take 10 courses including a 3-credit special project or course option. This model creates opportunities for students who want to pursue a doctorate or to go directly to work in the industry after graduation. The curriculum includes courses that cover recent technological development, such as Building Information Modeling and Modular Construction. Students will be using various software widely adopted in the industry in different courses. For example, Procore software is widely used for managing construction projects digitally which is an innovative e-construction approach. Students will be using Sage Timberline estimating software, B2W estimate, and Stack software for quantity takeoff and estimating cost of the project. They will be using various building information modeling software for designing, such as AutoCAD, Autodesk Revit, Naviswork, and Graphisoft ArchiCAD. In addition to Microsoft Project, students will be using Primavera P6 for project scheduling. FSU is also planning to expand the proposed program to include a focus on sustainable practices, lean construction, and automation in construction in the future. Upon successful graduation of the initial cohorts of students and a commitment to ongoing program assessment, FSU plans to submit documentation to the Accreditation Board for Engineering Technology (ABET⁹) for accreditation. Faculty will implement a project-based learning approach to enhance students' knowledge and skills. FSU expects to encourage students to choose community engaged projects for their class works as this program

⁹ ABET is a nonprofit, ISO 9001 certified organization that accredits college and university programs in applied and natural science, computing, engineering and engineering technology.

integrates academic work with community engagement to respond to community needs and assets.

The Prior Learning Assessment (PLA) through portfolio option allows students the opportunity to have their industry learning experiences evaluated and credited toward a graduate degree where content knowledge is aligned. It is planned that if a student meets PLA credit criteria requirement or has an active Certified Construction Manager license, three credits have already been earned 3 as a graduate elective. Rigorous PLA criteria for credit award was detailed in the full LOI.

B. ALIGNMENT WITH CAMPUS STRATEGIC PLAN AND MISSION

Priority Rationale and Support of Strategic Plan and Mission of Institution

The FSU Strategic Plan 2020-2025 embraces the institution's history of designing programs to meet the needs of students and the community and identifies six goals that are aligned to its mission of education justice, incorporating high-impact practices, and innovation. The proposed MS/CM is designed to prepares students for a stable career in the construction industry and provide the qualifications for senior level management. This proposed MS/CM is created in direct response to the institution's strategic plan Goal 1.4 "leverage existing curricular strengths to develop new programs that meet demand and forge deeper connections between our curriculum and community needs" and Goal 1.7 "across all academic and co-curricular programs, leverage institutional expertise in online education and distance learning to reinforce the University's commitment to access." The program is also aligned with the School of Graduate, On-Line, and Continuing Education (SGOCE)'s Goal 1: Strengthen academic programs. FSU developed the proposed program by creating new courses that include advancements in construction practices and enhance students' learning experiences. The flexible design of the curriculum allows for on-going innovation as faculty and advisors can review and make programmatic revisions as the workforce, community, and industry evolves. The program has also been designed such that it "ensures all

processes and support services are adequate to meet the unique needs of transfer students, non-traditional students, online learners, and graduate students” (Strategic Plan Goal 2.4). This goal is also aligned with the SGOCE’s Goal 2: Promote student success. Our affordable, accessible program lowers the financial barriers for many students. In addition, our ability to accept PLA and the online pedagogical modality will support the working student who seeks to advance their career.

Reflected in the strategic planning goals 2020-2025, FSU’s commitment to Reimagine North of Main, In-town Fitchburg, and the Crocker Center previously cited in this motion, is expected to enhance student opportunities while extending and developing positive relationships with the City of Fitchburg. The Engineering Technology Department has aligned its goals with institutional learning outcomes and the mission of education justice and serving as a student-ready campus. It also commits to continue to broaden the value proposition so that students consider FSU for lifelong learning needs.

Program Goals and Objectives (Form B)

The proposed program’s emphasis on educational justice by recruiting diverse students and using an iterative disaggregated evaluation process to ensure students are work-ready once they complete the program, is reflected in the attached rubric.

C: ALIGNMENT WITH OPERATIONAL AND FINANCIAL OBJECTIVES OF INSTITUTION

Enrollment Projections (Form C, Appendices)

Enrollment for the first five years of the program is expected to begin with a combination of full- and part-time students, building from 8 at the beginning to 77 students by the end of year 5. There are no immediate concerns about the impact of enrollments of construction management students on their courses or programs.

Resources and Financial Statement of Estimated Net Impact on Institution (Form D)

The net impact of the program on the overall financial resources of the institution is expected to be modest as FSU will leverage existing faculty expertise and resources. The costs related to adjunct faculty, program administration, and marketing are outlined on Form D. In year 1, the estimated budget for adjunct faculty is \$51,735.67, general administrative cost is \$3,000, and marketing cost is \$7,000. FSU expects that there will be no return on investment until the third year of the proposed program.

Faculty and Staffing: One Graduate Program Chair will administer the proposed MS/GM program. Existing full-time faculty in Engineering Technology have expressed interest in teaching online graduate courses. Adjunct faculty will be hired as needed.

Library and Information Technology: Master thesis and other research activities in various courses will provide student access to journals and conference publications through the library database. Every effort will be made to provide open educational resources to reduce textbook costs for students. Course content will be delivered through Blackboard. For specific software, students will have access to the Engineering Technology Department laboratory via VMware virtual platform. Many software programs are free for educational purposes and/or include free student versions.

Facility: Since this program will be offered online, no additional equipment or lab facility will be required.

Fiscal and Other Resources: No additional financial resources are required.

STAFF REVIEW AND VALIDATION

Staff thoroughly reviewed the **LOI** proposing full degree granting authority for the **Master of Science in Construction Management** submitted by **Fitchburg State University**. Staff validate that the **LOI** includes all data required by the Massachusetts Board of Higher Education. Staff recommendation is for BHE authorization for the Commissioner to review the program pursuant to the Fast Track review protocol.

Form A2: LOI Graduate Program Curriculum Outline¹⁰

(Plan of Study I: Thesis Option.)

2. Major Required (Core) Courses (Total # of courses required = 6)		
3. Course Number	Course Title	Credit Hours
CMGT 7XXX	Construction Cost Analysis & Estimating	3
CMGT 7XXX	Construction Scheduling & Resource Optimization	3
CMGT 8XXX	Improvement in Construction Productivity	3
CMGT 8XXX	Building Information Modeling Application in CM	3
CMGT 8XXX	Research Methodology for CM	3
CMGT 9XXX	Construction Management Thesis	6
	Sub-total # Core Credits Required	21
Elective Course Choices (Total courses required = 3) (attach list of choices if needed)		
CMGT 7XXX	Construction Safety	3
CMGT 7XXX	Construction Law & Contracts	3
CMGT 8XXX	Construction Engineering Management	3
CMGT 8XXX	Temporary Structures	3
CMGT 8XXX	Modular Construction	3
CMGT 9XXX	Risk Management	3

¹⁰ Courses will be numbered in the Phase II application and subsequent to internal WSU governance determinations

	Sub-total # Elective Credits Required	9
<i>Curriculum Summary</i>		
	Total number of courses required for the degree	9
	Total credit hours required for degree	30
<i>Prerequisite, Concentration or Other Requirements:</i>		

Form A2: LOI Graduate Program Curriculum Outline

(Plan of Study II: Special Project Option.)

4. Major Required (Core) Courses (Total # of courses required = 6)		
5. Course Number	Course Title	Credit Hours
CMGT 7XXX	Construction Cost Analysis & Estimating	3
CMGT 7XXX	Construction Scheduling & Resource Optimization	3
CMGT 8XXX	Improvement in Construction Productivity	3
CMGT 8XXX	Building Information Modeling Application in CM	3
CMGT 8XXX	Research Methodology for CM	3
CMGT 9XXX	Special Project in CM	3
	Sub-total # Core Credits Required	18
Elective Course Choices (Total courses required = 4) (attach list of choices if needed)		
CMGT 7XXX	Construction Safety	3
CMGT 7XXX	Construction Law & Contracts	3
CMGT 8XXX	Construction Engineering Management	3
CMGT 8XXX	Temporary Structures	3
CMGT 8XXX	Modular Construction	3
CMGT 9XXX	Risk Management	3
	Sub-total # Elective Credits Required	12

<i>Curriculum Summary</i>	
Total number of courses required for the degree	10
Total credit hours required for degree	30
<i>Prerequisite, Concentration or Other Requirements:</i>	

Form B: LOI Goals and Objectives

Goal	Measurable Objective	Strategy for Achievement	Timetable
Perform a program review of and create action plan for the M.S. in Construction Management after 4 years (AY26) and every 4 years thereafter	Using existing comprehensive program review criteria, the department will complete a self-study of the program and an expert external to the university will assess the program in 2026 and every four years thereafter. In order to support DEI based analysis, data on student success will be disaggregated by race, ethnicity, and gender.	Dean of School of Graduate, Online, and Continuing Education (SGOCE) and Dean of School of Health and Natural Sciences (will be renamed in summer 2023 to reflect Engineering Technology and Computer Science) will add M.S. in Construction Management to the program review rotation. Director of Assessment to work with the department to establish assessment methods	Initial program review in AY26 and every four years thereafter
Work-Ready Students	Students will either complete Master's Thesis or complete a project / course in their final year. Students will be encouraged to complete community-based projects in their class projects activities.	Build on existing industry partnerships and develop new community partnerships that enable students to complete service-learning projects as part of their class projects.	AY24, the first-year students will graduate from the program
Identify, attract, retain, and graduate diverse student population	Retention rate: 75%; five-year Graduation rate: 65% Admission yield similar to UG population (~30% African-American, Latinx)	Work with Associate Vice-President for Enrollment to target outreach and recruitment efforts. Collaborate with the Center for Diversity and Inclusiveness to build support systems into the major and advising process in order to better retain students.	AY26, which will allow rates based on three years of graduating students
Become a destination program that attracts outstanding students regionally,	Outreach regional, national, and global universities and industry partners	Create transfer pathway for students from other universities; Implement 4+1 plan from BS to MS in Construction Management pathway to attract current BS students and students from other universities; On-campus	AY24, based on recruiting students

nationally, and globally		promotion; Recruit construction professionals seeking graduate degree; Work with AVP of Enrollment to develop marketing and outreach plans for the program	
--------------------------	--	--	--

Form C: LOI Program Enrollment

	Year 1	Year 2	Year 3	Year 4	Year 5
New Full-Time	3	5	10	15	20
Continuing Full-Time		3	5	10	12
New Part-Time	5	10	15	20	25
Continuing Part-Time		5	10	15	20
Totals	8	23	40	60	77

Form D: LOI Program Budget

One Time/ Start Up Costs						
		Annual Enrollment				
	Cost Categories	Year 1	Year 2	Year 3	Year 4	Year 5
	Full Time Faculty <i>(Salary & Fringe)</i>					
	Part Time/Adjunct Faculty <i>(Salary & Fringe)</i>	\$31,372.38	\$41,829.84	\$47,058.57	\$47,058.57	\$52,287.30
	Staff					
	General Administrative Costs	\$3,000	\$3,938	\$5,350	\$8,194	\$8,194
	Instructional Materials, Library Acquisitions		\$350	\$350	\$500	\$500
	Facilities/Space/Equipment					
	Field & Clinical Resources					
	Marketing	\$7,000	\$5,000	\$5,000	\$5,000	\$5,000
	Other (Specify)					
One Time/Start-Up Support		Annual Income				
	Revenue Sources	Year 1	Year 2	Year 3	Year 4	Year 5
	Grants					

	Tuition	\$19,305	\$67,860	\$119,925	\$184,275	\$236,340
	Fees (all expenses come out of tuition, so Fee's not included in the total)	\$20,790	\$73,080	\$129,150	\$198,450	\$254,520
	Departmental					
	Reallocated Funds					
	Other (specify)					
	TOTALS	\$19,305	\$67,860	\$119,925	\$184,275	\$236,340
	Net Totals	(\$22,067.38)	\$16,742.16	\$61,986.43	\$123,522.43	\$170,358.70

References:

- American Society of Civil Engineers (ASCE) (2021). A report card for America's infrastructure. Retrieved from <https://infrastructurereportcard.org/>
- Associated Builders and Contractors (ABC) (July, 2022). ABC news release on construction employment increase. Retrieved from <<https://www.abc.org/News-Media/News-Releases/>>
- Associated General Contractors-Massachusetts (AGC-MA) (March, 2021). Construction employment. Retrieved from <https://www.agc.org/news/>
- Commonwealth Corporation STEM Report (2022). *Collective efforts and actions in STEM: Implications of emerging data*. The Commonwealth of Massachusetts Executive Office of Labor and Workforce Development. Retrieved from <https://commcorp.org/wp-content/uploads/2022/10/STEM-Report-2022.pdf>
- Digital Media Innovation Program Letter Of Intent (2022).
- Finley, A., & McNair, T. (2013). *Assessing underserved students' engagement in high-impact practices*. Association of American Colleges and Universities. AAC&U publications, Washington DC.
- Fitchburg State University (2022). Strategic plan 2020-2025. <https://www.fitchburgstate.edu/about/campus-planning-and-policies/strategic-plan-2020-2025>
- Fitchburg State University (2022a). *Common data set for academic year 2021 – 2022*. Institutional Research and Planning, Fitchburg State University. Retrieved from https://www.fitchburgstate.edu/sites/default/files/documents/2022-03/CDS_2021-2022_Final.pdf
- Fitchburg State University (2022b). *Institutional factbook*. Institutional Research and Planning, Fitchburg State University. Retrieved from https://www.fitchburgstate.edu/sites/default/files/documents/2022-03/FactBook_2021_website_31122.pdf
- Kuh, G. (2008). High impact educational practices: What they are, who has access to them, and why they matter. Association of American Colleges and Universities. AAC&U publications, Washington DC.
- Mani, N., & Chenot, D. K. (2022). Solar decathlon design challenge: A collaborative student-community engagement project. *Proceedings of 2022 Industry, Engineering, & Management Systems Conference*, Florida, March 14-16.
- Mani, N., & Chenot, D. K. (2020). Sustainable redevelopment in Fitchburg: A collaborative faculty-students-community engaged project. *Proceedings of 2020 Industry, Engineering, & Management Systems Conference*, Florida, March 15-17.

MassHire Boston Workforce Board (2021). Pic 4-year plan. Retrieved from <https://www.mass.gov/doc/boston-wioa-local-plan-package-fy22-fy25/download>

Occupational Employment Statistics Survey (OES) (2021). Retrieved from [https://api.dol.gov/V1/Statistics/OES/\\$metadata](https://api.dol.gov/V1/Statistics/OES/$metadata)

Statistic Brain (2017). Retrieved from <<http://www.statisticbrain.com/construction-industry-statistics/>