Institution: **Proposed Degree:**

PHASE I: LETTER OF INTENT TEMPLATE FOR BOARD VOTE ON APPROVAL PROCESS

Review Guidelines Prior to Submitting Materials
https://www.mass.edu/foradmin/academic/publicnewdegrees.asp

Information should be typed directly into the boxes below, which will expand. Letter of Intent (LOI) document should be about five to six pages in addition to appendices. After the local approval process for the LOI has been completed, the President of the institution should submit this template and all required forms addressed to the Commissioner of Higher Education, and to the Academic Affairs Committee (AAC) of the Board of Higher Education (BHE).

Submissions are required to be in MS Word format. Please direct the completed to:
PublicProgramReview@dhe.mass.edu

Proposed Degree Title and Intent and Mission of the Program (200 words):

Degree Title: M.S. in Construction Management

The proposed M.S. in Construction Management 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 professionals with the comprehensive academic and technical skills necessary for them to meet the needs of regional, national, and global industries. The M.S. in Construction Management program will (1) prepare students to manage complex construction projects and enhance their decision-making processes; (2) provide pathways to students to advance into the field of construction management from related disciplines and/or prior construction experience; (3) 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 (4) contribute to scholarly activity in the discipline. Students will graduate from this program ready to meet the workforce needs of the construction industry.

Proposed CIP Code: 52.2001

Chief Academic Officer (CAO) Name and Title:
Dr. Patricia A. Marshall (Provost and Vice President for Academic Affairs)

CAO Phone Number: 978-665-3653

CAO Email: pmarsha5@fitchburgstate.edu

Has the Chief Academic Officer reviewed this LOI? Yes.

Date LOI was approved by governing authority: Pending

Institution: **Proposed Degree:**

A. Alignment with Massachusetts Goals for Public Higher Education

The FY19 BHE Equity Statement (https://www.mass.edu/strategic/equity.asp) provides campuses with insight into the next iteration of the system-level plans.

1. How does the program address institutional gaps in opportunity and achievement? How does the program align with campus goals?

This 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 Fitchburg State and other universities through 4+1 plan of study. We identified affinity groups (e.g., National Association of Women in Construction, National Black Contractors Association) that will provide us an opportunity to advertise this program more broadly.

The program aligns to the university goal of reducing opportunity and achievement gaps. The program includes a rigorous curriculum that is taught with evidence-based instruction, career mentorship, and a focus on students' needs (academic, career, social, and personal sense of belonging). To remove opportunity and achievement gaps, Fitchburg State University 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).

As a "student-ready" campus, Fitchburg State is poised to understand the growing needs of students, while filling an important workforce gap. The program will help to narrow the achievement gap between junior and senior professionals in the construction industry. It will help students to achieve upper level management positions in the construction industry through improved competency in project and organization management, such as construction managers, project managers, coordinators, estimators, schedulers, safety specialists, construction business development managers, and senior-level executive positions. Fitchburg State students will have access to this program from a B.S. degree or through Prior Learning Assessment.

With 32.68% of Fitchburg State students qualifying for a Pell grant in fall 2021, and 91% of the class receiving financial assistance, students will benefit from an affordable public education. Fitchburg State University (2022a, 2022b) 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. This graduate program will attract not only current B.S. students and regional or national students but also international students and construction professionals. Upon meeting requirements (discussed in the later section) of the Prior Learning Assessment, the eligible students will receive 3 credits towards a construction management graduate program for their construction professional working experiences.

The program will develop a skilled workforce in the construction industry which will positively impact the state and nation's economy. Students will be engaged in high-impact practices, such as civic engagement, intensive project work, and research activities. They will engage in graduate level research activities, such as master thesis presentation, publications, and project study. A 2013 AAC&U report (Finley & McNair, 2013) entitled *Assessing Underserved Students' Engagement in High-Impact Practices* highlights the positive impact of such practices, including projects, 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 Engagement (NSSE) that students from underserved populations are precisely those who tend to lack access to these types of high-impact practices (Kuh, 2008). The Construction Management program is 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. 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.

This program will assert our distinctive value proposition and institutional learning outcomes boldly and widely. Enrollment in this program will also play a significant role in Fitchburg State's long-term organizational financial stability.

2. What program or department supports and practices are in place to ensure that students persist and complete the certifications and degrees offered by the program?

Students will begin to connect with the university prior to admission into the program, and that connection will continue throughout their degree. The program chair and School of Graduate, Online, and Continuing Education (SGOCE) staff will offer information sessions to allow 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 Navigate, 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 also uses DegreeWorks to track students' progress towards degree completion and to walk through remaining requirements.

The SGOCE recognizes the needs for multiple forms of communication to meet the requirements of the graduate student population. The SGOCE will develop program specific social media outreach programs, student coordinator outreach programs, and other materials that make clear

both what additional resources are available on campus and how these are relevant to the Construction Management program. FSU has a well-equipped SSC navigation platform to track and analyze students' performance. We provide links to available resources and websites from Blackboard. Students will have virtual orientation and advising sessions led by their faculty advisor and the Construction Management Program Chair. We will collaborate with the Center for Diversity and Inclusiveness to build support systems into the major and advising process in order to better retain students. As per need basis, students will be encouraged to connect with the Writing Center, Disabilities Services, International Service Office, and Career Services and Advising Center. We will collaborate with the Academic Coaching and Tutoring Center to support students who need academic services. Fitchburg State University 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. As the university moves toward a goal of becoming a certified Hispanic-Serving Institution, we plan to recruit and support students in this demographic (DMI, 2022).

3. Please describe relevant alliances and partnerships with PK-12, other institutions of higher education, and the employer community. If you have or plan to convene an advisory group for this proposed program, please explain. Describe how information from an advisory will be used to develop and refine the program.

This program will build upon the established partnerships that exist between the University, School, and Department of Engineering Technology with PK-12 districts including the surrounding "Gateway Cities" communities (such as Fitchburg, Leominster, and Gardner), and industry partners. Fitchburg, Leominster, and Gardner school districts are diverse, with 56.9%, 41.3%, and 26.7% Hispanic students, respectively. More broadly, the Department fostered strong relationships with our top feeder high schools, such as 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. Our faculty and staff frequently visit these schools during recruitment processes. Through a newly implemented Student Ambassador program within the School of Health and Natural Sciences where Engineering Technology resides, FSU students visit K-12 classrooms to engage with students about college life, academic topics, and support for clubs, such as Robotics.

We maintain strong relationships with our top feeder colleges, such as Mount Wachusett Community College (MWCC), Quinsigamond Community College (QCC), Middlesex Community College, University of Massachusetts Amherst, University of Massachusetts Dartmouth, Mass Bay Community College, Northern Essex Community College, and Worcester State University. We have institutional and departmental articulations with MWCC and QCC.

The Engineering Technology Department has been actively engaged with the surrounding high schools and community colleges in various outreach activities (*e.g.*, robotics, dual enrollment course development, science fair judging) and in preparation for their college experience (*e.g.*, STEM Shadow Days, STEM Transfer Academy (funded by DHE/STEM Starter), STEM Scholars program at MWCC (STEM Starter). We are interested in expanding our existing Early College Partnership program for the Engineering Technology Department, an opportunity that would also deepen our relationship with K-12 schools and engage students earlier in this career pathway.

The Engineering Technology Department also has deep connections with industry partners. Some of our construction industry partners are Associated General Contractors - Massachusetts (AGC-MA), Bond Brothers, Colantonio, Inc., Columbia Construction Company, Consigli Construction, Dimeo Construction, F.W. Madigan Company, Inc., Gilbane Building Company, Central Ceilings, Inc., Turner Construction, Walsh Brothers, Inc., Trinity Building & Construction Management Corp., Lee Kennedy, JM Coull, Inc., and Shawmut Design & Construction. The letters of support from AGC-MA and Colantonio, Inc. are attached for references.

The Construction Management Industry Advisory Board was formed for the undergraduate program (Construction Management Concentration, now proposed as B.S. in Construction Management) in 2017. This board's charge will be expanded to include the Master's degree in Construction Management program. The Industry Advisory Board is comprised of Fitchburg State faculty and staff, faculty/scholars from Monty Tech, MWCC, QCC and other universities, and industry partners (such as AGC-MA, Walsh Brothers, Madigan Company, Inc., Central Ceilings, Inc. and Colantonio, Inc.). The Advisory Board will meet to discuss the program requirements, employer needs, and student progress. The Advisory Board will receive aggregated data regarding admissions and graduation rates, as well as student feedback and evaluation data to help improve the program. The Advisory Board will also establish short-term and long-term goals for program review, internships, and curricular innovation to ensure we are meeting the needs of students and employers. The Advisory Board will meet semi-annually.

Fitchburg State University has partnered with the City of Fitchburg and state and local entities to support downtown revitalization and growth through the Reimagine North of Main and InTown Fitchburg projects. These initiatives present opportunities for our students for 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. Prof. Keith Chenot (retired) from the Engineering Technology Department and Dr. Jane Huang from the Earth and Geographic Science and students were involved in various projects for the improvement of the Fitchburg community. For example, a team of Prof. Chenot, Dr. Joshua Spero, and students conducted a feasibility study for an "Advanced Polymer Manufacturing Research, Technology Transfer, and Training Facility." Prof. Keith Chenot, Dr. Nirajan Mani, and students were involved in the "Solar Decathlon Design Challenge: A Collaborative Student-Community Engagement Project" (Mani & Chenot, 2022) and "Redevelopment of a Sustainable Fitchburg City: A Collaborative Faculty-Students-Community Engaged Projects" (Mani & Chenot, 2020). Dr. Jane Huang and her student team have been awarded multiple interdisciplinary research grants in GIS teaching, research, and community service projects. Community project topics have included crime hotspots mapping analysis, urban structure study, and regional economic development mapping.

In addition to the academic benefits of the partnerships described above, students also benefit from our 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 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 *Exploratorium*.

4. If the proposed program is designed for students to enter an employment area of demonstrated need in the regional and/or statewide labor market, provide evidence including references to workforce development plans (e.g. MassHire Regional Blueprints, https://www.mass.gov/service-details/view-your-regions-blueprint), showing market need and employer engagement. If it is not directly labor market aligned, identify the career options related to the proposed program and explain how students will be made aware of them. Do not rely on Bureau of Labor Statistics projections in this section.

   Explain all relevant content that has been sourced using the internet**. Use the full APA citation including retrieval date and the exact url where the content was obtained** [e.g. Last, First. M. (Year, Month Date Published). Article title. *Retrieved from URL* ...]. Do not rely on a hyperlink reference to information and data used in this section. The application serves as a permanent record. If the institution has commissioned market research regarding the proposed program, please attach a digital copy of the report(s) on which you relied to draw your conclusions and design your program. DHE utilizes Burning Glass to validate data.

The construction industry is one of the largest industries in the USA with the involvement of over 7.31 million workers and generating more than $1.73 million 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 July, 2022 (in a month). In a year, the construction related employment increased by 4.2% (about 311,000) (ABC, 2022). The STEM Occupation Projection Report (STEM Report, 2022) in Massachusetts shows that the employment of construction managers is 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 Construction Manager is $145,000. The American Society of Civil Engineers (ASCE) in their infrastructure evaluation report card (2017), which grades the infrastructure facilities (transport, water, plants, etc.), assigned the infrastructure in the United States a grade of D+ which translate into large investment in infrastructure and thus, high demand for engineers and construction managers.

Associated General Contractors-Massachusetts (AGC-MA) also states that there is a huge demand for construction managers. Associated General Contractors (AGC, 2022) states that 415,000 construction industry jobs were added by the end of March 2022 which was 20% higher than March 2021. John Ferrante, CEO of the AGC-MA mentions (attached letter of support) that many companies have been hiring graduates with other degrees and training them because of a lack of construction management professionals. Also, he asserts that "there is a significant gap in the construction management workforce between the 'baby boomers" and the "millennials/zoomers." He believes that a graduate-level construction management program would allow for faster transfer of expertise and skills than transfer of skills through industry experience only."

The MassHire Boston Workforce Board (2021) also affirms that the construction industry (including Mining and Logging) was the top growing sector (57% growth) in Boston/ Cambridge/ Newton after the Great Recession of 2008 – 2009. The Central Mass Regional Workforce Blueprint

(2018-2022) identified Construction Occupations as one of five occupational groups that are facing the most significant employee shortages.

5. Are there existing programs at other institutions (public and independent) in your region that offer a similar degree? If so, compare and contrast them with the proposed program.

If this program were to be approved by the BHE, Fitchburg State University would be the first state university in Massachusetts to offer an M.S. in Construction Management program. In Massachusetts, only Wentworth Institute of Technology offers an M.S. in Construction Management program. Southern New Hampshire University (SNHU) has an M.S. in Management with a concentration in Construction Management. Roger Williams University in Rhode Island and Central Connecticut State University in Connecticut 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 program 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.

Fitchburg State's M.S. in Construction Management program will set itself apart from existing programs in the region as an affordable and accessible program. With many construction professionals currently employed, this program is delivered completely online. Due to the online format, it is easy to offer courses over the summer terms and/or to provide an accelerated format, meeting the needs of our intended audience. With our recent increase in international graduate students in Computer Science (85% increase from AY2021 to AY2022), we are uniquely prepared to provide this program in international markets. This program may also attract new undergraduate students in the program by implementing an accelerated B.S. to M.S. (4+1) pathway.

As mentioned above, other universities have different program names with a concentration in Construction Management. Universities like SNHU and Northeastern University mainly focus on Business and Management, not engineering and construction-specific skills. Therefore, our program will be an accessible pathway for construction professionals toward higher pay and promotion in their companies after graduation with a Master's degree in Construction Management.

The curriculum structure of our M.S. in Construction Management program is unique in our region. Students will be able to graduate with 30 credit hours and have the opportunity to choose one of two proposed plans of study: (i) thesis option, and (ii) special project option. In the thesis option, students have to take 9 courses including a 6-credit thesis option, whereas in the special project option they have to take 10 courses including a 3-credit special project or course option. This model creates opportunities for students who want to either pursue a Ph.D. or work in industry after graduation. The curriculum includes courses that cover recent technological development in the industry, such as Building Information Modeling and Modular Construction.

We are also planning to expand our 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, we are planning to submit applications for the ABET accreditation of the program in the future.

6. Has the proposed program been planned to include any significant digital, experiential, competency-based or other innovative approaches? Please explain and provide examples.

The proposed M.S. in Construction Management program is explicitly designed to leverage its innovative and adaptive pathway model to give students the opportunity to learn cutting-edge skills through hands-on experiential learning. 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.

Faculty will implement a project-based learning approach to enhance students' knowledge and skills. We encourage students to choose community engaged projects for their class works as this program 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 experiences evaluated as educational experiences and credited toward a graduate degree. If a student meets PLA credit criteria requirement or has an active Certified Construction Manager license, they can substitute 3 credits for a graduate elective course. The criteria for 3 credits PLA are:

1. Industry experience: Minimum of six years of construction professional experiences (as a Responsible-In-Charge (RIC) role of minimum 4 years). (evidence: need resume and letter of references)
2. Teaching experiences (Optional): Minimum of two years experiences in high school (evidence: need a letter of appointment from administration)
3. Skills acquired from documented professional enhancement or development workshops (at least 100 hours), seminars and other training programs (evidence: need certificates or award letters) Optional
4. Evidence of leadership, services, and examinations (minimum of one year)
   - Community service (evidence: documents with minimum of one-year service)
   - Activity within professional organizations
   - Relevant experience gained via outside activity
   - Proficiency or competency examination other than those required and/or applied elsewhere with a candidate's degree program (evidence: need a record of the exams) (optional)
   - Military service courses, tests, professional specialties (evidence: need a record of the military discharge and tests documents) (optional)

B. Alignment with Campus Strategic Plan and Mission

1. Describe why the proposed program is a priority, and how it supports the campus's approved strategic plan, in the context of the institution's mission.

Fitchburg State University has a long history of establishing programs that meet the needs of students, employers, and the Commonwealth. The institution's Strategic Plan (2020-2025) embraces that history and identifies six goals that are aligned to our mission of education justice, incorporating high-impact practices, and innovation.

The M.S. in Construction Management program prepares students for a stable career in the

construction industry, providing them with an opportunity to become senior level managers. This program 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 SGOCE's Goal 1: Strengthen academic programs. We have developed this 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 can revise and add pathways as the needs of the workforce and community evolve.

The program also "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.

Through our continued partnerships with industry, our program has been developed to meet the needs of the workforce and will allow our students to contribute to the economic development of cities in our state. We encourage and support faculty and student research and projects that are community-focused and designed to help the city and region address critical challenges or opportunities (Strategic Plan Goal 3.5). Our University's commitment to Reimagine North of Main, In-town Fitchburg, and the Crocker Center will provide additional student opportunities while fostering a "town and gown" relationship with the City of Fitchburg.

Our faculty and staff are committed to inclusive excellence and innovation, giving all of our students an opportunity to be empowered and succeed. As per our Strategic Plan Goal 4.4, we "provide faculty and staff professional development opportunities and appropriate tools, including technology, to ensure they can be effective in their roles." Dr. Ralph Fasano (Director of Digital learning) will provide all necessary support and training to faculty teaching online courses.

The Engineering Technology Department has aligned its goals with the institutional learning outcomes and mission. We support Fitchburg State's mission of education justice and serving as a "student-ready campus as a cornerstone of the university's positioning strategy" (Strategic Plan Goal 5.1) and "continue to broaden our value proposition so that students consider Fitchburg State for their lifelong learning needs" (Strategic Plan Goal 5.4).

2. List the overall goals and learning objectives of the program and describe the strategy for achieving each goal. Use the **LOI Program Goals and Objectives** table in addition to any narrative comments.

Form B details the 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.

C. Alignment with Operational and Financial Objectives of the Institution

Institution: **Proposed Degree:**

1. Provide enrollment projections for the first five years of the program using the Program Enrollment form (Form C), Describe below any anticipated impact that the program may have on enrollment in other programs.

The form C presents the projected enrollment for the first five years of the program. There are no immediate concerns about the impact of enrollments of construction management students on their courses or programs.

2.. Describe the resources that the program will require (additional faculty and/or staff, space and equipment, on-line infrastructure, startup and maintenance of the program). Please include a narrative or financial statement outlining the anticipated net impact of the program on the overall financial resources of the institution. Include five years of future projections of revenue and expense using the LOI Budget form **(Form D).**

The net impact of the program on the overall financial resources of the institution will be modest as we are leveraging existing faculty expertise and resources. The modest costs related to adjunct faculty, program administration, and marketing are outlined on Form D. In year 1, the estimated budget for the adjunct faculty is $51,735.67, general administrative costs is $3,000, and marketing cost is $7,000. We understand that there will be no profit until the third year. Form D shows the detailed program budget.

Faculty and Staffing Requirement:

One Graduate Program Chair will administer the Master's in Construction Management program. Existing full-time faculty in Engineering Technology (Dr. Nirajan Mani, Dr. Abdel Gabar Mustafa, and Dr. Patricia Kio) have expressed interest in teaching online graduate courses. Adjunct faculty will be hired as needed.

Library and Information Technology:

For Master's thesis and other research activities in various courses, students will need 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.

The 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.

3. Complete the LOI Curriculum Outline form (Form A) with course titles and credits.

4. Complete the LOI Program Goals and Objective form (Form B).

Institution: **Proposed Degree:**

Comments and Response

The submitted LOI will be reviewed for completeness by staff. This process typically occurs within 15 business days from when it is received. Once deemed complete, the LOI is circulated by the Deputy Commissioner of Academic Affairs and Student Success (the Deputy), to the AAC and SPC members of the BHE, public campus CAO's, and to the Association of Independent Colleges and Universities of Massachusetts (AICUM) representatives for relevant comments.

Formal commentary to an LOI must come from an institution's President, be addressed to the Commissioner of Higher Education, with a cc to the Deputy, and received within 20 business days from the date the LOI is circulated.

All commentary is sent to the community colleges and state university institution, where the proposed program LOI originated. University of Massachusetts commentary is sent to the Senior Vice President for Academic Affairs, and International Relations, who is responsible to forward the information to the specific campus

Responses to any commentary are required. Responses must come from the LOI institution President and be addressed to the Commissioner of Higher Education, with a cc to the Deputy and submitted to awilliams@dhe.mass.edu. This written response to commentary must be received within 20 business days from the date it is sent to the President.

A Note About Timelines

Program review is a serve-and-return process, which means that there are several communications back and forth between the institution and DHE staff as the submission is being reviewed.

A campus should expect that an LOI (or proposal application) template submitted for staff validation and review for completion will be subject to a **15-business-day period of review**. Following this time frame the campus can expect staff to provide information regarding any further data that are needed for the LOI to be deemed complete. This communication **resets the 15-business-day time frame**. Responsibility rests with the campus to provide data in a timely manner, this may be important to a campus working within a targeted timeline for program development and launch. Once the campus has responded to staff by submitting the additional data, **the 15-business-day** clock begins anew.

After an LOI is validated and deemed complete it is circulated by the Deputy to the AAC and SPC, public campus CAO's and to AICUM representatives for commentary (as described above). The **comment period is open for 20 business days**. At the end of this time frame, all comments are reviewed by staff and sent to the LOI institution's CAO, who then has **20 business days** to submit a written response to the Deputy. Comments and responses are included in the motion brought forward for BHE action.

An LOI is brought forward either within **20 business days** of receiving the institution's response or at the next scheduled AAC meeting.

Following AAC action, the next step of the process is submission of the application proposal, which must be submitted **within two years** of the BHE action on the LOI for either a Fast Track or Standard process review.

A proposed program application template is validated and reviewed for completion **within 20 business days** of receipt. As noted above, the campus can expect staff to provide information regarding any further data that is needed for the proposal to be deemed complete. As previously noted, this communication **resets the time frame**. Once the campus has responded by submitting the additional data, **the 15-business-day** clock begins anew. Once validated and deemed complete, Fast Track proposals are forwarded to the Commissioner with a recommendation for action **within 30 business days**. The 30-business day timetable begins on the date DHE staff notify the campus that the proposal is deemed complete. BHE follows the guidelines on all proposal applications in accordance with either the Fast Track or the Standard Process.

ATTACHMENTS:

Form A	**LOI Curriculum Outline**
Form B	**LOI Goals and Objectives**
Form C	**LOI Enrollment Projections**
Form D	**LOI Budget**

Form A2: LOI Graduate Program Curriculum Outline
(Plan of Study I: Thesis Option.)

7. Major Required (Core) Courses (Total # of courses required = 6)		
8. 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
	Sub-total # Elective Credits Required	9

Curriculum Summary	
Total number of courses required for the degree	9
Total credit hours required for degree	30

Prerequisite, Concentration or Other Requirements:

Form A2: LOI Graduate Program Curriculum Outline
(Plan of Study II: Special Project Option.)

9. Major Required (Core) Courses (Total # of courses required = 6)		
10. 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

Curriculum Summary	
Total number of courses required for the degree	10
Total credit hours required for degree	30

Prerequisite, Concentration or Other Requirements:

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	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	AY24, based on recruiting students

regionally, nationally, and globally		attract current BS students and students from other universities; On-campus 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**

Institution: Fitchburg State University **Proposed Degree: M.S. Construction Management**

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 *(Salary & Fringe)*					
	Part Time/Adjunct Faculty *(Salary & Fringe)*	$51,735.67	$67,847.63	$76,893.99	$78,431.87	$80,000.50
	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	$ 0	$(-9,275.63)	$32,331.01	$92,149.13	$142,645.50

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