Resolution

Approving the Submission of a Notification of Intent to Submit a Proposal (NISP) for a Master of Construction Engineering Management (M.C.E.M) Degree (CIP Code 14.3301)

WHEREAS, the School of Engineering at The University of Alabama at Birmingham strives to deliver quality programs that are relevant and innovative; and

WHEREAS, the proposed Master of Construction Engineering Management degree program is designed to enhance the engineering and business qualifications of working professionals in the engineering and construction industry; and

WHEREAS, the proposed degree is a 30-credit hour, coursework only option with a set curriculum to be delivered in a fully online format; and

WHEREAS, the program is associated with the current MEng degree program with a concentration in Construction Engineering Management (CEM). When the proposed degree program is fully implemented, the programs will replace the MEng degree with a concentration in Construction Engineering Management;

NOW, THEREFORE, BE IT RESOLVED by The Board of Trustees of The University of Alabama that it approves submission of a Notification of Intent to Submit a Proposal (NISP) for a Master of Construction Engineering Management (M.C.E.M.) degree (CIP Code 14.3301) by The University of Alabama at Birmingham.
1. **Institution**: The University of Alabama at Birmingham

2. **Date of NISP Submission**: September 2022

3. **Contact Person and Title**: Katrina Mintz, Ph.D., Assoc. Vice Provost
   
   Telephone: (205) 934-2384
   
   E-mail: kmintz@uab.edu

4. **Program Identification**:
   
   Award Level: Master’s
   
   Title: Master of Construction Engineering Management (MCEM)
   
   6-digit CIP: 14.3301

5. **Program Administration and Implementation**:
   
   Name of College/ School: School of Engineering
   
   Name of Dean: Jeffrey W. Holmes, M.D., Ph.D., Dean
   
   Name of Department: Department of Civil, Construction, and Environmental Engineering
   
   Name of Chairperson: Wesley C. Zech, Ph.D., Professor and Interim Chair
   
   Proposed program implementation date: Fall 2023
   
   Anticipated ACHE meeting to vote on proposal: March 2023
   
   Anticipated date of approval from institutional governing board: April 2023
   
   Other considerations for timing and approval (e.g., upcoming SACSCOC review): None

6. **Program Design**:

   Brief Description of Program and Objectives:
   
   The University of Alabama at Birmingham (UAB) School of Engineering (SoE) proposes to offer a Master’s of Construction Engineering Management (MCEM) degree housed in the Department of Civil, Construction, and Environmental Engineering (CCEE). This degree is designed to enhance the engineering and business qualifications of working professionals in the engineering and
construction industry. The proposed MCEM degree is a 30-credit hour, coursework only option with a set curriculum to be delivered in a fully online format. The proposed degree option has been developed in consultation with representatives from engineering and major construction companies in the Birmingham area. The proposed degree program will replace the highly successful Master of Engineering (MEng) degree with a concentration in Construction Engineering Management that has resulted in 654 graduates over the course of 14 years.

Objectives of the program are as follows:

- Provide a challenging and convenient fully online educational program that will expand the professional’s knowledge in their discipline. This program will focus on the area of Construction Engineering Management.

- Provide an educational program to build the professional’s expertise in selected areas of business and construction. Courses in the following areas would be of interest:
  - Advanced Project Management
  - Construction Estimating and Bidding
  - Construction Liability and Contracts
  - Construction Methods and Equipment
  - Techniques of Project Planning and Control
  - Green Building Design/Construction
  - Advanced Construction and Engineering Economics
  - Building Information Modeling (BIM) Techniques
  - Construction Project Risk Management
  - Construction Management and Leadership Challenges in the Global Environment

- Provide an affordable and flexible educational program for professionals seeking to continue their higher education while continuing to work full-time or part-time from around the world. Students will have the option of completing their plan of study in 12 to 24 months depending on course load.

- Provide a rigorous and highly interactive online experience where strong peer and instructor relationships are initiated and maintained.

Graduates from this program will be able to:

- Demonstrate advanced knowledge and skills in a selected technical area.

- Demonstrate and understand:
  - Leadership and professional ethics
  - Effective communications
  - Project management methods and tools
  - Globalization issues impacting the built environment
- Business processes
- Effective evaluation of emerging and sustainable technologies
- Entrepreneurial thinking

- Exhibit the drive to continue to grow professionally.
- Gain a new knowledge base and skills to transition from military service to civilian life.
- Assume leadership roles in industry, the profession, and the community exhibiting strong ethics and character values.
- Assume instructor roles in community colleges and four-year higher education institutions.

Proposed delivery format (In-person, online, hybrid): 100% online

If hybrid, what % of program will be delivered online? N/A

In multiple formats, which ones? N/A

Total Credit Hours required to complete the program (if range, enter minimum): 30 semester credit hours

Please identify any specialized accreditation agency that may apply to this program and explain why your institution does or does not intend to seek specialized accreditation.

The Engineering Accreditation Commission of ABET accredits undergraduate engineering programs. While the option to accredit master’s programs exists, it would essentially require all students to possess a baccalaureate engineering degree from an accredited program. This would prevent many students who are construction industry professionals from enrolling.

Will the curriculum require work-based or experiential learning (internship, practicum, etc.)? If yes, please explain. Definitions and examples of different types of work-based learning are available at https://www.alapprentice.org/.

No. The curriculum will not require students to engage in work-based or experiential learning activities. However, since the degree program is oriented towards working professionals, it is anticipated that some of students will have completed some type of experiential learning activity (i.e. professional experience, co-op, internship, etc.) prior to enrolling in the degree program.

Will the program be designed to meet educational requirements licensure and/or certification required for entry-level employment? If yes, please list license and/or certification(s).

The American Society for Civil Engineering (ASCE) and state licensing boards are moving toward requiring a master’s degree as the minimum educational degree for professional practice and future licensing in civil engineering. This program would meet that future requirement.
7. Employment Occupational Alignment

Using the federal Standard Occupational Code (SOC) System, please indicate the top three occupational codes related to post-graduation employment from the program. A full list of SOCs can be found at https://www.onetcodeconnector.org/find/family/title#17. A list of Alabama’s “In-Demand Occupations” is available at https://ache.edu/Instruction.aspx

SOC 1 11-9021.00, Construction Managers
SOC 2 17-2051.00, Civil Engineers
SOC 3 11-9041.00, Architectural and Engineering Managers

8. Relationship to other programs within the institution:

Is the proposed program associated with any existing offerings? If yes, please explain. If this is a graduate program, please list any existing undergraduate programs which are directly or indirectly related. If this is a doctoral program, also list related master’s programs.

The proposed MCEM degree program is associated with the current MEng degree program with a concentration in Construction Engineering Management (CEM). When the proposed degree program is fully implemented, the programs will replace the MEng degree with a concentration in CEM in the UAB SoE.

Undergraduate programs at UAB that directly relate to the proposed MCEM degree program include:

- Bachelor of Science (BS) in all engineering programs (biomedical, civil, electrical & computer, materials, and mechanical)
- BS with a major in Computer Science (Department of Computer Science)
- BS with a major in Mathematics (Department of Mathematics)
- BS with a major in Information Systems (School of Business, Department of Management, Information Systems, and Quantitative Methods)

Will this program replace any existing programs or specializations, options, or concentrations within existing programs? If yes, please explain.

Yes. When fully implemented, this program will replace the MEng degree with a concentration in Construction Engineering Management in the UAB SoE.

9. Relationship to programs at other Alabama public institutions:

List programs at the same degree level that use the same or similar CIP codes. If no similar programs exist within Alabama, please list similar programs offered within the 16 SREB states.
Using the CIP Code of 14.3301, which is for Construction Engineering degrees, the following institutions offer a similar online program at the undergraduate level based upon the SREB Program Inventory:

<table>
<thead>
<tr>
<th>Institution</th>
<th>Degree</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Univ. of Southern Mississippi</td>
<td>Bachelor of Science in Construction Management</td>
<td>Construction Management</td>
</tr>
</tbody>
</table>

If the proposed program duplicates, closely resembles, or is similar to any other offerings in the state, please provide justification for any potential duplication.

At this time, there is no other fully online degree program focused on Construction Engineering Management other than at UAB.

If you plan to explore program collaboration with other institutions, please explain.

N/A

10. Projected program demand

What is the primary methodology you will use to determine the level of student demand for this program? (Survey of current or former students, enrollments in existing programs or courses)

The CCEE Department currently offers a concentration in Construction Engineering Management that is part of the Master’s of Engineering degree program. This concentration has been admitting students since January 2008 and has produced 654 graduates to date, with 166 active degree seeking students. Current enrollment projections are at least 150 to 175 new students admitted per academic year.

What is the primary methodology you will use to determine state need for this program? (Labor market information, expert market analysis, state or regional economic development strategy)

Historical records of the existing MEng degree with a concentration in CEM have shown a 150% increase in enrollment and credit hour production from the 2008-2009 academic year through the 2020-2021 academic year as seen in Figure 1. The enrollment report is based upon the number of students in classes offered during these academic years.
From this data, it is evident that there is a large demand for graduate education in the field of construction engineering management. Based upon this information, we are projecting enrollments to increase between 5 to 10% each year.
THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Resolution

Granting Initial Approval of and Submission to the Alabama Commission on Higher Education (ACHE) of a Proposal for a Master in Construction Engineering Management (M.C.E.M.) Degree (CIP Code 14.3301)

WHEREAS, the Board of Trustees approved the Notification of Intent to Submit a Proposal for a Master in Construction Engineering Management (M.C.E.M.) degree during the September 16, 2022, meeting; and

WHEREAS, the School of Engineering at The University of Alabama at Birmingham strives to deliver quality programs that are relevant and innovative; and

WHEREAS, the proposed degree is designed to enhance the engineering and business qualifications of working professionals in the engineering and construction industry; and

WHEREAS, the proposed degree is a 30-hour, coursework only option with a set curriculum to be delivered in a fully online format; and

WHEREAS, the program is associated with the current MEng degree program with a concentration in Construction Engineering Management (CEM). When the proposed degree program is fully implemented, the programs will replace the MEng degree with a concentration in Construction Engineering Management;

NOW, THEREFORE, BE IT RESOLVED by The Board of Trustees of The University of Alabama that it approves granting approval of and submission to the Alabama Commission on Higher Education (ACHE) of a proposal for a Master in Construction Engineering Management (M.C.E.M.) Degree (CIP Code 14.3301) by The University of Alabama at Birmingham.
Master of Construction Engineering Management
The University of Alabama at Birmingham

CIP Code: 14.3301

1. Executive Summary (not to exceed two pages)

The School of Engineering at the University of Alabama at Birmingham proposes an online Master of Construction Engineering Management degree program. The Department of Civil, Construction, and Environmental Engineering (CCEE) currently offers an online Construction Engineering Management concentration within the Masters of Engineering degree (M.Eng.). The formal degree offering will change, although additional courses and resources are not needed.

The proposed MCEM degree program will help satisfy the demand for the continuing educational needs of a large number of professionals employed in engineering (i.e., Civil Engineers, Architectural and Engineering Managers, etc.), information technology, energy services, and construction companies (i.e., Construction Managers) not only in the Birmingham, AL metropolitan area, but professionals who travel the world routinely in the normal course of their employment. The recommended degree plans are designed primarily for the professional community who want an advanced degree that not only adds depth to their engineering and technical skill sets but also provides advanced education training in crucial business and information technology skills so clearly needed in the workplace today. In addition, UAB has experienced tremendous interest from prospective students who are instructors in community colleges and four-year colleges who not only need the online education option, but more specifically they want to experience the curriculum style and delivery style developed by the CCEE over the last 14 years. The online pedagogy and support staff in place in the UAB Department of CCEE is ideally positioned to provide this much-needed option to prospective students.

The program is also designed to be an attractive graduate education option for career-oriented students who initially believed a bachelor’s degree would be a sufficient prerequisite for a job in industry, only to find that an additional degree is a necessary credential for career advancement.

2. Steps taken to determine if other UA System institutions might be interested in collaborating in the program.

UAH has recently added a Project Management Certificate, which is one component of the CECM program. UA offers a BS in Construction Management. UAB is open to collaboration in course instruction and research should opportunities arise.
3. Desegregation impact statement

The School of Engineering and the Graduate School are committed to ensuring recruitment and retention of students from diverse backgrounds in all its programs. The Master of Construction Engineering Management program will encourage applications from persons from different cultures and ethnicities, physical abilities, backgrounds, socio-economic status, faiths, and genders. The program would not discriminate on any basis and, to the contrary, would promote diversity, tolerance, understanding, and respect for difference. Students will have access to all programs for the support of doctoral students from diverse backgrounds. The on-line nature of the program makes it open to students who would not be able to enroll in it due to geographic limitations.

4. Summary of consultant’s comments (if any)

N/A.

5. Summary of other campuses’ comments (if any)

N/A.

6. Other pertinent information as needed (if any)

N/A.
PROPOSAL FOR A NEW DEGREE PROGRAM (Part 1: Proposal)

1. Date of Proposal Submission: September 1, 2023

   Full program name and level: Master of Construction Engineering Management

   Degree nomenclature (e.g., MBA, BS): MCEM

   CIP Code: 14.3301

2. Learning Outcomes:
   Succinctly list at least four (4) but no more than seven (7) of the most prominent student learning outcomes of the program.

   The following is a list of the most prominent student learning outcomes for the MCEM degree program:
   i. Demonstrate advanced knowledge and skills in a selected technical area.
   ii. Demonstrate and understand:
       a. leadership and professional ethics;
       b. effective communications;
       c. project management methods and tools;
       d. globalization issues impacting the built environment;
       e. business processes;
       f. effective evaluation of emerging and sustainable technologies; and
       g. entrepreneurial thinking.

3. Employment Outcomes and Program Demand
   Please describe how the proposed program prepares graduates to seek employment in the occupations (SOC codes) identified within the NISP. Note: you may also indicate any updates to those codes here.

   SOC 1 11-9021.00, Construction Managers
   SOC 2 17-2051.00, Civil Engineers
   SOC 3 11-9041.00, Architectural and Engineering Managers

   It should be noted that the proposed MCEM degree program is currently very successfully operating as the Construction Engineering Management concentration within the Masters of Engineering degree program at UAB. There will be no changes in curriculum or operations if the new degree program is approved. The change in degree and CIP code will allow us to more effectively advertise the program, and the academic training will be more clearly recognized with a masters in Construction Engineering Management versus a masters in Engineering.
According to the Bureau of Labor Statistics, “employment of construction managers is projected to grow 10 percent from 2018 to 2028, faster than the average for all occupations. Construction managers are expected to be needed to oversee the anticipated increase in construction activity over the coming decade. Those with a bachelor’s and/or master’s degree in construction science, construction management, or civil engineering, coupled with construction experience, will have the best job prospects” (BLS, 2019)¹

The proposed MCEM degree program will help satisfy the demand for the continuing educational needs of a large number of professionals employed in engineering (i.e., Civil Engineers, Architectural and Engineering Managers, etc.), information technology, energy services, and construction companies (i.e., Construction Managers) not only in the Birmingham, AL metropolitan area, but professionals who travel the world routinely in the normal course of their employment. The recommended degree plans are designed primarily for the professional community who want an advanced degree that not only adds depth to their engineering and technical skill sets but also provides advanced education training in crucial business and information technology skills so clearly needed in the workplace today. In addition, UAB has experienced tremendous interest from prospective students who are instructors in community colleges and four-year colleges who not only need the online education option, but more specifically they want to experience the curriculum style and delivery style developed by the UAB Department of Civil, Construction, and Environmental Engineering (CCEE) over the last 14 years. The online pedagogy and support staff in place in the UAB Department of CCEE is ideally positioned to provide this much-needed option to prospective students.

The program will also be designed to be an attractive graduate education option for career-oriented students who initially believed a bachelor’s degree would be a sufficient prerequisite for a job in industry, only to find that an additional degree is a necessary credential for career advancement. Over the last decade the need for additional higher education in specific CCEE graduate curriculums has become clear. In fact, some undergraduate engineering students currently at UAB would like to complete a 5-year bachelor/master’s degree, and we anticipate an increasing demand for such a program. Additionally, the American Society for Civil Engineering (ASCE) and the state licensing boards are moving toward requiring a master’s degree as the minimum educational degree for professional practice and future licensing in civil engineering (NSPE, 2019)². This requirement could be in place within the next five years. This program will be an important proactive initiative by UAB to ensure our graduates are employable, properly trained, and prepared for full certification in their chosen discipline. In fact, we believe the online master’s degree option will be more supportive of students planning to pursue career goals as engineering professionals than the traditional on-campus Master of Science degree seeking students, which requires students to complete a research project or thesis and spend valuable career time and financial resources in resident campus status.

¹ https://www.bls.gov/ooh/management/construction-managers.htm
The UAB online curriculum provides a mix of technical engineering courses, engineering management courses, advanced business principles for engineering management, and leadership fundamentals. Consequently, students completing the 5th year MCEM degree immediately after completion of their undergraduate degree will have both engineering and business skills and will be highly recruited for their first full-time position. It is anticipated that some of these students will have completed some type of experiential learning activity (i.e., co-op, internship, etc.) and some will have also completed the equivalent of a minor in business as part of their Bachelor of Science degree program.

Please explain whether further education/training is required for graduates of the proposed program to gain entry-level employment in the occupations you have selected.

No further education/training is required for graduates of the proposed MCEM program to gain entry-level employment in selected occupations.

Briefly describe how the program fulfills a specific industry or employment need for the State of Alabama. As appropriate, you should discuss alignment with Alabama’s Statewide or Regional Lists of In-Demand Occupations (available at https://ache.edu/Instruction.aspx under "Policy/Guidance") or with emerging industries as identified by Alabama’s Innovation Commission or the Economic Development Partnership of Alabama (EDPA).

The MCEM degree program will cater primarily to the Architectural, Engineering, and Construction sectors by providing post-secondary education to enrolled students seeking to gain advanced knowledge that will lead to employment and career advancement opportunities. Below is a list of employment opportunities that graduates with a MCEM degree may pursue. The majority of these opportunities are in alignment with Alabama’s Statewide and Regional lists of in-demand occupations for the years of 2021-2022.

**Employment Opportunities:**

| Construction Manager\(^1\,^2\) | Cost Estimator\(^1\,^2\) | Civil Drafter\(^1\,^2\) |
| Project Manager\(^1\,^2\) | Scheduler | BIM\(^4\) Modeler |
| Assistant Project Manager\(^1\,^2\) | General Contractor\(^1\,^2\) | Safety Director |
| Project Engineer\(^1\,^2\) | Field Site Superintendent\(^1\,^2\) | Material Vendor Supplier |
| Assistant Project Engineer\(^1\,^2\) | Crew Foreman\(^1\,^2\) | Material Vendor Sales |
| Civil Engineer\(^1\,^2\) | Trade Laborer\(^1\,^2\) | Public Works Manager |
| Civil Engineering Techs\(^1\,^2\) | Site Surveyor\(^1\,^2\) | Engineering Designer |
| Project Coordinator | LEED\(^3\) Coordinator | Construction Inspectors\(^1\,^2\) |

Note: 1. Aligns with Alabama’s Statewide List of In-Demand Occupations\(^3\)
2. Aligns with the Regional List of In-Demand Occupations\(^4\)
3. LEED = Leadership in Energy and Environmental Design
4. BIM = Building Information Modeling

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\(^3\) [https://ache.edu/ACHE_Reports/Meetings/Deadlines/Statewide_List_of_In-Demand_Occupations_2021-2022.pdf](https://ache.edu/ACHE_Reports/Meetings/Deadlines/Statewide_List_of_In-Demand_Occupations_2021-2022.pdf)

\(^4\) [https://ache.edu/ACHE_Reports/Meetings/Deadlines/2022_SOCs_By_Regions.pdf](https://ache.edu/ACHE_Reports/Meetings/Deadlines/2022_SOCs_By_Regions.pdf)
According to Alabama’s Statewide and Regional lists of in-demand occupations, “Construction Managers” and “Civil Engineers” are listed as one of the 25 highest demand occupations in the state. (ACHE, 2022)

Please describe how you will determine whether graduates are successful in obtaining relevant employment or pursuing further study.

The School of Engineering will survey graduates to track career progress two years, four years, and six years after graduation.

Briefly describe evidence of student demand for the program, including enrollments in related coursework at your institution if applicable. If a survey of student interest was conducted, please briefly describe the survey instrument, number and percentage of respondents, and summary of results.

Historical records of the existing MEng degree with a concentration in Construction Engineering Management shows a 150% increase in student enrollment in class sections and credit hour production (CHP) from the 2008-2009 academic year through the 2020-2021 academic year as seen in Figure 1. The enrollment report is based upon the number of students in classes offered during these academic years.

From this data, it is evident that there is a large demand for graduate education in the field of construction engineering management. Based upon this information, we are projecting enrollments to increase between 5 to 10% each year.

4. Specific Rationale (Strengths) for Program

What is the specific rationale for recommending approval of this proposal? List 3-5 strengths of the proposed program.
The strengths specific to the proposed MCEM degree program are as follows:

i. The program will continue to satisfy the demand for the continuing educational needs of many professionals employed in engineering, information technology, energy services, and construction companies not only in the Birmingham, AL metro area, but professionals who reside and travel the world in the normal course of their employment.

ii. The program will provide a challenging and convenient, fully online educational program, which will expand the professional’s knowledge in his/her discipline.

iii. This program will provide an affordable and flexible educational program for students seeking to further their higher education while continuing to work full time or part-time anywhere in the world.

iv. This program will be able to provide a rigorous and highly interactive online experience where strong peer and instructor relationships are initiated and maintained.

v. By creating a standalone master’s program in construction engineering management within the Department of CCEE, it will fulfill an industry need for higher education while establishing UAB as the premier institution to deliver this type of education to working professionals.

Please list any external entities that have supplied letters of support attesting to the program’s strengths and attach letters with the proposal.

Southern Company, Paula Marino, Executive Vice President T&PS. The letter of support is provided in Appendix A of this proposal.

5. Program Resource Requirements

A. Faculty. Please provide or attach a brief summary of primary and support faculty that includes their qualifications specific to the program proposal. Note: Institutions must maintain and have current and additional primary and support faculty curriculum vitae available upon ACHE request for as long as the program is active, but you do not need to submit CVs with this proposal.

Please provide faculty counts for the proposed program:

<table>
<thead>
<tr>
<th>Status</th>
<th>Faculty Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Primary</td>
</tr>
<tr>
<td>Current – Full Time¹</td>
<td>3</td>
</tr>
<tr>
<td>Current – Part Time²</td>
<td>2</td>
</tr>
<tr>
<td>Additional – Full Time (to be hired)</td>
<td>0</td>
</tr>
<tr>
<td>Additional – Part Time (to be hired)</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: 1. Our existing instructional design manager is listed as support faculty and is a full-time employee.
2. Two adjunct faculty teaching 2 courses per year are listed under Part-Time Faculty.

A brief summary of Faculty and their qualifications specific to the program proposal are included in Appendix B of this proposal.
Note: Annual compensation costs for additional faculty to be hired should be included in the NEW ACADEMIC DEGREE PROGRAM SUMMARY table in Part 3. Salary/benefits for current faculty should not be included.

Briefly describe the qualifications of any new faculty to be hired:

N/A. No new faculty will be hired as part of this proposal.

B. Staff. Will the program require dedicated staff?

☐ Yes ☒ No

If so, indicate the number or percentage of FTEs.

Note: Annual compensation costs for staff to be hired should be included in the NEW ACADEMIC DEGREE PROGRAM SUMMARY table in Part 3.

N/A

C. Equipment. Will any special equipment be needed specifically for this program?

☐ Yes ☒ No

If yes, please list. Their cost should be included in the NEW ACADEMIC DEGREE PROGRAM SUMMARY table in Part 3.

N/A

D. Facilities. Will any new facilities be required specifically for the program?

☐ Yes ☒ No

If yes, please list. Only new facilities need be listed. Their cost should be included in the NEW ACADEMIC DEGREE PROGRAM SUMMARY table in Part 3.

N/A

E. Library. Will additional library resources be required to support the program?

☐ Yes ☒ No

Please provide a brief description of the current status of the library collections supporting the proposed program.
Sterne Library - VIRTUAL Research Help
Sterne Library offers one-on-one Virtual Research consultation sessions for distance learning students via Blackboard Collaborate virtual room. Students can schedule sessions as needed.

Virtual Research sessions will be just like the face-to-face appointments: students let the librarians know their topics when they request a session, and librarians help them find sources for their research. For students who prefer asynchronous assistance, librarians are still available to help them through email.

To schedule Virtual Research Help sessions, please contact:
Jennifer M. Long, MLS
Assistant Professor & Reference Librarian for Engineering
Mervyn H. Sterne Library - UAB
E-mail: jmlong@uab.edu
Phone: 205-934-6364
Website: library.uab.edu

If yes, please briefly describe how any deficiencies will be remedied, and include the cost in the NEW ACADEMIC DEGREE PROGRAM SUMMARY table.

N/A

F. Assistantships/Fellowships. Will you offer any assistantships specifically for this program?

☐ Yes  ☒ No

If “Yes”, how many assistantships will be offered?

N/A

The expenses associated with any *new* assistantships should be included in the NEW ACADEMIC DEGREE PROGRAM SUMMARY table in Part 3.

G. Other. Please explain any other costs to be incurred with program implementation, including lab start-up expenses or specialized accreditation costs. Be sure to note these on the NEW ACADEMIC DEGREE PROGRAM SUMMARY table in Part 3.

N/A
PROPOSAL FOR A NEW DEGREE PROGRAM (Part 2: Course Info)

Name of Proposed Program: Master of Construction Engineering Management

Program Completion Requirements: (Enter a credit hour value for all applicable components, write N/A if not applicable)

| Credit hours required in program courses | 30    |
| Credit hours in general education or core curriculum | 0    |
| Credit hours required in support courses | 0    |
| Credit hours in required or free electives | 0    |
| Credit hours in required research | 0    |
| **Total credit hours required for completion** | **30** |

Maximum number of credits that can be transferred in from another institution and applied to the program:

A maximum of 9 credit hours can be transferred in from another institution as long as those credits have not been applied to another degree.

Intended program duration in semesters for full-time students: 3 semesters – 12 mo.

Intended program duration in semesters for part-time students: 5 semester – 19 mo.

Does the program require students to demonstrate industry-validated skills, specifically through an embedded industry-recognized certification, through structured work-based learning with an employer partner, or through alignment with nationally recognized industry standards? If yes, please explain how these components fit with the required coursework.

No.

Does the program include any options/concentrations? If yes, please give an overview of the options, and identify the courses for each in the table below.

No.

Please indicate any prior education or work experience required for acceptance into the program:

All applicants are required to have two years of relevant construction industry work experience or a bachelor’s in engineering or a science-related field.

Describe any other special admissions or curricular requirements for the program:
Admission requirements for the Master of Construction Engineering Management (MCEM) degree program are:

- Bachelor’s degree (any discipline) from a recognized institution of higher education. The MCEM degree option promotes a multi-discipline learning experience and therefore an engineering undergraduate degree is not required.
- An undergraduate GPA of 3.0 or higher (individuals not meeting this requirement but who have a strong professional background, references, and interview may be admitted).
- No GRE required.
- International students must submit TOEFL, IELTS, PTEA, IELA, or Duolingo scores [https://www.uab.edu/graduate/admissions/international-applicants#english-proiciency-exams]. Duolingo scores are preferred by the UAB Graduate School.
- Original transcripts as required by the UAB Graduate School (detailed instructions are included during the online application process).
- Two years of relevant construction industry work experience or a bachelor’s in engineering or a science-related field.
- Personal interview with the Director of CEM Student Affairs (schedule the interview prior to applying).
- Three letters of recommendation from professional contacts.
- Personal essay detailing motivation and career aspirations for earning the degree.
- Résumé/Curriculum Vitae.

Please complete the table below indicating all coursework for the proposed program, identifying any new courses developed for the program, along with courses associated with each option as applicable. Include the course number, and number of credits. Coursework listed should total the number of hours required to complete the program.

The courses that will be offered in the online environment will include the full curriculum course titles currently available in the MEng degree program with a concentration in CEM, which currently includes ten (10) unique course titles. All of these courses are already offered in an online format and have been thoroughly tested with live students.

<table>
<thead>
<tr>
<th>Course Number and Title</th>
<th>No. of Credit Hours</th>
<th>* If New Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>CECM 669: Advanced Project Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CECM 670: Construction Estimating and Bidding</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CECM 671: Construction Liability and Contracts</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CECM 672: Construction Methods and Equipment</td>
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<td>CECM 674: Green Building Design/Construction</td>
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<td>CECM 675: Advanced Construction and Engineering Economics</td>
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<td>CECM 676: Construction Project Risk Management</td>
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<td>CECM 688: Construction Mgmt. &amp; Leadership Challenges in the Global Env.</td>
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<td>CECM 689: Building Information Modeling (BIM) Techniques</td>
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PROPOSAL FOR A NEW DEGREE PROGRAM  
(Part 3: Program Summary/Business Plan)

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

INSTITUTION: University of Alabama at Birmingham

PROGRAM: Master of Construction Engineering Management  
Select Level: Master's

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<th>ESTIMATED “NEW” EXPENSES TO IMPLEMENT PROPOSED PROGRAM</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Year 6</th>
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<th>“NEW” REVENUES AVAILABLE FOR PROGRAM SUPPORT</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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ENROLLMENT PROJECTIONS  

Note: “New Enrollment Headcount” is defined as unduplicated counts across years.

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<tr>
<th>Year</th>
<th>FULL-TIME HEADCOUNT</th>
<th>Part-Time Headcount</th>
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DEGREE COMPLETION PROJECTIONS  

Note: Do not count Lead “0”s and Lead 0 years in computing the average annual degree completions.

<table>
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<th>Degree Completion Projections</th>
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*New* entails additional expenses or revenues associated with program implementation. Please include any planning or start-up expenses within Year 1 (even if these were incurred in Year 0 or prior). Do not include expenses or revenues already budgeted for a department or instructional unit prior to the development of this specific program. For instance, if new faculty will be hired to teach in this program, salary/benefits should be included for each year following hire, but salary/benefits for existing faculty would not be included.

5 This assumes that tuition will stay constant resulting in no new revenues to the degree program.
APPENDIX A

LETTERS OF SUPPORT FROM EXTERNAL ENTITIES
ATTESTING TO THE PROGRAM’S STRENGTHS
February 14, 2023

Re: Industry Letter of Support for Master of Construction Engineering Management (MCEM) Degree Program

Dear Alabama Commission on Higher Education (ACHE),

The purpose of this letter is to provide support for the proposed Master of Construction Engineering Management (MCEM) degree program. The degree curriculum is extremely relevant and applicable to real world scenarios that our industry faces daily. Southern Company has had many employees complete the existing Master of Engineering (MEng) program with a concentration in Construction Engineering Management. One consistent comment from the UAB graduates is that industry knowledge gaps are filled after completing the program. Our employees certainly had a strong foundational knowledge base going into their studies and the graduate degree program at UAB exposed them to advanced information and higher-level topics that directly relate to their work at Southern Company.

Students are trained on industry standard software: On-screen Takeoff, P6, Revit, and Navisworks. The students also engage in group projects with their peers and learn how to interact, lead, and function as a team. After completing the degree plan, our employees have greater confidence in their abilities and feel they are prepared for any facet of the construction environment. The knowledge gained and skills attained are a huge benefit to both the employee as well as the company.

Please let me know if you need additional information.

Best Regards,

Paula Marino
Executive Vice President
Technical & Project Solutions
APPENDIX B

SUMMARY OF FACULTY QUALIFICATIONS
Wesley C. Zech, Ph.D., LEED AP – Primary Faculty  
Professor, Interim Chair, and Director of Construction Engineering Management  
University of Alabama at Birmingham  
Department of Civil, Construction, and Environmental Engineering

Education:
- B.S., University at Buffalo, Civil Engineering
- M.E., University at Buffalo, Civil Engineering
- Ph.D., University at Buffalo, Civil Engineering

Biography:
Wesley C. Zech is currently a professor in the Department of Civil, Construction, and Environmental Engineering and serves as the director of the concentration in Construction Engineering Management. Prior to his appointment with the University of Alabama at Birmingham, he was the Brasfield and Gorrie Professor of Construction Engineering and Management at Auburn University. He earned a B.S. (1999), M.E. (2000), and a Ph.D. (2004) from the University at Buffalo in Western, NY. He was employed at Auburn University in 2004 and taught courses in the areas of construction engineering, project management, construction safety and health management, construction equipment and methods, erosion and sediment control applications in construction, and sustainable design and construction.

In addition to teaching, he has conducted external research in collaboration with the Alabama Department of Transportation and Ohio Department of Transportation that led to the development of the Auburn University Erosion and Sediment Control Testing Facility. His research efforts focused on applying full-scale testing techniques to evaluate the performance of various erosion and sediment control practices commonly used in construction, including: silt fence tiebacks, the use of polyacrylamide, hydromulches, ditch checks, inlet protection measures, sediment barriers, catch basin inserts, and sediment basins. Many of the research results from these efforts have been adopted as standard erosion and sediment control practices used on highway construction projects in the state of Alabama.

His current research endeavors include characterizing the performance of sediment barrier systems, using unmanned aerial vehicles for construction site inspections, and the design and deployment of a rainfall simulator used to evaluate erosion control measures. Other areas of research expertise include construction safety, work zone safety, and the use of unmanned aerial systems for construction site inspections.
Dianne Gilmer, MEng, PMP – Primary Faculty
Instructor and Director of CEM Student Affairs
University of Alabama at Birmingham
Department of Civil, Construction, and Environmental Engineering

Education:
- B.S., Samford University, Business Administration/Finance
- MEng, University of Alabama at Birmingham, Construction Engineering Management

Biography:
Dianne K. Gilmer is an instructor in the Department of Civil, Construction and Environmental Engineering. She is Director of Construction Engineering Management (CEM) student affairs. Gilmer is a Birmingham native and received her B.S. in Business Administration/Finance from Samford University in 1989. After graduation, she took a position with CB/Richard Ellis in Atlanta. She worked for the company as an administrative supervisor in the Commercial Real Estate Appraisal office. She went on to take the position of Regional Administrative Manager – Brokerage Services in the Washington D.C. region. In her roles, she had extensive interaction with employees and clients. She was an integral part of a relocation committee that organized and conducted space planning for the consolidation of two commercial real estate offices. She implemented corporate administrative policies and budget reduction techniques in the Atlanta, San Francisco, and Baltimore offices. Preparing annual budgets and monitoring for compliance were also part of her responsibilities.

Gilmer returned to Birmingham in 1996 to raise her children. During this time, she was extremely active in the local community, schools, and her church. Once her children were both in school, she returned to industry. Technology had dramatically changed the world while she was home raising her children and she realized she must retool and re-educate. A local HVAC/Plumbing design mechanical engineering firm looking to hire a specification coordinator was willing to educate and train her. Not only did she coordinate specifications for the firm, she developed and launched the company’s first ever website. She helped the company establish a successful web presence and place them in a more marketable position to maintain strong client relations. She assisted with proposal development and maintained the database of architectural drawings. She worked with company leaders to create a more rewarding and positive work environment for all employees.

Gilmer began her employment with UAB in October 2007. In 2009, she completed her MEng degree with a concentration in Construction Engineering Management. She is the primary instructor for Advanced Project Management and the Construction Management and Leadership Challenges in the Global Environment course. Being a program co-founder, alumni, and faculty member is an honor for Gilmer, and she is passionate about UAB and the CEM graduate program. Hoping to inspire and motivate students to critically think and problem solve is extremely important to her. One of her favorite expressions is “our students are online, but never alone.” She understands the importance of meeting students where they are and keeping them engaged in an online environment. She works closely with all course instructors in course delivery, management, and communication. She serves as the academic advisor and is an advocate for all CEM students. In addition to instruction, she is involved heavily in student recruiting and retention.
Christopher Waldron, Ph.D., P.E. – Support Faculty
Associate Professor and Director of the Civil Structural Engineering Online Program
University of Alabama at Birmingham
Department of Civil, Construction, and Environmental Engineering

Education:
- BSCE, Drexel University
- MSCE, Virginia Tech
- Ph.D., Virginia Tech

Biography:
Christopher J. Waldron is an Associate Professor in the Department of Civil, Construction, and Environmental Engineering. He brings a diverse mix of public and private sector experience with him to UAB that give a unique perspective to his teaching and research. While pursuing his undergraduate degree, he worked for the Pennsylvania Department of Transportation (PennDOT) in the Roadway Management Division, where he assisted with the development and implementation of life-cycle cost analysis techniques to prioritize infrastructure spending, and he worked for INTECH Construction in Philadelphia as an assistant project engineer where he oversaw and managed the daily operations of several subcontractors.

After completing his graduate degrees, Waldron worked as a bridge engineer at FIGG where he worked on the design, load rating, and construction support of many signature bridges, including the Allegheny River Bridge in Pittsburgh, PA (PA Turnpike over the Allegheny River), the Veteran’s Glass City Skyway Bridge in Toledo, OH (I-280 over the Maumee River), the Penobscot Narrows Bridge and Observatory in Prospect, ME (US-1 over the Penobscot River), and the I-35W St. Anthony Falls Bridge in Minneapolis, MN (I-35W over the Mississippi River.)

Waldron earned his B.S. from Drexel University in Philadelphia and his M.S. and Ph.D. degrees from Virginia Tech in Blacksburg, VA, all in Civil Engineering with a concentration in Structural Engineering. While at Virginia Tech and since coming to UAB in 2008, Dr. Waldron has taught a wide range of classes ranging from the sophomore level to the Ph.D. graduate level in the areas of mechanics, structural analysis, concrete design, and construction management.

While pursuing his graduate degrees, his research focus was the application of new and improved materials to bridge construction. For his Master’s research he performed experimental verification of the strength, stiffness, and mechanical behavior of fiber-reinforced polymer girders developed by Strongwell, Inc. that were subsequently used as the main load carrying elements of the Route 601 Bridge over Dickey Creek in Sugar Grove, VA. Waldron’s Ph.D. research involved the characterization of the long-term creep and shrinkage properties of several high strength/high performance concrete mixtures being implemented by the Virginia Department of Transportation (VDOT) to better estimate the effects of long-term prestress loss in girders cast using these concrete mixtures.

Since coming to UAB, he has continued to focus his research efforts on improving the design and construction of bridges. He has completed projects investigating the effects of heavier trucks and higher truck volumes on the bridge network and investigated ways to improve the accuracy of bridge load rating through the use of weigh-in-motion data and by calibrating finite element models of the bridge with load tests. He has also worked on projects to aid in the design of prefabricated and fast-track construction techniques for bridges.
Jason T. Kirby Ph.D. – Support Faculty
Associate Professor and Director of Sustainable Smart Cities
University of Alabama at Birmingham
Department of Civil, Construction, and Environmental Engineering

Education:
- B.S., Auburn University, Environmental Science
- M.S., University of Alabama, Environmental Engineering
- Ph.D., University of Alabama, Civil Engineering

Biography:
Jason Thomas Kirby has a strong teaching portfolio that includes five UAB Civil Engineering required courses and 10 electives offered at the undergraduate and/or graduate levels. Topics address environmental engineering, water resources and the emerging field of sustainable engineering. Courses have been offered via traditional classroom lecture, the Interactive Intercampus Telecommunication System (ITTS), study away, and online/blended instruction to support student and departmental needs. Student evaluations have consistently indicated that his teaching performance is excellent.

Kirby has similarly proven to be a collaborative researcher and has helped secure in excess of one million dollars of extramural funds for UAB. He has served as principal investigator or co-investigator on numerous research grants in the areas of environmental engineering, water resources, and sustainable construction. His work has been presented at numerous international, national, and regional venues. He has contributed to several book chapters, external research reports, and multiple publications in peer reviewed journals; in addition to preparing a number of papers for peer reviewed proceedings.

Kirby is currently focusing his research efforts into the development of new green/sustainable building materials. Active/ongoing projects are examining innovative composite materials, non-traditional construction systems, energy efficient technologies, green roof installations, and the comprehensive design of affordable, energy efficient residential housing that exhibits superior indoor air quality.

He conducts extensive student outreach and recruiting activities in support of UAB’s educational objectives. Among these efforts he coordinates the Civil Engineering department’s outreach at local high schools, science and technology fairs, Boy and Girl Scout troops, and he represents UAB Civil Engineering at the annual Open House events.

Kirby is heavily involved in his respective professional association, The American Society of Civil Engineering (ASCE), and has served as the UAB ASCE student chapter’s faculty advisor. In this role he helps reinforce engineering fundamentals, the importance of professional licensure, and the value of professional ethics. He encourages students to volunteer in community outreach and has led the regional competition team to win several awards on behalf of UAB.

In 2010, he started UAB’s “Order of the Engineer” chapter. This national organization is devoted to the promotion of engineering ethics.
Allen Murphree, MEng– Primary Faculty
Instructor and Student Relations Manager
University of Alabama at Birmingham
Department of Civil, Construction, and Environmental Engineering

Education:
- B.S., Southern Polytechnic State University, Architectural Engineering
- MEng, University of Alabama at Birmingham, Construction Engineering Management

Biography:
Allen J. Murphree is an Instructor and Student Relations Manager in the Department of Civil, Construction and Environmental Engineering at the University of Alabama in Birmingham. In 1990, he completed a Bachelor of Science degree in Architectural Engineering from Southern Polytechnic State University, located in Marietta, Georgia. He is a Certified Engineer Intern with the Georgia State Board for Professional Engineers and Land Surveyors. After graduation, he worked in Georgia as an architectural designer for a large residential development company.

In 1991, Murphree joined a Birmingham civil and environmental consulting engineering firm, which offers engineering services to municipal and county governments. There he used his engineering education to successfully design large site development projects, storm water drainage systems, various utility systems, water and wastewater treatment plants, industrial parks, building facilities, solid waste landfills, roadways, and several Alabama Department of Transportation projects. In addition to design, he also worked as the firm’s Construction Service Manager, providing contractor oversight, construction observation and construction management duties to protect client-owners during construction.

In 2009, Murphree became a company vice president and was appointed as the secretary of the board, giving him an opportunity to take on a larger leadership role and more business duties. In 2012, he completed his Master of Engineering degree in Construction Engineering Management from UAB. The CEM concentration provided him with the knowledge to manage more effectively, enhanced his strategic problem-solving techniques, and improved his business skills to better address daily financial, legal, and risk issues.

In addition to his engineering work, Murphree is a co-owner of a Birmingham residential design firm, which was incorporated in year 2001. He is the executive member and chief architectural designer for all custom home and remodeling projects. He is an Alabama Licensed Contractor and Certified Professional Building Designer (CPBD).

After dedicating over 24 years to the civil engineering, construction management, and architectural fields, Murphree brings his education and work experiences to the classroom. He began his UAB career in 2014. Currently, he is the primary instructor of the Construction Project Risk Management, Building Information Modeling (BIM), and Primavera P6 Project Scheduling and Control courses. In addition to teaching, Murphree provides educational and technical support to students, instructors, professors, and program directors.
Dr. Talat Salama, Ph.D., PE – Adjunct Faculty  
Professor  
Central Connecticut State University  
Manufacturing and Construction Management

Education:  
− B.S., Rutgers University, Civil Engineering  
− M.S., American University in Cairo, Construction Engineering  
− Ph.D., Rutgers University, Structural Engineering

Biography:  
Professor Salama has more than 16 years of teaching experience at the University of Alabama at Birmingham and Central Connecticut State University in the Civil Engineering and Construction Management programs. He is a licensed Professional Engineer at the states of New Jersey and Alabama. He teaches courses in the fields of Construction Management and Structural Engineering, at the undergraduate and graduate levels, both on-ground and online. His research interests include instrumentation and testing of bridges, sustainable concrete mix design, and rehabilitation of deteriorating structures. He has authored and co-authored articles on construction-related subjects such as reducing project delays and costs on highway projects due to utility relocation, building information modeling for quality management on highway projects, and improving bridge load rating accuracy. He has participated in study abroad programs including the National Science Foundation - International Research Experiences for Students (NSF - IRES).

Salama served on the Board of Directors of the Neighborhood Housing Services of New Britain, CT, and he was the faculty coordinator of the annual Associated School of Construction (ASC) student competition. In 2017, he was awarded the Educator of the Year by the Associated General Contractors (AGC) of Connecticut Industry Recognition Awards. In 2012, he was awarded the President’s Award for Excellence in Teaching for the School of Engineering at UAB. In 2007, he was awarded the Circle of Excellence Award by the Alabama Society of Professional Engineers.
Michael Knapp, Esq. – Adjunct Faculty

Education:
- Juris Doctor, May 1995, Wake Forest University, School of Law, Winston-Salem, NC
- Bachelor of Arts, Political Science/Economics, May 1992, James Madison University, Harrisonburg, VA

Biography:
Michael Knapp is the instructor for the Construction Liability and Contracts course in the concentration in Construction Engineering Management.

Knapp enjoys a national practice which focuses primarily on construction, business and commercial disputes, and financial services litigation. For the past several years, his focus has been on large scale public and private construction project disputes spread equally among owners, developers, engineers, architects, contractors, and sureties. In recent years, he has worked on several high-profile construction defect class action matters that involved claims of moisture intrusion and mold infestation. Additionally, Knapp has worked with a number of clients in drafting, structuring and negotiating even handed contracts in an attempt to avoid disputes between the parties. He is also experienced in the resolution of disputes, including mediation, arbitration, and litigation in state and federal courts across the country.

He has given numerous in house and public lectures on topics including the construction effects of the Americans with Disabilities Act, revisions to the American Institute of Architects and Associated General Contractors form contracts, proper claims procedures and practical construction project documentation. During the summers of 2009 and 2010, Knapp had the honor of teaching a construction law course to engineering students at Misr University located near Cairo, Egypt.

Knapp is a member of the State Bars of North Carolina, District of Columbia and California. Before joining Bradley, Knapp served in the United States Navy as a Judge Advocate from 1995 to 1998 where he was the Assistant Staff Judge Advocate for the Commanding Officer of Naval Station San Diego, the home of the U.S. Navy's Pacific fleet. In addition, he served as a prosecutor where he tried several felony crimes to verdict.

After his Navy service, he practiced law in San Diego for five years before returning to the Southeast.