To: Ms. Jinawa McNeil  
Chair, UMES Senate

From: Dr. Latasha Wade  
Chair, Senate Academic Affairs Committee

Date: September 2, 2015

Re: Proposal for Course, Program, or Curriculum Status Changes from the Department of Technology

On March 12, 2015, the Senate Academic Affairs Committee (SAAC) received proposals from the Department of Technology to:

1. Create new courses (all 3-credit courses) for the Career and Technology Education program
   a. EDTE 380 Hybrid - Universal Design for Learning in Career and Technology Education
   b. EDTE 381 Hybrid – Managing Effective Career and Technology Education Classrooms
   c. EDTE 465 Hybrid – Instructional Analysis and Curriculum Development in Work-Based Learning

2. Remove (8) courses from Construction Management Technology concentration (courses will still be used in other concentrations/programs within the department)
   a. CMTE 313
   b. CMTE 314
   c. CMTE 315
   d. CMTE 316
   e. CMTE 317
   f. CMTE 413
   g. CMTE 414
   h. CMTE 454

3. Create (8) new courses and add to concentration
   a. CMTE 319 – Statics and Strengths of Materials
   b. CMTE 320 – Building Structures
c. CMTE 321 – BIM Technology for Construction Management I
   d. CMTE 322 – BIM Technology for Construction Management II
   e. CMTE 326 – Mechanical and Electrical Building Systems
   f. CMTE 427 – Soils and Site Development
   g. CMTE 440 – Construction Safety Management
   h. CMTE 450 – Green Building II

4. Update catalog description of Construction Management Technology concentration

Members of the SAAC independently reviewed the course proposals on August 31st.

On September 1st, members of the SAAC voted electronically to approve the requested course changes with no recommended modifications.

SAAC Members:
Kate Brown, Ph.D. Malinda Cecil, Ph.D.
Derrek Dunn, Ph.D. Kingsley Ejiogu, Ph.D.
Nydia Gregory, Ph.D. Ali Ishaque, Ph.D.
Gail Lankford, M.Ed. Latasha Wade, Pharm.D.
The following Proposal for Program, Curriculum or Course Status Forms on behalf of the School of Business and Technology’s (SBT) Department of Technology, Construction Management Technology Program are attached:

- Program Change – Construction Management Technology
- Rational for Updating CMT Program at UMES
- CMTE 319 – Statics and Strength of Materials
- CMTE 320 – Building Structures
- CMTE 321 – BIM Technology for Construction Management I
- CMTE 322 – BIM Technology for Construction Management II
- CMTE 326 – Mechanical and Electrical Building Systems
- CMTE 427 – Soils and Site Development
- CMTE 440 – Construction Safety Management
- CMTE 450 – Green Building II

The following members of the SBT Curriculum Committee met on March 10, 2015:

Dr. Mohammad Ali – Dept. of Business, Management & Accounting
Dr. Karl Binns – Dept. of Hospitality and Tourism Management
Dr. Ibibia Dabipi – Dept. of Engineering & Aviation Sciences
Dr. Aaron Rababaah – Dept. of Mathematics & Computer Science
Dr. Joseph Arumala – Dept. of Technology (SBT Curriculum Committee Chair)

If you have any questions, please contact me.
MEMORANDUM

TO: Dr. Ayodele J. Alade
Dean, School of Business and Technology

FROM: Dr. Joseph Arumala
Chair, SBT Curriculum Committee

DATE: March 10, 2015

SUBJECT: Proposal for Program, Curriculum or Course Status Forms
Department of Technology – Construction Management Technology
Program Changes

The following Proposal for Program, Curriculum or Course Status Forms on behalf of the School of Business and Technology’s (SBT) Department of Technology, Construction Management Technology Program are attached:

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If you have any questions, please contact me.
November 16, 2014

Dr. Ayodele Alade, Dean
School of Business and Technology
UMES Campus

Re: Undergraduate Construction Management Technology Program Changes

Dear Dr. Alade:

The Department of Technology Curriculum Committee met to review and approve new courses and a revised paradigm incorporating the new courses for the undergraduate Construction Management Technology program. The changes are in response to new accreditation standards that are being promulgated by the American Council on Construction Education (ACCE), reports from the Maryland Center for Construction Education & Innovation (MCCEI) and feedback from the Construction Industry.

Courses to be added to CMT program:
CMTE 319 Statics and Strength of Materials 3 Credits
CMTE 320 Building Structures 3 Credits
CMTE 321 BIM Technology for Construction Management I 3 Credits
CMTE 322 BIM Technology for Construction Management II 3 Credits
CMTE 326 Mechanical and Electrical Building Systems 3 Credits
CMTE 427 Soils and Site Development 4 Credits
CMTE 440 Construction Safety Management 3 Credits
CMTE 450 Green Building II 3 Credits.

Courses to be removed from CMT undergraduate program:
CMTE 313 Statics 3 Credits
CMTE 314 Strength of Materials 4 Credits
CMTE 315 Environmental Technology I 3 Credits
CMTE 316 Environmental Technology II 3 Credits
CMTE 317 Soils in Construction 3 Credits
CMTE 413 Structural Design I 3 Credits
CMTE 414 Structural Design II 3 Credits.
CMTE 454 Site Development 3 Credits.

Please note, the above listed course will be retained in the departmental course catalog for future use in the proposed Civil Engineering Technology program under development by Dr. Arumala, the proposed Architectural Engineering Technology concentration under development by Dr. Molavi, the proposed Construction Engineering Technology concentration currently being discussed by Dr. Salgado and Mr. Shapoorian.

Also, these proposed changes are not considered substantial modification to existing program by the Maryland Higher Education Commission\(^1\) (MHEC\(^1\)) because the department is changing less than 33% of the course work in the degree program.

The members of the Department of Technology's Curriculum Committee are:
Dr. Kenny Fotouhi, Curriculum Committee Chair
Dr. Derrek Dunn, Ex-officio
Dr. Thomas Loveland
Dr. Jeffery Molavi
Mr. Harry Shealey
Mr. Joel Tomlinson

In conclusion, the Department of Technology Curriculum Committee, after an exhaustive examination of the proposed documents, unanimously recommends that the attached be approved. Therefore, the proposal is hereby submitted to you for support and approval.

Sincerely,

\[\text{Signature}\]

Dr. Derrek B. Dunn, Chairperson

Attachments

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\(^1\) [http://www.mhec.state.md.us/higherEd/acadAff/AcadProgInstitApprovals/AcadProgProposalInfo/AcademicProgramProposals.asp](http://www.mhec.state.md.us/higherEd/acadAff/AcadProgInstitApprovals/AcadProgProposalInfo/AcademicProgramProposals.asp)
UMES Construction Management Technology Program

Special Meeting

Meeting Date 10/13/2014

Location: UMES - Department of Technology Conference room

Attendees: Dr. Derrek Dunn, Dr. Carlos Salgado, Dr. Jeffrey Molavi, Dr. Joseph Arumala, Mr. Bijan Shapoorian

New Business

1. Dr. Dunn started the meeting a few minutes after 1:00 PM by asking Mr. Shapoorian to present the proposal for CMT program update.

2. Mr. Shapoorian presented the proposal for CMT program update and reviewed the strategy and reason for 25 credits in the current program to be combined and replaced by 25 credits of new courses.

3. Dr. Salgado made a remark as the new proposal has not eliminated any courses from the program and courses are combined to allow addition of new courses.

4. Dr. Dunn asked the participants for questions and discussion.

5. There was no question or discussion.

6. Dr. Dunn asked for votes on the update.

7. All in favor were; Dr. Dunn, Dr. Salgado, Dr. Molavi, and Mr. Shapoorian

8. All opposed; None

9. Dr. Dunn asked Dr. Arumala if he was abstaining from voting.

10. Dr. Arumala responded in the positive.

11. The meeting was adjourned by 1:30 PM
UMES Construction Management Technology Program

Special Meeting

Meeting Date 10/13/2014

Location: UMES - Department of Technology Conference room

Attendees: Dr. Derrek Dunn, Dr. Carlos Salgado, Dr. Jeffrey Molavi, Dr. Joseph Arumala, Mr. Bijan Shapoorian

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Rational for Updating
Construction Management Technology (CMT)
Program at UMES

Why do we need to update the program?

1. Changes in the Architecture, Engineering and Construction (AEC) Industry in last 10 years and the years to come.
   A. Maryland Center for Construction Education & Innovation (MCCEI) has produced reports that show Digitalization/BIM (Building Information Modeling) is an important tool for Construction firms that support the implementation of Green Building standards and codes.
   B. MCCEI reports have noted that Construction Management Programs have traditionally been strongly influenced by Civil Engineering programs or Architectural programs or Technology programs, but now need to develop an independent identity with more emphasis on construction management topics.
   C. As such UMES current Construction Management Technology (CMT) program has too much emphasis on Civil Engineering Technology topics and not enough emphasis on management aspect of the Construction Management (CM) profession. This fact was noted in a previous American Council for Construction Education (ACCE) accreditation visit.

2. Demand by AEC industry for individuals with four year CM degree
   Government contracts require construction companies (Bidders) to have construction supervisors / construction managers with four-year degrees in CM or in closely related fields. Our CM program update should focus on how to attract more students and how to deliver more graduates with the skills demanded by the Maryland construction industry while updating the curriculum to match the new outcome based assessment model which ACCE is currently adopting as an accreditation process.

3. We need to maintain our position as the leader in this educational program in our region
   UMES traditionally has been offering the only four year program in the field of Construction Management in the State of Maryland, but now faces new competitors. In addition, there are conversations by AEC industry, MCCEI, and Maryland Higher Education Commission (MHEC) of the need for a third institution in the State of Maryland to offer a four year program in the area of construction management.

4. Update our undergraduate program, develop different majors and offer a graduate program
   To cover all bases in educational program of this field, the department is in the process of developing a graduate program in Construction Management, update our undergraduate Construction Management Technology program, and develop programs in Civil Engineering Technology and Architectural Engineering Technology.

5. Urgency for implementation of the updated program
   Maryland Center for Construction Education & Innovation (MCCEI), a state supported entity and an industry-led workforce intermediary, was created to align the industry’s changing workforce needs with Maryland’s education offerings. MCCEI is exploring the idea of a third institution in Maryland to offer a four year program in CM and is working closely with Towson University as a potential institution to do so. Morgan State is offering a 2+3 program which offers a master degree to transfer students from local community colleges in three years while our 2+2 program also requires three years for most transfer students to obtain a four year bachelor degree. Updating our CM program in a timely manner is vital. Target date of Fall 2015 for implementation of the updated program is highly recommended.
UMES Bachelor of Construction Management Technology

The University of Maryland Eastern Shore (UMES) is the only institution in the state of Maryland offering a four year ACCE accredited program in Construction Management. At the Universities at Shady Grove (USG) campus the last two years of this program is offered as a (2+2) program designed for the transfer students from local community colleges. Currently UMES has a pipe line at USG for 2+2 students from Montgomery College and Northern Virginia Community College (NOVA) and working on improving or establishing agreement with other local community colleges such as Fredrick Community College, Prince George Community College, Howard Community College, Anne Arundel Community College, and College of Southern Maryland. To maintain the leadership role in Construction Education by UMES in this region, the program requires periodic update to address the necessary program adjustment meeting both academic and industry demands.

Suggested updates to the existing Construction Management Technology program at the University of Maryland Eastern Shore is for the purpose of attracting more students into this program with the intent of increasing the number of marketable CM graduates from this institution. The need for individuals with a four year degree in construction management is on the rise. These graduates are expected to be proficient in construction management and be familiar with the available technological tools such as BIM and most importantly prove their managerial skills through human interaction and collaboration with the stakeholders in projects.

**Suggested Updates to the Present CMT Program**
Suggested changes are for the purpose of balancing our academic requirements in the areas of construction science and construction management and strengthening the program by adding more relevant courses for the management of construction projects.

**Present courses to be removed from CMT Program**
- CMTE 313 Statics
- CMTE 314 Strength of Materials
- CMTE 315 Environmental Technology I
- CMTE 316 Environmental Technology II
- CMTE 317 Soils in Construction
- CMTE 413 Structural Design I
- CMTE 414 Structural Design II
- CMTE 454 Site Development

**Total:** 25 Credits

**New courses to be added to CMT Program**
- CMTE 319 Statics and Strength of Materials
- CMTE 320 Building Structures
- CMTE 321 BIM Technology for Construction Management I
- CMTE 322 BIM Technology for Construction Management II
- CMTE 326 Mechanical and Electrical Building Systems
- CMTE 427 Soil and Site Development
- CMTE 440 Construction Safety Management
- CMTE 450 Green Building II

**Total:** 25 Credits

Our present CMT program has 25 credits of core construction courses with emphasis on construction science as shown above. The proposal suggests combining present courses as shown to allow addition of new courses and leaving the number of total required courses for the program at 126. New BIM Technology in CM I, BIM Technology in CM II, will be two consecutive courses. Present Green Building course offers introduction to Green
Building and the new Green Building II course will prepare students for the GA exam. The new course in Construction Safety Management will prepare students to develop construction project safety plans. Our present Construction Management II (CMTE 426) will be the capstone course for this program.
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Revised: 10/30/2014
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<td>CMTE 425 Construction Management I</td>
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<td>CMTE 350 Green Building I</td>
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<td>CMTE 426 Construction Management II</td>
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<td>CMTE 450 Green Building II</td>
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<td>CMTE 440 Construction Safety Management</td>
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Business Elective Group I: (Select 6 credits from the following list of courses)

- BUAD 200 Business Ethics 3 Credits
- BUAD 430 Business Technology Ethics / Economics 3 Credits
- BUAD 132 Introduction to Business 3 Credits
- BUAD 242 The Legal Environment for Business 3 Credits
- BUAD 304 Small Business Management 3 Credits
- BUAD 306 Human Resource Management 3 Credits
- MKTG 308 Principles of Marketing 3 Credits
- BUAD 420 International Business 3 Credits
- FINA 340 Financial Management 3 Credits
- FINA 441 Insurance & Business Risk 3 Credits
- FINA 442 Principles of Real Estate 3 Credits

Revised: 10/30/2014
DIRECTIONS:

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---

School: □ Ag & Natural Sciences □ Arts and Professions □ Business and Technology
□ Health Professions □ Library Services

DEPARTMENT: Technology

PRESENT COURSE

□ Change □ Eliminate □ Add

Prefix & Number

Credit Hours:

Title:

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter
Year:

NEW COURSE

Prefix & Number

Credit Hours:

Title:

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter
Year:
Program

- New
- Change
- Eliminate
- Add

Title: Bachelor of Science in Construction Management Technology

Start Date: ☑ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: 2015

Curriculum

- New
- Change
- Eliminate
- Add

Title: Bachelor of Science in Construction Management Technology

Start Date: ☑ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: 2015

Course Title:

Old Catalogue Description: The Construction Management Technology (CMT) curriculum is a four year program of study leading to a Bachelor of Science Degree. This interdisciplinary curriculum accredited by the American Council for Construction Education (ACCE) provides a background in several physical and applied sciences and construction technology. Technical content is balanced by courses in business management, communications, humanities, and social sciences. This broad diversification provides the technical base needed for immediate employment as well as the managerial concepts for career development. Students must complete 126 semester hours of designated coursework including supervised internship in the construction industry. A minimum grade of “C” must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses.

New Catalogue Description: The Construction Management Technology (CMT) curriculum is a four year program of study leading to a Bachelor of Science Degree. This interdisciplinary curriculum accredited by the American Council for Construction Education (ACCE) provides a background in several physical and applied sciences and construction technology. Technical content is balanced by courses in business management, communications, humanities, and social sciences. This broad diversification provides the technical base needed
for immediate employment as well as the managerial concepts for career development. Students must complete 126 semester hours of designated coursework including supervised internship in the construction industry. A minimum grade of “C” must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses. The 126 semester credit hour Bachelor of Science in Construction Management Technology includes 41 credits in general education courses, 67 credits in program core classes, 9 credits in required business courses, 6 credits in business electives and 3 credits in program support courses. A degree in Construction Management Technology prepares individuals for challenging careers in the construction industry with the ability to manage and supervise the total construction process.

Prerequisites: University Admission Standards.

Co-requisites: N/A

Course Outline (Topics Only): The 126 semester credit hour Bachelor of Science in Construction Management Technology includes 41 credits in general education courses, 67 credits in program core classes, 9 credits in required business courses, 6 credits in business electives and 3 credits in program support courses. Students must complete 126 semester hours of designated coursework including supervised internship(s) in the construction industry. A minimum grade of “C” must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses. Course requirements other than those listed should be selected in consultation with the advisor or Department Chairperson.

Course Objectives: The Construction Management Technology (CMT) curriculum is a four year program of study leading to a Bachelor of Science Degree. This interdisciplinary curriculum accredited by the American
Council for Construction Education (ACCE) provides a background in the several physical and applied sciences and construction technology. Technical content is balanced by courses in business management, communications, humanities, and social sciences. This broad diversification provides the technical base needed for immediate employment as well as the managerial concepts for career development. The goal of the Construction Management Technology program is the preparation of well educated professionals for challenging careers in the construction industry. Emphasis is placed on preparing professionals who are capable of managing the total construction process. Graduates qualify for employment with general contracting and subcontracting firms and in government.


Effects on staff and/or facility: No new faculty will be needed for the first third years of the program. An additional
adjuncts may be required to assist with teaching the networking courses the fourth and subsequent years, depending on enrollment numbers. No additional facilities are required.

Lab Fee (if required): N/A
<table>
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<td>3/12/2015</td>
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Revised 12/10/14
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School: Ag & Natural Sciences ☐ Arts and Professions ☐ Business and Technology ☒ Health Professions ☐ Library Services

DEPARTMENT: Technology

PRESENT COURSE

☐ Change ☐ Eliminate ☐ Add

Prefix & Number ___________________________ Credit Hours: __________

Title: ___________________________

Start Date: ☐ Fall ☐ Spring ☐ Summer I ☐ Summer II ☐ Summer III ☐ Winter Year: ________

NEW COURSE

Prefix & Number CMTE 319 Credit Hours: 3.0

Title: Statics and Strength of Materials

Start Date: ☒ Fall ☐ Spring ☐ Summer I ☐ Summer II ☐ Summer III ☐ Winter Year: 2015
Course Title: Statics and Strength of Materials

Old Catalogue Description: N/A

New Catalogue Description: See attached course outline.

Prerequisites: See attached course outline.

Co-requisites: N/A

Course Outline (Topics Only): See attached course outline
Course Objectives: See attached course outline

Course Learning Outcomes: See attached course outline

Effects on staff and/or facility: No effect.

Lab Fee (if required): No lab fee required.
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</table>
CMTE 319 Statics and Strength of Materials

Course Description
This course is an introduction to structural behavior and structural theory. The course covers the development and application of the basic principles of statics and strength of materials as they relate to the analysis of building structures. Illustrations and examples of building structural components, i.e. foundations, columns, beams, etc., will enable construction students to visualize the connection between concepts and real buildings and materials. Lecture 3 hours. Prerequisites: MATH 112 and PHYS 121.

Credit Hours: 3(3-0)

Course Topics
- Introduction to Statics and Strength of Materials.
- Statics.
- Analysis of selected structural systems.
- Load Tracing.
- Strength of Materials.
- Cross-Sectional Properties of Structural Members.
- Bending and Shear in Simple Beams.
- Bending and Shear Stresses in beams.
- Column Analysis and Design.
- Structural Connections.
- Structure, Construction and Architecture.

Course Objectives
- To develop a basic introductory presentation of structural principles and systems.
- To teach basic structural concepts and basic structural theory.
- To introduce the process of structural design.
- To link structural theory to real buildings and structural components.
- Emphasize the use of free-body diagrams.
- The study of cross-sectional properties and analysis & design of beams and columns.

Course Learning Outcomes
At the successful completion of this course, students should be able to:
- Describe the basic principles of statics—external force systems acting on structural elements.
- Explain the major principles of strength of materials—internal forces and deformations that result from external forces.
- Use free-body diagrams.
- Understand cross sectional properties of structural members
- Perform basic beam and column analysis.

Textbook
DIRECTIONS:

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School: □ Ag & Natural Sciences    □ Arts and Professions    □ Business and Technology
□ Health Professions    □ Library Services

DEPARTMENT Technology

PRESENT COURSE

□ Change    □ Eliminate    □ Add

Prefix & Number ___________________________ Credit Hours: __________

Title: ___________________________

Start Date: □ Fall    □ Spring    □ Summer I    □ Summer II    □ Summer III    □ Winter    Year: ________

NEW COURSE

Prefix & Number CMTE 320 Credit Hours: 3.0

Title: Building Structures

Start Date: ▒ Fall    □ Spring    □ Summer I    □ Summer II    □ Summer III    □ Winter    Year: 2015
PROGRAM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title: ____________________________________________

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: ________

CURRICULUM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title: ____________________________________________

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: ________

Course Title: Building Structures

Old Catalogue Description: N/A

_________________________________________________________________________________

New Catalogue Description: See attached course outline.

_________________________________________________________________________________

_________________________________________________________________________________

Prerequisites: See attached course outline.

_________________________________________________________________________________

_________________________________________________________________________________

Co-requisites: See attached course outline.

_________________________________________________________________________________

Course Outline (Topics Only): See attached course outline.
Course Objectives: See attached course outline.

Course Learning Outcomes: See attached course outline.

Effects on staff and/or facility: No effect.

Lab Fee (if required): No lab fee required.
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</table>
CMTE 320 Building Structures

Course Description
This course will cover common building structural systems including wood, steel, concrete and masonry. Construction Management students will gain a conceptual understanding of the basic principles of structural systems and how these systems perform, as well as, a familiarity with the components, sizes, connections, methods of assembly, resistance, building codes and other factors affecting their application in buildings. Lecture 3 hours. Prerequisites: CMTE 319.

Credit Hours: 3(3-0)

Course Topics
- Basic Concepts of Building Structures.
- Investigation of Structures.
- Structural Elements.
- Wood Structures.
- Steel Structures.
- Concrete Structures.
- Masonry Structures.
- Building Foundations and Site Structures.
- Lateral-Force Effects.
- Building Structures Design Examples.

Course Objectives
The objective of this course is to:
- Expose students to fundamental structural principles.
- Introduce students to the design of simple structural systems for buildings.
- Understand wood frame structural systems
- Understand how steel systems for building structures
- Expose students to Concrete foundations
- Expose students to Reinforced concrete & masonry

Course Learning Outcomes
At the successful completion of this course, students shall be able to:
- Describe basic structural design principles.
- Explain building code requirements.
- Explain the basic design of structural components.
- Explain methods used in the design of simple structural systems such as:
  - Wood frame structural systems.
  - Steel systems for building structures.
  - Concrete foundations
  - Reinforced concrete & masonry

Textbook
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School: Ag & Natural Sciences □ Arts and Professions □ Business and Technology □ Health Professions □ Library Services

DEPARTMENT Technology

PRESENT COURSE

□ Change □ Eliminate □ Add

Prefix & Number ____________________________ Credit Hours: ______________

Title: ____________________________________

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter Year: ____________

NEW COURSE

Prefix & Number CMTE 321 Credit Hours: 3.0

Title: BIM Technology for Construction Management I

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter Year: 2015
PROGRAM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title:__________________________

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year:________

CURRICULUM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title:__________________________

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year:________

Course Title: BIM Technology for Construction Management I

Old Catalogue Description: N/A

New Catalogue Description: See attached course outline.

Prerequisites: See attached course outline.

Co-requisites: See attached course outline.

Course Outline (Topics Only): See attached course outline.
Course Objectives: See attached course outline.

Course Learning Outcomes: See attached course outline.

Effects on staff and/or facility: No effect.

Lab Fee (if required): No lab fee required.
<table>
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CMTE 321 BIM Technology for Construction Management I

Course Description
This is the first course of a two course sequence on the application of BIM technology in Construction Management. This course will cover introduction to digital tools available today in Construction Management with emphasis on using current software for the development of BIM models and their implementation in management of construction projects. Lecture 1 hour, lab 4 hours. Prerequisites: EDTE 131, CMTE 201, and CMTE 205.

Credit Hours: 3(1,4)

Course Topics
- Introduction to Digital tools used in Construction Management
- Introduction to Building Information Modeling (BIM) and tools to develop BIM Models
- Team formation for the purpose of BIM Model development
- Developing Architectural BIM Models
- Developing Structural BIM Models
- Developing MEP BIM Models
- Develop an estimate for Cost and Time for the Construction phase of the BIM Model and the time and cost to develop and implement the BIM model
- BIM and Model update
- BIM and Clash Detection
- BIM and Construction Administration (RFI, Reports, Punch List)
- Green BIM
- BIM and Maintenance and Operation

Course Objectives
- To introduce the application of digital tools in Construction Management.
- To develop a basic introduction to Building Information Modeling (BIM).
- To teach Construction Management techniques using BIM as a tool.
- To introduce the process of BIM Model development.
- To introduce Clash Detection of components in a BIM Model.
- To introduce Operation and Maintenance of buildings using BIM models.

Course Learning Outcomes
At the successful completion of this course, students should be able to:
- Identify and use available technological tools in Construction Management.
- Explain the major principles of Building Information Modeling.
- Develop and manage a simple BIM Model.
- Understand the components and capabilities of BIM Models.
- Understand Construction Management using BIM.

Textbook
By Brad Hardin, Copyright © 2014, Wiley Publication, Inc.
PROPOSAL FOR COURSE, PROGRAM OR CURRICULUM STATUS

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School: ☐Ag & Natural Sciences ☐Arts and Professions ☑Business and Technology
☐Health Professions ☐Library Services

DEPARTMENT Technology

PRESENT COURSE

☐Change ☐Eliminate ☐Add

Prefix & Number ________________ Credit Hours: ________________

Title: __________________________

Start Date: ☐Fall ☐Spring ☐Summer I ☐Summer II ☐Summer III ☐Winter Year: ________________

NEW COURSE

Prefix & Number CMTE 322 Credit Hours: 3.0

Title: BIM Technology for Construction Management II

Start Date: ☑Fall ☐Spring ☐Summer I ☐Summer II ☐Summer III ☐Winter Year: 2015
PROGRAM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title:

☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year:

CURRICULUM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title:

☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year:

Course Title: BIM Technology for Construction Management II

Old Catalogue Description: N/A

New Catalogue Description: See attached course outline.

Prerequisites: See attached course outline.

Co-requisites: N/A

Course Outline (Topics Only): See attached course outline.
Course Objectives: See attached course outline.

Course Learning Outcomes: See attached course outline.

Effects on staff and/or facility: No effect.

Lab Fee (if required): No lab fee required.
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CMTE 329 BIM Technology for Construction Management II

Course Description
This is the second course of a two course sequence on the application of available current technology in Construction Management. This course will continue the study of application of digital tools for Construction Management with emphasis on using current software for development of BIM models and their implementation in management of Commercial Construction. Lecture 1 hour, lab 4 hours. Prerequisites: CMTE 321

Credit Hours: 3(1-4)

Course Topics
- Building Information Modeling (BIM) for commercial projects
- Architectural BIM Models in Commercial Construction Projects
- Structural BIM Models in Commercial Construction Projects
- MEP BIM Models in Commercial Construction Projects
- Cost and Time for the Construction phase of the BIM Model and the time and cost to develop and implement the BIM model
- BIM and Model update
- BIM and Clash Detection
- BIM and Construction Administration (RFI, Reports, Punch List)
- Green BIM
- BIM and Facility Management

Course Objectives
The objective of this course is to:
- Develop the knowledge of application of digital tools in Construction Management.
- Develop the application of BIM in Construction Management.
- Develop Clash Detection of components in a BIM Model.
- Introduce Facility Management using BIM models.

Course Learning Outcomes
At the successful completion of this course, students should be able to:
- Explain available technological tools in Construction Management.
- Design and manage a BIM Model in commercial construction projects.
- Demonstrate BIM not only for a virtual representation but for the purpose of information management throughout the different phases of a project from inception to design development to construction and facility management.

Textbook
PROPOSAL FOR COURSE, PROGRAM OR CURRICULUM STATUS

DIRECTIONS:

Provide one set of forms for each course, curriculum or program change. Submit one signed copy. All proposals must have the following: old catalogue description, new catalogue description, start date, course prerequisites, course co-requisites, course outline (topics only), course objectives, and course learning outcomes, effects on staff and/or facility, and lab fees.

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_______
School: □Ag & Natural Sciences □Arts and Professions □Business and Technology
□Health Professions □Library Services

DEPARTMENT Technology

PRESENT COURSE

□Change □Eliminate □Add

Prefix & Number ____________________________ Credit Hours: ____________

Title: ____________________________________

Start Date: □Fall □Spring □Summer I □Summer II □Summer III □Winter Year: ______

NEW COURSE

Prefix & Number CMTE 326 Credit Hours: 3.0

Title: Mechanical and Electrical Building Systems

Start Date: □Fall □Spring □Summer I □Summer II □Summer III □Winter Year: 2015
PROGRAM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title: ________________________________

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: ________

CURRICULUM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title: ________________________________

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: ________

Course Title: Mechanical and Electrical Building Systems

Old Catalogue Description: N/A

New Catalogue Description: See attached course outline.

Prerequisites: See attached course outline.

Co-requisites: N/A

Course Outline (Topics Only): See attached course outline.
Course Objectives:  See attached course outline.

Course Learning Outcomes:  See attached course outline.

Effects on staff and/or facility:  No effect.

Lab Fee (if required):  No lab fee required.
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Course Description
This course covers the basics of Mechanical and Electrical systems in buildings for Construction Managers, including HVAC, plumbing, fire protection systems, lighting systems, vertical transportation for buildings, sound control and year-round climate control in buildings. The course covers code provisions and cost estimations. (Lecture 3 hours). Prerequisites: CMTE 201, ENGL 305, PHYS 121, PHYS 122, MATH 112.

Credit Hours: 3(3-0)

Course Topics
- Thermal, Environmental and Comfort concepts.
- HVAC Systems.
- Solar Thermal Systems.
- Plumbing Fundamentals.
- Water Supply systems.
- Sanitary drainage, wastewater treatment & disposal and storm water drainage systems.
- Electrical materials, equipment and design principles.
- Lighting Systems.
- Telecommunication systems.
- Acoustical control systems.
- Conveying Systems.
- Sustainable Technologies.

Course Objectives
The objective of this course is to expose students to:
- Basics of Mechanical and Electrical Systems.
- A broad-scope introduction to building mechanical and electrical materials.
- Fundamentals of design concepts and engineering principles.
- Basic working-level knowledge of mechanical and electrical practices.

Course Learning Outcomes
At the successful completion of this course, student shall be able to:
- Explain a basic knowledge of the fundamentals of designing Mechanical & Electrical systems.
- Describe basic mechanical and electrical systems in buildings.
- Explain principles and practices in:
  - HVAC, plumbing, piping, storm drainage
  - Illumination, electrical power distribution
  - Building telecommunications, acoustics, conveying systems
  - Fire protection and energy conservation systems in buildings

Textbook
PROPOSAL FOR COURSE, PROGRAM OR CURRICULUM STATUS

SCHOOL OF BUSINESS & TECHNOLOGY

DIRECTIONS:

Provide one set of forms for each course, curriculum or program change. Submit one signed copy. All proposals must have the following: old catalogue description, new catalogue description, start date, course prerequisites, course co-requisites, course outline (topics only), course objectives, and course learning outcomes, effects on staff and/or facility, and lab fees.

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| School: | □ Ag & Natural Sciences | □ Arts and Professions | □ Business and Technology |
|□ Health Professions | □ Library Services |

DEPARTMENT: Technology

PRESENT COURSE

□ Change
□ Eliminate
□ Add

Prefix & Number: ____________

Credit Hours: ____________

Title: ________________________

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter Year: ____________

NEW COURSE

Prefix & Number: CMTE 427

Credit Hours: 4.0

Title: Soils and Site Development

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter Year: 2015
Title: 

Start Date:  □ Fall  □ Spring  □ Summer I  □ Summer II  □ Summer III  □ Winter  Year: ________

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CURRICULUM
----------------------------------------

Title: 

Start Date:  □ Fall  □ Spring  □ Summer I  □ Summer II  □ Summer III  □ Winter  Year: ________

Course Title:  Soils and Site Development.

Old Catalogue Description:  N/A

New Catalogue Description:  See attached course outline.

Prerequisites:  See attached course outline.

Co-requisites:  N/A

Course Outline (Topics Only):  See attached course outline.
Course Objectives: See attached course outline.

Course Learning Outcomes: See attached course outline.

Effects on staff and/or facility: No effect.

Lab Fee (if required): No lab fee required.
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Course Description
This course covers the identification and properties of soils; the influence of soil material in certain construction operations and in the construction contract; site selection criteria, physical influences on land, zoning, government agencies rules and regulations, land search and market analysis, legal procedures for land acquisition, design and construction process for land development, earthwork, storm water and sediment control management, water and sewer systems. Lecture 3 contact hours, Laboratory 2 contact hours. Prerequisites: CMTE 201, CMTE 214, CMTE 205

Credit Hours 4(3-2)

Course Topics
- Introduction to land development
- Site feasibility studies
- Soil types, tests and reports
- Land use and Zoning
- Permitting and legal process in land development
- Design and Permit documents for land development
- Construction process for land development
- Storm water and Sediment control strategies
- Water, utility and sewer systems
- Redevelopments

Course Objectives
The objective of this course is to develop the knowledge of:
- Properties of soils and interpretation of reports.
- Soil considerations in excavation & embankment and foundation construction.
- Land & Site Development in Construction Management.
- Application of Green Building strategies in land development.
- Plan and report readings in relation to land development.
- Rules and regulations in land development.
- Methods & equipment in relation to land development.

Course Learning Outcomes
At the successful completion of this course, students should be able to:
- Understand criteria for land development.
- Demonstrate basic knowledge in construction soil types and soil report.
- Demonstrate basic knowledge in the design and construction process of land development.
- Understand the importance of Green Building strategies in land development.
- Demonstrate basic knowledge in earthwork, storm water management, sediment control strategies, design and construction of water and sewer systems, design and construction of roads and streets.

Textbook
TBD
DIRECTIONS:

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School:  ☐Ag & Natural Sciences  ☐Arts and Professions  ☒Business and Technology
☐Health Professions  ☐Library Services

DEPARTMENT   Technology

PRESENT COURSE

☐Change  ☐Eliminate  ☐Add

Prefix & Number__________________________  Credit Hours:____________________

Title:____________________________________

Start Date: ☐Fall  ☐Spring  ☐Summer I  ☐Summer II  ☐Summer III  ☐Winter  Year:________

NEW COURSE

Prefix & Number  CMTE 440  Credit Hours: 3.0

Title:  Construction Safety Management

Start Date: ☐Fall  ☐Spring  ☐Summer I  ☐Summer II  ☐Summer III  ☐Winter  Year: 2015
PROGRAM

□ New □ Change □ Eliminate □ Add

Title: __________________________

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter Year: __________

CURRICULUM

□ New □ Change □ Eliminate □ Add

Title: __________________________

Start Date: □ Fall □ Spring □ Summer I □ Summer II □ Summer III □ Winter Year: __________

Course Title: Construction Safety Management

Old Catalogue Description: N/A

New Catalogue Description: See attached course outline.

Prerequisites: See attached course outline.

Co-requisites: N/A

Course Outline (Topics Only): See attached course outline.
Course Objectives: See attached course outline.

Course Learning Outcomes: See attached course outline.

Effects on staff and/or facility: No effect.

Lab Fee (if required): No lab fee required.
## Signatures for Approval

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CMTE 440 Construction Safety Management

Course Description
This course covers the requirements of OSHA standards as applied to the building construction industry. Topics include general safety and health provisions; accident prevention; hazard identification; records; responsibility for compliance and development of construction safety management programs. Lecture 3 hours. Prerequisites: Senior standing or permission of instructor.

Credit Hours: 3(3-0)

Course Topics
- Safety Movement and the Construction Industry.
- Cost of Accidents: Why Safety is Important.
- Roles of construction personnel in safety and health.
- Accident Causation Theories.
- Ethics and Safety.
- Workers’ Compensation.
- OSHA compliance.
- Program and Policies.
- Accident Investigation, Reporting and Record Keeping.
- Emergency Response Plan.
- Total Safety Management.
- Environmental Safety and ISO 14000.
- Promoting Safety.

Course Objectives
The objectives of this course are to:
- Instruct the students on the fundamental safe practices and safety programs commonly implemented on construction sites.
- Study the OSHA standards, basic mandatory procedures, training and records.
- Examine ethics and legal requirements for compliance and inspection.
- Impress upon the students that safety is a fundamental part of construction management, that besides being required by law, it is an important aspect of good business practice.

Course Learning Outcomes
Upon successfully completing this course, students will be able to:
- Describe management and employee responsibilities for job site safety and health.
- Identify safety and health issues for each phase of a construction project.
- Implement procedures and policies to promote worker safety and health during construction.
- Develop a Construction Site Safety Plan also known as a Project Accident Prevention Plan (PAPP).
- Define and use terms relevant to safety and health in construction.
- Explain OSHA standards to minimize the risk of citations.

Textbook
DIRECTIONS:
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School:  □Ag & Natural Sciences □Arts and Professions  □Business and Technology  □Health Professions □Library Services

DEPARTMENT   Technology

PRESENT COURSE

□Change  □Eliminate  □Add

Prefix & Number ____________________________ Credit Hours: ______________

Title: ____________________________________

Start Date: □Fall  □Spring  □Summer I  □Summer II  □Summer III □Winter   Year: ___________

NEW COURSE

Prefix & Number CMTE.450 Credit Hours: 3.0

Title: Green Building II

Start Date: □Fall  □Spring  □Summer I  □Summer II  □Summer III □Winter   Year: 2015
PROGRAM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title:

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: __________

CURRICULUM

☐ New  ☐ Change  ☐ Eliminate  ☐ Add

Title:

Start Date: ☐ Fall  ☐ Spring  ☐ Summer I  ☐ Summer II  ☐ Summer III  ☐ Winter  Year: __________

Course Title: Green Building II

Old Catalogue Description: N/A

New Catalogue Description: See attached course outline.

Prerequisites: See attached course outline.

Co-requisites: N/A

Course Outline (Topics Only): See attached course outline.
Course Objectives: See attached course outline.

Course Learning Outcomes: See attached course outline

Effects on staff and/or facility: No effect.

Lab Fee (if required): No lab fee required.
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CMTE 450 Green Building II

Course Description
This is the second course of a two course sequence in the study of fundamentals of sustainable construction in Construction Management. This course will continue the study of application of Green Building strategies in Construction Management with emphasis on in-depth studies of the different categories in the LEED rating systems of Green Projects. At the conclusion of this course students will have a documented, up-to-date understanding of the most current green building principles and practices in construction management and sustainability. Lecture 3 hours. Prerequisites: CMTE 350.

Credit Hours: 3(3-0)

Course Topics
• Sustainable Sites
• Water Efficiency
• Energy and Atmosphere
• Materials and Resources
• Indoor Environmental Quality
• Innovation and Design Process
• Regional Priority

Course Objectives
The objectives of this course are to:
• Study the role of buildings and their impact on the environment.
• Teach best sustainable construction practices.
• Examine the LEED rating system and categories for projects.
• Understand the role of CM in supporting green building design & construction.
• Show application of Green Building strategies in Construction Management.
• Develop knowledge for LEED credential exams.

Course Learning Outcomes
At the successful completion of this course, students should be able to:
• Formulate a broad understanding of sustainable construction strategies.
• Define the role of buildings and their environmental impact.
• Describe the intent of the prerequisites and credits of LEED in the different categories.
• Develop strategies focused on the CM's role in supporting a project seeking certification.
• Analyze the connection between construction practices and sustainability
• Demonstrate a broad knowledge of LEED rating systems.
• Explain the importance of Green Building strategies in Construction Management.

Textbook