**NEW YORK CITY COLLEGE OF TECHNOLOGY**

**of the City University of New York**

**Department of Construction Management & Civil Engineering Technology**

**CURRICULUM MODIFICATION PROPOSAL**

**Proposal for Three New Courses:**

**CMCE 4402 - Fundamentals of Engineering Practice**

**CMCE 4403 - Professional Practice and Ethics**

**CMCE 4461 - Instrumentation and Condition Assessments for Civil and Construction Engineers**

**First Submission: February 21, 2020**

**Revised: May 15, 2020**

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New York City College of Technology, CUNY

# CURRICULUM MODIFICATION PROPOSAL FORM

This form is used for all curriculum modification proposals. See the [Proposal Classification Chart](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-09-Proposal_Classification_Chart.pdf) for information about what types of modifications are major or minor. Completed proposals should be emailed to the Curriculum Committee chair.

|  |  |
| --- | --- |
| **Title of Proposal** | New Courses: CMCE 4402, CMCE 4403 and CMCE 4461 |
| **Date** | February 21, 2020 |
| **Major or Minor** | Major |
| **Proposer’s Name** | Ivan L. Guzman |
| **Department** | Construction Management and Civil Engineering Technology |
| **Date of Departmental Meeting in which proposal was approved** | January 29, 2020 |
| **Department Chair Name** | Melanie Villatoro |
| **Department Chair Signature and Date** |  |
| **Academic Dean Name** | Gerarda Shields |
| **Academic Dean Signature and Date** |  |
| **Brief Description of Proposal**  (Describe the modifications contained within this proposal in a succinct summary. More detailed content will be provided in the proposal body. | Three courses are offered as part of this proposal. The courses are technical electives available to Construction Engineering BTECH students. The courses are part of a department effort to widen the breadth of available electives by offering courses that address topics needed for engineering licensure (CMCE 4402), professional practice trends (CMCE 4403) and emerging/cutting edge technical topics (CMCE 4461). |
| **Brief Rationale for Proposal**  (Provide a concise summary of why this proposed change is important to the department. More detailed content will be provided in the proposal body). | The proposal includes three new Construction Engineering BTECH level departmental electives:  CMCE 4402 – *Fundamentals of Engineering Practice* – This course offers a culminating experience on fundamental engineering knowledge. It introduces expanding engineering concepts on an array of topics covered during licensure examinations.  CMCE 4403 – *Professional Practice and Ethics* – The course is focused on improving the understanding of professional practices in Architecture, Engineering and Construction Industries.  CMCE 4461 *– Instrumentation and Condition Assessments for Civil and Construction Engineers* – The course will cover the fundamentals and application of electronic/mechanical measuring systems and condition assessments commonly used within the Civil and Construction Engineering industries. |
| **Proposal History**  (Please provide history of this proposal: is this a resubmission? An updated version? This may most easily be expressed as a list). | This is a new Proposal |

Please include all appropriate documentation as indicated in the Curriculum Modification Checklist.

For each new course, please also complete the New Course Proposal and submit in this document.

Please submit this document as a single .doc or .rtf format. If some documents are unable to be converted to .doc, then please provide all documents archived into a single .zip file.

**ALL PROPOSAL CHECK LIST**

|  |  |
| --- | --- |
| Completed CURRICULUM MODIFICATION FORM including: |  |
| * Brief description of proposal | X |
| * Rationale for proposal | X |
| * Date of department meeting approving the modification | X |
| * Chair’s Signature | x |
| * Dean’s Signature | x |
| Evidence of consultation with affected departments  List of the programs that use this course as required or elective, and courses that use this as a prerequisite. | N/A |
| Documentation of Advisory Commission views (if applicable). | N/A |
| Completed [Chancellor’s Report Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-09-Chancellor_Report_Quick_Reference_Guide1.doc). | X |

**EXISTING PROGRAM MODIFICATION PROPOSALS**

|  |  |
| --- | --- |
| Documentation indicating core curriculum requirements have been met for new programs/options or program changes. | N/A |
| Detailed rationale for each modification (this includes minor modifications) | N/A |

# CMCE 4402 - Fundamentals of Engineering Practice

# 

New York City College of Technology, CUNY

## New Course Proposal Form – CMCE 4402

This form is used for all new course proposals. Attach this to the [Curriculum **Modification** Proposal Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-10-Curriculum_Modification_Proposal_Form.docx) and submit as one package as per instructions. Use one New Course Proposal Form for each new course.

|  |  |
| --- | --- |
| **Course Title** | Fundamentals of Engineering Practice |
| **Proposal Date** | 02/21/2020 |
| **Proposer’s Name** | Navid Allahverdi |
| **Course Number** | CMCE 4402 |
| **Course Credits, Hours** | 3 Credits, 3 hour/week |
| **Course Pre / Co-Requisites** | CMCE 3602 |
| **Catalog Course Description** | Fundamentals of Engineering Practice provide a culminating experience on fundamental knowledge and practice of different disciplines of Civil Engineering. It introduces new concepts on subjects of Engineering Economy, Construction Engineering, Structural Engineering, Geotechnical Engineering, Transportation Engineering, Hydrology and Hydraulic Design. This course discusses design examples with a focus on reinforcing and expanding topics covered in Fundamentals of Engineering (FE), and Principles and Practice of Engineering (PE) exam administered by National Council of Examiners for Engineering and Surveying (NCEES). |
| **Brief Rationale**  Provide a concise summary of why this course is important to the department, school or college. | This course will be offered as a technical elective course for Construction Engineering Technology program in BTECH level. The course introduces or expands on topics required for Civil Engineering licensure examinations. |
| **CUNY – Course Equivalencies**  Provide information about equivalent courses within CUNY, if any. | None. |
| **Intent to Submit as Common Core**  If this course is intended to fulfill one of the requirements in the common core, then indicate which area. | No. |
| **For Interdisciplinary Courses:**   * Date submitted to ID Committee for review * Date ID recommendation received   - Will all sections be offered as ID? Y/N | Not Applicable. |
|  |
|  |
| **Intent to Submit as a Writing Intensive Course** | No. |

Please include all appropriate documentation as indicated in the NEW COURSE PROPOSAL Combine all information into a single document that is included in the Curriculum Modification Form.

**COURSE OVERVIEW AND RATIONALE – CMCE 4402**

This course will be offered as a technical elective course for Construction Engineering Technology program in BTECH level. The course introduces or expands on topics required for Civil Engineering licensure examinations. The topics covered will complement and extend our technology focused program in order to enable graduates to succeed in obtaining professional licensure examinations.

The course has been offered during previous years as a technical elective under “special topic” title with a successful track record. The subjects include Engineering Economy, Construction Engineering, Structural Engineering, Geotechnical Engineering, Transportation Engineering, Hydrology and Hydraulic Design.

**NEW COURSE PROPOSAL CHECK LIST – CMCE 4402**

Use this checklist to ensure that all required documentation has been included. You may wish to use this checklist as a table of contents within the new course proposal.

|  |  |
| --- | --- |
| **Completed NEW COURSE PROPOSAL FORM** |  |
| * Title, Number, Credits, Hours, Catalog course description | x |
| * Brief Rationale | x |
| * CUNY – Course Equivalencies | x |
| Completed [Library Resources and Information Literacy Form](https://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/curriculum_modification_library_form-rev3F16.doc) | x |
| **Course Outline**  Include within the outline the following. |  |
| Hours and Credits for Lecture and Labs  If hours exceed mandated Carnegie Hours, then rationale for this | x |
| Prerequisites/Co- requisites | x |
| Detailed Course Description | x |
| Course Specific Learning Outcome and Assessment Tables   * Discipline Specific * General Education Specific Learning Outcome and Assessment Tables | x |
| Example Weekly Course outline | x |
| Grade Policy and Procedure | x |
| Recommended Instructional Materials (Textbooks, lab supplies, etc.) | x |
| Library resources and bibliography | x |
| **Course Need Assessment.**  Describe the need for this course. Include in your statement the following information. |  |
| Target Students who will take this course. Which programs or departments, and how many anticipated?  Documentation of student views (if applicable, e.g. non-required elective). | x |
| Projected headcounts (fall/spring and day/evening) for each new or modified course. | x |
| If additional physical resources are required (new space, modifications, equipment), description of these requirements. If applicable, Memo or email from the VP for Finance and Administration with written comments regarding additional and/or new facilities, renovations or construction. | x |
| Where does this course overlap with other courses, both within and outside of the department? | x |
| Does the Department currently have full time faculty qualified to teach this course? If not, then what plans are there to cover this? | x |
| If needs assessment states that this course is required by an accrediting body, then provide documentation indicating that need. | x |
| **Course Design**  Describe how this course is designed. |  |
| Course Context (e.g. required, elective, capstone) | x |
| Course Structure: how the course will be offered (e.g. lecture, seminar, tutorial, fieldtrip)? | x |
| Anticipated pedagogical strategies and instructional design (e.g. Group Work, Case Study, Team Project, Lecture) | x |
| How does this course support Programmatic Learning Outcomes? | x |
| Is this course designed to be partially or fully online? If so, describe how this benefits students and/or program. | x |
| **Additional Forms for Specific Course Categories** |  |
| [Interdisciplinary Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/Application-for-Interdisciplinary-Course-Designation.docx) (if applicable) | N/A |
| Interdisciplinary Committee Recommendation (if applicable and if received)\*  \*Recommendation must be received before consideration by full Curriculum Committee | N/A |
| [Common Core (Liberal Arts) Intent to Submit](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/CommonCoreCourseSubmissionForm_4.2.12.doc) (if applicable) | N/A |
| Writing Intensive Form if course is intended to be a WIC (under development) | N/A |
| If course originated as an experimental course, then results of evaluation plan as developed with director of assessment. | N/A |
| **(Additional materials for** [**Curricular Experiments**](http://www.300jaystreet.com/college-council/curriculum_proposals/curricular-experiments)**)** |  |
| Plan and process for evaluation developed in consultation with the director of assessment. (Contact Director of Assessment for more information). | N/A |
| Established Timeline for Curricular Experiment | N/A |

## Library Resources & Information Literacy: Major Curriculum Modification – CMCE 4402

Please complete for **all** major curriculum modifications. This information will assist the library in planning for new courses/programs.

Consult with your library faculty subject specialist (<http://cityte.ch/dir>) **3 weeks before the proposal deadline**.

**Course proposer:** please complete boxes 1-4. **Library faculty subject specialist:** please complete box 5.

|  |  |  |
| --- | --- | --- |
| **1** | **Title of proposal**  CMCE 4402 – *Fundamentals of Engineering Practice* | **Department/Program CMCE**  Construction Management and Civil Eng. Tech |
|  | **Proposed by** (include email & phone)  Navid Allahverdi  [nallahverdi@citytech.cuny.edu](mailto:nallahverdi@citytech.cuny.edu) EXT:4950 | **Expected date course(s) will be offered**  Spring 2021  **# of students 24** |

|  |  |
| --- | --- |
| **2** | **The library cannot purchase reserve textbooks for every course at the college, nor copies for all students. Consult our website (**[**http://cityte.ch/curriculum**](http://cityte.ch/curriculum)**) for articles and eBooks for your courses, or our open educational resources (OER) guide (**[**http://cityte.ch/oer**](http://cityte.ch/oer)**). Have you considered using a freely-available OER or an open textbook in this course?**  The course adopts an open textbook in electronic format.  Also, the instructor will provide students with electronic lecture notes in OER format. |

|  |  |
| --- | --- |
| **3** | **Beyond the required course materials, are City Tech library resources sufficient for course assignments? If additional resources are needed, please provide format details (e.g. eBook, journal, DVD, etc.), full citation (author, title, publisher, edition, date), price, and product link.**  No additional resources are required. |

|  |  |
| --- | --- |
| **4** | **Library faculty focus on strengthening students' information literacy skills in finding, critically evaluating, and ethically using information. We collaborate on developing assignments and customized instruction and research guides. When this course is offered, how do you plan to consult with the library faculty subject specialist for your area? Please elaborate.**  The instructor has developed electronic resources on Blackboard. |

|  |  |
| --- | --- |
| **5** | **Library Faculty Subject Specialist \_\_\_Anne Leonard\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Comments and Recommendations**  **Date** |

## Outline – CMCE 4402

**NEW YORK CITY COLLEGE OF TECHNOLOGY**

**of the City University of New York**

**The Department of Construction Management and**

**Civil Engineering Technology**

**CMCE 4402 Fundamentals of Engineering Practice**

**Course Description**

Fundamentals of Engineering Practice provide a culminating experience on fundamental knowledge and practice of different disciplines of Civil Engineering. It introduces new concepts on subjects of Engineering Economy, Construction Engineering, Structural Engineering, Geotechnical Engineering, Transportation Engineering, and Hydrology and Hydraulic Design. This course discusses design examples with a focus on reinforcing and expanding topics covered in Fundamentals of Engineering (FE) and Principles and Practice of Engineering (PE) exams administered by National Council of Examiners for Engineering and Surveying (NCEES).

**Prerequisite(s)** CMCE3602

**3 class hours, 3 credits**

**Required Textbook**

National Council of Examiners for Engineering and Surveying (NCEES), *Fundamentals of Engineering Reference Handbook*, 9.5 Ed., NCEES, 2019, 287pp. ISBN 978-1-932613-67-4

**Course Topics**

This course covers a breadth of topics spanning different domains of expertise required for successful design and delivery of engineering projects. The course will emphasize the multidisciplinary nature of engineering practices. The topics include:

* Engineering Economy: Interest Rate, Time Value of Money, Rate of Return, Cost-Benefit Analysis, Life Cycle (Depreciation);
* Structural Engineering: Advanced Design of Concrete & Steel Components, Analysis of Determinate/Indeterminate Structures, Deformations (Moment-Rotation)
* Geotechnical Engineering: Soil Properties and Testing, Effective Stress, Seepage/Flownet, Retaining Walls (Active/Passive Pressure), Foundation Types, and Consolidation Settlement.
* Transportation Engineering: Pavement Design, Transportation Capacity & Planning, Geometric Design (Horizontal/Vertical Curve), Earthwork
* Hydrology and Hydraulic Design: Infiltration, Rainfall, Runoff, Detention, Flood flows, Watersheds, Manning equation, Bernoulli theorem, Open-channel flow, Pipe flow.
* Construction Engineering: Project scheduling (e.g., CPM, allocation of resources), and Construction Estimating.

**Student Outcomes**

Student Outcomes are aligned with the provisions of General Education goals for City Tech graduates, and ABET. ABET is the nationally recognized accrediting body for engineering technology programs. The CMCE department has adopted the most current ABET student outcomes criterion. Student performance in this course will be assessed based on the following learned capabilities:

|  |  |
| --- | --- |
| Student Outcomes | Assessment Method |
| A. Knowledge  General Education:  Knowledge > Breadth of Knowledge:  “Understand and appreciate the range of academic disciplines and their relationship to the fields of professional and applied study.”  ABET:  “An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline;” | **Assessment is conducted via specifically developed Rubrics for the course based on the individual exams and quizzes.** |
| B. Design Solutions  General Education:  Skills > Inquiry/Analysis > “Use creativity to solve problems.”  ABET:  “An ability to design solutions for broadly-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline;” | **Assessment is conducted via specifically developed Rubrics for the course based on the individual and group assignments.** |
| C. Communication  General Education:  Skills > Communicate > “Communicate in diverse settings and groups, using written (both reading and writing), oral (both speaking and listening), and visual means, and in more than one language.”  ABET:  “An ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical.” | **Assessment is conducted via Rubrics prepared for a presentation made on a research assignment.** |

**Grading Policy**

Assignments 25%

Final Exam 40%

Midterm Exam 35%

**Final Grade = 100%**

**Letter Grades**

Numerical grades will be converted to letter grade using following table:



**Technology**

Computer station is required for each student. Students are expected to use Blackboard® in this course. All course materials and examinations are accessible on Blackboard®.

**Attendance Policy**

Students are expected to adhere to the attendance policy as outlined in the Student Handbook.

**Academic Integrity Policy**

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity.

Accordingly, **academic dishonesty is prohibited** in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, or expulsion.

**Class Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Topic** | **Reading** | **Assignment** |
| 1 | Engineering Economy – 1 | Lecture Notes,  Pg 131-137 | For assignments refer to Blackboard. |
| 2 | Engineering Economy – 2 |  |  |
| 3 | Engineering Economy – 3 |  |  |
| 4 | Structural Engineering – 1 | Lecture Notes,  Pg 152-164 |  |
| 5 | Structural Engineering – 2 |  |  |
| 6 | Structural Engineering – 3 |  |  |
| 7 | Midterm Exam |  |  |
| 8 | Geotechnical Engineering – 1 | Lecture Notes,  Pg 146-151 |  |
| 9 | Geotechnical Engineering – 2 |  |  |
| 10 | Hydrology & Hydraulics – 1 | Lecture Notes,  Pg 165-168 |  |
| 11 | Hydrology & Hydraulics – 2 |  |  |
| 12 | Transportation Engineering – 1 | Lecture Notes,  Pg 169-176 |  |
| 13 | Transportation Engineering – 2 |  |  |
| 14 | Construction Engineering | Lecture Notes,  Pg 177-178 |  |
| 15 | Final Exam |  |  |

New York City College of Technology, CUNY

## New Course Need Assessment – CMCE 4402

**Target Students who will take this course. Which programs or departments, and how many anticipated?**

Students in the Construction Engineering Program (BTECH level) who are planning to obtain Professional Licensure to perform engineering practice in the capacity of “Engineer of Record.”

**Projected headcounts (fall/spring and day/evening) for each new or modified course.**

One section for the first year. 24 Students per section.

**If additional physical resources are required (new space, modifications, equipment), description of these requirements.**

Basic smart room set-up: a screen, and an overhead projector. Computer stations are needed for students.

**Where does this course overlap with other courses, both within and outside of the department?**

The course does not have direct overlap with existing courses. The course introduces new topics or expand on existing concepts learned in the core curriculum.

**Does the Department currently have full time faculty qualified to teach this course? If not, then what plans are there to cover this?**

Yes. There are full time faculty members to teach the course.

**If needs assessment states that this course is required by an accrediting body, then provide documentation indicating that need.**

N/A

## Course Design – CMCE 4402

**Course Context (e.g. required, elective, capstone)**

This course will be offered as an elective in the BTECH program.

**Course Structure**

This class will run in a lecture/activity format.

**Anticipated pedagogical strategies and instructional design (e.g. Group Work, Case Study, Team Project, Lecture)**

This class will run in a lecture-activity style/format. The course will discuss multiple case studies of engineering projects.

**How does this course support Programmatic Learning Outcomes?**

This course requires satisfactory completion of individual assignments, and two major examinations.

**Is this course designed to be partially or fully online? If so, describe how this benefits students and/or program.**

The course is intended for in-person classes; however, it can be offered fully online via Blackboard if required. In any event, the course uses Blackboard extensively.

## Chancellor’s University Reports – CMCE 4402

**AIV.1.1 – CMCE 4402**

|  |  |
| --- | --- |
| **CUNYfirst Course ID** |  |
| **Department(s)** | **Construction Management and Civil Engineering Technology** |
| **Career** | **[  X ] Undergraduate  [ ] Graduate** |
| **Academic Level** | **[ X ] Regular  [   ] Compensatory  [   ] Developmental  [   ] Remedial** |
| **Subject Area** | **Civil Engineering** |
| **Course Prefix** | **CMCE** |
| **Course Number** | **4402** |
| **Course Title** | **Fundamentals of Engineering Practice** |
| **Catalogue Description** | **Fundamentals of Engineering Practice provide a culminating experience on fundamental knowledge and practice of different disciplines of Civil Engineering. It introduces new concepts on subjects of Engineering Economy, Construction Engineering, Structural Engineering, Geotechnical Engineering, Transportation Engineering, Hydrology and Hydraulic Design. This course discusses design examples with a focus on reinforcing and expanding topics covered in Fundamentals of Engineering (FE), and Principles and Practice of Engineering (PE) exam administered by National Council of Examiners for Engineering and Surveying (NCEES).** |
| **Pre/ Co Requisites** | **CMCE 3602** |
| **Credits** | **3 credits** |
| **Contact Hours** | **3 hours per week** |
| **Liberal Arts** | **[ ] Yes  [  X] No** |
| **Course Attribute (e.g. Writing Intensive, Honors, etc.)** |  |
| **Course Applicability** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **[ X ] Major** |  |  |  | | | **[ ] Gen Ed Required** | | **[ ] Gen Ed - Flexible** | | **[ ] Gen Ed - College Option** | | **[ ] English Composition** | | **[ ] World Cultures** | | **College Option Detail\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | **[ ] Mathematics** | | **[ ] US Experience in its Diversity** | |  | | **[ ] Science** | | **[ ] Creative Expression** | |  | |  |  | **[ ] Individual and Society** | |  | |  |  | **[ ] Scientific World** | |  | |
| **Effective Term** | **Spring 2021** |

**RATIONALE**

This course will be offered as a technical elective course for Construction Engineering Technology program in the BTECH level. The course introduces or expands on topics required for Civil Engineering licensure examinations. The topics covered will complement and extend our technology focused program in order to enable graduates to succeed in obtaining professional licensure examinations.

The course has been offered during previous years as a technical elective under “special topic” title with a successful track record. The subjects include: Engineering Economy, Construction Engineering, Structural Engineering, Geotechnical Engineering, Transportation Engineering, Hydrology and Hydraulic Design.

# CMCE 4403 – PROFESSIONAL PRACTICE AND ETHICS

New York City College of Technology, CUNY

## New Course Proposal Form – CMCE 4403

This form is used for all new course proposals. Attach this to the [Curriculum **Modification** Proposal Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-10-Curriculum_Modification_Proposal_Form.docx) and submit as one package as per instructions. Use one New Course Proposal Form for each new course.

|  |  |
| --- | --- |
| **Course Title** | Professional Practice and Ethics |
| **Proposal Date** | 2/19/20 |
| **Proposer’s Name** | Anne Marie Sowder |
| **Course Number** | CMCE 4403 |
| **Course Credits, Hours** | 3 credits, 3 class hours |
| **Course Pre / Co-Requisites** | CMCE 2321 OR CMCE 3520. |
| **Catalog Course Description** | Professional Practice and Ethics is an elective focused on improving student understanding of professional practices and ethical concepts in the interrelations between the Architecture, Engineering, and Construction professions. A strong emphasis will be placed on problem solving, improving presentation skills, and using professional communication to achieve project goals. Students will be expected to write, speak, and present weekly, with regular formal presentations throughout the semester. |
| **Brief Rationale**  Provide a concise summary of why this course is important to the department, school or college. | Professional practice and ethics are topics critical to CMCE’s Program Educational Objective #1, being employable in the professions. This elective also supports the ABET accreditation assessed Student Outcome #3, ability to communicate in writing, orally, and graphically to technical and non-technical audiences. |
| **CUNY – Course Equivalencies**  Provide information about equivalent courses within CUNY, if any. | ARCH 4861 Professional Practice (emphasis on the management of firms and projects) |
| **Intent to Submit as Common Core**  If this course is intended to fulfill one of the requirements in the common core, then indicate which area. | N/A |
| **For Interdisciplinary Courses:**   * Date submitted to ID Committee for review * Date ID recommendation received   - Will all sections be offered as ID? Y/N | N/A |
| N/A |
| N/A |
| **Intent to Submit as a Writing Intensive Course** | No |

Please include all appropriate documentation as indicated in the NEW COURSE PROPOSAL Combine all information into a single document that is included in the Curriculum Modification Form.

**COURSE OVERVIEW AND RATIONALE – CMCE 4403**

Professional practice and ethics are topics critical to CMCE’s Program Educational Objective #1, being employable in the professions. This elective also supports the ABET accreditation assessed Student Outcome #3, ability to communicate in writing, orally, and graphically to technical and non-technical audiences.

Students completing this elective improve problem solving, writing, and presentation skills as demonstrated during the Special Topics run of the course in Fall 2019. Assignments build off each other throughout the semester while students explore the rationale for ethical behavior, strengthening their commitment to behave ethically as professionals.

A stand-alone professional practice and ethics course helps meet goals of the industry and educational communities and brings our curriculum in line with other comparable programs.

**NEW COURSE PROPOSAL CHECK LIST– CMCE 4403**

Use this checklist to ensure that all required documentation has been included. You may wish to use this checklist as a table of contents within the new course proposal.

|  |  |
| --- | --- |
| **Completed NEW COURSE PROPOSAL FORM** |  |
| * Title, Number, Credits, Hours, Catalog course description | X |
| * Brief Rationale | X |
| * CUNY – Course Equivalencies | X |
| Completed [Library Resources and Information Literacy Form](https://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/curriculum_modification_library_form-rev3F16.doc) | X |
| **Course Outline**  Include within the outline the following. | **X** |
| Hours and Credits for Lecture and Labs  If hours exceed mandated Carnegie Hours, then rationale for this | X |
| Prerequisites/Co- requisites | X |
| Detailed Course Description | X |
| Course Specific Learning Outcome and Assessment Tables   * Discipline Specific * General Education Specific Learning Outcome and Assessment Tables | X |
| Example Weekly Course outline | X |
| Grade Policy and Procedure | X |
| Recommended Instructional Materials (Textbooks, lab supplies, etc.) | X |
| Library resources and bibliography | X |
| **Course Need Assessment.**  Describe the need for this course. Include in your statement the following information. | X |
| Target Students who will take this course. Which programs or departments, and how many anticipated?  Documentation of student views (if applicable, e.g. non-required elective). | X |
| Projected headcounts (fall/spring and day/evening) for each new or modified course. | X |
| If additional physical resources are required (new space, modifications, equipment), description of these requirements. If applicable, Memo or email from the VP for Finance and Administration with written comments regarding additional and/or new facilities, renovations or construction. | X |
| Where does this course overlap with other courses, both within and outside of the department? | X |
| Does the Department currently have full time faculty qualified to teach this course? If not, then what plans are there to cover this? | X |
| If needs assessment states that this course is required by an accrediting body, then provide documentation indicating that need. | X |
| **Course Design**  Describe how this course is designed. | X |
| Course Context (e.g. required, elective, capstone) | X |
| Course Structure: how the course will be offered (e.g. lecture, seminar, tutorial, fieldtrip)? | X |
| Anticipated pedagogical strategies and instructional design (e.g. Group Work, Case Study, Team Project, Lecture) | X |
| How does this course support Programmatic Learning Outcomes? | X |
| Is this course designed to be partially or fully online? If so, describe how this benefits students and/or program. | X |
| **Additional Forms for Specific Course Categories** |  |
| [Interdisciplinary Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/Application-for-Interdisciplinary-Course-Designation.docx) (if applicable) | N/A |
| Interdisciplinary Committee Recommendation (if applicable and if received)\*  \*Recommendation must be received before consideration by full Curriculum Committee | N/A |
| [Common Core (Liberal Arts) Intent to Submit](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/CommonCoreCourseSubmissionForm_4.2.12.doc) (if applicable) | N/A |
| Writing Intensive Form if course is intended to be a WIC (under development) | N/A |
| If course originated as an experimental course, then results of evaluation plan as developed with director of assessment. | N/A |
| **(Additional materials for** [**Curricular Experiments**](http://www.300jaystreet.com/college-council/curriculum_proposals/curricular-experiments)**)** |  |
| Plan and process for evaluation developed in consultation with the director of assessment. (Contact Director of Assessment for more information). | N/A |
| Established Timeline for Curricular Experiment | N/A |

## Library Resources & Information Literacy: Major Curriculum Modification – CMCE 4403

Please complete for **all** major curriculum modifications. This information will assist the library in planning for new courses/programs.

Consult with your library faculty subject specialist (<http://cityte.ch/dir>) **3 weeks before the proposal deadline**.

**Course proposer:** please complete boxes 1-4. **Library faculty subject specialist:** please complete box 5.

|  |  |  |
| --- | --- | --- |
| **1** | **Title of proposal**  CMCE 4403 – *Professional Practice and Ethics* | **Department/Program**  Construction Management & Civil Engineering |
|  | **Proposed by** (include email & phone)  Anne Marie Sowder  [Amsowder@citytech.cuny.edu](mailto:Amsowder@citytech.cuny.edu)  X 5579 | **Expected date course(s) will be offered**  Fall 2021  **# of students**  23 / semester |

|  |  |
| --- | --- |
| **2** | **The library cannot purchase reserve textbooks for every course at the college, nor copies for all students. Consult our website (**[**http://cityte.ch/curriculum**](http://cityte.ch/curriculum)**) for articles and eBooks for your courses, or our open educational resources (OER) guide (**[**http://cityte.ch/oer**](http://cityte.ch/oer)**). Have you considered using a freely-available OER or an open textbook in this course?**  Yes, students will use OER. |

|  |  |
| --- | --- |
| **3** | **Beyond the required course materials, are City Tech library resources sufficient for course assignments? If additional resources are needed, please provide format details (e.g. eBook, journal, DVD, etc.), full citation (author, title, publisher, edition, date), price, and product link.**  Yes - sufficient |

|  |  |
| --- | --- |
| **4** | **Library faculty focus on strengthening students' information literacy skills in finding, critically evaluating, and ethically using information. We collaborate on developing assignments and customized instruction and research guides. When this course is offered, how do you plan to consult with the library faculty subject specialist for your area? Please elaborate.**  Students prepare written assignments based on City Tech library resources. Consulting with a library specialist prior to assignment release will help verify that all content is available to students through their college accounts. I would coordinate with our librarian to promote best practices for independent student research at the library. |

|  |  |
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| **5** | **Library Faculty Subject Specialist \_\_Anne Leonard\_\_\_\_\_\_\_\_\_\_**  **Comments and Recommendations**  **Date:** |

## Outline – CMCE 4403

**NEW YORK CITY COLLEGE OF TECHNOLOGY**

**of the City University of New York**

**The Department of Construction Management &**

**Civil Engineering Technology**

**CMCE 4403 PROFESSIONAL**

**PRACTICE & ETHICS**

**COURSE SYLLABUS**

**Textbook** N/A. Refer to Syllabus Resources, Blackboard &Instructor notes.

**Materials** Refer to Blackboard for updates.

**Requirements** Reading responses and presentations, class participation, and projects.

**Pre/Co-Reqs** CMCE 2321 OR CMCE 3520.

**Credits, Hours** 3 credits, 3 hours

**Course Description:**

Professional Practice and Ethics is an elective focused on improving student understanding of professional practices and ethical concepts in the interrelations between the Architecture, Engineering, and Construction professions. A strong emphasis will be placed on problem solving, improving presentation skills, and using professional communication to achieve project goals. Students will be expected to write, speak, and present weekly, with regular formal presentations throughout the semester.

**Grading**

Participation 40%

Assignments 15%

Presentations 45%

100%

Numerical grades will be converted to letter grade using following table:



**Learning Outcomes**

|  |  |
| --- | --- |
| **General Education Learning Outcomes / Assessment Methods** | |
| **Learning Outcomes** | **Assessment Methods** |
| Upon successful completion of this course the student will be able to: | To evaluate the students’ achievement of the learning objectives, the professor will do the following: |
| 1. **SKILLS; Communication,**   Communicate in diverse settings and groups, using written (both reading and writing),  oral (both speaking and listening), and visual means. | 1. **Assess** student understanding by monitoring weekly discussion and presentation of material |
| 1. **INTEGRATION; Information literacies,**   Gather, Interpret, evaluate, and apply information discerningly from a variety of sources**.** | 1. **Assess** student understanding by monitoring weekly discussion and presentation of material |
| 1. **VALUES, ETHICS, AND RELATIONSHIPS; Ethics/values,**   Transform information into knowledge, and knowledge into judgment and action; Assume responsibility for social justice. | 1. **Assess** student understanding by monitoring weekly discussion and presentation of material. |
| 1. **VALUES, ETHICS, AND RELATIONSHIPS; Professional/Personal development,**   Discern consequences of decisions and actions; Work with teams, including those of diverse composition. Respect and use creativity. | 1. **Assess** student understanding by monitoring weekly discussion and presentation of material |

|  |  |  |  |
| --- | --- | --- | --- |
| **Accreditation Board for Engineering and Technology, Inc. (ABET) Students Outcomes and Program Criteria / Assessment Methods** | | | |
| **Learning Outcomes** | | **Assessment Methods** | |
| Upon successful completion of this course the student will be able to: | | To evaluate the students’ achievement of the criteria, the professor will do the following: | |
| 1. (Student Outcome Criterion 3)   APPLY written, oral, and graphical communication in broadly defined technical and non-technical environments. | | 1. **Review** student discussion of lectures and readings; observe presentations in class; **assess** student understanding through their written work and oral presentations of material. | |
| 1. (Student Outcome Criterion 5)   FUNCTION EFFECTIVELY as a member as well as a leader on technical teams. | | 1. **Review** group discussions of lectures and readings; observe presentations in class; **assess** student leadership through their group work and oral presentations of material. | |
| 1. (Program Criterion h)   APPLY appropriate principles of construction management, law, and ethics. | | 1. **Review** student discussion of lectures and readings; observe presentations in class; **assess** student understanding through their written work and oral presentations of material. | |
|  | | | |
| **Course Specific Learning Outcomes / Assessment Methods** | | | |
| **Learning Outcomes** | | **Assessment Methods** | |
| Upon successful completion of this course the student will be able to: | | To evaluate the students’ achievement of the learning objectives, the professor will do the following: | |
| 1. Apply appropriate professional practices to address a variety of real-world problems. | | **assess** student understanding through class discussions and presentations of material. | |
| 1. Represent design and construction information in writing, visually, and verbally. | | **assess** student understanding through class discussions and presentations of material. | |
| 1. Demonstrate an understanding of the codes of ethics observed by design and construction professionals. | | **assess** student understanding through class discussions and presentations of material. | |
| 1. Understand group dynamics – working in a team, toward a common goal. | | **assess** student performance in team dynamics. | |

**Tech Help**

It is imperative that you (1) have and use a CityTech email account, and (2) create a BlackBoard account. Significant amounts of course material are hosted on and submitted via Blackboard.

1. You should have access to and be able to use the Chrome, Firefox, Safari, or Internet Explorer browsers. A complete list of versions supported is found here: <https://en-us.help.blackboard.com/Learn/Student/Getting_Started/Browser_Support>
2. If you do not know your CityTech email login information:
   1. Visit <http://mail.citytech.cuny.edu/UserIdLookupA/>.
   2. From there, retrieve your login information and log into your account.
3. If you need additional help with your CityTech email, or do not have an account:
   1. contact the CityTech Help Desk at 718-260-4900 OR
   2. Go to the Atrium, First Floor A-114 OR
   3. Email HelpDesk at [studenthelpdesk@citytech.cuny.edu](mailto:studenthelpdesk@citytech.cuny.edu)
4. For BlackBoard training and support on all tools required to fully participate in the interactive component of the course:
   1. Access the “Beginners Guide to BlackBoard Course Info” training at <http://websupport1.citytech.cuny.edu/studentworkshops.html> AND/OR
   2. Visit the open student lab in the General Building, sixth floor, room G600 or email them at [itec@citytech.cuny.edu](mailto:itec@citytech.cuny.edu) for BlackBoard help AND/OR
   3. Call (718) 254-8565 for BlackBoard help
   4. Attend workshops hosted by the student lab

**Course Resources**

The following resources will help you with this class:

1. City Tech Library. Stop quoting Google and Wikipedia. Access real academic sources.

Start here: https://library.citytech.cuny.edu/

2. CM OER. This resource hosts many resources on project management and presentation. Subscribe to this page.

Start here: <https://openlab.citytech.cuny.edu/cmcesowder/>

3. NYC Department of Buildings: https://www1.nyc.gov/site/buildings

4. NYC Open Data. GIS and information for mapping: https://opendata.cityofnewyork.us/

5. NYC Geology at AMNH. Find overview and many additional resources for city site history studies.

Start here: <https://www.amnh.org/research/physical-sciences/earth-and-planetary->sciences/public-outreach/new-york-city-geology

**Attendance & Absences**

* Leaving early or failure to participate in class exercises will result in forfeiture of all participation points.
* Absences, classes missed entirely, are governed by the attendance policy as outlined in the Student Handbook.

**Email & Phones**

* All email to the Professor **must start with the subject line CMCE 4403 – [Email Subject].** Typically, emails generated from Blackboard do not meet this requirement.
* Include your full name as a signature and title block as shown in Department Standards.
* All devices capable of phone or audio must be silenced and put away during class lecture.
* No answering calls or texts in the classroom during lecture. Step outside at appropriate times.

**Academic Integrity Policy**

Students and all other who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity.

Accordingly, **academic dishonesty is prohibited** in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, or expulsion.

**Course Outline**

|  |  |  |
| --- | --- | --- |
| **Session** | **Topic** | **DELIVERABLES** |
| 1 – date | AEC Industry Ethics, Part I |  |
| 2 – date | Improving Email & Informal Communication |  |
| 3 – date | Improving PowerPoint & Oral Presentations |  |
| 4 – date | Class Presentations | Presentation 1 |
| 5 – date | AEC Industry Ethics, Part II |  |
| 6 – date | Improving Communication with Management Tech |  |
| 7 – date | Improving Reports & Academic Posters | Assignment 1 due |
| 8 – date | Class Presentations | Presentation 2 |
|  | MIDTERM GRADES POSTED |  |
| 9 – date | AEC Industry Ethics, Part III |  |
| 10 – date | Improving Billing Procedures |  |
| 11 – date | Improving Resumes |  |
| 12 – date | Class Presentations | Presentation 3 |
| 13 – date | AEC Industry Ethics, Part IV |  |
| 14 – date | Improving Client Retention | Assignment 2 due |
| 15 date | Improving Interviews |  |

New York City College of Technology, CUNY

## New Course Need Assessment – CMCE 4403

**Target Students who will take this course. Which programs or departments, and how many anticipated?**

This course is currently intended for CMCE BTECH students meeting their Technical Elective requirements. It relies heavily on classroom discussion and detailed instructor feedback, so standard class sizes are appropriate at a maximum.

In the Fall 2019 Special Topics trial run, the class had 24 students enrolled.

**Projected headcounts (fall/spring and day/evening) for each new or modified course.**

To be offered fall semesters with typical headcounts (currently capped at 24 students per section). Students taking this course will be juniors or seniors in the BTech program looking for a departmental elective to fulfill their graduation requirements. They may also be seeking content that improves their professional, problem solving, and presentation skill set, the “soft skills” sought after by employers.

**If additional physical resources are required (new space, modifications, equipment), description of these requirements.**

N/A – no additional requirements.

**Where does this course overlap with other courses, both within and outside of the department?**

Architectural Technology offers a similar course,

ARCH 4861 Professional Practice.

However, its emphasis is on the management of architectural firms and projects, with the goal of alignment with licensing exam material. The course intent is similar enough to recommend it as an equivalency for internal transfer students, but is not so similar as to be considered a duplication of content.

**Does the Department currently have full time faculty qualified to teach this course? If not, then what plans are there to cover this?**

Yes, the department has faculty that can teach this course. Assistant Professor Anne Marie Sowder taught this class under the Special Topics designation in Fall 2019.

**If needs assessment states that this course is required by an accrediting body, then provide documentation indicating that need.** N/A

## Course Design – CMCE 4403

**Describe how this course is designed.**

This class will run in a lecture and discussion format except on days of major presentations. The instructor will begin with a lecture on a key topic and then move to active discussion and student activities. Refer to the pedagogy question below for details.

While this course is not intended to be taught online, it does use the Blackboard format to engage students in discussions and review of previously presented material. For example, student presentations are filmed (with permission) and posted for feedback and self-reflection on presentation techniques. If a hybrid or fully online delivery is needed, this course could be taught using Blackboard with recorded or live student presentations and discussions of content via the Blackboard Forum.

**Course Context (e.g. required, elective, capstone)**

Elective –

This course is currently intended for CMCE BTECH students meeting their Technical Elective requirements.

**Anticipated pedagogical strategies and instructional design (e.g. Group Work, Case Study, Team Project, Lecture)**

This course is built around the following strategies:

Lecture & Discussion

Each class session is centered around a topic. The instructor provides a lecture on best practices or current research on that topic and students engage in group discussion and low stakes group work in response to prompts on the topic.

In one example, best practices for cloud-based field management were presented by the instructor. Students then broke into groups and researched different software platforms for this technology. They then presented their findings, applying feedback they had previously received on improving presentations.

Case Study Research & Writing

Students complete two writing assignments based around independent research on an ethics case study from the Architecture, Engineering, and Construction professions. Students follow up on their individual topic and receive feedback on their research throughout the semester.

In Fall 2019, students researched and wrote on topics including Developers, Rezoning & and Neighborhood Gentrification in Gowanus; the Deutsche Bank Fire; Ethics In Construction: Examples From Uganda; Construction Managers’ Fiduciary Responsibility; Citicorp and William LeMessurier-The Fifty-Nine-Story Crisis: A Lesson in Professional Behavior; Architects’ Duty to Sustainable Design; Architects and Prison Design; Bias in Engineered Devices / Machine Learning; Workplace Safety Responsibilities: Laborer Dies in Tuna Factory; and Workplace Safety and Migrant/Immigrant Workers.

Scaffolded Projects

Students are given opportunities to try out new concepts in low stakes classroom exercises, receive feedback, and then re-apply the same concepts in novel situations repeatedly throughout the semester.

In addition, students are guided through discussions of professional ethics while continuously researching on and presenting on a single topic throughout the semester.

**How does this course support Programmatic Learning Outcomes?**

This course requires satisfactory completion of individual assignments, two major written assignments, and three formal presentations.

**Is this course designed to be partially or fully online? If so, describe how this benefits students and/or program.**

No.

## Chancellor’s University Reports – CMCE 4403

**AIV.1.2 – CMCE 4403**

|  |  |
| --- | --- |
| **CUNYfirst Course ID** |  |
| **Department(s)** | **Construction Management and Civil Engineering Technology** |
| **Career** | **[  X ] Undergraduate  [ ] Graduate** |
| **Academic Level** | **[ X ] Regular  [   ] Compensatory  [   ] Developmental  [   ] Remedial** |
| **Subject Area** | **Construction Management** |
| **Course Prefix** | **CMCE** |
| **Course Number** | **4403** |
| **Course Title** | **Professional Practice & Ethics** |
| **Catalogue Description** | **Professional Practice and Ethics is an elective focused on improving student understanding of professional practices and ethical concepts in the interrelations between the Architecture, Engineering, and Construction professions. A strong emphasis will be placed on problem solving, improving presentation skills, and using professional communication to achieve project goals. Students will be expected to write, speak, and present weekly, with regular formal presentations throughout the semester.** |
| **Pre/ Co Requisites** | **None** |
| **Credits** | **3 credits** |
| **Contact Hours** | **3 hours per week** |
| **Liberal Arts** | **[ ] Yes  [  X] No** |
| **Course Attribute (e.g. Writing Intensive, Honors, etc.)** |  |
| **Course Applicability** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **[ X ] Major** |  |  |  | | | **[ ] Gen Ed Required** | | **[ ] Gen Ed - Flexible** | | **[ ] Gen Ed - College Option** | | **[ ] English Composition** | | **[ ] World Cultures** | | **College Option Detail\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | **[ ] Mathematics** | | **[ ] US Experience in its Diversity** | |  | | **[ ] Science** | | **[ ] Creative Expression** | |  | |  |  | **[ ] Individual and Society** | |  | |  |  | **[ ] Scientific World** | |  | |
| **Effective Term** | **Spring 2021** |

Rationale:

CMCE 4403

Research and writing support the need to expand soft skill education in engineering programs such as our BTech in Construction Engineering Technology. Professional practice and ethics are topics critical to CMCE’s Program Educational Objective #1, being employable in the professions. This elective also supports the ABET accreditation assessed Student Outcome #3, ability to communicate in writing, orally, and graphically to technical and non-technical audiences. Assignments build off each other throughout the semester while students explore the rationale for ethical behavior, strengthening their commitment to behave ethically as professionals.

Students completing this elective improve problem solving, writing, and presentation skills as demonstrated during the Special Topics run of the course in fall 2019. The pilot course revealed student demand for new departmental electives. Student progress in improving analytic and (visual, written, and oral) presentation skills over the course of the semester was extremely promising.

A stand-alone professional practice and ethics course helps meet goals of the industry and educational communities and brings our curriculum in line with other comparable programs.

# CMCE 4461 - Instrumentation and Condition Assessments for Civil and Construction Engineers

New York City College of Technology, CUNY

## New Course Proposal Form – CMCE 4461

This form is used for all new course proposals. Attach this to the [Curriculum **Modification** Proposal Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-10-Curriculum_Modification_Proposal_Form.docx) and submit as one package as per instructions. Use one New Course Proposal Form for each new course.

|  |  |
| --- | --- |
| **Course Title** | Instrumentation and Condition Assessments for Civil and Construction Engineers |
| **Proposal Date** | February 21, 2020 |
| **Proposer’s Name** | Ivan L. Guzman |
| **Course Number** | CMCE 4461 |
| **Course Credits, Hours** | 3 credits, 3 Class hours per week |
| **Course Pre / Co-Requisites** | Pre: PHYS 1434 or PHYS 1442, CMCE 2456 |
| **Catalog Course Description** | This course will cover the fundamentals and application of measuring systems and condition assessments commonly used within Civil and Construction engineering. Students will apply fundamentals of physics and mechanics to the planning, installation and execution, of civil/construction engineering instrumentation programs to measure static and dynamic engineering parameters, and to supplement Structural and Environmental condition assessments. |
| **Brief Rationale**  Provide a concise summary of why this course is important to the department, school or college. | More than ever Engineers and Construction Managers rely on electronic instrumentation to monitor the condition of existing structures as well as new structures as they are being erected. Additionally, the widespread availability of cellular connectivity and Wi-Fi in combination with inexpensive solar cells allow the professional to install electronic instrumentation in remote areas and monitor the health of a structure in real time. Students in the course will be introduced to common instrumentation techniques and will learn how to prepare and execute successful condition assessments. |
| **CUNY – Course Equivalencies**  Provide information about equivalent courses within CUNY, if any. | N/A |
| **Intent to Submit as Common Core**  If this course is intended to fulfill one of the requirements in the common core, then indicate which area. | No |
| **For Interdisciplinary Courses:**   * Date submitted to ID Committee for review * Date ID recommendation received   - Will all sections be offered as ID? Y/N | No |
| N0 |
| No |
| **Intent to Submit as a Writing Intensive Course** | No |

Please include all appropriate documentation as indicated in the NEW COURSE PROPOSAL Combine all information into a single document that is included in the Curriculum Modification Form.

**COURSE OVERVIEW AND RATIONALE – CMCE 4461**

CMCE 4461 – More than ever Engineers and Construction Managers rely on electronic instrumentation to monitor the condition of existing structures as well as new structures as they are being erected. These include vibration and alignment monitoring of subway tunnels, dynamic load testing of deep foundations, tiltmeters to monitor vertical alignment of retaining walls, strain gages to monitor stress distribution in structural members, QA/QC of soil compaction with nuclear techniques, and many other applications. Additionally, the widespread availability of cellular connectivity and Wi-Fi in combination with inexpensive solar cells allow the professional to install electronic instrumentation in remote areas and monitor the health and performance of a structure in real time.

Students in the course will be introduced to common instrumentation techniques and will learn how to prepare and execute successful condition assessments using a variety of electronic and mechanical instruments. This course has a small lab component that will be part of regular class hours.

This course is proposed based on the following considerations:

1. To give students the knowledge and expertise with instrumentation techniques that are in high demand in local engineering and construction firms.
2. To our knowledge, the course is not offered at any local university at an undergraduate level. It is only offered as a graduate course at NYU. This gives the students who complete the course an advantage when entering the local workforce.
3. This course is part of an attempt to increase the number of specialized higher-level elective courses within the Construction Management and Civil Engineering Technology department.

**NEW COURSE PROPOSAL CHECK LIST – CMCE 4461**

Use this checklist to ensure that all required documentation has been included. You may wish to use this checklist as a table of contents within the new course proposal.

|  |  |
| --- | --- |
| **Completed NEW COURSE PROPOSAL FORM** |  |
| * Title, Number, Credits, Hours, Catalog course description | x |
| * Brief Rationale | x |
| * CUNY – Course Equivalencies | x |
| Completed [Library Resources and Information Literacy Form](https://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/curriculum_modification_library_form-rev3F16.doc) | x |
| **Course Outline**  Include within the outline the following. |  |
| Hours and Credits for Lecture and Labs  If hours exceed mandated Carnegie Hours, then rationale for this | x |
| Prerequisites/Co- requisites | x |
| Detailed Course Description | x |
| Course Specific Learning Outcome and Assessment Tables   * Discipline Specific * General Education Specific Learning Outcome and Assessment Tables | x |
| Example Weekly Course outline | x |
| Grade Policy and Procedure | x |
| Recommended Instructional Materials (Textbooks, lab supplies, etc.) | x |
| Library resources and bibliography | x |
| **Course Need Assessment.**  Describe the need for this course. Include in your statement the following information. |  |
| Target Students who will take this course. Which programs or departments, and how many anticipated?  Documentation of student views (if applicable, e.g. non-required elective). | x |
| Projected headcounts (fall/spring and day/evening) for each new or modified course. | x |
| If additional physical resources are required (new space, modifications, equipment), description of these requirements. If applicable, Memo or email from the VP for Finance and Administration with written comments regarding additional and/or new facilities, renovations or construction. | x |
| Where does this course overlap with other courses, both within and outside of the department? | x |
| Does the Department currently have full time faculty qualified to teach this course? If not, then what plans are there to cover this? | x |
| If needs assessment states that this course is required by an accrediting body, then provide documentation indicating that need. | x |
| **Course Design**  Describe how this course is designed. |  |
| Course Context (e.g. required, elective, capstone) | x |
| Course Structure: how the course will be offered (e.g. lecture, seminar, tutorial, fieldtrip)? | x |
| Anticipated pedagogical strategies and instructional design (e.g. Group Work, Case Study, Team Project, Lecture) | x |
| How does this course support Programmatic Learning Outcomes? | x |
| Is this course designed to be partially or fully online? If so, describe how this benefits students and/or program. | x |
| **Additional Forms for Specific Course Categories** |  |
| [Interdisciplinary Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/Application-for-Interdisciplinary-Course-Designation.docx) (if applicable) | N/A |
| Interdisciplinary Committee Recommendation (if applicable and if received)\*  \*Recommendation must be received before consideration by full Curriculum Committee | N/A |
| [Common Core (Liberal Arts) Intent to Submit](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/CommonCoreCourseSubmissionForm_4.2.12.doc) (if applicable) | N/A |
| Writing Intensive Form if course is intended to be a WIC (under development) | N/A |
| If course originated as an experimental course, then results of evaluation plan as developed with director of assessment. | N/A |
| **(Additional materials for** [**Curricular Experiments**](http://www.300jaystreet.com/college-council/curriculum_proposals/curricular-experiments)**)** |  |
| Plan and process for evaluation developed in consultation with the director of assessment. (Contact Director of Assessment for more information). | N/A |
| Established Timeline for Curricular Experiment | N/A |

## Library Resources & Information Literacy: Major Curriculum Modification – CMCE 4461

Please complete for **all** major curriculum modifications. This information will assist the library in planning for new courses/programs.

Consult with your library faculty subject specialist (<http://cityte.ch/dir>) **3 weeks before the proposal deadline**.

**Course proposer:** please complete boxes 1-4. **Library faculty subject specialist:** please complete box 5.

|  |  |  |
| --- | --- | --- |
| **1** | **Title of proposal**  CMCE 4461- *Instrumentation and Condition Assessments* | **Department/Program**  Construction Management and Civil Engineering Technology, Construction Engineering BTECH |
|  | **Proposed by** (include email & phone)  Ivan L. Guzman, 718-260-5689, iguzman@citytech.cuny.edu | **Expected date course(s) will be offered**  Spring 2021  **# of students** 24 |

|  |  |
| --- | --- |
| **2** | **The library cannot purchase reserve textbooks for every course at the college, nor copies for all students. Consult our website (**[**http://cityte.ch/curriculum**](http://cityte.ch/curriculum)**) for articles and eBooks for your courses, or our open educational resources (OER) guide (**[**http://cityte.ch/oer**](http://cityte.ch/oer)**). Have you considered using a freely-available OER or an open textbook in this course?**  Yes, the course will be using available OER resources for the topic of Basic Circuit Analysis |

|  |  |
| --- | --- |
| **3** | **Beyond the required course materials, are City Tech library resources sufficient for course assignments? If additional resources are needed, please provide format details (e.g. eBook, journal, DVD, etc.), full citation (author, title, publisher, edition, date), price, and product link.**  Yes. The library subscribes to sufficient number of journals and databases in which students will find information and instructions on how to complete the course assignments. |

|  |  |
| --- | --- |
| **4** | **Library faculty focus on strengthening students' information literacy skills in finding, critically evaluating, and ethically using information. We collaborate on developing assignments and customized instruction and research guides. When this course is offered, how do you plan to consult with the library faculty subject specialist for your area? Please elaborate.**  Yes, this course covers an array of instrumentation techniques that are difficult to find under one title. The expertise of a librarian will be of great benefit to students during assignments while they locate literature on different techniques. |

|  |  |
| --- | --- |
| **5** | **Library Faculty Subject Specialist \_\_\_\_\_\_Anne Leonard\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Comments and Recommendations**  **Date** |

## Outline – CMCE 4461

**NEW YORK CITY COLLEGE OF TECHNOLOGY**

**of the City University of New York**

**Department of Construction Management & Civil Engineering Technology**

**CMCE 4461–Instrumentation and Condition Assessment for Civil and**

**Construction Engineers**

**3 Class Hours, 3 Credits**

**Course Description**

This course will cover the fundamentals and application of measuring systems and condition assessments commonly used within Civil and Construction engineering. Students will apply fundamentals of physics and mechanics to the planning, installation and execution, of civil/construction engineering instrumentation programs to measure static and dynamic engineering parameters, and to supplement Structural and Environmental condition assessments.

**Prerequisites**: CMCE 2456; PHYS 1434 **or** PHYS 1442

**Textbook**: Instructor Notes, Handouts

**References:** Electric Circuit Fundamentals, Thomas L. Floyd

Geotechnical Instrumentation for Monitoring Field Performance, John Dunnicliff

Instrumentation Vendors

1. **Course Objectives:**

Student enrolled in this course will learn the following as they apply to instrumentation techniques in civil/construction engineering:

* The fundamentals of electrical circuits and their application to civil/construction engineering electronic instruments.
* Introduce and use of an array of instruments applicable to civil/construction engineering such as strain gages, load cells, pressure gages, displacement transducers, tilt meters, vibration monitors, pile driving analyzers, nuclear density gages, etc.
* Different data acquisition and management techniques.
* How to conduct a structural condition assessments of concrete, masonry, steel, and timber structures and an introduction to environmental assessments.

1. **Learning Outcomes:**

* **General Education Learning Outcomes**

|  |  |
| --- | --- |
| **General Education Learning Outcomes / Assessment Methods** | |
| **Learning Outcomes** | **Assessment Methods** |
| **KNOWLEDGE - Breadth of Knowledge;**  Understand and appreciate the range of academic disciplines through the integration of fundamentals of electrical circuits and there application to civil/construction engineering instrumentation. | Students will be assessed through assignments, and midterm and final examinations. |
| **KNOWLEDGE-Depth of Knowledge;**  Engage in an in-depth, focused, and sustained program of study by learning how to conduct structural and environmental condition assessments. | Students will be assessed through assignments, and midterm and final examinations. |
| **SKILLS-Communication;**  Communicate in a group setting using oral and written means. | Students will be evaluated through the professor’s observation of group interactions and written presentation of laboratory reports. |
| **SKILLS-Inquiry Analysis;**  Use of quantitative and qualitative analysis to describe an engineering phenomenon both independently and cooperatively, and employ scientific/engineering reasoning to evaluate the findings in the context of the behavior of an entire structure. | Students will be assessed through laboratory reports, and examinations. |

* **Student Outcomes**

ABET, Inc. (Accreditation Board for Engineering and Technology, Inc.) is the nationally recognized accrediting body for engineering technology programs. The CMCE department has adopted the most current ABET Student Outcomes and Program Criteria. The CMCE 4403 curriculum provides instruction in the following areas:

|  |  |
| --- | --- |
| **STUDENT OUTCOMES / EVALUATION METHODS** | |
| **Learning Outcomes** | **Evaluation Methods** |
| An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline; **ABET Criterion 3.B.1** | Through completion of assignments and examinations, students will use electric circuit principles and apply them to monitor mechanical properties of importance to the wellbeing of structures. |
| An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes; **ABET Criterion 3.B.4** | Through laboratory experiments students will use concepts learned in their academic career to analyze and interpret data from instrumentation experiments, and to conduct structural and environmental condition assessments. |
| An ability to function effectively as a member as well as a leader on technical teams; **ABET Criterion 3.B.5** | Students will work as a team to deliver three laboratory reports that summarize the findings of laboratory exercises with strain gages and structural condition assessment of concrete and/or other building materials. |

1. **Student Evaluation:**

Midterm Examination 30% of final grade

Final Examination 30% of final grade

Laboratory Reports (3) 20% of final grade

Assignments / Quizzes / Projects 20% of final grade

**Final Grade = 100%**

1. **Grade Scale:**
2. **Course Outline:**

|  |  |  |
| --- | --- | --- |
| **Week** | **Schedule\*** | **Topic** |
| 1 | Lecture | Basic Concepts of Electricity  Resistance and Ohm’s Law |
| 2 | Lecture | Kirchoff’s Law  DC Circuit Analysis |
| 3 | Lecture | Measurement of Strain |
| 4 | Laboratory | Laboratory 1 – Strain Gage Construction and Calibration in a laboratory setting |
| 5 | Lecture | Sensors for Static Measurements – Load Cells, Pressure Gauges, etc. |
| 6 | Laboratory | Laboratory 2 – On site measurement of strain in existing structural members of a building with the use of Strain Gages – Building performance |
| 7 | Lecture | Sensors for Static Measurements – Displacement, Tilt Meters, etc. |
| 8 | Midterm | **Midterm Examination** |
| 9 | Lecture | Data Acquisition, Signal Conditioning and Error Analysis |
| 10 | Lecture | Sensors for Dynamic Measurements |
| 11 | Lecture | Condition Assessment: Concrete and Masonry |
| 12 | Laboratory | Laboratory 3 – Non Destructive Testing of concrete structural elements in an existing building – Forensic |
| 13 | Lecture | Condition Assessment: Steel and Timber |
| 14 | Lecture | Condition Assessment: Environmental Assessment  Review |
| 15 | Final | **Final Exam** |

**\* Tentative schedule subject to change**

## New Course Need Assessment – CMCE 4461

**Target Students who will take this course. Which programs or departments, and how many anticipated?**

Junior and Senior level students in the Construction Engineering BTECH program

**Projected headcounts (fall/spring and day/evening) for each new or modified course.**

24 students, course will be offered once a year

**If additional physical resources are required (new space, modifications, equipment), description of these requirements.**

Basic smart room set-up: a screen, and an overhead projector that is run by and connected to a computer. Some laboratory equipment.

**Where does this course overlap with other courses, both within and outside of the department?**

No overlaps

**Does the Department currently have full time faculty qualified to teach this course? If not, then what plans are there to cover this?**

Yes, there are faculty members within the department who have doctoral degrees in Civil Engineering and with professional experience and formal academic preparation with instrumentation techniques.

**If needs assessment states that this course is required by an accrediting body, then provide documentation indicating that need.**

Course is not required by accrediting body

## Course Design – CMCE 4461

**Course Context (e.g. required, elective, capstone)**

This course will be offered as an elective in the BTECH program.

**Course Structure**

This class will run in a lecture and discussion format except on days of laboratory experiments (3 laboratories).

**Anticipated pedagogical strategies and instructional design (e.g. Group Work, Case Study, Team Project, Lecture)**

The course will be offered in lecture format and will require both individual study as well as group work in the form of laboratory experiments and reports.

**How does this course support Programmatic Learning Outcomes?**

This course requires satisfactory completion of individual assignments, two major examinations and three “group” laboratory reports.

**Is this course designed to be partially or fully online? If so, describe how this benefits students and/or program.**

This course is designed to be offered as an in-person course, but can be offered as a hybrid course. If offered as a hybrid course students would benefit from the flexibility of the schedule and more in depth independent research.

## Chancellor’s University Reports – CMCE 4461

**AIV.1.3 – CMCE 4461**

|  |  |
| --- | --- |
| **CUNYfirst Course ID** |  |
| **Department(s)** | **Construction Management and Civil Engineering Technology** |
| **Career** | **[  X ] Undergraduate  [ ] Graduate** |
| **Academic Level** | **[ X ] Regular  [   ] Compensatory  [   ] Developmental  [   ] Remedial** |
| **Subject Area** | **Civil Engineering** |
| **Course Prefix** | **CMCE** |
| **Course Number** | **4461** |
| **Course Title** | **Instrumentation and Condition Assessments for Civil and Construction Engineers** |
| **Catalogue Description** | **This course will cover the fundamentals and application of measuring systems and condition assessments commonly used within Civil and Construction engineering. Students will apply fundamentals of physics and mechanics to the planning, installation and execution, of civil/construction engineering instrumentation programs to measure static and dynamic engineering parameters, and to supplement Structural and Environmental condition assessments.** |
| **Pre/ Co Requisites** | **Pre: PHYS 1434 or PHYS 1442, CMCE 2456** |
| **Credits** | **3 credits** |
| **Contact Hours** | **3 hours per week** |
| **Liberal Arts** | **[ ] Yes  [  X] No** |
| **Course Attribute (e.g. Writing Intensive, Honors, etc)** |  |
| **Course Applicability** | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **[ X ] Major** |  |  |  | | | **[ ] Gen Ed Required** | | **[ ] Gen Ed - Flexible** | | **[ ] Gen Ed - College Option** | | **[ ] English Composition** | | **[ ] World Cultures** | | **College Option Detail\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | **[ ] Mathematics** | | **[ ] US Experience in its Diversity** | |  | | **[ ] Science** | | **[ ] Creative Expression** | |  | |  |  | **[ ] Individual and Society** | |  | |  |  | **[ ] Scientific World** | |  | |
| **Effective Term** | **Spring 2021** |

Rationale:

CMCE 4461 – More than ever Engineers and Construction Managers rely on electronic instrumentation to monitor the condition of existing structures as well as new structures as they are being erected. These include vibration and alignment monitoring of subways tunnels, dynamic load testing of deep foundations, tiltmeters to monitor vertical alignment of retaining walls, strain gages to monitor stress distribution in structural members, QA/QC of soil compaction with nuclear techniques and many other applications. Additionally, the widespread availability of cellular connectivity and Wi-Fi in combination with inexpensive solar cells allow the professional to install electronic instrumentation in remote areas and monitor the health of a structure in real time.

Students in the course will be introduced to common instrumentation techniques and will learn how to prepare and execute successful condition assessments using a variety of electronic and mechanical instruments. This course has a small lab component that will be part of regular class hours.

This course is proposed based on the following considerations:

1. To give students the knowledge and expertise with instrumentation techniques that are in high demand in local engineering and construction firms.
2. To our knowledge, the course is not offered at any local university at an undergraduate level. It is only offered as a graduate course at NYU. This gives the students who complete the course an advantage when entering the local workforce.
3. This course is part of an attempt to increase the number of specialized higher-level elective courses within the Construction Management and Civil Engineering Technology department.

NOTE: At least one Title and IRP code of a program to which the new course is applicable, as per SED regulation.

# APPENDIX

**Advisory Commission Meeting Minutes**

February 5, 2020 9:00am-11:00am

1. Call to Order

Meeting was called to order at 9:15am by Melanie Villatoro.

1. Roll Call/Introductions

Advisory Members Present - Albert Pozotrigo, Tony Cioffi, Stephanie Martinez, Carol Sonnenblick, Craig Ruyle, Andrew Herrmann (via phone)

Faculty and Staff Present - Ivan L. Guzman, Ann Marie Sowder, Navid Allahverdi, Sigurd Stegmaier, Melanie Villatoro, Danielle Blount

1. Election for Chair of the Advisory Commission

Professor Melanie Villatoro nominated Tony Cioffi to be Chairperson of the Advisory Commission. Tony accepts the nomination and named Chair by unanimous vote.

1. Department Updates
   1. CMCE Enrollment: 714 for fall 2019, 686 for spring 2019.
   2. Faculty and Staff updates: Currently six full-time staff members, Melanie Villatoro serving as Interim Chair, Gerarda Shields serving as Interim Dean. Ongoing Search for new full-time faculty member.
   3. Advisory commission provided ideas for outreach at the high school and community level to increase enrollment. Ideas include partnering with alumni currently employed at their respective companies and collaborating with the Continuing education department to recruit using their existing resources.
2. Proposed Curriculum Changes
   1. Three new proposed courses:

Instrumentation, Professional Practice and Fundamentals of Engineering. The advisory commission agrees that these new courses are in alignment with current industry needs.

* 1. The department proposed to change the credit count for CMCE 2351 Fluid Mechanics and CMCE 2454 Applied Hydraulics. The proposed change would make CMCE 2351 a 3 credit course and CMCE 2454 a 3 credit course. The advisory commission agrees to the proposed change.

1. Review of Program Objectives:

Program objectives were read by Anne Marie Sowder.

Melanie Villatoro made a motion to keep program objective as and the motion was approved unanimously.

1. ABET Visit – Fall 2020

The advisory commission was notifies of our current ABET activities. Two programs are in review, Civil AAS and Construction Engineering BTECH. Anticipated ABET visit is October 18-20, 2020.

1. Fundraising

Melanie reported a total of $3881 was raised from Giving Tuesday.

1. Internships

Proposed Job Fair – Evening Students – 5pm-7:20pm – Feb, 20, 2020 proposed by Ann Marie Sowder

Meeting adjourned at 10:55am.

**Department Faculty & Staff Meeting**

November 6, 2019, 12:00pm-2:00pm

**Agenda**

1. ABET Update – Anne Marie and Navid

* Navid distributed ABET Data collection schedule for Fall 2019-Spring 2020
* The department will make an effort to start reviewing new courses to be included as part of ABET criteria
* Course coordinators to update ABET outcomes on syllabus by 12/27/19

2. Class Observations –UPDATE, Should have already been completed.

3. Advisement – Please encourage students to continue to make use of your scheduled office hours for advisement.

4. New Placement Coordinator – Anne Marie Placement Advisement Hours Wednesday 3-4, by appointment only.

5. Lab Proposal Update - Navid

6. Giving Tuesday Update - Navid

* Department donation goal is $10,000, which will be partially matched by University
* Faculty agreed to donate $50 per person towards giving Tuesday
* Student association groups are encouraged to accept donations through Giving Tuesday link

7. New Contract – Adjunct Faculty Office Hours

* There is a concern from the full time faculty on how to monitor new adjunct requirements for office hours

8. Department Service Positions:

First Year Student Coordinator – Open House, Orientation, and Transfer Office Tours

9. Gen Ed Committee Update

* Offered by Ivan Guzman regarding emphasize in Gen Ed themes during orientation, and elimination of prerequisite classes to build up competency in English and Mathematics.

10. Curriculum Changes

1. Major curriculum changes to be implemented in Spring 2021 deadline is Friday, February 21, 2020.

11. Others:

* Faculty agreed to use $300 from supplementary fund to supply wood for laboratories
* Chair is reaching out to private companies (hardware stores, lumber yards, etc.) for laboratory supplies donation

**Notices, Important Dates and Announcements**

1. Doreen Retirement Celebration – Gift ?
2. Asha to support Perkins Peer Advisement, ABET, and Department Tours. Wed/Thur 10-4. Not guaranteed for the spring.
3. Department Tours

Asha and Lamia will host 11/6, 11/7 and 12/5.

Need host: 11/19 and 12/3.

Think of Spring…..

1. Money for Tony's gift – If you still owe me, $25.

**Next Meeting**

ABET Meeting, November 25 –12pm

Faculty Meeting - December 4

DAC Committee – Dates on HOLD  
December 10 from 2pm-5pm

December 11 from 12pm-2pm

December 17 from 2pm-5pm

December 18 from 12pm-2pm