**CURRICULUM MODIFICATION PROPOSAL FORM**

**New York City College of Technology, CUNY**

**Title of Proposal: Curriculum Modification Proposal – B.Tech Telecommunications**

**By**

A. Hossain, D. Mynbaev, M. Kouar, V. Vladutescu, Z. Marantz, X. Wei, H. Marandi, M. Kalechman

Department of Electrical and Telecommunications Engineering Technology

186 Jay Street, V-742, Brooklyn, NY 11201

Phone: (718) 260-5310  
Email: [ahossain@citytech.cuny.edu](mailto:ahossain@citytech.cuny.edu)

**Revised 4/5/2017**

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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://www.300jaystreet.com/college-council/resources/2010/04/2013-10-09-Proposal_Classification_Chart.docx) 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 Course: Telecommunications Capstone Project I (TCET 4182) |
| **Date** | 11/25/15 |
| **Major or Minor** | Major |
| **Proposer’s Name** | A. Hossain, D. Mynbaev, M. Kouar, V. Vladutescu, Z. Marantz, H. Marandi, M. Kalechman |
| **Department** | Department of Electrical and Telecommunications Engineering Technology |
| **Date of Departmental Meeting in which proposal was approved** | 12/03/15 |
| **Department Chair Name** | Mohammad Razani |
| **Department Chair Signature and Date** |  |
| **Academic Dean Name** | Dean Kevin Hom |
| **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. | -New Course TCET 4182 Telecommunications Capstone Project I   * Course withdrawn (TCET 4120) {replaced by TCET 4182} * ACC 1162 removed from the program and TCET 4132 added * Modify course name, description, contact hour and pre-req (TCET 4282) |
| **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). | -ABET requires Capstone/ Senior Design course (ABET/ETAC 2016-2017 Accreditation Criteria, page 4) for B.Tech degree. The proposed new course (TCET 4182 Telecommunications Capstone Project I) is the first part of the two-semester course sequence. It replaces TCET 4120. Department and IAC feel that TCET 4120 (Legal and Regulatory Issues in Telecommunications), compared to Capstone Project, has very little bearing on a student obtaining work as a technologist.  -The addition of TCET 4132 as a required course is imperative; as a TCB graduate, students are expected to know how wireless systems operate. It will substitute (remove) ACC 1162. The department and IAC feel that TCET 4132 is necessary and will benefit the TCB students.  -Changing the course name and pre-req for TCET 4282 is necessary to be consistent with other courses in the curriculum. Additionally, due to the contact hour limitation, one contact hour is taken from TCET 4282 (Capstone II) to add to TCET 4182 (Capstone I). This distribution resulted in both courses to be 2 credits and 3 contact hours each.  Students will be able to complete the Capstone II work in a lesser time due to the preparation in Capstone I. |
| **Proposal History**  (Please provide history of this proposal: is this a resubmission? An updated version? This may most easily be expressed as a list). | **First submission** |

New York City College of Technology, CUNY

NEW COURSE PROPOSAL FORM

This form is used for all new course proposals. Attach this to the [Curriculum Modification Proposal Form](http://www.300jaystreet.com/college-council/resources/2010/04/2013-10-10-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** | Telecommunications Capstone Project I |
| **Proposal Date** | 11/22/15 |
| **Proposer’s Name** | A. Hossain and D. Mynbaev |
| **Course Number** | TCET 4182 |
| **Course Credits, Hours** | 2 cr., 1 hr class, 2 hrs lab |
| **Course Pre-requisites** | TCET 3202 |
| **Course Pre / Co-Requisites** | CST 2403 |
| **Catalog Course Description** | First part of a two-semester senior design course sequence that introduces programming of embedded systems, research and development methodology, project management, technical writing, and presentation. Students present an introductory level final project incorporating telecommunications engineering designs that are fully documented and prototyped. |
| **Brief Rationale**  Provide a concise summary of why this course is important to the department, school or college. | ABET requires Capstone/ Senior Design course (ABET/ETAC 2016-2017 Accreditation Criteria, page 4) for B.Tech degree. The proposed new course (TCET 4182 Telecommunications Capstone Project I) is the first part of the two-semester course sequence. This course will provide the Telecommunications engineering technology students with the necessary hands-on experience for next capstone course. |
| **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. | NA |
| **Intent to Submit as An Interdisciplinary Course** | NA |
| **Intent to Submit as a Writing Intensive Course** | NA |

**NEW COURSE PROPOSAL CHECK LIST**

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 |
| Completed [Library Resources and Information Literacy Form](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/curriculum_modification_library_form.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. | NA |
| 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. | NA |
| **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) | NA |
| [Common Core (Liberal Arts) Intent to Submit](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/CommonCoreCourseSubmissionForm_4.2.12.doc) (if applicable) | NA |
| Writing Intensive Form if course is intended to be a WIC (under development) | NA |
| If course originated as an experimental course, then results of evaluation plan as developed with director of assessment. | NA |
| **(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). | NA |
| Established Timeline for Curricular Experiment | NA |

**LIBRARY RESOURCES & INFORMATION LITERACY: MAJOR CURRICULUM MODIFICATION**

Please complete for **all** major curriculum modifications. This information will assist the library in planning for new acquisitions; it will not affect curriculum proposals either positively or negatively.

Consult with library faculty subject selectors (<http://cityte.ch/dir>) **3 weeks in advance** when planning course proposals to ensure enough time to allocate budgets if materials need to be purchased.

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

|  |  |  |
| --- | --- | --- |
| **1** | **Title of proposal**  Telecommunications Capstone Project I | **Department/Program**  **Electrical and Telecommunications Engineering Technology Department** |
|  | **Proposed by** (include email & phone)  A. Hossain and D. Mynbaev  Phone: (718) 260-5310 Email: [ahossain@citytech.cuny.edu](mailto:ahossain@citytech.cuny.edu) | **Expected date course(s) will be offered**  Spring 2017  **# of students**  18 |

|  |  |
| --- | --- |
| **2** | **Are City Tech library resources sufficient for course assignments? Please elaborate.**  Yes. The library does provide an ample collection of technical journals and magazines needed for research and project. |

|  |  |
| --- | --- |
| **3** | **Are additional resources needed for course assignments? Please provide details about format of resources (e.g., ebooks , journals, DVDs, etc.), author, title, publisher, edition, date, and price.**  **(These books are already reference for other classes.)**  **Reference :**  1. Design for Electrical and Computer Engineers  By Ralph Ford Chris Coulston  McGraw Hill, 2008, 9780073380353  $115.95  2. Tools and Tactics of Design  By Peter G Dominick  Wiley, 2001, 9780471386483  $84.95 |

|  |  |
| --- | --- |
| **4** | **Library faculty focus on strengthening students' information literacy skills in finding, evaluating, and ethically using information. We can collaborate on developing assignments and offer customized information literacy instruction and research guides for your course.**  **Do you plan to consult with the library faculty subject specialist for your area? Please elaborate.**  No; because the final semester students should be able to conduct research independently with minimal assistance from faculty. The faculty is responsible for any discipline specific research assistance. |

|  |  |
| --- | --- |
| **5** | **Library Faculty Subject Selector\_\_\_\_\_\_\_\_Gordon Xu\_\_\_\_\_\_\_\_\_\_**  **Comments and Recommendations**  The library offers sufficient books, journals and electronic resources on electrical and telecommunications engineering technology. However, many print monographs are outdated, and the library has been weeding some older print materials. The library would acquire updated materials to replace those removed from the collection. The library could purchase additional materials to further support this course. Additionally, I suggest that the textbooks for this course also be acquired and placed in the library’s reserve section.  **Date:** 12/1/2015 |

**COURSE OUTLINE**

**NEW YORK CITY COLLEGE OF TECHNOLOGY**

**The City University of New York**

|  |  |  |
| --- | --- | --- |
| **DEPARTMENT**: | | Electrical and Telecommunications Engineering Technology |
| **SUBJECT CODE:** | | TCET 4182 |
| **TITLE:** | | Telecommunications Capstone Project I |
| **COURSE DESCRIPTION** | | First part of a two-semester senior design course sequence that introduces programming of embedded systems, research and development methodology, project management, technical writing, and presentation. Students present an introductory level final project incorporating telecommunications engineering designs that are fully documented and prototyped. |
| **REQUIRED:** | B.Tech Telecommunications Engineering Technology | | |
| **PRE-REQUISITES:**  **PRE/CO-REQUISITES:** | TCET 3202  CST 2403 | | |
| **TEXTBOOK** | Instructor notes and handouts will be used.  References:  1. Design for Electrical and Computer Engineers  By Ralph Ford Chris Coulston  McGraw Hill, 2008, 9780073380353  2. Tools and Tactics of Design  By Peter G Dominick  Wiley, 2001, 9780471386483  Students may need to buy additional design components. | | |

**TOPICS**: Telecommunications technology design, coding (Multisim, MATLAB, C++), analysis of existing methods and solutions, description of possible innovative approaches to solve a problem, economics, ethics and societal impact of engineering, proposals presentation, design validations, performance in multidisciplinary design teams, system integration, testing and validation, design documentation and review, engineering management tools and techniques.

|  |  |
| --- | --- |
| **CLASS HOURS** | 1 |

|  |  |
| --- | --- |
| **LAB HOURS** | 2 |
| **CREDITS** | 2 |

|  |  |
| --- | --- |
| **Prepared by** | Professors Hossain and Mynbaev |
| **Course Coordinator** | Professor Hossain  email: ahossain*@*citytech.cuny.edu |
|  |  |

**Description of laboratory work**: The design work will include integration of various Telecommunications engineering technology principles, coding, problem solving skills and lab experiences the students gained throughout their undergraduate curriculum. Students will exercise research and development methodology as well as utilize other relevant skills such as troubleshooting, teamwork, and project management. The final product/prototype will be from any kind of Telecommunications technology, including wireless and optical networking technology.

**GRADING POLICY**: TCET 4182

|  |  |
| --- | --- |
| Class Participation | 10% |
| Preliminary Proposal | 10% |
| Midterm Progress Report | 15% |
| Final Project Report  Oral presentation | 25%  15% |
| Prototype Demonstration | 25% |

|  |  |  |
| --- | --- | --- |
| **Letter Grade** | **Numerical Grade Ranges** | **Quality** |
| A | 93-100 | 4.0 |
| A- | 90-92.9 | 3.7 |
| B+ | 87-89.9 | 3.3 |
| B | 83-86.9 | 3.0 |
| B- | 80.82.9 | 2.7 |
| C+ | 77-79.9 | 2.3 |
| C | 70-76.9 | 2.0 |
| D | 60-69.9 | 1.0 |
| F | 59.9 and below | 0.0 |

**COURSE OBJECTIVE, LEARNING OUTCOME AND Assessment:** The following assessment techniques are correlated to the course objectives as follows. In addition, each assessment technique incorporates one or more of the following ABET Criterion 3 outcomes (3a-3k, PC.a - PC.d). **Few of the ABET outcomes are also considered as general education outcomes.**

|  |  |  |
| --- | --- | --- |
| **Course Objective** | **Learning Outcome** | **Assessment** |
| 1. Identify a Telecommunications engineering technology problem and then design and implement system, component, program, switching technologies, and wide area networking technologies to address the problem.(ABET Criteria 3d, 3f, PC.a, PC.b). | Students will demonstrate an ability to identify Telecommunications engineering technology problems and propose solutions to design a system or component. | Preliminary proposal |
| 2. Apply mathematics, science and engineering principles and skills to address Telecommunications engineering technology problems.  (ABET Criteria 3a, 3b, PC.d) | Students will demonstrate science and engineering skills in terms of solving Telecommunications engineering technology problems through research, design, and development of their project. | Midterm progress report, final  project report and  prototype demonstration |
| 3. Conduct, analyze, and interpret experiments; and apply experimental results to validate/improve design processes.(ABET Criteria 3c) | Students will demonstrate ability to conduct tests and measurements to validate or improve their Telecommunications design project. | Midterm progress report, final  project report and  prototype demonstration |
| 4. Design and manage Telecommunications network within a set of realistic constraints including societal and global impact. (ABET Criteria 3j, PC.c) | Students will demonstrate design and implementation considerations in terms of economic, environmental, ethical, health, safety, social, political, sustainability, and manufacturability issues. | Preliminary proposal. |
| **General Education Outcomes** | | |
| 5. Contribute effectively in a team and demonstrate professional and ethical responsibilities including a respect for diversity.(ABET Criteria 3e, 3i) | Students will demonstrate elements of good teamwork, such as respect for diversity, ethical responsibility, conducting self-evaluation, and providing leadership while working towards successful completion of their project. | Class/lab participation. |
| 6. Manage project in terms of timeliness and quality. (ABET Criteria 3k) | Students will use a project timeline, design review, cost analysis, and other relevant tools to demonstrate project management skills and quality improvement. | Midterm progress report and final project report. |
| 7. Understand the need for learning a new technology as part of continuous professional development. (ABET Criteria 3h) | Students will research innovative solution for given technology problems and establish the need for lifelong learning to be current in a fast paced technology field. | Midterm progress report and final project report. |
| 8. Demonstrate oral and written communication skills. (ABET Criteria 3g) | Students will develop a written design report and oral presentation for faculty and peers. | Final project report and oral presentation. |

The course contents for TCET 4182 Telecommunications Capstone Project I course and the weekly tentative schedule including the series of lectures and laboratories will be the following:

|  |  |  |
| --- | --- | --- |
| **Week** | **Lecture** | **Laboratory** |
| 1 | **Overview:**   * Introduction to the capstone project * Class policies | * Discuss preliminary project ideas * Introduction to project management |
| 2-3 | **Review of programming** | * Write example program * Form project teams |
| 4-5 | **Microcontrollers and applications** | * Simple I/O programs |
| 6 | **Project selection process:**   * Problem identification and description * Description of possible approaches to solving the problem * Selection of approach * Societal impact of the project * Ethical issues related to project | • Identify and describe a problem  • Propose a solution |
| 7 | **Project management:**   * Project lifecycle/timeline * Resource allocation | * Define specific target and timeline/milestones * Assign tasks to team members |
| 8 | **Conceptual design:**   * Concept generation and evaluation * Requirements specifications * Deliverables | * Develop detailed design of block diagram * Develop detailed design requirements in term of hardware and software with quantitative performance specifications * List the project deliverables |
| 9 | * **Midterm progress report** | * Presentation and analysis |
| 10-14 | **Design implementation and testing** | * Build and troubleshoot prototype hardware and software |
| 15 | **Presentations** | * Prepare and demonstrate prototype * Oral presentation * Written final project report |

**Course Need Assessment:**

The TCET 4182 (Telecommunications Capstone Project I) is a senior design course required for the final year B.Tech students in the Telecommunications engineering technology program. It is an ABET requirement (ABET/ETAC 2016-2017 Accreditation Criteria, page 4).

One section of the course will be offered in fall and spring. Expected student count is 18. No additional resources are required to conduct this course. The department has more than five full time faculties who are capable of teaching this course.

**Course Design:**

It is designed to offer a culminating design experience for undergraduate students. Students are to propose solutions to Telecommunications engineering technology problems with realistic constraints. Their design work will be an amalgamation of various Telecommunications principles, problem solving skills and lab experiences they gained throughout their undergraduate curriculum. They will exercise research and development methodology as well as utilize other relevant skills such as troubleshooting, teamwork, project management, and technical writing and presentation. The course will be offered in the department in lecture and lab format. Students will meet regularly with their faculty advisors for design review and progress reports; and at the end of semester, they are to present a sizable engineering design that is fully documented and prototyped.

**Additional resources:**

**None**

**Consultation with affected departments (Accounting)**

>>> Anne Zissu 12/18/15 3:04 PM >>>

Very well Mohammad, thank you for informing me.

I wish you and your family Happy Holidays,

Anne  
>>> Mohammad Razani 12/18/15 2:41 PM >>>  
FYI  
  
>>> Mohammad Razani 12/09/15 3:18 PM >>>  
Hello Anne,  
  
I hope you are doing well and getting yourself ready for a month long holiday.  
Our ETET departmental curriculum committee after a long discussion at the departmental level as well as recent consultation with the members of the Advisory Committee of the department, have concluded that for our TCET students it is more beneficial to take the Wireless Communications course (TCET 4132) in place of the accounting 1162 course. Although we do understand that students can also benefit from the accounting course but the conclusion of the discussions has been to make this change which is more related to their field of study.   
The following gives the rationale for this curriculum modification and I am sending you this email to consult with you and to ask for your kind support of such a change.  
  
"The replacement of ACC 1162 with TCET 4132 as a required course is imperative in our modern day “always connected” society. Furthermore, as a TCB graduate, students will be expected to know not only how wireless signals operate, but also the details of specific systems to stay ahead of the cutting edge of developing wireless systems. ACC 1162 is very specific for students who pursue a career in accounting and not necessarily those pursuing a career in telecommunications engineering technology. (ECON 1101 is still a mandatory course as it is imperative that students understand how economics functions as a system.)"  
  
Best Regards,  
  
Mohammad

The following is the email from Prof. Hong Li the Chair of CST department, in response to the concern expressed during the meeting with Provost August, AP Brown, Kim Cardascia, the College Council Curriculum Subcommittee Chaired by Prof. Edward Roberts and the members of the ETET department on 3-9-17 at 11:30 AM:

**From: Hong Li**

**To: Mohammad Razani;**

**12:23 PM 3/9/17**

**“Prof. Razani,**

**Per our discussion, the CST will propose a minor curriculum change:**

**to add EET1102 as alternative prereq for CST2403.**

**The proposal will be submitted soon.**

**Hong Li, Ph.D.**

**Associate Professor and Chair**

**Department of Computer Systems Technology**

**New York City College of Technology**

**City University of New York**

**300 Jay Street N914**

**Brooklyn, NY 11201**

**Phone: (718) 260-5170**

**Email:** [**hli@citytech.cuny.edu**](mailto:hli@citytech.cuny.edu)**”**

Section AIV: New Courses

**New course to be offered in the Electrical and Telecommunications Engineering Technology Department**

|  |  |
| --- | --- |
| **Department(s)** | **Electrical and Telecommunications Engineering Technology Department** |
| **Academic Level** | **[ X ] Regular  [   ] Compensatory  [   ] Developmental  [   ] Remedial** |
| **Subject Area** | **Telecommunications Engineering Technology** |
| **Course Prefix** | TCET |
| **Course Number** | 4182 |
| **Course Title** | Telecommunications Capstone Project I |
| **Catalog Description** | First part of a two-semester senior design course sequence that introduces programming of embedded systems, research and development methodology, project management, technical writing, and presentation. Students present an introductory level final project incorporating telecommunications engineering designs that are fully documented and prototyped. |
| **Prerequisite** | TCET 3202 |
| **Corequisite** |  |
| **Pre- or corequisite** | CST 2403 |
| **Credits** | 2 |
| **Contact Hours** | 1 Class Hours, 2 Lab Hours |
| **Liberal Arts** | **[ ] Yes  [  X ] No** |
| **Course Attribute (e.g. Writing Intensive, etc)** |  |
| **Course Applicability** | |  |  |  | | --- | --- | --- | | **[X ] Major** |  | | | **[ ] Gen Ed Required** | **[] Gen Ed - Flexible** | **[ ] Gen Ed - College Option** | | **[ ] English Composition** | **[ ] World Cultures** | **[ ] Speech** | | **[ ] Mathematics** | **[ ] US Experience in its Diversity** | **[ ] Interdisciplinary** | | **[ ] Science** | **[ ] Creative Expression** | **[ ] Advanced Liberal Arts** | |  | **[] Individual and Society** |  | |  | **[ ] Scientific World** |  | |
| **Effective Term** | Spring 2017 |

**Rationale:** ABET requires Capstone/ Senior Design course (ABET/ETAC 2016-2017 Accreditation Criteria, page 4) for B.Tech degree. The proposed new course (TCET 4182 Telecommunications Capstone Project I) is the first part of the two-semester course sequence. This course will provide the Telecommunications engineering technology students with the necessary hands-on experience for next capstone course.

# AV: Changes to Existing Courses

**Changes to be offered in the Department of Electrical and Telecommunications Engineering Technology - B.Tech Telecommunications**

1. **TCET 4282 Telecommunications Capstone Project**

|  |  |  |  |
| --- | --- | --- | --- |
| **CUNYFirst Course ID** | 128187 |  |  |
| **FROM:** |  | **TO:** |  |
| **Department(s)** |  | **Department(s)** |  |
| **Course** | ~~Telecommunication Capstone Project~~ | **Course** | Telecommunications Capstone Project II |
| **Prerequisite** | ~~TCET 4202 or departmental permission~~ | **Prerequisite** | TCET 4182 |
| **Corequisite** |  | **Corequisite** |  |
| **Pre- or corequisite** |  | **Pre- or corequisite** | TCET 4202 or departmental permission |
| **Hours** | ~~1 class hr., 3 lab hrs, 2 cr.~~ | **Hours** | 1 class hr, 2 lab hrs, 2 cr. |
| **Credits** |  | **Credits** |  |
| **Description** | ~~A senior design course that integrates telecommunication principles, problem solving skills, and lab experiences students have gained throughout their undergraduate curriculum. Students employ research and development methodology as well as troubleshooting, teamwork, project management, technical writing, and presentation. Students present final project incorporating engineering designs that are fully documented and prototyped.~~ | **Description** | It is the second part of a two-semester senior design course sequence that integrates Telecommunications principles, problem solving skills, and lab experiences students have gained throughout their undergraduate curriculum. Students employ research and development methodology as well as troubleshooting, teamwork, project management, technical writing, and presentation. Students present final project incorporating engineering designs that are fully documented and prototyped. |
| **Requirement Designation** |  | **Requirement Designation** |  |
| **Liberal Arts** | [ ] Yes [ X ] No | **Liberal Arts** | [ ] Yes [ X ] No |
| **Course Attribute (e.g. Writing Intensive, Honors, etc** |  | **Course Attribute (e.g. Writing Intensive, Honors, etc** |  |
| **Course Applicability** | |  | | --- | | [ X ] Major | | [ ] Gen Ed Required | | [ ] English Composition | | [ ] Mathematics | | [ ] Science | | [ ] Gen Ed - Flexible | | [ ] World Cultures | | [ ] US Experience in its Diversity | | [ ] Creative Expression | | [ ] Individual and Society | | [ ] Scientific World | | [ ] Gen Ed - College Option | | [ ] Speech | | [ ] Interdisciplinary | | [ ] Advanced Liberal Arts | | **Course Applicability** | |  | | --- | | [X ] Major | | [ ] Gen Ed Required | | [ ] English Composition | | [ ] Mathematics | | [ ] Science | | [ ] Gen Ed - Flexible | | [ ] World Cultures | | [ ] US Experience in its Diversity | | [ ] Creative Expression | | [ ] Individual and Society | | [ ] Scientific World | | [ ] Gen Ed - College Option | | [ ] Speech | | [ ] Interdisciplinary | | [ ] Advanced Liberal Arts | |
| **Effective Term** | Spring 2017 |  | Spring 2017 |

**Rationale:** To be consistent with other courses in the curriculum.

**Section AIII: Changes in Degree Programs**

**AIII.1. The following revisions are proposed for the Electrical and Telecommunication Engineering Technology Department**

**Program: Bachelor Degree of Technology in Telecommunications Engineering Technology**

**Program Code: 90200**

**Effective: Spring 2017**

Changes in general program

|  |  |  |  |
| --- | --- | --- | --- |
| **FROM**  **Credits** | | **TO**  **Credits** | |
| **PROGRAM-SPECIFIC DEGREE REQUIREMENTS**  **Associate-Level Courses**  EET 1102 Techniques of Electrical Technology  EET 1122 Circuit Analysis I  EET 1222 Circuit Analysis II  EET 1240 Electronics  EET 1241 Electronics Laboratory  EET 2140 Communications Electronics  EET 2141 Communications Electronics Laboratory  EET 2162 Digital Electronics I  TCET 1100 Introduction to Telecommunications  TCET 2102 Analog and Digital Telephony  TCET 2202 Data Communications and Systems  TCET 2220 Transmission Systems  TCET 2242 Microcomputer Interfacing  ENG 1101 English Composition I  ENG 1121 English Composition II  MAT 1375 Precalculus  PHYS 1433 General Physics I: Algebra Based  **or**  PHYS 1441 General Physics I: Calculus Based  PHYS 1434 General Physics II: Algebra Based  **or**  PHYS 1442 General Physics II: Calculus Based  MAT 1475 Calculus I  **Baccalaureate-Level Courses**  TCET 3102 Analog and Digital Communications I  TCET 3120 Switching and Automata Theory  TCET 3142 Computer Systems  TCET 3202 Analog and Digital Communications II  TCET 3222 Satellite Transmission  TCET 4102 Fiber-Optic Communications  ~~TCET 4120 Legal and Regulatory Issues in Telecommunications~~  TCET 4140 Telecommunications Ne0twork Management  TCET 4202 Advanced Telecommunications  ~~TCET 4282 Telecommunications Capstone Project~~  ~~ACC 1162 Elements of Accounting~~  CST 2403 Intro C++ Programming Language I  ENG 2570 Writing in the Workplace  ENG 2575 Technical Writing  ECON 1101 Macroeconomics  MAT 1372 Probability and Statistics  MAT 1575 Calculus II  PHIL 2106 Philosophy of Technology  PHIL 3212 Engineering Ethics  COM 1330 Public Speaking  or higher  **TOTAL PROGRAM-SPECIFIC REQUIRED AND ELECTIVE COURSES**  **TOTAL NYSED LIBERAL ARTS AND SCIENCE CREDITS**  **TOTAL CREDITS REQUIRED FOR THE DEGREE** | **84**  2  4  5  4  1  3  1  3  2  4  4  3  3  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  4  3  3  4  3  3  ~~2~~  3  3  2  ~~3~~  3  3  3  Met as GenEd  3  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  **84**  **47-49**  **131-133** | **PROGRAM-SPECIFIC DEGREE REQUIREMENTS**  **Associate-Level Courses**  EET 1102 Techniques of Electrical Technology  EET 1122 Circuit Analysis I  EET 1222 Circuit Analysis II  EET 1240 Electronics  EET 1241 Electronics Laboratory  EET 2140 Communications Electronics  EET 2141 Communications Electronics Laboratory  EET 2162 Digital Electronics I  TCET 1100 Introduction to Telecommunications  TCET 2102 Analog and Digital Telephony  TCET 2202 Data Communications and Systems  TCET 2220 Transmission Systems  TCET 2242 Microcomputer Interfacing  ENG 1101 English Composition I  ENG 1121 English Composition II  MAT 1375 Precalculus  PHYS 1433 General Physics I: Algebra Based  **or**  PHYS 1441 General Physics I: Calculus Based  PHYS 1434 General Physics II: Algebra Based  **or**  PHYS 1442 General Physics II: Calculus Based  MAT 1475 Calculus I  **Baccalaureate-Level Courses**  TCET 3102 Analog and Digital Communications I  TCET 3120 Switching and Automata Theory  TCET 3142 Computer Systems  TCET 3202 Analog and Digital Communications II  TCET 3222 Satellite Transmission  TCET 4102 Fiber-Optic Communications  TCET 4182 Telecommunications Capstone Project I  TCET 4140 Telecommunications Ne0twork Management  TCET 4202 Advanced Telecommunications  TCET 4282 Telecommunications Capstone Project II  TCET 4132 Wireless Communication  CST 2403 Intro C++ Programming Language I  ENG 2570 Writing in the Workplace  ENG 2575 Technical Writing  ECON 1101 Macroeconomics  MAT 1372 Probability and Statistics  MAT 1575 Calculus II  PHIL 2106 Philosophy of Technology  PHIL 3212 Engineering Ethics  COM 1330 Public Speaking  or higher  **TOTAL PROGRAM-SPECIFIC REQUIRED AND ELECTIVE COURSES**  **TOTAL NYSED LIBERAL ARTS AND SCIENCE CREDITS**  **TOTAL CREDITS REQUIRED FOR THE DEGREE** | **84**  2  4  5  4  1  3  1  3  2  4  4  3  3  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  4  3  3  4  3  3  2  3  3  2  3  3  3  3  Met as GenEd  3  Met as GenEd  Met as GenEd  Met as GenEd  Met as GenEd  **84**  **47-49**  **131-133** |

**Rationale:** ABET requires a Capstone/ Senior Design course (ABET/ETAC 2016-2017 Accreditation Criteria, page 4) for B.Tech degree. The proposed new course (TCET 4182 Telecommunications Capstone Project I) is the first part of the two-semester course sequence.

The removal/replacement of TCET 4120 by TCET 4182 is rational. Because, compared to TCET 4182, TCET 4120 has very little bearing on a student obtaining work as a technologist. The replacement of ACC 1162 with TCET 4132 as a required course is imperative in our modern day “always connected” society. Furthermore, as a TCB graduate, students are expected to know not only how wireless signals operate, but also the details of specific systems to stay ahead of the cutting edge of developing wireless systems. ACC 1162 is very specific for students who pursue a career in accounting and not necessarily those pursuing a career in telecommunications engineering technology. (ECON 1101 is still a mandatory course as it imperative that students understand how economics functions as a system.)

**Semester by semester course:**

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| **FROM:** | **TO:** |
| **B.Tech Telecommunications**   |  |  |  | | --- | --- | --- | | **FIFTH SEMESTER**  TCET 3102 | Analog and Digital Communications I | **CREDITS**  4 | | TCET 3120 | Switching and Automata Theory | 3 | | TCET 3142 | Computer Systems | 3 | | MAT 1575 | Calculus II | 4 | | ENG 2575 | Technical Writing | 3 | |  | **Subtotal** | **17** |   **SIXTH SEMESTER**   |  |  |  | | --- | --- | --- | | TCET 3202 | Analog and Digital Communications II | 4 | | TCET 3222 1 | Satellite Transmission | 3 | | GenEd Elective 2,3 Flexible Core 3 | | | | MAT 1372 | Statistics with Probability | 3 | | ENG 2570 | Writing in the Workplace | 3 | |  | **Subtotal** | **16** |   **SEVENTH SEMESTER**   |  |  |  | | --- | --- | --- | | TCET 4102 | Fiber-Optic Communications | 3 | | ~~TCET 4120~~ | ~~Legal and Regulatory Issues in Telecommunications~~ | ~~2~~ | | TCET 4140 | Telecommunications Network Management | 3 | | CST 2403 | Intro C++ Programming Language Part I | 3 |   GenEd Elective 2,3 Flexible Core 3  **~~Subtotal 14~~**  **EIGHTH SEMESTER**   |  |  |  | | --- | --- | --- | | TCET 4202 | Advanced Telecommunications | 3 | | TCET 4282 | Telecommunications Capstone Project | 2 | | ~~ACC 1162~~ | ~~Elements of Accounting~~ | ~~3~~ | | COM 1330 | Public Speaking or higher | 3 | | College Option | Interdisciplinary Course | 3 | | PHIL 3212 | Engineering Ethics | 3 | |  | **~~Subtotal~~** | **~~17~~** |   **TOTAL CREDITS REQUIRED FOR THE DEGREE 64**  TCET 4000 4 Internship (optional) 3  *1 Students must take TCET 2220 as a prerequisite for TCET 3222 if not taken in AAS.*  *2 Overall Flexible Core choices for the AAS and BTech combined must include one each of the following: ECON 1101 in US Experience in Its Diversity, PHIL 2106 in Individual and Society, any course in World Cultures and Global Issues, and any course in Creative Expression.*  *3 Overall Flexible Core and College Option choices for the AAS and BTech combined must include at least two Writing Intensive courses.*  *4 Internship is an elective course that will allow students to gain industrial experience and add three (3) credits to their degree. See prerequisites in the course description.*  *and add three (3) credits to their degree. See prerequisites in the course description.* | **B.Tech Telecommunications**   |  |  |  | | --- | --- | --- | | **FIFTH SEMESTER**  TCET 3102 | Analog and Digital Communications I | **CREDITS**  4 | | TCET 3120 | Switching and Automata Theory | 3 | | TCET 3142 | Computer Systems | 3 | | MAT 1575 | Calculus II | 4 | | ENG 2575 | Technical Writing | 3 | |  | **Subtotal** | **17** |   **SIXTH SEMESTER**   |  |  |  | | --- | --- | --- | | TCET 3202 | Analog and Digital Communications II | 4 | | TCET 3222 1 | Satellite Transmission | 3 | | GenEd Elective 2,3 Flexible Core 3 | | | | MAT 1372 | Statistics with Probability | 3 | | ENG 2570 | Writing in the Workplace | 3 | |  | **Subtotal** | **16** |   **SEVENTH SEMESTER**   |  |  |  | | --- | --- | --- | | TCET 4102 | Fiber-Optic Communications | 3 | | TCET 4132 | Wireless Communications | 3 | | TCET 4140 | Telecommunications Network Management | 3 | | TCET 4182 | Telecommunications Capstone Project I | 2 | | CST 2403 | Intro C++ Programming Language Part I | 3 |   GenEd Elective 2,3 Flexible Core 3  **Subtotal 17**  **EIGHTH SEMESTER**   |  |  |  | | --- | --- | --- | | TCET 4202 | Advanced Telecommunications | 3 | | TCET 4282 | Telecommunications Capstone Project II | 2 | | COM 1330 | Public Speaking or higher | 3 | | College Option | Interdisciplinary Course | 3 | | PHIL 3212 | Engineering Ethics | 3 | |  | **Subtotal** | **14** |   **TOTAL CREDITS REQUIRED FOR THE DEGREE 64**  TCET 4000 4 Internship (optional) 3  *1 Students must take TCET 2220 as a prerequisite for TCET 3222 if not taken in AAS.*  *2 Overall Flexible Core choices for the AAS and BTech combined must include one each of the following: ECON 1101 in US Experience in Its Diversity, PHIL 2106 in Individual and Society, any course in World Cultures and Global Issues, and any course in Creative Expression.*  *3 Overall Flexible Core and College Option choices for the AAS and BTech combined must include at least two Writing Intensive courses.*  *4 Internship is an elective course that will allow students to gain industrial experience and add three (3) credits to their degree. See prerequisites in the course description.*  *and add three (3) credits to their degree. See prerequisites in the course description.* |

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| ***college blue_yellow2 | **NEW YORK CITY**  **COLLEGE OF TECHNOLOGY**  The City University of New York  300 Jay Street • Brooklyn, NY 112012983  **Department of Electrical and Telecommunications Engineering Technology**  TEL (718) 2605300 FAX: (718) 2548643 |

**Minutes of the ETET Departmental**

**Industry Advisory Commission (IAC) Meeting**

**December 3, 2015**

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| Adam Filios | Zory Marantz |
| Aron Goykadosh | Djafar Mynbaev |
| Kevin Hom | Mohammad Razani |
| Delowar Hossain | Morris Schwartz |
| Misza Kalechman | Song Tang |
| Mohammed Kouar | Viviana Vladutescu |
| Mark Krinker | Xin Zhou Wei |
| Hamid Marandi |  |
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* The meeting was called to order at 4:20 PM.
* Prof. Razani, the Dept. Chairperson welcomed the IAC members thanked them for all their input and appreciate any and all internship opportunities that they may provide for the students.
* Dean Hom welcomed the IAC members and provided them with recent updates including the accreditation of the ET program soon and development of a multidisciplinary biomedical engineering technology program
* The floor then moved to student presentations of capstone projects done in EET 4212. Questionnaires were handed out for IAC members to assess the student projects and presentations.
* The committee members reviewed the minutes from December 11, 2014 and May 1, 2015. The minutes were all unanimously approved.
* An update on the activities and the status of the enrollment and recruitment of students. Prof. Marandi reported that the enrollment in the ETB program is steadily increasing, but that for the TCB program is dropping. A recent meeting was held with the transfer student advising and steps are being taken to assist that department in educating students more about the TCB major and the program itself. One of the corrective actions taken is to have the Welcome Center and the Recruitment Center provide a 3-hour tour of the department to high school seniors where Prof. Marandi differentiates between the different majors and the scholarship and financial aid opportunities available.
* Mr. Schwartz pointed out that it is difficult to believe that students are unaware of the need for TCB graduates in the workforce since he appreciates the difficulties in finding well educated TCB graduates. Prof. Marandi pointed out that more often than not, students tend to be misinformed on the future career opportunities and hence do not enter those fields.
* Prof. Marantz inquired the level of TCB people that are required. Mr. Schwartz responded that a qualified TCB graduate may be hired as interns. These are advertised on the MTA site. There is no exam given, but they must go through an interview process.
* Mr. Schwartz asked if there is an introductory period for new students. Prof. Marandi replied that there is, but some provide incorrect info, hence the corrective action mentioned previously.
* The meeting received a summary of the activities of the student clubs. Prof. Wei summarized that 54 new members joined the IEEE Club, he thanked Profs. Marantz and Ummy for their seminar presentations during the past semester, project workshops are run throughout the semester on working with the Arduino microcontroller board and various sensors. The projects are focused more on ETB concepts and will introduce the RaspPi and TCB centered projects next semester. Finally, the clubs website has been posted and is being hosted on the IEEE main site, which also allows student members to upload their resumes.
* For the ETA Int’l Club, Prof. Marandi reported that there are currently 243 active members and after 11 years on campus students are passing the FCC exams (Parts 1 – 9). Students will also be allowed to upload their resumes to the ETA Int’l website without any fees. He also thanked Prof. Mynbaev for the seminar that he provided on behalf of the club.
* Mr. Schwartz asked if students are encouraged to join the IEEE and, if so, what’s the acceptance rate. Prof. Wei stated that new members join every semester, but not all students can participate in the workshops because many students work during club hours.
* The meeting then moved on to ABET assessment cycle updates. Prof. Kouar thanked the IAC members for their participation. He stated that the first cycle for the next accreditation has begun this past semester. Previous input from the IAC has been acted on, i.e. the inclusion of EET 4132 Wireless Communication as a mandatory course in the TCB program.
* For the ET BT program, Prof. Marantz updated the IAC that the ETB program will be applying for accreditation in January 2017 with the possibility of getting a 2 year retroactive approval. The results of the first cycle, which began during the Spring 2015 semester yielded results for some outcomes that were below the target threshold. Some of the reasons for that are courses being run for the first time, laboratory equipment not being set up, and various other issues, all of which have been attended to and corrective action have been planned to bring the results of the next cycle up to par.
* For the EET AAS program Prof. Ummy stated that the Capstone course in the program is working with mechanical on a project and working on interdepartmental cooperation, similar to what students experience in real life.
* Mr. Schwartz asked if students are ready for the challenges of a Capstone course. Prof. Vladutescu stated that minor curriculum changes have been submitted to guarantee that students follow a prescribed order when taking courses in the program so that they are indeed prepared with all the necessary technical prerequisites.
* Mr. Schwartz asked if students are assessed before they enter a Capstone course. Prof. Kouar responded that there are formative assessments that are done in the prerequisite courses to get an idea of students’ preparedness. Prof. Vladutescu stated that courses are assessed from semester per semester.
* Mr. Schwartz pointed out that in his experience students forget what they learned. In response to that, Prof. Kouar stated that was indeed an observation that was made and for that reason a second Capstone course was added in the TCB program. This also will assist with the students’ lack of programming skill because they tend to take it too late in their TCB career.
* Prof. Hossain presented the latest proposal for the TCB program that introduces the Capstone I and Capstone II courses. His experience shows that many schools have similar such programs. It also introduces wireless communications as a mandatory course in the program and removes accounting, as well as requires students take a programming course earlier on in their career.
* Mr. Schwartz raised a question as to the philosophy of the capstone courses. Specifically, to they encourage students to do their own work and review any material that they need or is it run in a lecture format. Prof. Ummy explained his method where 2 out of the 3 projects in his capstone course are mandatory by everyone and the final project is independent where students implement their own ideas.
* The topic of students having insufficient programming experience was brought up again and Mr. Tang suggested that the students learn Python, as it is a language that he uses at work and Mr. Schwartz confirmed that that language is becoming more prolific.
* Dr. Krinker gave an update of his own research on torsion fields. On June 6 he achieved torsion field communication between Australia and NY by transmitting the two letters TF. Prof. Razani asked what the resulting speed of propagation was and Dr. Krinker reported that it was faster than the speed of light. The results of the experiment were published in the International Journal of Conventional Science. Mr. Schwartz asked what the application of this research is to which Dr. Krinker answered that it permits communication without the need to transmit EM fields.
* Professor Mynbaev updated the members on the status of his task force, composed of Professors Hossain and Marantz, in updating the basic electrical circuit curriculum. Specifically, to compress and combine various topics in DC and AC circuits to introduce more advanced concepts in the AC circuit course.   
  Mr. Schwartz pointed out that it’s nice in theory, but not necessarily in practice. The students that he interviews seem to have a lack of understanding of the fundamentals of circuits. It’s unclear to some of the members how increasing content in a class will help students. Prof. Marantz responded by allowing the students to see all the ways that the concepts may be used in both AC and DC. Mr. Schwartz felt that it might work, but is very uncertain about it.
* The meeting was adjourned at 6 PM.

Cc: Chairman Mohammad Razani



