

NYIT Annual Program Assessment Report

Name of Program: Telecommunications Network Management

Year of assessment report: 2016-2017

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Contact : Lak Amara

I-Annual Program Learning Assessment:

1-Review Statement of Program Learning Goals

1-1 Student Outcomes

The following table shows the 2016-17 a-k ABET student or program outcomes relevant to this program. They are assessed over a cycle of two years.

a	an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
b	an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies; Specifically, the application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of computer systems and associated software systems; The ability to utilize statistics/probability, transform methods, discrete mathematics, or applied differential equations in support of computer systems and networks; The application of natural sciences and mathematics at or above the level of algebra and trigonometry to the building, testing, operation, and maintenance of electrical/electronic systems; The ability to utilize differential and integral calculus, as a minimum, to characterize the performance of electrical/electronic systems;
c	an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
d	an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives; specifically, The application of electric circuits, computer programming, associated software applications, analog and digital electronics, microcomputers, operating systems, local area networks, and engineering standards to the building, testing, operation, and maintenance of computer systems and associated software systems; The application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems;

e	an ability to function effectively as a member or leader on a technical team;
f	an ability to identify, analyze, and solve broadly-defined engineering technology problems; Specifically the ability to analyze, design, and implement hardware and software computer systems; the ability to analyze, design, and implement one or more of the following: control systems, instrumentation systems, communications systems, computer systems, or power systems;
g	an ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;
h	an understanding of the need for and an ability to engage in self-directed continuing professional development;
i	an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity;
j	a knowledge of the impact of engineering technology solutions in a societal and global context; and
k	a commitment to quality, timeliness, and continuous improvement; specifically, the ability to apply project management techniques to computer systems and to electrical/electronic(s) systems;

Figure 1- ABET Student Outcomes 2016-2017

1-2 Curricular Matrix

The matrix in Figure 2 shows which course(s) from the curriculum are strongly connected (marked with a 2) or loosely connected (marked with a 1) to a specific student outcome.

Courses	a	b	c	d	e	f	g	h	i	j	k
ETEC 131 Electronics Tech. I	2		2		2						1
ETEC 495 Seminar Project (in Telecom)	1		1			2	2	2	2		2
CTEC 204 Programming Fund. I	2					2					

CTEC 216 Digital Electronics			2			2	1				2
IENG 400 Ethics & Global Issues						1	2	2	2	2	
TELE 110 Telecom. Fund.	2			2		1					
TELE 420 Internetworking I	2	2				2		2			
TELE 220 Applied Telecom.	2					2	2				
TELE 431 Internetworking II		2		2	2	2	2				2
TELE 321 Wireless Information Network	2	2				2		2			
QANT 201 Statistics	2	2				2					
ETCS 105 Freshman Seminar				2	2		2		2		

Key value : 2 strongly connected ; 1 loosely connected

Figure 2: Matrix of relationships between selected courses and Student outcomes

1-3 Which program learning outcomes will be assessed for the planned academic year?

The table in figure 3 shows the list of student outcomes that will be assessed during this current academic year.

Semester	Assessed Student Outcomes
Fall 2016	e, h, j
Spring 2017	f, g, k

Figure 3: Assessed student outcome for the 2016-2017 academic year

2. What measuring instruments were used for the assessment?

The student outcome assessment in place for the program to ensure continuous improvement is based on a process which includes direct and indirect assessment measures. Our direct method is based on Faculty Course Assessment Reports (FCARs) which are submitted by the faculty for each course at the end of each semester.

The EGMU rubric that we use is shown in Figure 4.

EGMU	Rubric	Score
E-Excellent	<input type="checkbox"/> Fully demonstrates/accomplishes the attributes and behavior in the rubric	3
G-Good	<input type="checkbox"/> Mostly demonstrates/accomplishes the attributes and behavior in the rubric	2
M-Minimal	<input type="checkbox"/> Minimally demonstrates/accomplishes the attributes and behavior in the rubric	1
U-Unsatisfactory	<input type="checkbox"/> Does not demonstrate/accomplish the attributes and behavior in the rubric	0

Figure 4: EGMU Rubric

The table in Figure 5 shows a list of courses that have been selected to measure specific student outcomes.

ABET Program Outcomes	ABET a-k	Strategies/Actions	Assessment Methods
<p>An ability to select and apply the knowledge, techniques, skills and modern tools of the discipline to broadly-defined engineering technology activities;</p>	<p>a</p>	<ul style="list-style-type: none"> * Include adequate course learning outcomes (CLOs) in the curriculum courses * Use of engineering application oriented software * Project experiences with real life examples 	<ul style="list-style-type: none"> * Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: CTEC 204, CTEC 216, TELE 110 and TELE 220
<p>An ability to select and apply a knowledge of mathematics, science, engineering and technology to engineering technology problems that require the application of principles and applied procedures or methodologies</p>	<p>b</p>	<ul style="list-style-type: none"> * Curriculum requirement of courses in mathematics, physics, chemistry, ECET and TELE * Establishment of adequate course learning outcomes (CLOs) in the curriculum courses 	<ul style="list-style-type: none"> * Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO. * Relevant courses for this SO: QANT 201, TELE 321, CTEC 206

<p>An ability to conduct standard tests and measurements; to conduct, analyze and interpret experiments; and to apply experimental results to improve processes;</p>	<p>c</p>	<p>Project laboratory experience emphasizing: - system analysis and system design problems, - teamwork, and - communication (oral and written form)</p>	<p>* Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: CTEC 216, ETEC 110, ETEC 131, TELE 431</p>
<p>An ability to design systems, components or processes for broadly-defined engineering technology problems that are appropriate to program educational objectives</p>	<p>d</p>	<p>Project Laboratory experience emphasizing the design of electrical / computer/ TELECOM systems</p>	<p>* Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: CTEC 206, TELE 431, TELE 321 and TELE 340</p>
<p>An ability to function effectively as a member or leader on a technical team</p>	<p>e</p>	<p>Project Laboratory work experience that emphasizes joint tasks, team work and communication</p>	<p>* Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: ETEC 120, ETEC 131, TELE 431</p>

<p>An ability to identify, analyze, and solve broadly-defined engineering and telecommunications technology problems</p>	<p>f</p>	<p>Project Laboratory work and seminar project experience with specific design requirements</p>	<ul style="list-style-type: none"> * Student required to work on a substantial, one semester duration, design project according to defined specifications *Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: ETEC 231, ETEC 495, CTEC 471 and TELE 431
<p>An ability to apply written, oral and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature</p>	<p>g</p>	<ul style="list-style-type: none"> * Ability to search and fetch technical info for courses involving programming or for the design of systems * Project Laboratory work experience requiring analysis and design of systems that include pre-lab collection of information, teamwork and communication 	<ul style="list-style-type: none"> * Work on design projects requiring technical literature *Work on a non-technical but scientific paper requiring scientific literature *Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: ETEC 110, TELE 310, ETEC 495, CTEC 206, CTEC 471

<p>An understanding of the need for and an ability to engage in self-directed continuing professional development</p>	<p>h</p>	<p>* Engage students in a self-directed effort to write technical and non-technical but scientific papers, and designing electrical and computer engineering systems and processes</p>	<p>* Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: ETEC 495, IENG 400, TELE 420, TELE 431, CTEC 471</p>
<p>An understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity</p>	<p>i</p>	<p>Emphasized in the Ethics and Global Issues course as well as in the Seminar Project course</p>	<p>* Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: ETEC 495, IENG 400, TELE 310</p>
<p>A knowledge of the impact of engineering technology solutions in a societal and global context</p>	<p>j</p>	<p>Emphasized in the Ethics and Global Issues course and Telecom Policies course</p>	<p>* Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: IENG 400, TELE 310</p>
<p>A commitment to quality, timeliness and continuous improvement</p>	<p>k</p>	<p>* Curriculum requirement of courses in ECET and TELECOM *Include adequate Course Learning Outcomes (CLOs) in the curriculum courses</p>	<p>* Collection of Faculty Course Assessment Reports (FCARs) * Selected courses of which LOs are strongly connected to this PO: ETEC 495, TELE 420, TELE 431</p>

Figure 5: Student Outcomes, Strategies and Actions for Assessment

3-Analysis of Student outcomes Assessment:

Using our FCAR system, data from courses, that have a strong connection to the selected student outcomes, was compounded to determine the student outcomes scores which are compared to our benchmark value of 1.5 (Grade C). Figure 6 shows the resulting analysis.

TELE - Student Outcomes Assessment
(e,h,j,f,g,k)
2016-2017

Course	e					f				
	E	G	M	U	BM	E	G	M	U	BM
ETEC-120-M01	14	3	2	1	2.50	16	9	23	4	1.71
ETEC 110-M01	18	12	8	0	2.18	25	12	14	5	2.02
TELE 110										
TELE210										
ETEC 495-M01						2	6	0	0	2.25
CTEC-206-M01										
CTEC-216-M01						19	8	4	1	2.41
TELE 220						2	2	0	0	2.50
TELE 310										
IENG-400-M01										
TELE 420						8	6	0	0	2.57
CTEC 471-M01	7	8	3	2	2.00					
TELE 431	10	6	0	0	2.63	8	8	0	0	2.50
TELE 321						6	10	0	0	2.38
ETCS 105-M01						6	3	8	9	1.23
									4	
Subtotals	49	29	13	3		92	64	49	19	
Benchmark				94	2.32				224	2.02
EGMU %	52%	31%	14%	3%		41%	29%	22%	8%	
E&G / All %	83%			3%		70%			8%	

Course	g					h				
	E	G	M	U	BM	E	G	M	U	BM
ETEC-120-M01										
ETEC 110-M01	15	0	2	2	2.20					
TELE 110										
TELE210										
ETEC 495-M01						4	3	0	1	2.2
CTEC-206-M01	5	10	5	4	1.67					
CTEC-216-M01										
TELE 220										
TELE 310						4	4	0	0	2.5
IENG-400-M01	32	27	11	2	2.24					
TELE 420										
CTEC 471-M01						8	8	4	1	2.1
TELE 431	8	8	0	0	2.50					
TELE 321						6	10	0	0	2.3
ETCS 105-M01						12	6	4	4	2.0
Subtotals	60	45	18	8		34	31	8	6	
Benchmark				131					79	
				2.20					2.18	
EGMU %	46%	34%	14%	6%		43%	39%	10%	8%	
E&G / All %	#REF!			#REF!		#REF!			#REF!	

Course	j					k				
	E	G	M	U	BM	E	G	M	U	BM
ETEC-120-M01										
ETEC 110-M01										
TELE 110										
TELE210										
ETEC 495-M01	2	3	3	0	1.88					
CTEC-206-M01										
CTEC-216-M01						23	5	3	1	2.5
TELE 220										
TELE 310	6	4			2.60					
IENG-400-M01	25	18	11	0	2.26					
TELE 420										
CTEC 471-M01						6	8	4	2	1.9
TELE 431						6	8	0	0	2.4
TELE 321										
ETCS 105-M01	15	19	9	9	1.77					
						23	9	27	7	1.7
Subtotals	48	44	23	9		58	30	34	10	
Benchmark				124					132	
				2.06					2.03	
EGMU %	39%	35%	19%	7%		44%	23%	26%	8%	
E&G / All %	#REF!			#REF!		#REF!			#REF!	

Figure 6: Collected data and benchmark scores

A compounded score for each student outcome is shown in figure 7.

Summary - Aggregated per SO	Benchmark
e	2.32
f	2.02
g	2.20
h	2.18
j	2.06
k	2.03

Figure 7: Student outcome scores

4-Interpretation of Results

All scores are well above our benchmark score of 1.5 out of 3 . On the average the score is in the B, B+ range.

5-Improvements

Overall the students are doing well in this program. Classes are small and allowing good interaction instructor-student. If there is an improvement to be done it is at the level of the Telecommunications laboratory. Equipment need to be upgraded. A lot of applications are using virtual simulation and this has its drawbacks.

II- Summary of Improvements Made in response to assessment Results in the past few years

Year of Assessment Results	Name of Program Learning Goal	Improvements Implemented Based on Assessment Results	Impact of Improvements
AY 13-14	Global Competency	<p>Global competency criteria were assessed and improved</p> <p>A student:</p> <ul style="list-style-type: none">• Collaborates effectively with team members towards optimal progress on the chosen project.• Values alternative perspectives and encourages participation among all team members• Remains non-judgmental when disagreeing with others/seeking conflict resolution• Addresses the impact of the design in an environmental, economic and	<p>Global Competency criteria application improves the life and performance of a graduate from our program.</p>

		<ul style="list-style-type: none"> societal context. • Evaluates and judges a situation using facts and a professional code of ethics • Uses personal value system to support actions, but understands the importance of using professional ethical standards for corporate decisions 	
AY 14-15	Written Communication	All term papers, laboratory and senior design reports were expected to be well written and have a professional layout.	The score for the student outcome “g” (ability to apply written ...communication in technical and non technical environment..) was a decent 2.2 out of 3.
AY 15-16	Improve current curriculum	A new curriculum has been designed. While still being benchmarked with other similar programs in the area, there are still some technicalities that have to be solved before it goes to the curriculum committee of the SoECS. The Departement ECET-TELE believes that the new program to be proposed can only run if adequate telecommunications lab space and equipment are made available to stduents and faculty.	Telecom. Technology Application Currency.

III-Faculty Engagement in the Current Annual Report:

Faculty were fully cooperative to provide course assessment data to complete this report.

IV- Annual Program Achievement Goals:

First year retention rates: (*)

Six-year graduation rates: (*)

Average time to degree completion: (*)

Student satisfaction survey results: (*)

Employer satisfaction results: (*)

% pursuing an advanced degree : (*)

% of job placement: (*)

(*) The number of students in this program has tremendously dropped over the past years. The reasons are many; lack of job opportunity in the telecom industry seems to be the main reason. This type of degree , when enhanced with CISCO certificates, gives a lot of opportunities in the industry for the student but that requires some extra investments in time and money . Also, there is a lot of competition from the CUNNY centers that offer similar programs. The department will continue monitoring the state of the industry but urgently should seeks outside financial funds to update the telecom laboratory.

L. Amara/ EGGC 812/lamara@nyit.edu/

