August 08, 2013

Sonia Rivera
Academic Affairs Dean
UPR- Aguadilla
P.O.Box 6150
Aguadilla, PR 00604-6150

Dear Dr. Rivera:

The Engineering Technology Accreditation Commission (ETAC) of ABET recently held its 2013 Summer Meeting to act on the program evaluations conducted during 2012-2013. Each evaluation was summarized in a report to the Commission and was considered by the full Commission before a vote was taken on the accreditation action. The results of the evaluation for University of Puerto Rico - Aguadilla Campus are included in the enclosed Summary of Accreditation Actions. The Final Statement to your institution that discusses the findings on which each action was based is also enclosed.

The policy of ABET is to grant accreditation for a limited number of years, not to exceed six, in all cases. The period of accreditation is not an indication of program quality. Any restriction of the period of accreditation is based upon conditions indicating that compliance with the applicable accreditation criteria must be strengthened. Continuation of accreditation beyond the time specified requires a reevaluation of the program at the request of the institution as noted in the accreditation action. ABET policy prohibits public disclosure of the period for which a program is accredited. For further guidance concerning the public release of accreditation information, please refer to Section II.A. of the 2012-2013 Accreditation Policy and Procedure Manual (available at www.abet.org).

A list of accredited programs is published annually by ABET. Information about ABET accredited programs at your institution will be listed in the forthcoming ABET Accreditation Yearbook and on the ABET website (www.abet.org).

It is the obligation of the officer responsible for ABET accredited programs at your institution to notify ABET of any significant changes in program title, personnel, curriculum, or other factors which could affect the accreditation status of a program during the period of accreditation stated in Section II.H. of the 2012-2013 Accreditation Policy and Procedure Manual (available at www.abet.org).

Assuring Quality - Stimulating Innovation
Please note that appeals are allowed only in the case of Not to Accredit actions. Also, such appeals may be based only on the conditions stated in Section II.L. of the 2012-2013 Accreditation Policy and Procedure Manual (available at www.abet.org).

Sincerely,

[Signature]

Amitabha Bandyopadhyay, Chair
Engineering Technology Accreditation Commission

Enclosure: Summary of Accreditation Action
Final Statement

cc:  Ivelice Cardona, Chancellor
     Edma A Baez-Choza, Dept. Chair
     Jorge Leon, Visit Team Chair
Electronics Technology (B.S.)

Accredit to September 30, 2015. A request to ABET by January 31, 2014 will be required to initiate a reaccreditation report evaluation. A report describing the actions taken to correct shortcomings identified in the attached final statement must be submitted to ABET by July 01, 2014. The reaccreditation evaluation will focus on these shortcomings. Please note that a visit is not required.

This is a newly accredited program. Please note that this accreditation action extends retroactively from October 01, 2011.
Final Statement of Accreditation

to

Puerto Rico - Aguadilla Campus
Aguadilla, PR

2012-13 Accreditation Cycle

Assuring Quality * Stimulating Innovation
ABET
ENGINEERING TECHNOLOGY ACCREDITATION COMMISSION

FINAL GENERAL REVIEW STATEMENT

on

UNIVERSITY OF PUERTO RICO AT AGUADILLA

Aguadilla, Puerto Rico

Dates of Visit:

October 07-09, 2012
The statement that follows consists of two parts: the first addresses the overall institution and its engineering technology operation, and the second addresses the individual engineering technology programs. Accreditation actions taken by ETAC of ABET will be based upon the findings summarized in this statement and will depend on the range of compliance or non-compliance with ABET criteria, policies, and procedures. The range can be construed from the following definitions for findings:

**Deficiency:** A Deficiency indicates that a criterion, policy, or procedure is not satisfied. Therefore, the program is not in compliance with the criterion, policy, or procedure.

**Weakness:** A Weakness indicates that a program lacks the strength of compliance with a criterion, policy, or procedure to ensure that the quality of the program will not be compromised. Therefore, remedial action is required to strengthen compliance with the criterion, policy, or procedure prior to the next evaluation.

**Concern:** A Concern indicates that a program currently satisfies a criterion, policy, or procedure; however, the potential exists for the situation to change such that the criterion, policy, or procedure may not be satisfied.

**Observation:** An Observation is a comment or suggestion which does not relate directly to the accreditation action but is offered to assist the institution in its continuing efforts to improve its programs.
INSTITUTIONAL FACTORS AFFECTING
THE ENGINEERING TECHNOLOGY UNIT

Introduction

The Engineering Technology Accreditation Commission (ETAC) of ABET has evaluated the baccalaureate degree program in Electronics Technology of the University of Puerto Rico at Aguadilla (UPRAg). The visit findings were evaluated using the 2012-13 ABET Criteria for Accrediting Engineering Technology Programs and the 2012-13 ABET Accreditation Policy and Procedure Manual.

The University of Puerto Rico at Aguadilla is one of 11 campuses of the University of Puerto Rico, a publicly-supported higher education system. UPRAg was established on April 7, 1972, was initially accredited by the Middle States Commission on Higher Education in 1976 (last accreditation date: April, 2011), and serves Aguadilla and the Northwest region of Puerto Rico. The baccalaureate degree program in Electronics Technology leads to the Bachelor of Science degree and was initiated in 1995. The Electronics Technology program is being submitted for initial accreditation.
Institutional Observation

Policy: Accreditation Policy and Procedure Manual (APPM) II.A.6, Public Release of Accreditation Information by the Institution, states, “Institution catalogs and similar publications must clearly indicate the programs accredited by the commissions of ABET as separate and distinct from any other programs or kinds of accreditation. Each accredited program must be specifically identified as “accredited by the ________ Accreditation Commission of ABET, http://www.abet.org.”

The Technology Accreditation Commission (TAC) officially changed its name to the Engineering Technology Accreditation Commission (ETAC) on March 24, 2012. All publications and communications that refer to “TAC” should be changed to “ETAC.” Each accredited engineering technology program must be specifically identified as “accredited by the Engineering Technology Accreditation Commission of ABET, http://www.abet.org.”
PROGRAM EVALUATION

ELECTRONICS TECHNOLOGY

Baccalaureate Degree

Introduction

The Electronics Technology Program was created in 1995 in response to the needs of the local manufacturing industry and awarded its first degrees in 1997. Instruction to students is delivered using traditional lecture and laboratories during the day. Target employers of the graduates are manufacturing industries in Aguadilla and in the surrounding region. The program educational objectives are:

- The graduates of the program should have a broad knowledge of electronics technology so they can analyze, design, install, operate and repair electric and electronic systems, processes and devices.

- The graduates of the program should possess communication skills to effectively perform as an individual or as a team member.

- The graduates of the program should be able to adapt to emerging technologies through continuous personal and professional improvement.

- The graduates of the program should possess personal awareness such that they can make decisions based on their professional, social, ethical and environmental responsibility.

The Program Criteria for Electrical/Electronic(s) Engineering Technology and SimilarlyNamed Programs as published in the 2012-13 ETAC criteria document were used to evaluate this program. Findings in meeting the provisions of ABET criteria and policies are described below.
Program Weaknesses

1. Criteria: Criteria 5. Curriculum, under Integration of Content experience states: “Baccalaureate degree programs must provide a capstone or integrating experience that develops student competencies in applying both technical and non-technical skills in solving problems.” The TEEL-4991 Undergraduate Research course was specifically created to address this curricular requirement. The course is now a required course for all incoming freshmen (effective Fall 2012), but only serves as an elective for the current body of students. There were several interesting student projects observed in the display room that provided evidence that some, but not all, students in the program have the opportunity to integrate and apply learned technical and non-technical skills in solving problems. The displayed projects were created in courses TEEL-4991 (a pilot offering of the course), TEEL-2005 and TEEL-4001. As is, current upper level students and program graduates over the next few years will be leaving the program without the benefit of an integrating or capstone experience. These graduates will lack some important abilities needed for success in meeting the program educational objective. To resolve this Weakness, the program must provide evidence that the curriculum ensures that all students are provided with an integrating experience that requires them to apply both technical and non-technical skills in solving problems prior to their graduation.

Due Process Response: The program explained that all students are provided with an integrating experience, including students under the current curriculum in TEEL 4991, and students under the previous curriculum in TEEL 4001.

Status after Due Process: This finding is resolved.

2. Criteria: Criterion 5. Curriculum, under Advisory Committee states: “An advisory committee with representation from organizations being served by the program graduates must
be utilized to periodically review the program’s curriculum and advise the program on the establishment, review, and revision of its program educational objectives. The advisory committee must provide advisement on current and future aspects of the technical fields for which the graduates are being prepared.” The program’s advisory committee was officially formed in 2011 and met for the first time in October 2011. While evidence was made available to the team during the visit that informally area employers and alumni of the program have been able to effect change in the program, it is only recently that the process of curricular review and change has become formalized. There was no evidence that the advisory committee has been able to provide periodic support in the area of curricular review on the establishment of program educational objectives and their continued relevancy to the changing industrial market and employment opportunities. Lacking continual input from industry advisors representing organizations served by graduates, the program cannot be certain that its program educational objectives are valid, if the program curriculum is current, or if graduates are prepared to meet the needs of industry. To resolve this weakness the program must demonstrate that it is using the advisory committee to periodically review the program’s curriculum and advise the program on the review and revision of its program educational objectives. Further, the program must demonstrate that the advisory committee is providing advisement on the current needs and future trends in the electronics field, as they apply to employment opportunities with and the skills needed to serve the area employers.

**Due Process Response:** The program states that before fall 2012 the IAC members provided informal recommendations concerning the program’s curriculum. Furthermore, the program states that in the November 2012 meeting, the IAC decided to meet every semester to advise the program regularly.
Supplemental material later indicated that the program had two individual interactions to discuss the benefits of incorporating software skills in the curriculum. They consisted of a presentation by industry and a meeting with an industry representative. These individual interactions are positive and should be encouraged, but they do not substitute for the periodic industry advisory committee meetings.

**Status after Due Process:** This finding remains a Weakness until the program demonstrates that it is using the advisory committee to periodically review the program’s curriculum and advise the program on the review and revision of its program educational objectives. Further, the program must demonstrate that the advisory committee is providing advisement on the current needs and future trends in the electronics field, as they apply to employment opportunities with and the skills needed to serve the area employers.

3. **Criteria:** Criteria 9. Program Criteria for Electronic(s) Engineering Technology and Similarly named programs states: “... graduates of baccalaureate degree programs must demonstrate: the ability to apply project management techniques to electrical/electronics(s) systems.” During the visit, ETAC-ABET observed that project management is limited to a laboratory exercise in TEEL 4013, “Logic Circuits II Lab”. In this laboratory, the student work indicated that students are required to break-down a project into definable tasks and assign responsibility to team members. This limited exposure of students to project management techniques needs to be strengthened in the curriculum. As a result, graduating students from the program will have limited understanding of project management techniques, a skill that is required of graduates per the criteria and one that is highly desired by the electronics industry. To resolve this Weakness, the program must demonstrate that graduating students are able to properly apply project management skills to electrical/electronics systems.
Due Process Response: The program states that it informally applies project management to the simple projects performed by students throughout the curriculum. In this “informal project management system,” project management “competences like communications skills, leadership, planning, people skills, and execution and control are integrated in courses and laboratories.” These competencies are assessed and evaluated indirectly using a matrix that how each competence relates to each student outcome. Although through this approach students are exposed to different aspects of project management, they are never explicitly integrated into a coherent project management methodology.

Supplemental documentation was provided later that showed project management has been included as one of the topics in TEEL 2003 Industrial Electronics. Additionally, project management skills are explicitly added to the course objectives in two other courses. These revisions are positive and formalize the coverage of project management on the curriculum. However, there is no clear evidence that the proposed changes will result in the desired student outcomes.

Status after Due Process: This finding remains a Weakness until the program demonstrates that graduating students are able to properly apply project management skills to electrical/electronics systems.

Program Concerns

1. Criteria: Criterion 4. Continuous Improvement states: “The program must regularly use appropriate, documented processes for assessing and evaluating the extent to which both the program educational objectives and the student outcomes are being attained. The results of these evaluations must be systematically utilized as input for the continuous improvement of the
program. Other available information may also be used to assist in the continuous improvement of the program.” The Electronics Technology program continuous improvement plan currently runs on a three-year cycle. The first cycle of the plan began in 2009. The second cycle of the plan had just begun at the time of the evaluation visit. While the first cycle of the plan did identify issues in the assessment data of student outcomes for improvement, no second cycle measures had occurred to document the continuous improvement of the program. Without the follow-up measurement, the Electronics Technology program cannot evaluate the extent to which actual improvements were made in attaining outcomes. It is required that the assessment of student outcomes be collected, evaluated, and utilized to assure an effective continuous improvement process.

2. **Criteria:** Criterion 3. Student Outcomes states in part that, “... these student outcomes must include, but are not limited to, the following learned capabilities: ... h. an understanding of the need for and an ability to engage in self-directed continuing professional development; ... and k. a commitment to quality, timeliness, and continuous improvement.” The Electronics Technology program at University of Puerto Rico uses its own student outcomes that, in turn, map to the Engineering Technology Accrediting Commission of ABET learned capabilities. All of the Electronics Technology defined student outcomes are measured and analyzed. However, a detailed review of the Student Outcomes revealed only a single relevant measurement was used supporting self-directed continuing professional development. Also, no direct assessment of student commitment to continuous improvement was found in the program display materials. As a result, the current situation creates a potential for future Electronics Technology students to be missing required learned capabilities. This finding remains a Concern until the program
demonstrates that students recognize the need for continuous self-directed professional development and continuous improvement.

3. **Criteria:** Criterion 8. Institutional Support states, “The resources available to the program must be sufficient to attract, retain, and provide for the continued professional development of a qualified faculty.” It was observed that in order to meet budgetary constraints the institution had to cut back in funds for faculty professional development. Limited funding for professional development may lead to an inability for program faculty to stay current in their respective fields, or even emerging fields. This finding remains a Concern until the program demonstrates that resources are made available by the institution for faculty professional development.

**Program Observation**

The Electronics Program could further strengthen its assessment of student understanding of ethical responsibilities by using the IEEE code of ethics as a tool in its assessment efforts.