EAC

ABET

Leadership and Quality Assurance in Applied Science, Computing, Engineering, and Technology Education

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August 13, 2007

France A. Cordova
Chancellor
University of California, Riverside
4108 Hinderaker Hall
Riverside CA 92521

Dear Dr. Cordova:

I am pleased to transmit to you the findings of the Engineering Accreditation Commission (EAC) of ABET with respect to the evaluation conducted for University of California, Riverside during 2006-2007. Each of ABET's Commissions is fully authorized to take the actions described in the accompanying letter under the policies of the ABET Board of Directors.

We are pleased that your institution has elected to participate in this accreditation process. This process, which is conducted by approximately 1,500 ABET volunteers from the professional community, is designed to advance and assure the quality of professional education. We look forward to our continuing shared efforts toward this common goal.

Sincerely,

William S. Clark

William Clark
President

Enclosure: Commission letter and attachments

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Applied Science Accreditation Commission
Computing Accreditation Commission
Engineering Accreditation Commission
Technology Accreditation Commission

August 13, 2007

Reza Abbaschian
Dean
Bourns College of Engineering
University of California, Riverside
A342 Bourns Hall
Riverside CA 92521

Dear Dr. Abbaschian:

The Engineering Accreditation Commission (EAC) of ABET recently held its 2007 Summer Meeting to act on the program evaluations conducted during 2006-2007. 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 California, Riverside 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.L. of the *2006-2007 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 web site (www.abet.org).

California, Riverside, University of

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.

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.G. of the *2006-2007 Accreditation Policy and Procedure Manual* (available at www.abet.org).

Sincerely,

Gerald S. Jakubowski

Gerald S. Jakubowski, Chair
Engineering Accreditation Commission

Enclosures: Summary of Accreditation Actions
Final Statement

cc: France A. Cordova, Chancellor
Dennis K. Rice, Assistant Dean, Bourns College of Engineering
Larry D. Kendrick, Visit Team Chair

ABET
Engineering Accreditation Commission

Summary of Accreditation Actions
for the
2006-07 Accreditation Cycle

University of California, Riverside
Riverside, CA

Computer Engineering (BS)
Electrical Engineering (BS)

Accredit to September 30, 2009. A request to ABET by January 31, 2008 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 1, 2008. The reaccreditation evaluation will focus on these shortcomings. Please note that a visit is not required.

Chemical Engineering (BS)
Environmental Engineering (BS)
Mechanical Engineering (BS)

Accredit to September 30, 2013. A request to ABET by January 31, 2012 will be required to initiate a reaccreditation evaluation visit. In preparation for the visit, a Self-Study Report must be submitted to ABET by July 1, 2012. The reaccreditation evaluation will be a comprehensive general review.

ABET, Inc.
ENGINEERING ACCREDITATION COMMISSION

UNIVERSITY OF CALIFORNIA RIVERSIDE
Riverside, CA

FINAL STATEMENT
Visit Dates: October 8-10, 2006

Introduction and Discussion of Statement Construct

The Engineering Accreditation Commission (EAC) of ABET, Inc. has evaluated the chemical, computer, electrical, environmental, and mechanical engineering programs at the University of California Riverside.

This statement is the final summary of the EAC evaluation, at the institutional and engineering-program levels. It includes information received during due process, including information submitted with the 14-day response. This statement consists of two parts: the first deals with the overall institution and its engineering operation, and the second deals with the individual engineering programs. It is constructed in a format that allows the reader to discern both the original findings and subsequent progress made during due process.

A program's accreditation action is based upon the findings summarized in this statement. Actions depend on the program's range of compliance or non-compliance with the criteria. This range can be construed from the following terminology:

- 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 that does not relate directly to the accreditation action but is offered to assist the institution in its continuing efforts to improve its programs.

The University of California Riverside is a relatively new member of the nine-campus University of California system. Its first engineering program was accredited in 1994. The College of Engineering currently has five accredited programs. All five programs were evaluated during this visit. Faculty members are active in the scholarship of both teaching and research, and the college has assumed an important role in the economic development of the region. The accredited programs of the college have an enrollment of approximately 800 undergraduate students.

The Mathematics, Physics, and Chemistry Departments as well as various non-academic units were visited. No problems were identified associated with their support of the engineering programs.

Institutional Strengths

1. The university demonstrates a strong commitment to the concept of diversity both in the faculty and the student body.

2. The university has a strong commitment to increasing enrollments in technical programs through active recruitment of candidates and to reduce attrition by providing innovative freshman and sophomore support programs.

3. The university demonstrates a strong commitment to growth of the engineering program by providing the necessary resources to expand the faculty and provide additional facilities.

Chemical Engineering
Program

Introduction

The chemical engineering program has three emphasis options including biochemical engineering, bioengineering, and chemical engineering. The chemical engineering degrees are granted through the combined Chemical and Environmental Engineering Department. The programs share faculty, staff, and many facilities. The chemical engineering program for 2005 had 100 students. The combined faculty and staff included 12 tenure track and seven other faculty members, three technicians/specialists, five office clerical employees, and one other employee. The creation of the Bioengineering Department has caused a drop in resources for the department and in number of students. In fall of 2006, total undergraduate enrollment in the program had dropped to 93.

Program Strengths

1. Faculty members are well qualified, committed, energetic, and accessible to the students.
2. The program emphasizes undergraduate research. Most students have at least one undergraduate research experience prior to graduation.

Program Weaknesses

1. Criterion 2. Program Educational Objectives Criterion 2 states, "These objectives are broad statements that describe the career and professional accomplishments that the program is preparing students to achieve." Many of the statements describe skills and knowledge that are very similar to the Program Outcomes and Assessments and are appropriate for students to achieve at graduation. The Criterion also states in 2b, "Each engineering program for which an institution seeks accreditation or re-accreditation must have in place a process based on the needs of the program's various constituencies in which the objectives are determined and periodically evaluated." Stakeholders other than faculty had extremely limited

involvement in creating and validating the objectives. The Criterion also states in 2d, "Each engineering program for which an institution seeks accreditation or re-accreditation must have in place a process of ongoing evaluation of the extent to which these objectives are attained, the result of which shall be used to develop and improve the program outcomes so that graduates are better prepared to attain the objectives." There are only limited examples of use of the information to improve the attainment of objectives.

- 14-Day response: The EAC acknowledges receipt of a 14-day response pointing out that a Criterion 2d shortcoming was incorrectly identified as a 2c shortcoming and an error on the Program Audit Form relative to the past accreditation actions. These errors have been corrected in the draft statement and audit form.

- Due-process response: The EAC acknowledges the receipt of documentation that the program has rewritten and approved a set of educational objectives that define expected early career accomplishments. The documentation also provides evidence of appropriate involvement of constituents in defining the objectives and in the definition of a review process.

- The weakness is now cited as a concern pending demonstration of the robustness of the new process.

2. Criterion 8. Program Criteria Criterion 8 requires the curriculum to include "appropriate modern experimental techniques." Although many students demonstrate the ability to design experiments through the final design courses, elective courses, or participation in research projects, based on the information available at the time of the visit, it is possible for students to complete the program without fulfilling this requirement.

   - 14-Day response: The EAC acknowledges receipt of a 14-day response to Criterion 8. The information provided does not deal with matters of errors of fact but will be considered during due process.

- Due-process response: The EAC acknowledges the receipt of documentation providing additional evidence of experimental design content in the curriculum and the modification of the curriculum to further strengthen the experimental design component.

- The weakness has been resolved.

Program Concern

1. Criterion 3. Program Outcomes and Assessment Criterion 3 states that programs must demonstrate that program outcomes "... are being measured and indicates the degree to which the outcomes are achieved." It further states, "There must be evidence that the results of this assessment process are applied to the further development of the program." The program has an outcomes assessment process. However, the process in place for assessment of program outcomes seems not to be capable of distinguishing the performance of one program outcome from another. The grade for each piece of student work is mapped to multiple course objectives, and each course objective is mapped to multiple program outcomes. Therefore, the result for a particular program outcome is essentially a weighted average of a weighted average of individual grades that each reflects multiple program outcomes. The effect is similar to the use of course grades to assess program outcomes, a practice that is discouraged because of the lack of specificity that would result. The assessment process should establish a unique or nearly unique association between a program outcome and student work.

   - Due-process response: The EAC acknowledges the receipt of documentation indicating an intent to review the assessment methodology but identifying no specific changes.

   - The concern remains unresolved.

Computer Engineering
Program

Introduction

The computer engineering program, jointly administered by the Departments of Electrical Engineering and Computer Science and Engineering, had a fall 2006 enrollment of 204 students. Curriculum includes core computer science and electrical engineering topics with both lecture and laboratory classes. Graduates are prepared for careers in computer and related industries, including the design of complex computer hardware/software systems, electronics and electrical signals for communications, networks, computing, and real-time embedded systems.

Program Strength

1. The dean and department chairs are totally committed to a successful and growing program and fully support its continuous improvement.

Program Weaknesses

1. Criterion 2. Program Educational Objectives Criterion 2 states, "... program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve." The program's objectives are not broad statements that describe the accomplishments of computer engineering graduates and their achievements; instead they describe skills more appropriately articulated in program outcomes. In addition, it is not clear that these objectives were reached based on the needs of program constituents (students, faculty, employers, alumni, advisory boards, and the community at large.) Since these objectives were not defined based on the needs of program constituents, it is not clear how the results are used to improve the program outcomes and for graduates to attain the objectives.

   - Due-process response: The EAC acknowledges receipt of documentation describing a proposal for a new set of educational objectives that are focused on early career

accomplishments. It also proposes a process for involvement of constituents in refining/ approving the objectives. The documentation indicates a May 2007 date for completion of the educational objectives review, refinement and approval process.

- The weakness remains unresolved and will be the focus of the next review. In preparation for the review, the EAC anticipates evidence documenting the implementation of the new process.

2. Criterion 3. Program Outcomes and Assessment Criterion 3 states, "There must be processes to produce these outcomes and an assessment process, with documented results, that demonstrates that these program outcomes are being measured and indicates the degree to which the outcomes are achieved. There must be evidence that the results of this assessment process are applied to the further development of the program." Course objectives are defined for each course but they are not clearly related to program outcomes that are referred to as departmental outcomes. It is stated in the report that the college will administer a new assessment tool in the fall of 2006 but the process used presently in measurement of program outcomes is not documented. Achievement of program outcomes is demonstrated using course objectives and grades in homework assignments and exams. Sufficient evidence was not provided to demonstrate students attain the outcomes articulated by the computer engineering program.

- Due-process response: The EAC acknowledges receipt of documentation that references the self-study and onsite documentation related to correlation between course content and program outcomes. The documentation also identified additional assessment planned in the future. It provided no additional information related relating course content to outcomes or of the use of assessment data to improve the program.

- The weakness remains unresolved and will be the focus of the next review. In preparation for the review, the EAC anticipates evidence that documents the relation of specific course content and grades to program outcomes, evidence documenting implementation of the additional assessment tools identified in the due-process response, as well as evidence that the results of assessments have been used to improve the program.

Program Concerns

1. Criterion 4. Professional Component Criterion 4 states, "Students must be prepared for engineering practice through the curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints." The self-study report did not clearly identify those courses with significant design content, however after interviews with several faculty members and inspection of course materials provided during the visit, it appeared that there are several courses with appropriate design content and, therefore, this criterion is satisfied. However, the potential exists that the situation can change in the future since the expected design content of courses is not documented.

   - The concern remains unresolved.

2. Criterion 5. Faculty Criterion 5 states, "The program faculty must have appropriate qualifications and must have and demonstrate sufficient authority to ensure the proper guidance of the program and to develop and implement processes for the evaluation, assessment, and continuing improvement of the program, its educational objectives and outcomes." While CSE Department faculty and EE Department faculty are listed it is not clear which group of faculty have primary responsibility for the computer engineering program. This uncertainty could lead to problems in the future regarding hiring new faculty and making curriculum changes.

   - The concern remains unresolved.

3. Criterion 8. Program Criteria Criterion 8 states, "The program must demonstrate that graduates have: knowledge of ...engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components, as appropriate to program objectives." The documentation provided in the self-study report and during the campus visit indicated that design coverage is satisfactory. However, design courses were listed as "elective" courses. The Criterion is satisfied by requiring students to choose between courses offered by one of the departments

that jointly offer the computer engineering program in a manner that satisfies the Criterion. Since this requirement is not documented, it is possible that in the future students could select courses in a manner that results in the Criterion not being satisfied.

- The concern remains unresolved.

Electrical Engineering
Program

Introduction

The electrical engineering program is the oldest program in the college. The program has about 190 students. There are 18 full-time tenured or tenure-track faculty members. The program has grown significantly since the previous review, and new facilities and faculty have been added to address this growth.

Program Strengths

1. The program has a very well-qualified faculty. They are actively engaged in state-of-the-art engineering activities and are involved with students and student projects. Faculty provide significant opportunities for undergraduate students to participate in research efforts, and students appear enthusiastic about taking advantage of such opportunities, which they felt were available to all interested students.

2. The student population is racially and culturally diverse, and many of them are first generation college students. Students cite the close interaction between students and faculty as being one of the most positive elements of the program.

3. Open admission policies lead to some students not fully ready to enter engineering studies. However, the program makes considerable efforts to provide additional help and resources to enable these students to succeed academically.

Program Weaknesses

1. Criterion 2. Program Educational Objectives Criterion 2 states that the program must have "a process based on the needs of the program's various constituencies in which the objectives are determined and periodically evaluated." While a process exists, it is not clear that this process is clearly tied to feedback from the program's defined constituencies or what the time

period is for re-evaluation of these objectives. Some objectives appear difficult to measure and some are similar to outcomes. Criterion 2 states that the program must have "a process of ongoing evaluation of the extent to which these objectives are attained, the result of which shall be used to develop and improve the program outcomes so that graduates are better prepared to attain the objectives." (While evaluation has been done, it is not yet clear that this is an ongoing process and that the loop is being closed to use the evaluation results in program improvement.)

- Due-process response: The EAC acknowledges receipt of documentation describing activity to define a new set of educational objectives that are focused on early career accomplishments and a description of a process for involving constituents in developing and refining the objectives. The target date for approval of the new objectives and objective review/definition process was indicated to be May 2007.

- The weakness remains unresolved and will be the focus of the next review. In preparation for the review, the EAC anticipates evidence documenting the implementation of the new process.

2. Criterion 3. Program Outcomes and Assessment Criterion 3 requires "... an assessment process, with documented results, that demonstrates ... program outcomes are being measured and indicates the degree to which the outcomes are achieved." While some assessment has been implemented, it does not appear that all outcomes are sufficiently measured and that achievement of all outcomes is being demonstrated. Sufficient evidence was not provided for the following outcomes: "b" an ability to design and conduct experiments, "d" an ability to function on multi-disciplinary teams, "f" an understanding of professional and ethical responsibility, "h" the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context, "j" a knowledge of contemporary issues.

- Due-process response: The EAC acknowledges receipt of documentation identifying curricular changes that have been implemented to insure adequate coverage of and documentation of achievement of Criterion 3 items b, d, f and j. Because the program

relies heavily on grading as an assessment tool, outcomes b, d, f and j now appear to be covered within the curriculum so that better assessment will take place.

- The weakness is now cited as a concern pending demonstration of the robustness of the changes.

3. Criterion 4. Professional Component Criterion 4 states, "Students must be prepared for engineering practice through the curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints." While the senior design projects in EE 175 are of excellent quality, inspection of a sample of reports and oral presentations did not provide sufficient evidence to demonstrate that all projects incorporate engineering standards and realistic constraints.

Criterion 4 also states, "The professional component must include ... one and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study." The program currently contains 66 quarter hours of electrical engineering topics, plus 20 hours of technical electives. Depending on how these electives are selected, it is possible for students to take 16 hours of computer science, which could lead to graduation without the 72 hours of electrical engineering topics required by this criterion.

- Due-process response: The EAC acknowledges the receipt of documentation that shows implementation of changes to the syllabus for EE175a/b that will insure coverage of realistic constraints and standards and a change to the curriculum to insure adequate coverage of engineering topics by all students.

- The weakness has been resolved.

4. Criterion 8. Program Criteria The electrical engineering program criteria state, "The program must demonstrate that graduates have: knowledge of probability and statistics, including applications appropriate to the program name and objectives ...." The program has a required course in probability and statistics taught by mathematics and statistics faculty, but does not demonstrate applications appropriate to electrical engineering theory and practice.

The criteria also state, "The structure of the curriculum must provide both breadth and depth across the range of engineering topics implied by the title of the program." While the curriculum insures that all students achieve adequate depth, the rules governing the selection of electives make it possible for a student to graduate by taking only introductory courses in multiple areas thus not achieving depth in any area.

- Due-process response: The EAC acknowledges receipt of documentation that shows implementation of changes to the curriculum to insure adequate coverage of the application of probability and statistics and that insure depth in at least one area of electrical engineering.

- The weakness has been resolved.

Program Observations

1. Program outcomes "a" through "k" are being used directly without evidence of consideration of other outcomes appropriate to this institution, or of any special emphasis placed by the program consistent with program goals.

2. Students expressed concern that knowledge of software packages such as PSPICE and Matlab is expected in the lab without sufficient instruction being provided.

3. Students expressed interest in having more flexibility in the allowed general education sequence; for example, allowing two semesters of a foreign language, which the students felt could be beneficial to their careers.

4. Students expressed interest in having lecture materials, solutions, etc., for all classes posted on the Blackboard system to allow easy access for all students. An opinion was expressed that some laboratory manuals should be rewritten to be more clear and explicit.

Environmental Engineering
Program

Introduction

The environmental engineering program emphasizes the areas of water pollution and air pollution. The program was created in 1995 and first received accreditation in the same year. It shares a department, including many faculty and facilities, with a program in chemical engineering. There are currently 48 students in the program, half of which are freshmen, indicating an increase in enrollment.

Program Strengths

1. This undergraduate environmental engineering program is one of the few in the nation that is associated with a chemical engineering program. This is particularly appropriate to the skill set needed for the program, and results in a program that is uniquely suited to deliver the highest level of technical abilities to its graduates.
2. The faculty is exceptionally dedicated to the undergraduate program and its students, especially in consideration of the high level of research that they conduct.
3. Program faculty and university research centers readily involve undergraduate students in research projects. This provides the students with exceptional experiences to reinforce and motivate their education.

Program Weaknesses

1. Criterion 2. Program Educational Objectives This criterion states that each engineering program must have in place "detailed published educational objectives," and "a process based on the needs of the program's various constituencies in which the objectives are determined and periodically evaluated." It also states that "program educational objectives are broad statements that describe the career and professional accomplishments that the program is

preparing graduates to achieve." Several of the published objectives (e.g., numbers 1, 2, and 5) seem to be oriented to attributes that students will have upon graduation, rather than after a period of time in the workplace. Thus, they resemble program outcomes (Criterion 3) more than objectives. Section B.2.3 (page 22) of the self-study document indicates that review of the objectives is excessively driven by the faculty, rather than constituencies. The only involvement of constituencies is that the objectives are "presented and discussed during the meetings of the Advisory Board."

- Due-process response: The EAC acknowledges the receipt of documentation of the implementation and utilization of a process for involving all constituencies in the definition of educational objectives. The response also documents the development and implementation of a new set of educational objectives focused on early career accomplishments.

- The weakness has been resolved. ✓

Program Concerns

1. Criterion 3. Program Outcomes and Assessment Criterion 3 states that programs must demonstrate that program outcomes "are being measured and indicates the degree to which the outcomes are achieved." It further states that, "There must be evidence that the results of this assessment process are applied to the further development of the program." The program has an assessment process in place that demonstrates the due diligence of the faculty in satisfying this criterion. Furthermore, the faculty has demonstrated their acceptance of the need to conduct outcomes assessment. However, the process in place for direct assessment of program outcomes seems not to be capable of distinguishing the performance of one program outcome from another. The grade for each piece of student work is mapped to multiple course objectives, and each course objective is mapped to multiple program outcomes. Therefore, the result for a particular program outcome is essentially a weighted average of a weighted average of individual grades that each reflects multiple program outcomes. The effect is similar to the use of course grades to assess program outcomes, a practice that is discouraged because of the lack of specificity that would result. The program

should modify the assessment process to establish a unique or nearly unique association between program outcomes and student work.

- Due-process response: The EAC acknowledges the receipt of documentation that indicates an intent to carefully examine the assessment methodology in light of the issues raised but nothing has been implemented.

- The concern remains unresolved.

2. Criterion 8. Program Criteria for Environmental Engineering Criterion 8 states that, "... the program must demonstrate that a majority of those faculty teaching courses which are primarily design in content are qualified to teach the subject matter by virtue of professional licensure, or by education and equivalent design experience." The faculty includes one member with a professional engineering license and one with an Engineer-In-Training certificate. While the Criterion is currently satisfied, the limited number of faculty with design qualifications raises the possibility that the Criterion may not be satisfied in the future either due to loss of faculty with design qualifications or due to modified teaching assignments.

   - Due-process response: The EAC acknowledges the receipt of documentation that indicates a commitment to weight licensure and design education heavily in future hiring decisions.

   - The concern remains unresolved.

Mechanical Engineering
Program

Introduction

The mechanical engineering program is provided through the Department of Mechanical Engineering. At the start of fall quarter 2006, the department had an enrollment of 337 undergraduate students. The faculty consists of 15 full-time tenure or tenure-track members, one full-time lecturer, and three part-time lecturers. The program is searching for a tenure-track faculty member in the area of information computation and design, and is presently guided by an interim chair.

Program Strengths

1. The department has a number of bright, enthusiastic, and energetic young faculty members. There is currently a good balance of both experienced leadership and new energy in the program.

2. The students are enthusiastic about the program and the faculty.

Program Concerns

1. Criterion 2. Program Educational Objectives Criterion 2 states that programs must have in place "... a process of ongoing evaluation of the extent to which the program educational objectives are attained, the result of which shall be used to develop and improve the program outcomes." The Board of Advisors has evaluated achievement of the program educational objectives since 2001. Beginning in 2006, input from an important constituency, the alumni, has been gathered through the use of a survey instrument. The program is relatively new and has graduated 73 students prior to 2004. The response to the survey has been around 10 percent. A plan is in place to increase the survey response rate but until the plan is fully implemented and more time has passed, there is limited input from alumni to evaluate the achievement of program educational objectives. There is a process in place to use the results

of the evaluation of the program educational objectives to improve the program outcomes. However, implementation of the process has been constrained by limited evaluation data and only limited improvement to the program outcomes has occurred. Also, Criterion 2 states, "... program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve." The program should consider rewording their program educational objectives to better describe accomplishments of their students three to five years after graduation.

- The concern remains unresolved.

2. Criterion 3. Program Outcomes and Assessment Criterion 3 states that programs must demonstrate that program outcomes "... are being measured and indicates the degree to which the outcomes are achieved." It further states that, "There must be evidence that the results of this assessment process are applied to the further development of the program." The program has an assessment process in place that demonstrates the due diligence of the faculty in satisfying this criterion. Furthermore, the faculty has demonstrated their acceptance of the need to conduct outcomes assessment. However, the process in place for direct assessment of the program outcomes seems not to be capable of distinguishing the performance of one program outcome from another. The grade for each piece of student work is mapped to multiple course objectives, and each course objective is mapped to multiple program outcomes. Therefore, the result for a particular program outcome is essentially a weighted average of a weighted average of individual grades that each reflects multiple program outcomes. The effect is similar to the use of course grades to assess program outcomes, a practice that is discouraged because of the lack of specificity that would result. The assessment process should be modified to establish a unique or nearly unique association between program outcomes and student work.

- The concern remains unresolved.