ABET, Inc.
111 Market Place, Suite 1050
Baltimore, MD 21202
Phone: 410-347-7700
Fax: 410-625-2238
www.abet.org
accreditation@abet.org

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

August 15, 2008

Mun Y. Choi
Dean, School of engineering
University of Connecticut
261 Glennbrook Road, U-2237
Storrs CT 06269-2237

Dear Dr. Choi :

Engineering Accreditation Commission (EAC) of ABET recently held its 2008 Summer
Meeting to act on the program evaluations conducted during 2007-2008. 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
Connecticut 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 2007-2008 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).

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 2007-2008 Accreditation Policy and Procedure Manual (available at www.abet.org).

Sincerely,

Mary Leigh Wolfe, Chair
Engineering Accreditation Commission


Enclosure:   Summary of Accreditation Action
             Final Statement

cc:   Peter Nicholls, Provost & Executive Vice President
      Robert McCartney, Associate Professor
      Wayne R. Bergstrom, Visit Team Chair

ABET, Inc.

Engineering Accreditation Commission
Summary of Accreditation Actions
for the
2007-2008 Accreditation Cycle

**University of Connecticut**
**Storrs, CT**

**Biomedical Engineering (BSE)**

**Computer Engineering (BSE)**

**Environmental Engineering (BSE)**

**Management and Engineering for Manufacturing (BS)**

**Material Science and Engineering (BSE)**

Accredit to September 30, 2014. A request to ABET by January 31, 2013 will be required to initiate a reaccreditation evaluation list. In preparation for the visit, a Self-Study Report must be submitted to ABET by July 01, 2013. The reaccreditation evaluation will be a comprehensive general review.

This is a newly accredited program. Please note that this accreditation action extends retroactively from October 01, 2005.

**Chemical Engineering (BS)**

**Civil Engineering (BS)**

**Computer Science and Engineering (BS)**

**Electrical Engineering (BS)**

**Mechanical Engineering (BS)**

Accredit to September 30, 2014.  A request to ABET by January 31, 2013 will be required to initiate a reaccreditation evaluation list.  In preparation for the visit, a Self-Study Report must be submitted to ABET by July 01, 2013.  The reaccreditation evaluation will be a comprehensive general review.

ABET, Inc.
ENGINEERING ACCREDITATION COMMISSION

**UNIVERSITY OF CONNECTICUT**
Storrs, CT

FINAL STATEMENT
Visit Dates:  October 7-9, 2007
Accreditation Cycle Criteria:  2007-2008

Introduction and Discussion of Statement Construct

The Engineering Accreditation Commission (EAC) of ABET, Inc. has evaluated the biomedical engineering, chemical engineering, civil engineering, computer engineering, computer science and engineering, electrical engineering, environmental engineering, management and engineering for manufacturing, materials science and engineering, and mechanical engineering programs of University of Connecticut.

This statement is the final summary of the EAC evaluation, at the institutional and engineering-program levels.  It includes information received during due process.  The statement that follows 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 visit 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 Connecticut is the flagship public research university of the State of Connecticut.  It enrolls approximately 28,000 students at seven campuses and is a land and sea grant university with a wide range of graduate and professional programs, as well as a comprehensive undergraduate program.  The university is in the midst of a 20-year, multibillion dollar capital improvement program funded by the State of Connecticut that has considerably expanded the university's educational facilities.

The School of Engineering is located at the University's main Storrs campus.  During the 2006-2007 academic year, nearly 1,700 undergraduate students and more than 300 graduate students were enrolled in engineering programs, and there were approximately 100 full-time, tenure-track faculty members.  The school offers Bachelor of Science degrees in 12 different 4-year programs, one of which is accredited by the Computing Accreditation Commission of ABET, Inc. and five of which are accredited by ABET's Engineering Accreditation Commission.  Five additional engineering programs are currently seeking accreditation by the EAC.

The following units were reviewed and found to adequately support the engineering programs: biology, chemistry, mathematics, physics, English, ethics/philosophy, natural resources, business, library, computing services, registrar, and admissions.

Institutional Strength

1. The institution's leadership at all levels and the engineering faculty share a vision of excellence that, coupled with strong state support for facility and operational needs, has

created an outstanding climate of scholarship and continuous improvement. Within the engineering school, this has led to very good facilities, strong undergraduate enrollment, and successful recruitment of outstanding faculty members.

Institutional Weakness

The institutional weakness cited applies to all engineering programs.

1. Policies and Procedures  Section II.L.6. of the ABET Accreditation Policy and Procedure Manual states that "College 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. Accredited programs should be specifically identified as 'accredited by the Engineering Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700.'" The citations on several of the departmental web sites lack strength of compliance, as does the citation in the 2007-2008 University of Connecticut Undergraduate Catalog. All university publications should be brought into compliance.

   • Due-process response:  The EAC acknowledges receipt of a letter listing the actions that have been taken to modify the accreditation citations on departmental websites and in the 2008-2009 Undergraduate Catalog, bringing them into compliance with the ABET Accreditation Policy and Procedure Manual.

   • The weakness is resolved.

Institutional Concern

The institutional concern cited applies to all engineering programs.

1. Criterion 1. Students  This criterion requires that the institution have and enforce procedures to assure that all students meet all program requirements. Procedures exist to prevent waivers of course requirements except where circumstances such as curriculum modifications or transfer equivalencies render specific requirements inapplicable. There is concern,

however, that limited documentation of individual waiver rationale may lead to deterioration in procedure enforcement in the event of future staffing or organizational changes.

- <u>Due process response</u>:  The EAC acknowledges documentation, in the form of the School of Engineering Director of Advising Procedures Manual that clarifies the documentation that will be used for course substitutions and waivers of requirements.

- The concern is resolved.

**Biomedical Engineering**
Program

Introduction

The first students graduated from the biomedical engineering program in 2003. The program is interdepartmental and has grown to nearly 200 undergraduate students and 10 faculty members, 3 of whom are assigned 100 percent to biomedical engineering. The curriculum provides flexibility for students to focus in one of several tracks.

Program Strengths

1. Student development is complemented by a staff academic advisor, a Commence database for student monitoring, the published BME Guide to Courses, a Career Fair, active student organizations, and an early warning system.

2. Academic programs, including a foreign-language double major, virtual and integrated laboratory platforms, an assessment sampling rubric, study abroad opportunities, laboratory research with faculty, capable and effective teaching assistants, and senior design project competitions, provide valuable benefits to the program's students.

Program Concern

1. Criterion 3. Program Outcomes and Assessment  Criterion 3 requires that outcomes be statements that describe what students are expected to know and be able to do by the time of graduation. For the biomedical engineering program, program outcome (n) states that "twenty-five percent of BME majors participate in study abroad." There is concern that this program outcome does not indicate student knowledge or ability expected to be achieved at the time of graduation.

   - Due-process response:  The EAC acknowledges receipt of a revision to this statement framed in the form of an outcome.

   - The concern is resolved.

2.  <u>Criterion 5. Faculty</u>  Criterion 5 states that there must be sufficient faculty to accommodate adequate levels of student advising and counseling.  During academic year 2006-07, one faculty member was assigned 100 percent to the biomedical engineering program while six others held dual/joint appointments.  Two new faculty members were hired for academic year 2007-08 with 100 percent assignment to biomedical engineering and host appointments in mechanical engineering.  These two new faculty members are scheduled to begin advising biomedical engineering students during the 2007-08 academic year.  There is concern that continued program growth will limit student access to faculty for counseling and advising.

    - <u>Due-process response</u>:  The program did not provide a response to this shortcoming.

    - The concern remains unresolved.

**Chemical Engineering**
Program

Introduction

The chemical engineering program is offered by the Department of Chemical, Materials, and Biomolecular Engineering. The program covers a broad spectrum of biotechnology, advanced materials, computer applications, and environmental engineering, and currently has eight and a half full-time-equivalent faculty members. In addition, one lecturer is assisting the process design course and the two laboratory courses. The undergraduate enrollment in the program during the 2006-07 academic year was 151.

Program Strengths

1. The program attracts excellent undergraduate students. The students interviewed reported that they are very satisfied with their undergraduate education and think very highly of their program.

2. The program faculty is strongly interested in the overall development of the students. Over 50 percent of undergraduate students took the independent research course, which indicates an excellent relationship between the students and the faculty.

Program Concerns

1. Criterion 5. Faculty Criterion 5 states that the faculty must be of sufficient number and must have the competencies to cover all areas of the curriculum. The program currently has 8.5 FTE faculty members with 151 students, in contrast to 12 full-time faculty members with 85 students during the 2001 visit. There is concern that continued program growth without growth in the number of faculty will detrimentally impact the effectiveness of the program.

    • Due-process response: The program did not provide a response to this shortcoming.

    • The concern remains unresolved.

2.  <u>Criterion 7.    Institutional Support and Financial Resources</u>    Criterion 7 states that constructive leadership must be adequate to ensure quality and continuity of the engineering program, and resources must be sufficient to attract and retain well-qualified faculty members.  Since the 2001 visit, the program has changed department heads (or program directors) almost every year.  The program also lost two key faculty members very recently, including the instructor of the design course.  There is concern that continued changes in leadership could detrimentally impact the quality of the program.

    -   <u>Due-process response</u>:  The program did not provide a response to this shortcoming.

    -   The concern remains unresolved.

<u>Program Observations</u>

1.  The program is encouraged to increase the synergy between the chemical engineering and the materials science and engineering programs, which would benefit both programs.  The program recognizes the importance of biology in the chemical engineering community and is encouraged to consider requiring or strongly recommending a biology course in the curriculum.

2.  Faculty advisors should pay close attention to overload and prerequisite requirements, and the dean's office should work closely with the program on this issue.  In addition, the university should check the count of transfer units because one of the sample transcripts contained an incorrect count of transfer units.

3.  Because Physical Chemistry (CHEM 263Q) has similar content compared to Thermodynamics I (CHEG 211), the program could consider modifying the physical chemistry course, or replacing it with another chemistry requirement or chemical engineering course.

**Civil Engineering**
Program

Introduction

The civil engineering program is offered by the Department of Civil and Environmental Engineering. Currently, there are 217 undergraduate students enrolled in the program, which provides emphasis in 4 prime technical areas: applied mechanics, structural engineering, transportation, and environmental engineering and water resources. The teaching faculty consists of 22 full-time, tenure-track and two adjunct members.

Program Strength

1.  Students are highly motivated and complimentary of the program. The program enjoys an enviable reputation in the State of Connecticut that is characterized by an overall perception of quality undergraduate education and alumni succeeding in the business of civil engineering after graduation.

Program Concerns

1.  Criterion 1. Students   This criterion requires that students be advised and/or monitored regarding curricular and career matters. The transcript reviews uncovered instances where students took classes before or concurrent with prerequisite classes. A process exists to limit these occurrences, but there is concern that faculty allowance of exceptions, if allowed to increase, may lead to an adverse impact on the ability of students to achieve program outcomes.

    - Due-process response: The program did not provide a response to this shortcoming.

    - The concern remains unresolved.

2.  Criterion 5. Faculty   The faculty must be of sufficient number and must have the competencies to cover all of the curricular areas of the program. There is concern that there is only one faculty member fully qualified to teach the required and elective geotechnical

engineering courses, and delivery of the program is becoming increasingly dependent on this individual.

- <u>Due-process response</u>:  The program did not provide a response to this shortcoming.

- The concern remains unresolved.

<u>Program Observation</u>

1. The program is encouraged to hire and develop its faculty such that it will remain fully qualified to teach the design components of its curriculum by virtue of professional licensure, or by education and design experience.

## Computer Engineering
Program

Introduction

The Department of Electrical and Computer Engineering (ECE) in collaboration with the Department of Computer Science and Engineering (CSE) offers a BS degree program in computer engineering. The program has an undergraduate enrollment of 52 students (fall 2007). The computer engineering BS program is offered only in a daytime mode.

Program Strengths

1. Interviews with the Industrial Advisory Board and faculty indicate that the faculty's strong relationship with industry provides significant opportunities for the mutual benefit and support of the needs of both.

2. The CSE and ECE department chairs and faculty are well respected by the students, industry, and community partners. The program has many students who are highly motivated and enthusiastic about the program and their educational opportunities.

Program Observation

1. The program is encouraged to increase consistency in the requirements for schematic, layout, and software documentation in the senior design projects to assure that all of the program's graduates have a culminating design experience of similar quality.

**Computer Science and Engineering**
Program

Introduction

The computer science and engineering program is one of two programs offered by the Department of Computer Science and Engineering. The second program is computer science. The teaching and advising responsibility for these programs rests with 19 full-time tenured and tenure-track faculty. Total enrollment in the computer science and engineering program has declined approximately 25 percent since a peak of 202 in the fall of 2004, although recent enrollments appear to have stabilized at about 150. The number of graduates in 2006-07 was 39, down from a high of 54 in 2003-04.

Program Strength

1. The highly motivated faculty members provide quality laboratory experiences and numerous teaming opportunities. They provide a program of study that prepares students for successively more challenging topics, culminating in senior design experiences that are varied and professionally challenging.

Program Weakness

1. Criterion 2. Program Educational Objectives This criterion requires a process based on the needs of the program's various constituencies in which the objectives are determined and periodically evaluated. A survey sent to 1999-2002 alumni in the spring of 2006 produced only 7 responses during a period in which the program produced approximately 200 graduates. Attempts to survey employers in professional contexts (e.g., during career fairs) have produced similarly low response rates of an informal nature (i.e., these attempts do not appear to have been completed in a fully systematic manner). These limited response rates have constrained the program's ability to evaluate achievement of their objectives and to use the evaluation results to improve the program.

- Due-process response:  The EAC acknowledges receipt of a letter describing a revised process for evaluating the achievement of program objectives.  This process included acquisition of additional survey feedback from graduates as well as direct feedback from three employers of program graduates.  The process is being further modified to acquire continued alumni feedback and increased employer feedback.  Finally, documentation has been provided demonstrating use of alumni and employer feedback to effect change in the program.  There is concern, however, that these new process modifications have had limited application and that the value of the revised objectives evaluation process may deteriorate until it has been fully institutionalized.

- The weakness is now cited as a concern.

Program Observation

1. Program educational objectives are identical for the computer science and engineering program and the computer science program, although recent actions by program faculty attempted to distinguish the two programs by preceding these objectives by separate introductory statements that summarize the thrust of each of the programs.  The survey form distributed in the spring of 2006 was sent to both computer science and engineering and computer science alumni.  The form included the common program educational objectives and the introductory statements for the computer science and engineering program.  Although the common program educational objectives were produced in consultation with constituents, in order to reduce confusion, the computer science and engineering program should reexamine the current approach to differentiation between the two programs.  In addition, similar measures should be taken with respect to the instrument(s) used to involve computer science and engineering and computer science alumni in the evaluation process.

**Electrical Engineering**
Program

Introduction

The Department of Electrical and Computer Engineering offers BS, MS, and Ph.D. degree programs in electrical engineering. The undergraduate program has an enrollment of 135 students (fall 2007). The electrical engineering BS program is offered only in a daytime mode.

Program Strength

1. The capstone design experience is the culmination of a sequence of design courses and activities that support program educational objectives. Emphasis is placed on multidisciplinary teams. These culminating design projects have successfully incorporated measures for outcome assessment that have improved the overall quality of the educational experience.

Program Observations

1. Based on the transcript analysis, some transfer students appear to have difficulty in adjusting to the demands of the program. The program is encouraged to take this into account during the academic advising process and counsel students appropriately.

2. The program and faculty are encouraged to promote life-long learning and professional development through IEEE membership and Eta Kappa Nu membership.

**Environmental Engineering**
Program

Introduction

The environmental engineering program is administered by the Department of Civil and Environmental Engineering. At the time of the visit, the program had 38 undergraduate students and was staffed by 9 core faculty members and approximately 12 affiliated faculty members from various other departments.

Program Strength

1. Since the arrival of the program director, the program has made strong advances in integrating faculty and resources to execute a curriculum supported by systems to continually assess and improve the quality of majors graduating from the program. It is evident that faculty and students alike appreciate his efforts to grow an undergraduate major in environmental engineering.

Program Concerns

1   Criterion 2. Program Educational Objectives  This criterion states that a program must have in place a process of ongoing evaluation of the extent to which objectives are attained, the results of which are used to develop and improve the program. An evaluation process is in place. There has been limited use of the results for program improvement. There is concern that, if current efforts to institutionalize the evaluation process are not completed, deterioration in objectives fulfillment may result.

   • Due-process response: The program did not provide a response to this shortcoming.

   • The concern remains unresolved.

2. Criterion 3. Program Outcomes and Assessment  This criterion states that engineering programs must demonstrate, among other things, that designs meet desired needs within realistic constraints (criterion 3 outcome "c"). The degree to which such realistic constraints

are addressed in the curriculum, including the major design experience, is limited. There is concern that, without added emphasis in preparation relating to this outcome, student achievement of this outcome could deteriorate.

- <u>Due-process response</u>: The program did not provide a response to this shortcoming.

- The concern remains unresolved.

3. <u>Criterion 8. Program Criteria</u> Environmental engineering programs must demonstrate that graduating students attain various levels of knowledge and abilities among the various program components. The program does not clearly articulate its interpretation of various levels of capability, such as "proficiency", "introductory level knowledge", and "ability to perform," for the various specific topics in the program criteria. There is a concern that, without clearer articulation, a potential exists that the attainment of program criteria could deteriorate.

- <u>Due-process response</u>: The program did not provide a response to this shortcoming.

- The concern remains unresolved.

## Management and Engineering for Manufacturing
Program

Introduction

The management and engineering for manufacturing (MEM) program is offered jointly by the School of Business and the School of Engineering. The MEM program was developed in 1990 by a task force of industry, academic, and state government representatives working with faculty from the University of Connecticut Schools of Business and Engineering. The result was an integrated curriculum designed to educate students to function in manufacturing occupations in global environments. There are six faculty members in the MEM teaching group and two others who teach MEM courses on an as-needed basis. The number of students majoring in MEM is 59 in 2007.

Program Strengths

1. The Schools of Business and Engineering have successfully integrated their functions to produce a cohesive, coordinated MEM program.

2. The MEM students are enthusiastic about this program and feel that the courses and the way they are taught will prepare them well for a variety of engineering management jobs.

Program Weakness

1. Criterion 3. Program Outcomes and Assessment  This criterion states that there must be processes to produce the program outcomes and an assessment process, with documented results, that demonstrates that these outcomes are being measured and indicates the degree to which the outcomes are achieved. There must also be evidence that the results of this assessment process are applied to the further development of the program. While substantial data have been gathered, the process and plan for scheduling and use of assessment lack documentation. Also, there is little documented evidence that the results of the outcome assessments are being used to improve the program.

Although there is some anecdotal information that feedback from students, faculty, and industry representatives has been used to improve various aspects of the program (curriculum, coursework, integration, hands-on experience), this information, including the feedback received, actions taken, dates, and results achieved, has not been documented as part of a standardized process. The lack of documentation of the outcome assessment plan and the program improvements is a weakness that hinders the assessment process from being applied systematically to ensure that the program's outcomes are attained.

- Due-process response: The EAC acknowledges receipt of written documentation further formalizing the outcomes assessment process and describing a clear path for feedback to the curriculum. Included in this documentation is a formalized schedule for performing the assessment process on a yearly cycle. The submitted documentation also demonstrates that the results of the outcomes assessment process have directly led to a program change which has already resulted in an apparent improvement in the applicable assessment attribute. There is concern, however, that systematic assessment documentation and the formalized schedule have had limited application and that the formalized outcomes assessment process may be subject to possible deterioration until it is fully institutionalized.

- The weakness is now cited as a concern.

Program Observations

1. Industry representatives are enthusiastic in their support of the program. Formalizing them into an Industry Advisory Board with an appropriate charter, regularly scheduled meetings, and a written record of actions taken would benefit the program.

2. Program faculty are encouraged to meet on a regular basis to address issues and share information related to the program and keep minutes of these meetings.

## Materials Science and Engineering
Program

Introduction

The materials science and engineering program is a new undergraduate program developed in response to significant demand of New England industry for engineers with materials background. It is the only undergraduate materials program in a public university in New England. The program provides concentration areas in biomaterials, metallurgy, and nanomaterials, which reflect a combination of faculty expertise and the needs of the local industrial constituency. The program has about 60 undergraduate students, 12 faculty members, and 2 emeritus faculty members who assist in teaching.

Program Strengths

1. The program and its faculty members have strong links with local and regional industry, based upon a well established Institute for Materials Research, which has supported graduate education and materials research for several decades.

2. The introduction of the undergraduate program has been well planned and executed over the past decade, and several new faculty members have been hired to rejuvenate the established MSE faculty and to develop and support the new undergraduate program. The program has grown in an orderly manner from providing sufficient courses for minors and double majors to being a full-fledged undergraduate program. Because of the foundation of the existing research institute, there is a well developed infrastructure and experience base to support the laboratory needs of the new program.

Program Concerns

1. Criterion 2. Program Educational Objectives  This criterion requires that a program 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". However, the process used to determine the extent to which these objectives have been met has just begun

to be exercised, and there are as yet very few alumni with sufficient experience to provide a strong basis for assessment. The program is also making a transition from a well established and effective relationally based ad-hoc feedback process, to a more systematic process that captures valuable feedback into institutional memory in a manner such that it can be used objectively to make improvements. The concern is that while appropriate processes are started, they are not yet 'ongoing', which is necessary for the program to be able to identify and implement necessary changes.

- Due-process response: The program did not provide a response to this shortcoming.

- The concern remains unresolved.

2. Criterion 3. Program Outcomes and Assessment This criterion states that there must be evidence that the results of the outcomes assessment process are applied to the further development of the program. Until the past year, the program has used documented but ad-hoc methods to make improvements to the program. The program developed a systematic process for making improvements in the past year. There is concern that the results of this new systematic process have not yet been fully implemented or assessed.

- Due-process response: The program did not provide a response to this shortcoming.

- The concern remains unresolved.

3. Criterion 4. Professional Component This criterion states that the curriculum must culminate 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 culminating design course clearly has components that incorporate appropriate standards and multiple realistic constraints, but the final reports from several projects give limited discussion of these aspects of design constraints and their implications for future decision making. There is concern that, if student emphasis on application of realistic design constraints is allowed to decline, the value of the culminating design experience may deteriorate.

- <u>Due-process response</u>:  The program did not provide a response to this shortcoming.

- The concern remains unresolved.

## Mechanical Engineering
Program

Introduction

The mechanical engineering program has seen a steady increase in undergraduate enrollment over the last several years, with a current enrollment of 373. The program currently has 20 full-time, tenure-track faculty members and 3 part-time or non-tenure-track faculty members.

Program Strengths

1. The program has a long history of preparing mechanical engineering students for successful careers in the mechanical engineering profession. As a result, the program is highly regarded and enjoys strong support from both its alumni and local industry.

2. The program has highly qualified faculty members with expertise that encompasses both thermal and mechanical systems. Faculty members are actively engaged in both the educational and research missions of the department, with strong participation by all faculty members in the culminating senior design project.

3. Students appear to be highly motivated and involved in their educational process. There appear to be many hands-on opportunities for students within the curriculum.

Program Concerns

1. Criterion 3. Program Outcomes and Assessment This criterion requires that there be evidence that the results of the assessment process are applied to the further development of the program. The program has developed a set of program outcomes that parallel and extend the "a" through "k" outcomes included in criterion 3. While the program has an assessment process that substantially meets this criterion, there is as yet only limited evidence that the results of the assessment process have been applied to the further development of the program for those additional program outcomes that are beyond "a" through "k." There is concern that the ability of the program to demonstrate that its students attain the program

outcomes will deteriorate if feedback regarding these additional outcomes is eventually perceived by the program's constituents to be of lesser importance than feedback regarding those outcomes that parallel "a" through "k."

- Due-process response: The program did not provide a response to this shortcoming.

- The concern remains unresolved.

2. Criterion 5. Faculty This criterion requires that faculty be of sufficient number and have the competencies to cover all of the curricular areas of the program. Recently, two senior faculty members have left the department and there is evidence of continued dissatisfaction with certain aspects of the program on the part of some faculty members. The concern is that faculty turnover could lead to an inadequate number of faculty members with the competencies to cover all curricular areas of the program.

- Due-process response: The program did not provide a response to this shortcoming.

- The concern remains unresolved.

Program Observations

1. Transcript reviews uncovered instances where students took classes before or concurrent with prerequisite classes. These instances were apparently approved by the students' advisors following established procedures, but it is important that these exceptions be limited to ensure they do not impact the integrity of the curriculum/program.

2. The program recently formed an external advisory board to provide input and analysis of its educational activities. This is a positive move to aid in the improvement of the curriculum and processes, but the ultimate success of this initiative will depend on the effectiveness of the board and the successful integration of the board activities into the other ongoing activities of the program.