

**Southern Utah University  
Department of Integrated Engineering and Technology  
Academic Outcomes Assessment Report  
2008-2009**

**Expanded Statement of Institutional Purpose:**

**IET Mission statement:**

The IET programs support the mission of the university by providing a high quality undergraduate education to students with in-depth skill development in the program discipline areas of integrated engineering, technology/construction management, electronics engineering technology, CAD/CAM engineering technology, engineering technology, through professional, credentialed faculty using state of the art facilities and equipment.

**Goal Statements:**

**I.** The IET programs at SUU will prepare students with the technical knowledge and skills necessary to succeed in their respective disciplines.

**Program Intended Educational Outcomes:**

**I.** Students will demonstrate their knowledge and mastery of their degree program .

**II.** Business/industry representatives will have an opportunity to provide curricular input.

**III.** Students will be satisfied with learning opportunities afforded to them by the IET department.

**Means of Program Assessment and Criteria for Success:**

**I.** 95% of IET majors will pass their IET courses with a minimum grade of "C-" (a minimum grade of "C" is required in Technology Education courses), as evaluated by assessment measures within each course. IET courses will contain activities that will enable students to demonstrate a reasonable level of proficiency in their learned skills.

**II.** Each IET program area will form an advisory committee that will meet bi-annually to review curriculum and provide guidance and direction for the program.

**III. (A)** 80% of graduating students will agree with the statement, "The quality, availability, and diversity of course offerings, and lab experiences in my degree program were appropriate."

**Summary of Data Collected:**

**I.** The overall percentage of IET majors that completed their IET courses with a C- or better for the 04-05 academic year was 97.6%.

**II.** All IET programs organized impressive advisory committees.

**III. (A)** This question on the graduates' Exit Assessment got an average score of 97%.

**Use of Results:**

**I.** The overall percentage of successful course completion is above our goal of 95%. This reflects well on our faculty and their commitment to the students.

**II.** We will continue to emphasize the importance of program advisory committee input to the overall success of our programs.

**III. A** this score is higher than last year and far above our goal of 80%.

**Expanded Statement of Institutional Purpose: (cont.)**

II. The IET programs will provide service to related industries/ organizations at the local, regional, state, and national levels, and work in close cooperation with industry to train students to meet employers' needs as well as provide training for their employees.

III. The curriculum in the IET programs will consist of a blending of classroom courses in theory, methodologies and histories of the program disciplines as well as lab/field experiences incorporating hands-on application of these principles.

IV. The intent of the IET faculty and curriculum is to produce well-rounded graduates who are conversant with the content in their program discipline and who can proficiently apply that content in the employment and/or continuing education endeavors.

V. The IET programs will achieve a high level (80%) of placement in employment and/or continuing education.

**Program Intended Educational Outcomes: (cont.)**

II. Students will have internships with various businesses and get actual hands-on experience. This will benefit both the student and the businesses participating.

III. Students will leave the IET program feeling that they have participated in a quality program that has prepared them for employment.

IV. Students will be prepared for post-graduation plans in their respective fields.

V. Students will find employment in their field and/or continue their educational pursuits.

**Means of Program Assessment and Criteria for Success: (cont.)**

II. Students participating in internships will successfully complete their semester with a satisfactory report from their employer .

III. (B) 80% of graduating students will give a rating of "Above Average" or "Excellent" to an overall rating of their degree program.

IV. 80% of graduating students will agree with the statement, "I feel that my program has prepared me well for my future employment or educational plans."

V. 80% of Students will continue in their education or have found employment in their field.

**Summary of Data Collected: (cont.)**

II. Internship participants successfully completed their semesters in all programs with a satisfactory report and the programs continue.

III. (B) The overall average percentage of students that rated their degree program "above average or excellent" was 76.9% The lowest rating was "Average".

IV. The percentage of students that will agree with the statement, "I feel that my program has prepared me well for my future employment or educational plans" was 88.4% The lowest rating was "Average".

V. 88% of students have found employment in their field and/or are accepted into a graduate program at the date of this report.

**Use of Results: (cont.)**

II. We have met our goal and continue to improve relations with community businesses.

III.(B) This score does not quite achieve our goal. We will continue to improve the programs.

IV. The goal was exceeded by 8.4%. This reflects well on the faculty.

V. Continued and increased internships will assist the students to find employment in their field and/or continue their educational pursuits.

**Expanded Statement of Institutional Purpose: (cont.)**

**Technology Mission statement:**

The Technology programs support the mission of the university by providing a high quality undergraduate education to students with in-depth skill development in the program discipline areas of criminal justice, construction technology/construction management, electronics engineering technology, CAD/CAM engineering technology, CAD/GIS engineering technology, automotive technology and cabinetmaking and millwork, through professional, credentialed faculty using state of the art facilities and equipment. In addition, the programs provided include Technology Education teacher certification with a secondary endorsement. Furthermore, we aim to provide meaningful service to industry, government, and all communities served by the university.

**Goal Statements:**

I. The Technology programs at SUU will prepare students with the technical knowledge and skills necessary to succeed in their respective disciplines.

II. The Technology programs will provide

**Technology Goal Statements (cont.)**

service to related industries/ organizations at the local, regional, state, and national levels, and work in close cooperation with industry to train students to meet employers' needs as well as provide training for their employees.

III. The curriculum in the Technology programs will consist of a blending of classroom courses in theory, methodologies and histories of the program disciplines as well as lab/field experiences incorporating hands-on application of these principles.

IV. The intent of the Technology faculty and curriculum is to produce well-rounded graduates who are conversant with the content in their program discipline and who can proficiently apply that content in the employment and/or continuing education endeavors.

V. The Technology programs will achieve a high level (80%) of placement in employment and/or continuing education.

**Means of Program Assessment and Criteria for Success: (cont.)**

IV. 80% of graduating students will agree with the statement, "I feel that my program has prepared me well for my future employment or educational plans."

**Summary of Data Collected: (cont.)**

IV. The overall percentage of students that agreed or strongly agreed with the "program preparation" statement was 69.2%.

**Use of Results: (cont.)**

IV. A high percentage of the students responded that they have been "well prepared for future education or employment plans", but a few rated us as average.

**Expanded Statement of Institutional Purpose: (cont.)**

**I  
Integrated Engineering Mission Statement:**

The mission of the Integrated Engineering program is to support and realize with excellence the overall mission and vision of the University and to provide a broadly based, cross disciplinary engineering education founded upon a design-oriented curriculum with integrates several disciplines into a whole, enabling graduates to undertake the wide variety of design and manufacturing challenges that modern industry faces.

**Objectives:**

The objectives for the Integrated Engineering program are:

**A.** a solid understanding of the fundamentals of mathematics, physical science, and engineering science, which re-occur in diverse technical applications and form the foundation for work in all fields of engineering;

**B.** the ability to practice engineering design and analysis and to integrate several engineering concepts into a system or process;

**Program Intended Educational Outcomes: (cont.)**

**Integrated Engineering:**

The standards and competencies that the student will have met and achieved at the time of graduation are expressed in terms of the characteristics of the program's graduates, which are the educational outcomes required for accreditation by the Accreditation Board for Engineering and Technology (ABET). Each graduate will have:

**A.** an ability to apply knowledge of mathematics, science, and engineering;

**B.** an ability to design a system, component, or process to meet desired needs;

**C.** an ability to function on multidisciplinary teams;

**D.** an ability to identify, formulate, and solve engineering problems;

**E.** an understanding of professional and ethical responsibility;

**F.** an ability to communicate effectively;

**G.** the broad education necessary to understand the impact of engineering solutions in a global and societal context;

**H.** a recognition of the need for, and an ability to engage in life-long learning

**I.** a knowledge of contemporary issues;

**J.** an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**Means of Program Assessment and Criteria for Success: (cont.)**

**Integrated Engineering:**

The Integrated Engineering program has recently been reviewed by a team from ABET. The visit was positive and the team made a few recommendations. These include reconsideration of course pre-requisites, re-designing the curriculum to ensure that the courses support the design projects, and developing assessment tools for the Program Educational Objectives. As stated in the program self-study, the Program Educational Objectives and the Program Outcomes and their achievements will be assessed using the following tools:

- Course Assessment: performed by the faculty every offering of the course;
- Review of Design Projects: performed by the instructor and other faculty and representatives from the industry every offering of the course;
- Fundamentals of Engineering (FE) exam: results will be reviewed at the end of the academic year;
- Alumni Survey: conducted every two years.

**Summary of Data Collected: (cont.)**

**Integrated Engineering:**

- Course Assessment: each faculty member did a self assessment of courses. In each course, we met or exceeded our course objectives.
- Review of Design Projects: As part of the requirements of ENGR 4085, graduating student's projects have been evaluated by faculty and members of the professional community. Design projects included a design of a sewage lagoon for the US Forest Service, Analysis of the Lake Powell Pipeline, Water shed project for the Iron County Water Board, Preliminary Analysis of a DL Granulator, Design and construction of a Automated Folder Packaging Machine for Smead, and design of an HVAC System for a Building Retrofit.
- Fundamentals of Engineering (FE) results: Ten students passed the FE exam.
- Alumni survey: No formal survey was conducted this year, however, all graduates continue to be employed upon graduation and/or are pursuing advanced degrees. The survey will be conducted again in 2010.

**Use of results**

**Integrated Engineering:**

- Our assessment of the courses has concluded that for now, no major changes are required to the program. Graduates we have interviewed informally, have indicated that the Program has the right approach and that the "general nature" of the Integrated Program has not limited their usefulness or adversely impacted their ability to solve engineering problems. In fact, the broad nature of the instruction has given them flexibility to solve a number of problems that other more specialized engineers have difficulty with. It should be noted that the Utah Department of Transportation is now actively recruiting our graduates and now specifies "Civil" and "Integrated Engineers" for their open positions. Our graduates continue to be paid above the level of the average for all engineers in the state.

**Expanded Statement  
of Institutional  
Purpose: (cont.)**

**Integrated Engineering:**

C. the ability to pursue professional careers in multidisciplinary fields by the development of effective teaming abilities and communication skills;

D. the ability to pursue advanced studies and/or assume leadership roles along diverse career paths;

E. a strong appreciation for and commitment to ethical responsibilities, professionalism, lifelong learning, and a concern for society and the environment.

**Special Note: The objectives, educational outcomes, and assessment criteria for the Integrated Engineering Program are stated in a format consistent with ABET's guidelines for accreditation.**

**Program Intended  
Educational  
Outcomes: (cont.)**

**Integrated Engineering:**

**Means of Program  
Assessment and  
Criteria for Success:  
(cont.)**

**Integrated Engineering:**

Employers Survey:  
conducted every two years.  
This survey will be  
conducted in September  
2010.

A two-loop process  
(discussed in detail in the  
program self-study) will be  
used to assess the Program  
Educational Objectives and  
the Program Outcomes.  
Assessment of the Program  
Outcomes will be performed  
on a two-year cycle,  
whereas the assessment of  
the Program Educational  
Objectives will be performed  
on a four-year cycle,  
benefiting from two full  
iterations on the Program  
Outcomes. The  
Assessment is greatly  
facilitated by various  
mappings that have been  
developed as part of the  
preparation of the program  
for accreditation. These  
mappings are discussed in  
great detail in the program  
self-study.

**Summary of Data  
Collected: (cont.)**

**Integrated Engineering:**

**Use of Results:  
(cont.)**

**Integrated Engineering:**