2006-1165: ASSESSMENT AND EVALUATION OF ENGINEERING TECHNOLOGY PROGRAMS

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Assessment and Evaluation of Engineering Technology Programs

Abstract

In order to execute a continuous improvement plan in compliance with the TAC/ABET Technology Criteria 2000 (TC2K), engineering technology programs face the challenge of outcomes-based assessment followed by evaluation, and implementation of improvement measures. Multiple constituencies are to be involved in the process, as the TC2K stipulate use of multiple assessment tools and measures for (a) the program outcomes, i.e., knowledge and capabilities of students at the time of graduation and (b) the program objectives, i.e., the expected accomplishments of graduates during the first few years after graduation.

Effective assessment tools provide the information needed to measure outcomes and objectives, so necessary improvements can be implemented. The primary assessment of program outcomes are based on student work, such as assignments, exams and student portfolios related to coursework. However, the use of alumni surveys and employer surveys as means of program objectives assessment is qualitative evidence based on opinion. These data should be used as supportive evidence, and their use as primary or only means of assessment is discouraged. Thus, additional validations (internal or external) through other means are vital to the assessment of program objectives. Some such measures, which have been used by the engineering technology programs at this institution, are discussed in this paper. Various templates used in the process are also included. This paper reviews different types of assessment, examines specific assessment measures and certain issues associated with them, and evaluates assessment data to determine the extent to which program outcomes or objectives are being achieved.

I. Introduction

The basic premise of the accreditation process for engineering technology programs, in accordance with the technology criteria 2000 (TC2K)[1] adopted by the TAC/ABET, is that every program must demonstrate, through documentary evidence, that *program educational objectives* and *program outcomes* are achieved. The program educational objectives are defined as broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve *during the first few years following graduation*. The program outcomes are defined as statements that describe what units of knowledge or skill students are expected to acquire from the program to prepare them to achieve the program educational objectives. These are typically demonstrated by the student and measured by the program *at the time of graduation*. The TAC/ABET designated (a – k) requirements must be included in some way in the program outcomes.

In order to ensure the quality of a program on an ongoing basis, it is essential that a program has a sound and viable Continuous Improvement Plan. The two key elements of the plan are assessment and evaluation. The term "assessment" means one or more processes that identify, collect, use and prepare data that can be used to evaluate achievement of program outcomes and

educational objectives[2]. The term "evaluation" characterizes one or more processes for interpretation of the data and evidence accumulated through assessment practices that a) determine the extent to which program outcomes or educational objectives are being achieved; or b) result in decisions and actions taken to improve the program.

As a case study, the Continuous Improvement Plan adopted by the Civil Engineering Technology Program at Georgia Southern University is discussed in this paper with particular emphasis on the assessment and evaluation of program outcomes and educational objectives.

II. Continuous Improvement Plan

A schematic diagram of the continuous improvement plan for the Civil Engineering Technology program at Georgia Southern University is shown in Figure 1. The elements of the continuous improvement plan adopted are listed below and discussed in the following paragraphs..

1. Program Mission and Vision
2. Program Educational Objectives
3. Program Outcomes
4. Constituencies
5. Assessment Methods
6. Ongoing Assessment Activities
7. Evaluation of Outcomes and Objectives
8. Use of Evaluation Results for Curriculum Improvement

1. Program Mission and Vision

The program mission and vision have been adopted to conform to those of the School of Technology, the College of Science and Technology, and the university.

2- 3. Program Educational Objectives and Outcomes

The program educational objectives and program outcomes were originally established by the faculty of the Civil Engineering Technology program. The objectives and outcomes were formally documented during the 1999 re-accreditation process, and significantly revised in 2002 and 2004. The correlation between program educational objectives and program outcomes is shown in Appendix A.

The program coordinator is responsible for initiating review of the objectives and outcomes by the faculty, administration, and industrial advisory committee. The objectives and outcomes are typically reviewed by the CET faculty at least once a year, usually in fall. Changes to the objectives and outcomes are agreed to by consensus of the faculty. Changes are then reviewed by the industrial advisory committee at the next regularly scheduled meeting—the IAC typically meets once per academic year. Major changes are now reported to the administration after review typically via the Institutional Effectiveness Report and Program Review.

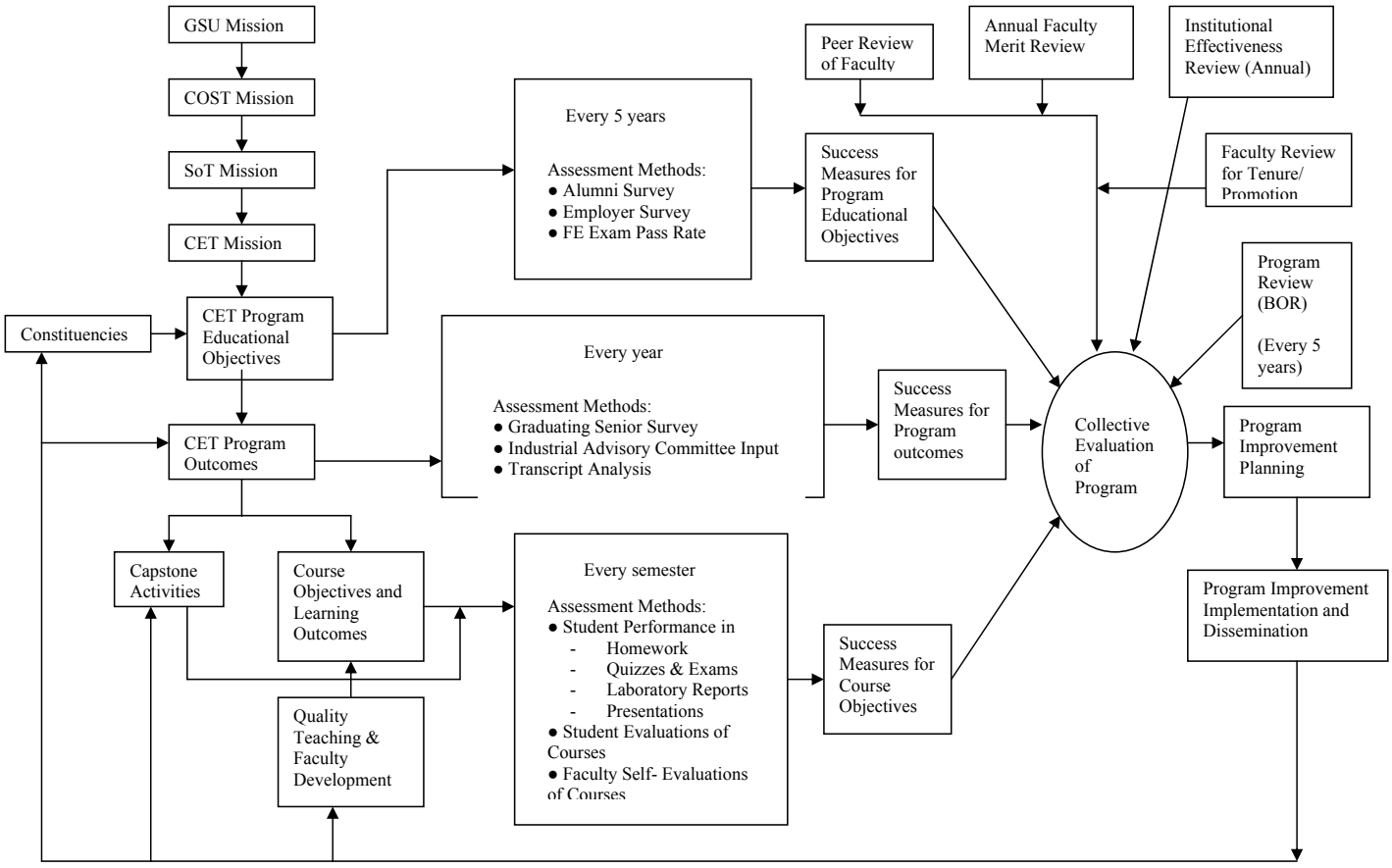

Figure 1: Civil Engineering Technology Program Continuous improvement Plan

4. Constituencies

The principal constituencies of the Civil Engineering Technology Program at Georgia Southern University are:

- Students currently enrolled in the program
- Employers of CET program graduates
- Georgia Southern University Administration
- Board of Regents of the University System of Georgia
- Tax-payers of the State of Georgia

Through measures such as senior surveys and annual student evaluations of courses and faculty, the students consistently have opportunities to provide their opinion in the process of evaluating the effectiveness of the program in meeting outcomes and objectives. Survey of alumni and survey of employers/ technical supervisors of alumni; provide another direct method of feedback. The Industrial Advisory Committee remains one of the strongest constituency members.

5. Assessment Methods

Multiple[2] assessment methods are recommended for each objective and outcome, as appropriate to institution/program resources. They must follow timely and regular cycles – short (for outcomes) and long (for objectives). The following assessment methods have been adopted by the Civil Engineering Technology Program at Georgia Southern University:

A. Assessment of Program Outcomes
   1. Course assignments (Homework/Quizzes)
   2. Exams and comprehensive finals
   3. Laboratory reports and Presentations
   4. Field-work
   5. Capstone experiences, e.g., ASCE Student Steel Bridge Competition
   6. Student evaluations
   7. Teaching portfolios
   8. Exit Survey of graduating seniors
   9. Transcript analysis
   10. Review by Industrial Advisory Committee
   11. TAC/ABET accreditation process

B. Assessment of Program Educational Objectives
   1. Survey of alumni
   2. Survey of employers
   3. Student success in Fundamentals of Engineering Exam
   4. Student success through acceptance to graduate schools
   5. Review by Industrial Advisory Committee
   6. Program Review
   7. Institutional Effectiveness Report
   8. TAC/ABET accreditation process

The above assessment methods can also be grouped into "direct" or "indirect" methods. The assessment methods 1 through 7 pertaining to program outcomes can be classified as direct methods, while 8 through 11 are considered indirect methods. As to the assessment methods for program educational objectives, methods 3, 4, 6 and 7 are classified as direct methods, while the remaining four including the surveys belong to the category of indirect methods.

While both types of methods are needed to obtain meaningful data, a balance between the direct and indirect methods is imperative to make the data bias-free. For example, while surveys provide useful information, they are essentially opinions nonetheless. Hence they should not constitute the sole assessment data, and must be complemented by other methods, such as, Program Review and Institutional Effective Report which are based on facts and figures.

6. Ongoing Assessment Activities

Appendix B shows the individuals involved/ responsible for the various elements of assessment, as well as the timing and frequency of the activities.

A. Assessment of Program Outcomes

Multiple methods are used to demonstrate accomplishment of program outcomes. A summary of those methods is given below.

Graded Homework:

In almost every lecture course in the program, graded homework is an integral part of the learning process. The methods of grading vary from instructor-to-instructor. Some collect homework sets on a weekly or bi-weekly schedule. Others require students to complete homework lecture-to-lecture. In any case, the work is graded, returned to the student in a timely fashion, and used for continuous improvement. Faculty members establish standards for submitted work, clearly announce deadlines, and maintain clear late policies. In this manner, a commitment to quality and timeliness are encouraged.

Graded Exams:

In every lecture course in the program, at least two (and up to four) major exams and a comprehensive final are typically administered. The exams are returned to students for feedback and continuous improvement of performance. Final exams are kept on file and can be reviewed by a student upon request. The depth, breadth, and quality of exams are peer reviewed during TAC of ABET re-accreditation activities (at least every six years).

Laboratory Reports:

Hands-on laboratory experiences are an integral part of any engineering technology degree. The communications content in the CET program at Georgia Southern is woven through every level of the curriculum, and increases incrementally in difficulty. Students write several reports in each of the following courses: TENS 2143 Strength of Materials, TENS 2144 Fluid Mechanics, TCET 3244 Construction Materials, TCET 4243 Highway Design,and TCET 4244 Soil Mechanics and Foundations. Student reports are graded as if they were being prepared by a professional. Students receive detailed feedback, and will meet one-on-one with the instructor to discuss improvements in writing style. Finally, a

presentation on a group term project is a major element of TCET 4243. Faculty members establish format and standards for submitted work, clearly announce deadlines, and maintain clear late policies. In this manner, a commitment to quality and timeliness are encouraged.

Student Evaluations of Faculty and all Georgia Southern Lecture Courses:

Student evaluations of lecture courses and faculty are required by the Office of the Provost every semester. The evaluations are reviewed by the School of Technology Director and reported to the Dean of the College of Science and Technology, and the Provost's Office. The student evaluations are typically a part of all faculty members' annual review. Unusually negative student evaluations triggers intervention on the part of the School of Technology Director—this includes but is not limited to an immediate classroom evaluation of performance. Additionally, for all CET major courses, students also provide feedback on course effectiveness vis-à-vis course objectives and learning outcomes (see Appendix C).

Senior Exit Surveys:

Since fall 2004, CET graduating seniors have been surveyed to determine satisfaction with their educational experience, and to access their confidence in their technical abilities. The program coordinator or a designated member of the CET faculty compiles the results of the survey, and the entire faculty reviews the results in the preparation of the Institutional Effectiveness Report. Faculty can have access to survey results at any time for individual continuous improvement efforts.

Teaching Portfolios

Course assessment (and evaluation) by faculty member responsible for each course at the end of each semester constitutes another important method toward assessment of program outcomes. The template used for the purpose is given in Appendix D.

B. Assessment of Program Educational Objectives

Multiple methods are used to demonstrate accomplishment of program objectives. A summary of those methods is given below.

Survey of Alumni :

The CET Graduates have been surveyed a minimum of once every 6 years. The purpose of the survey is two-fold: (1) to determine alumni satisfaction with their educational experience in the CET program, and (2) to measure alumni performance in their professional career. CET graduates were last surveyed in the spring of 1999, and they were again surveyed in the spring of 2005. The program coordinator or his designated faculty representative updates surveys and administers them. The program coordinator or a designated member of the CET faculty compiles the results of the survey, and the entire faculty reviews the results in preparation of the Program Review and the Institutional Effectiveness Report. Faculty can have access to survey results at any time for individual continuous improvement efforts. The future plan is to conduct such surveys every 5 years.

Survey of Employers:

Employers and supervisors of CET graduates have been surveyed a minimum of once every 6 years. The purpose of this survey is two-fold: 1) to determine the demand for specific skills

within the field of Civil Engineering Technology (CET), and 2) to determine how well Georgia Southern University's CET graduates are performing within their work environment. Employers and supervisors were last surveyed in the spring of 1999, and they were again surveyed in the spring of 2005. The program coordinator or his designated faculty representative updates surveys and administers them. The program coordinator or a designated member of the CET faculty compiles the results of the survey, and the entire faculty reviews the results in preparation of the Program Review and the Institutional Effectiveness Report. Faculty can have access to survey results at any time for individual continuous improvement efforts. The future plan is to conduct such surveys every 5 years.

Program Review:

The Board of Regents, and by proxy the tax payers of Georgia, require a formal program review and report every five years—unless more frequent reports are triggered. The CET program prepared its first BOR Program Review report in 2000, and a subsequent Program Review was completed in 2005. Two templates, one for sample data to be used and the other for the summary findings, are shown in Appendix E and Appendix F, respectively. .

Institutional Effectiveness Report:

Every program at Georgia Southern University must prepare an annual Institutional Effectiveness Report (IER). At a minimum, the report contains a statement of program goals and objectives (which are synonymous to objectives and outcomes, respectively), a summary of measurement methods, presentation and analysis of measurements, implementation of findings, and a statement of what will be completed during the next continuous improvement or reporting cycle. Each IER must incorporate and reflect continuous improvement activities. While methods of measurement may vary from year to year, multiple measurements nonetheless must be shown to demonstrate accomplishment of goals and objectives in the preparation of the IER. A template for this report is included in Appendix G.

Industrial Advisory Board Review and Recommendations:

The CET Industrial Advisory Committee is composed of professionals and alumni working in the field of civil engineering. They are an independent body functioning under the direction of an elected chair. The committee typically meets at least once a year. At each meeting, the committee reviews any recent changes to the curriculum and also provides recommendations for improvements. Typically, the program coordinator is responsible for Industrial Advisory Committee relations.

7. Evaluation of Outcomes and Objectives

As stated before, evaluation is interpretation of the data collected through a systematic assessment process, to determine the quality of the program and also to what extent improvements are needed. Evaluation is necessary for every program outcome and educational objective. For the purpose of interpretation of data, benchmarks (i.e. performance expectations

or standards) need to be established. A benchmark is typically a numerical value, and a consensus among the Civil Engineering Technology program faculty is reached as to every such value used in the evaluation process.

Successful completion of course work (through demonstration of learning outcomes associated with course objectives) contributes toward achievement of program outcomes which in turn contribute toward accomplishment of program educational objectives. Thus, assessment and evaluation of all major courses constitute a key part of the evaluation of the program itself. At the conclusion of each course, students provide input as to their perceived gain in knowledge, skills etc. on a scale of 1 to 5 as a result of taking the course (see Appendix C for a sample Course Effectiveness Assessment by Students). Then the faculty member in-charge of the course does his assessment and evaluation of the course, using multiple assessment methods including the feedback from the students (see Appendix for a template of Course Assessment and Evaluation). As can be seen, this template includes benchmarks for various measures used. These documents of course assessment and evaluation by individual faculty members become part of the teaching portfolio for each course.

The evaluation of data collected through different surveys (graduating seniors, alumni and employers) also requires benchmarks for various items. Remedial actions will be warranted when collected data fall short of benchmarks. A few samples from such surveys conducted in the recent past are given below.

Exit interview of graduating seniors:

Excerpts from the summary of the results of two most recent surveys conducted on CET seniors, graduating in fall 2004 and spring 2005 are shown in Appendix H. A total of 14 responses were received. From the analysis of data, it is observed that a vast majority of CET graduates (86% - 100%)) perceive that they are acquiring the abilities they need to perform as professionals.

Also, the coverage of materials has been acknowledged by a vast majority of students to be adequate, if not better, with the exception of the Computer-aided Drafting course (as it falls short of the benchmark of 70%). Therefore, some improvement in the computer-aided drafting coverage is warranted.

Alumni Survey:

Some salient findings from the summary of survey conducted in spring 2005 (total 35 responses) is shown in Appendix I. It is evident from the data that all of the 11 outcomes (a-k), which are the same as the Program Outcomes prescribed by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (TAC/ABET), are met. Hence no corrective actions are necessary.

8. Use of Evaluation Results for Curriculum Improvement

Program faculty prepares a report based on assessment and evaluation results, makes recommendation for changes or improvements to the Director, School of Technology. Subsequently, the program coordinator communicates with alumni, industrial advisory committee, and prospective employers about curriculum improvements, as often as necessary.

III. Summary

Effective implementation of a viable continuous improvement plan is crucial to maintain and improve the quality of a program in compliance with the TAC/ABET TC 2K criteria. Assessment and evaluation of program outcomes and program educational objectives constitute two key elements of the plan. Both short-term and long-term well-defined assessment activities at specified frequencies involving multiple constituencies are essential. The continuous improvement plan adopted by the Civil Engineering Technology program at Georgia Southern University is discussed in this paper with particular emphasis on the various methods and measures used for assessment and evaluation. These include student work, teaching portfolio, survey of graduating seniors, alumni survey, employer survey, program review, institutional effectiveness report and some others.

Bibliography:

1. TAC/ABET *Criteria for Accrediting Engineering Technology Programs* (Effective for Evaluations During the 2005-2006 Accreditation Cycle)
2. *ABET Program Evaluator Training* (TC2K Training), sponsored by ABET Education and Information Services during the 2002 American Society for Engineering Education Annual Conference and Exposition in Montreal, Canada.

Appendices:

Appendix A: Correlation between Program Objectives and program Outcomes

Appendix B: Assessment Methods, Frequency and Participants

Appendix C: Sample Course Effectiveness Assessment by Students

Appendix D: Course Assessment and Evaluation by Faculty

Appendix E: Comprehensive Program Review Sample Data

Appendix F: Summary CPR Findings and Plans

Appendix G: Institutional Effectiveness Report

Appendix H: Partial Results of Exit Interview of Graduating Seniors

Appendix I: Partial Results of Alumni Survey

Appendix A
Correlation between Program Objectives and Program Outcomes

Program Educational Objectives	Program Outcomes										
	a. Mastery of the knowledge, techniques, skills, and modern tools of mechanical engineering technology	b. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology	c. An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes	d. An ability to apply creativity in the design of systems, components or processes appropriate to program objectives	e. An ability to function effectively on teams	f. An ability to identify, analyze and solve technical problems	g. An ability to communicate effectively	h. A recognition of the need for and an ability to engage in lifelong learning	i. An ability to understand professional, ethical, and social responsibilities	j. A respect for diversity and a knowledge of contemporary professional, societal and global issues	k. A commitment to quality, timeliness, and continuous improvement
1. **Technical Knowledge:** Graduates of the civil engineering technology program at Georgia Southern University will demonstrate a working knowledge of discipline-specific technical contents, mathematics, engineering sciences, natural sciences, and computer applications, as well as the interrelationships among the foregoing subjects, acquired through study, experimentation and field work, involving analysis, computation, and design. The CET graduates should be able to apply technical expertise in at least three major areas within the discipline – environmental, structural and transportation.	X	X	X	X							
2. **Technical Problem-solving Ability:** Graduates of the civil engineering technology program at Georgia Southern University will demonstrate the ability to synthesize multiple solutions to complex problems with specified constraints, through the creative integration of fundamental engineering principles and techniques, natural sciences and mathematics.	X	X	X	X							
3. **Effective Communication Skills:** Graduates of the civil engineering technology program at Georgia Southern University will demonstrate effective communication skills in presenting discipline-related information in both written and oral forms.					X		X				X

Appendix A (contd.)

Correlation between Program Objectives and Program Outcomes

Program Educational Objectives	Program Outcomes										
	a. Mastery of the knowledge, techniques, skills, and modern tools of mechanical engineering technology	b. An ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology	c. An ability to conduct, analyze and interpret experiments and apply experimental results to improve processes	d. An ability to apply creativity in the design of systems, components or processes appropriate to program objectives	e. An ability to function effectively on teams	f. An ability to identify, analyze and solve technical problems	g. An ability to communicate effectively	h. A recognition of the need for and an ability to engage in lifelong learning	i. An ability to understand professional, ethical, and social responsibilities	j. A respect for diversity and a knowledge of contemporary professional, societal and global issues	k. A commitment to quality, timeliness, and continuous improvement
4. **Professionalism:** Graduates of the civil engineering technology program at Georgia Southern University will exhibit professional responsibility and sensitivity to a broad range of societal concerns including ethical, environmental, political, and regulatory issues in making decisions. Their decisions will be guided by an understanding of and appreciation for cultural diversity, global interactions, and the needs of the local, state, regional, national, and world communities.									X	X	X
5. Self Assessment, Lifelong Learning and Teamwork: Graduates of the civil engineering technology program at Georgia Southern University will understand the necessity for personal growth, self-reflection and assessment to engage in successful professional practice and development throughout their careers. Constructive participation in commonly encountered, multidisciplinary, team-centered environments will require flexibility, effective communication skills, leadership, continuous learning, selfless contributions toward team objectives, and ethical conduct.					X	X	X	X	X		X

Appendix B

Assessment Methods, Frequency and Participants

Assessment Method	Frequency	Participants						
		Program Faculty	Students	Graduating Seniors	Alumni	Employer/ Supervisor	Industrial Advisory Committee	TAC/ ABET
Course assessment (syllabi, assignments, exams, field work and lab reports)	Each semester	X						
Student Evaluation of Courses	Each semester		X					
Senior Exit Interview	Each semester			X				
Alumni Survey	Every 5 years				X			
Employer Survey	Every 5 years					X		
Industrial Advisory Committee meetings	At least once a year						X	
Program Review	5 years	X						
Institutional Effectiveness Report	Each year	X						
TAC/ABET Accreditation Visit	6 years	X						X

Appendix C

Sample Course Effectiveness Assessment by Students

Course Number and Title: TCET 4244 Soil Mechanics and Foundations Instructor: Dr. Junan Shen
Semester and Year: Fall 2005

Please give us your feedback on the knowledge, skills, and abilities you have gained as a result of taking this course. Base your responses on your total learning experience as a student (content, rigor and delivery of the course, efforts you had to put in to learn the material, interaction with faculty and other students etc.). Please feel free to use the space below the table to briefly explain any of your responses, especially if your preparation was less than adequate. Use a scale of one (1) to five (5) to rate your abilities with:

1 = None 2 = Low 3 = Moderate 4 = High 5 = Very high

Course Objectives	Learning Outcomes	1	2	3	4	5
1. To understand the engineering characteristics of soils.	1. Ability to define, describe, and classify soils.					
	2. Ability to determine weight-volume characteristics of a soil sample.					
	3. Ability to solve various soil mechanics problems including stress in soils due to point loads and uniformly distributed, settlement of loads on clays and sand.					
	4. Ability to use shear test data to determine angle of internal friction and cohesion of soil.					
2. To acquire the skills necessary to correctly conduct standard tests of engineering properties of soils; and to document and communicate laboratory test results.	5. Ability to conduct standard tests and to use test data to determine of weight-volume relationships including unit weight of soil, soil moisture content, specific gravity of soil solids, and void ratio.					
	6. Ability to determine particle-size distribution of soil, Atterberg Limits of soil and to use the test results to determine the classification a soil sample based on the AASHTO procedure and the Unified Soil Classification System (USCS).					
	7. Ability to obtain the compaction optimum moisture content and corresponding maximum dry unit weight of a soil sample.					
	8. Ability to conduct tests and to complete the analysis of test data to determine the coefficients of permeability and consolidation of a soil sample.					
	9. Ability to obtain field unit weight of compaction.					
	10. Gain skills to document laboratory test results and to prepare written laboratory reports.					
3. To understand the application of mechanics in the analysis of the load bearing capacity of soils, and the analysis and design of footings and single piles.	11. Ability to determine ultimate and allowable soil bearing capacity.					
	12. Ability to determine required minimum dimensions of footings under known loading and soil characteristics.					
	13. Ability to determine allowable loads for existing footing geometry.					

Appendix D

Course Assessment and Evaluation by Faculty

Course Number and Title:
Semester and Year: **Instructor:**

Course Objectives	Supported Related Program Outcomes and Criteria	Course Embedded Assessment of Student Performance (A)						Student Evaluation (%) (B)				
		Assessment Method 1	Score (%)	Assessment Method 2	Score (%)	Assessment Method 3	Score (%)	Excellent 5	Good 4	Average 3	Marginal 2	Poor 1

Notes:
Assessment Methods: 1 = Final Exam; 2 = Key Homework Assignments; 3 = Laboratory/ Project Reports/Oral Presentations/Quizzes
Benchmarks:
● For any of the three assessment methods under A, the goal is that average score will be 70% or better, otherwise, a corrective action will be triggered. For Method 1, however, corrective actions in terms of critical review of course content and modifications thereof will be warranted if 80% of all students score below 65% or above 80%.
● For student evaluations of course effectiveness under B, the target is an average rating of 3.5; any shortfall will trigger corrective action.

Appendix E

Comprehensive Program Review
Sample Data

NOTE: The following information illustrates how a program gathers the data that will be analyzed to write the narrative summary. The gathered data as illustrated below will not be submitted but instead will be used to support statements within the submitted narrative reflecting the analysis of data.

Program Title: B.S. with a major in Civil Engineering Technology
Data Considered:

Productivity: Measures the results and benefits of the program

Faculty Service Projects	4 ongoing projects				
Faculty Scholarly Productivity					
	F04	**F03**	**F02**	**F01**	**F00**
Publications					
Presentations					
Grants					
Submitted					
Funded					
Amount					
Faculty Professional Development					
	F04	**F03**	**F02**	**F01**	**F00**
Number of Activities					
Course Offerings					
	F04	**F03**	**F02**	**F01**	**F00**
Student Credit Hours					
Number of Service Courses	Not Applicable				
Student Retention					
	F04	**F03**	**F02**	**F01**	**F00**
Attrition Rates					
Student Contributions					
Number of Graduates					
Number of Graduates Passing Certification Exam					

Quality: Measures excellence of program

Faculty					
	F04	F03	F02	F01	F00
Number of Faculty (FTE)					
Diversity of Faculty (F04)					
Grants					
Race					
Gender					
Rank					
Tenure					
Faculty Qualifications/Expertise					
Faculty Service Projects Institution: Community: Discipline;					
Faculty Scholarly Productivity Publications: Presentations: Grants:					
Faculty Professional Development					
Students					
Curriculum Coherency (strengths) Coherency (weaknesses) Currency (strengths)					

Currency (weaknesses) Learning Experiences (strengths) Learning Experiences (weaknesses)
Learning Space/Work Space
Library Offerings
Technology
Accreditation

Viability: Measures sustainability and success of program (independent of quality measures)

Student Interest in Program					
	F04	**F03**	**F02**	**F01**	**F00**
Majors					
Number of Graduates					
Relevancy of Curriculum (strengths) (weaknesses)					
Available Budget Resources					
Teaching, Scholarship, and Service Contributions					

Appendix F

SUMMARY

CPR Findings and Plans (Year: XXXX)
For the
Bachelor of Science
With a major in
Civil Engineering Technology
At
Georgia Southern University

Major Findings on the Program's Quality, Productivity, and Viability

Viability:

Productivity:

Quality:

Plans for Improving the Program's Quality, Productivity, and Viability

Planned Allocations and Sources of Resources to be Dedicated to the Program's Improvement

Appendix G

Institutional Effectiveness Report
Year: XXXX - XXXX

GEORGIA SOUTHERN UNIVERSITY
College of Science and Technology
SCHOOL OF TECHNOLOGY
Civil Engineering Technology Program

1. Civil Engineering Technology Program Overview (Narrative):

2. Institutional Effectiveness Plan -Narrative to include:
- Student learning outcomes (CET majors)
- Programmatic outcomes

3. Vision and Mission:

UNIVERSITY VISION	COLLEGE VISION	SCHOOL OF TECHNOLOGY VISION	CET PROGRAM VISION
UNIVERSITY MISSION	**COLLEGE MISSION**	**SCHOOL OF TECHNOLOGY MISSION**	**CET PROGRAM MISSION**

4. Institutional Effectiveness Efforts:

UNIT EXPECTED OUTCOME	MEANS FOR ASSESSMENT	BENCHMARK ASSESSMENT CRITERIA	ASSESSMENT OF OUTCOME (Achieved, partially achieved, not achieved)	EVIDENCE OF IMPROVEMENT BASED ON ANALYSIS OF RESULTS IMPROVEMENT/ACTIONS
STUDENT LEARNING OUTCOMES:				
PROGRAMMATIC OUTCOMES:				

5. Assessment Methods (List):

6. Plan to Address Findings (Narrative):

7. Plan for Next Year's Assessment (Narrative):

Appendix H

Partial Results of Exit Interview of Graduating Seniors
Fall 2004 and Spring 2005

● Acquired abilities as a result of completing degree , as compared to before coming to Georgia southern (Six ratings: *superior, greatly improved, improved, slightly improved, same* and *not applicable*)

Area	# and % of "superior"/"greatly improved"/ "improved" ratings
A) Technical knowledge, techniques, skills and modern tools	13 (93%)
B) Ability to apply current knowledge and adapt to emerging technology	12 (86%)
C) Ability to conduct, analyze, and interpret experiments and apply experimental results to improve processes	14 (100%)
D) Ability to apply creativity in the design of systems, components or processes	12 (86%)
E) Ability to function effectively on teams	13 (93%)
F) Ability to identify, analyze and solve technical problems	13 (93%)
G) Ability to communicate effectively	12 (86%)
H) A recognition of the need for, and an ability to engage in lifelong learning	12 (86%)

● Coverage of technical aspects of curriculum (Five ratings: *excellent, good, adequate, would like to see more coverage and no interest*)

Course Topics	# and % of "excellent"/"good"/ "adequate" ratings
Environmental Pollution	12 (86%)
Water Supply Systems	11 (79%)
Water and Wastewater Treatment	12 (86%)
Construction Materials	14 (100%)
Surveying	13 (93%)
Transportations Systems	14 (100%)
Highway Design	14 (100%)
Soil Mechanics and Foundations	14 (100%)
Structural Analysis	10 (71%)
Reinforced Concrete Design	11 (79%)
Structural Steel Design	10 (71%)
Mechanics (Statics, Dynamics, Strength of Materials, and Fluid Mechanics)	12 (86%)
Computer-aided Drafting	5 (35%)

Appendix I

Partial Results of Alumni Survey
Spring 2005

● Extent of abilities developed as a result of educational experience
(Three ratings: s*ignificant gain, some gain,* and *no gain*)

Item	# and % of "significant gain"/ "some gain" ratings
a. Mastery of the knowledge, techniques, skills and modern tools of civil engineering technology.	35(100%)
b. Ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and technology.	35(100%)
c. Ability to conduct, analyze and interpret experiments and apply experimental results to improve processes.	34 (97%)
d. Ability to apply creativity in the design of systems, components or processes pertinent to the civil engineering area.	35(100%)
e. Ability to function effectively on teams.	35(100%)
f. Ability to identify, analyze, and solve technical problems.	35(100%)
g. Ability to communicate effectively (both written and oral).	35(100%)
h. Recognition of the need for, and an ability to engage in lifelong learning.	33 (94%)
i. Ability to understand professional, ethical and social responsibilities.	34 (97%)
j. Respect for diversity, and a knowledge of contemporary professional, societal and global issues, and	32 (91%)
k. Commitment to quality, timeliness, and continuous improvement.	34 (97%)