DEPARTMENT REPORT
OF
PROGRAM LEARNING OUTCOMES ASSESSMENT

Department: Architectural/Civil Construction/Drafting

Program (Degree): Civil Engineering Technology with an Option in Construction Management (CCT)

Type of Degree: X AAS ____ AA ____ AS ____ ATS ____ AIS

Chairperson: Al Wahle Date: April 5, 2001

Person(s) Interviewed: Al Wahle

I. Program Curriculum: A description of the basis for the program curriculum (i.e., how it is derived and validated). Include accreditation organizations, advisory committees or external groups that influence curriculum. Describe curriculum review activities including the review of course master syllabi*.

Members of the Advisory Committee provide input and guidance into the CCT program and curriculum. Individuals from the American Society of Civil Engineers and the Homebuilder's Association participate as members of the advisory committee.

A modified DACUM was conducted in 1994 with members of the professional Civil Engineering community participating in the focus group sessions.

The Civil Engineering Technology (CCT) degree program is accredited by TAC-ABET. The initial accreditation was received in June 1998 and extends for a six year period.

Three new certificate programs were offered beginning Fall, 1999. These included the Constructor Certificate, the Advanced Constructor Certificate and the Supervisor Certificate. Area contractors approached Sinclair to develop the Constructor certificates to develop skills in carpentry, ironwork and concrete for beginners in the field. The Supervisor Certificate is aimed at current workers who want to progress into management positions.

The master syllabi for all courses were reviewed during Winter 2001.

* Note: Every department is required to review Master Syllabi and Program Learning Outcomes a minimum of every two years.

II. **<u>Program Learning Outcomes</u>:** A description of what you intend for students to know (cognitive), think/feel (affective), or do (psychomotor), when they have completed your degree program. A suggested manageable number of outcomes should be in the range of five to ten. Describe Program Learning Outcomes review activities*.

There have been no changes in the program learning outcomes since the last assessment review. A new course in sketching and computer aided drafting, DRT 196, was added to the curriculum in response to an emphasis on computer aided drafting in the field.

An entry-level graduate with an Associate of Applied Science Degree in Civil Engineering Technology from Sinclair Community College will be able to:

Learning Outcomes	Related Courses
1. Communicate effectively and professionally in the civil engineering environment through proper usage of verbal, written and graphic techniques.	COM 206; ENG 121, 122; ARC 101, 105, 116; CCT 105, 201, 202, 226, 246, 278; DRT 196, 198, 199; MET 198
2. Develop mathematical skills in algebra, trigonometry and calculus, using analytical problem solving methods.	MAT 131, 132, 133; PHY 131, 132, 133; MET 203, 207; CCT 105, 201, 202, 206, 216, 226, 245, 278
3. Employ logical and concise problem solving techniques to technical problems.	ARC 105; CCT 105, 201, 202, 206, 216, 245, 278; MAT 131, 132, 133; PHY 131, 132, 133; MET 203, 207
4. Demonstrate the capability to develop engineering drawings for construction projects.	DRT 196; ARC 101; CCT 201, 202, 206, 226, and ARC 240 or CCT 246, CCT 278
5. Be proficient in the use of computer graphics associated with civil engineering projects.	MET 198, DRT 198, 199, and ARC 240 or CCT 246, CCT 278
6. Demonstrate a thorough knowledge of common construction materials--both their proper usage and proper testing procedures.	ARC 105, 116; CCT 105, 206, 216, 245, 278
7. Understand the mechanics of structural design.	MAT 131, 132; PHY 131; MET 203, 207; CCT 105, 206, 245, 278
8. Be proficient in the use of surveying equipment to collect and to lay out projects to solve engineering problems.	MAT 131, 132; CCT 201, 202, 226, 245, 278

III. **Assessment Method(s)**: A measurable indicator of success in attaining the stated learning outcome(s). The methodology should be both reliable and valid. Please describe in detail.

a. Formative Assessment Method(s) and Description: a measurable indicator of student in-progress success in attaining the stated learning outcome(s).

Formative assessment is accomplished via course-by-course evaluations made by individual instructors. Most courses require students to complete projects that draw upon learning outcomes in previous coursework. There are sequenced courses: the structural series culminates in CCT 206 and the surveying sequence culminates in CCT 202. The structural analysis series includes math, physics, statics, and strength of materials. Student achievement in this course, CCT 206, demonstrates whether adequate skills were learned in the earlier classes. At the beginning of the term, faculty typically solicit feedback from students on what they know and remember from earlier classes in the sequence. There are not large numbers of students in the program; informal data gathering is sufficient, and grades earned in earlier courses are one indicator of student achievement.

b. Summative Assessment Method(s) and Description: a measurable indicator of end-of-program success in attaining the stated end-of-program learning outcome(s).

Summative assessment is achieved via the capstone course, CCT 278. CCT 278 is a project-oriented course which mixes one hour of lecture with six hours of lab time. Students complete a major project which is specific to their degree option. A written and oral report accompanies each project, and faculty evaluate the projects. The program receives feedback from advisory committee members who review the projects and give suggestions for faculty and program improvement.

IV. **Results**: A description of the actual results of overall student performance gathered from the summative assessment(s). (see II.b.)

There have been approximately six students in the class each year. Student are given a letter grade and most of the students do well. High standards are required in the course.

Generally very positive feedback is received from the advisory committee on the projects from this class. Student success is based in large part on student effort, particularly since this is a project-oriented assessment.

V. **Analysis/Actions:** From analysis of your summative assessment results, do you plan to or have you made any adjustments to your program learning outcomes, methodologies, curriculum, etc.? If yes, describe. If no, explain.

No changes have been made to the assessment process because the feedback received from the advisory committee is so glowing. There are no *major* anticipated changes in curriculum. In the future, the department may consider the development of curriculum modules.

VI. **General Education:** A description of where and how within the major the three primary general education outcomes* (communication, thinking, values/citizenship) are assessed.

a. Where within the major do you assess written communication? Describe the assessment method(s) used. Describe assessment results if available.

A written report accompanies each capstone project. The department does not use the written communication checklist for assessing writing.

b. Where within the major do you assess oral communication? Describe the assessment method(s) used. Describe assessment results if available.

An oral report accompanies each capstone project. The department does not use the oral communication checklist for assessing oral work.

c. Where within the major do you assess thinking? Thinking might include inventing new problems, seeing relationships and/or implications, respecting other approaches, demonstrating clarity and/or integrity, or recognizing assumptions. Describe the assessment method(s) used. Describe assessment results if available.

Creative and analytical thinking is embedded in all courses. It is assessed formatively in all courses and summatively in the capstone course.

d. Where within the major do you assess values/citizenship/community? These activities might include behaviors, perspective, awareness, responsibility, teamwork, ethical/professional standards, service learning or community participation. Describe the assessment method(s) used. Describe assessment results if available.

Faculty within the department practice role modeling in order to convey professional behaviors to students. Faculty members are currently working to integrate the Core Competencies of the Engineering & Industrial Technology Division, including citizenship and professionalism, into the curriculum.

* Note: The oral communication checklist and the written communication checklist developed by the General Education Committee were adopted for college-wide use during the 1997-98 academic year by Academic Council. Thinking Guidelines developed by the General Education Committee are being piloted by faculty during the 1998-99 academic year.