DEPARTMENT REPORT
OF
PROGRAM LEARNING OUTCOMES ASSESSMENT

Department: Tooling and Machining Technology

Program (Degree): Tooling and Machining Technology, with options in Industrial, Mechanical, and Tooling and Machining and Step II

Type of Degree: _____ AAS __X__ AA _____ AS _____ ATS _____ AIS

Chairperson: Gene Chambers Date: 5-10-01

Person(s) Interviewed: Gene Chambers

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*.

The Tooling and Machine Technology program was awarded NIM certification as a training institute by the National Institute for Metalworking Skills in 2001.

A DACUM was conducted in Fall of 1998. No new changes to the program have been made since that time. The Master Syllabi are reviewed and updated as needed every year.

The department has an active advisory committee which helps guide the curriculum of the certificate and degree program.

Step II employers are invited to the college for an open house and asked to provide feedback on the effectiveness of the program. The feedback has been positive.

The Dayton Tool and Machining Association is the professional association that provides guidelines for updating the technology in the program.

The State of Ohio has funded a new machine shop at Patterson Career Academy that is being used in partnership by the Dayton Public Schools and the INT program. This partnership has increased enrollment by expanding the Step II program.

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

II. Program Learning Outcomes: 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*.

The program learning outcomes for this program have not changed since the last assessment interview in 1999.

An entry-level graduate with an Associate of Applied Science Degree in Industrial Manufacturing Technology, Mechanical option, from Sinclair Community College will be able to:

Learning Outcomes	Related Courses
1. Demonstrate technical engineering skills appropriate to program requirements.	IET 101, 125, 126, 205, 206, 216; all INT courses
2. Analyze manufacturing engineering. Problems (general and technical) and make appropriate decisions.	IET 125, 126; EER 115; MET 104; QET 101, 201; PET 131, 132; EGR 206; INT electives
3. Demonstrate mathematical skills required for occupation.	MAT 131; IET 105
4. Demonstrate computer competency compatible with occupational needs.	IET 198
5. Demonstrate positive attitude and work habits in a professional manner.	IET 125, 126;all INT courses
6. Identify new changes in career field and build personal skills to maintain state-of-the-art competencies.	IET 203, 205, 206, 216; all INT courses
7. Demonstrate applied competencies in the areas of machining applications, drafting techniques, and blueprint interpretation.	INT 111, 112, 113, 165, 211, 212, 213; DRT 196

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 completed via end-of-sequence courses and student performance in those courses. These include INT 114, Jig and Fixture Design; INT 225, Tool Design; and INT 213, Computer Numerical Control Applications. All are required of INT majors and all require students to apply knowledge and skills gained from previous courses. INT 114 and 225 assess student learning through design projects that apply knowledge and skills from previous coursework. INT 213 also uses projects to assess learning. Assessments are also done through course tests.

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

Summative assessment is completed via INT 213, Computer Numerical Control Applications, which is considered the capstone course for INT majors. This course is a combination of project development and team building. The project designed by the student group must address theory, design, application, and programming.

Student projects from INT 213 were favorably reviewed at the Engineering Advisory Committees meeting.

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

There is close to 100% placement rate of graduates from the INT program. Both graduates and employers indicate that Sinclair students are very competitive in the workplace.

Student performance in the capstone course (INT 213) is very good.

In addition, many of the students in the Tooling and Machining certificate program have no intention of completing the degree program when they enroll. The goal is to complete the certificate; when they do, they join the workforce. Seventy-one of the 88 students who started the program completed in the 1999-2000 academic year. Even though the certificate students don't intend to complete the degree, about 25% of them do enroll in the degree program.

The department administers an employer survey which indicates students are doing well on the job. Informal verbal feedback also reinforces that students do well in the work place.

The department is also surveying students who have dropped out to find out why.

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.

The most recent change to the curriculum is the design work in INT 114 and INT 225 which now includes the use of the computer. AutoCAD release 2000 is used in INT 114 and 225 and PROCAM is being used for computer numerical control applications. Students also have access to more computer time through Open Lab.

The department has expanded the curriculum by offering welding courses (INT 151-152-153) at MVCTC (Miami Valley Career Technology Center). The department has expanded course offerings through the opening of the new machine shop at the Dayton Career Academy.

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.

Written communication is stressed throughout the curriculum and is particularly important in INT 213, the capstone course. INT 165, Advanced Machine Operations Laboratory, also includes a review of technical literature. The department tries to have students follow a standardized format for writing assignments. The department does not use the written communication checklist.

* 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.

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

Oral communication is stressed throughout the curriculum and is particularly important in INT 213, the capstone course. Students do an oral presentation in INT 213. The department does not use the oral communication checklist.

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.

Students learn to think methodically, especially via the sequence of INT 114, 225, and 213. The use of a process operation sheet also provides a framework for thinking, organizing, and documenting student work. In INT 111, Tool & Manufacturing Processes I, students complete their first process operation report where they tell "how" to make a project including the sequence of operations and why it is done that way. Students receive less support on projects as course work progresses. Critical thinking skills are evaluated especially In computer numerical control courses.

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.

Values are stressed throughout the INT program. An INT faculty member serves on the General Education Committee and is helping to develop an Honor Code for college-wide adoption. Values/citizenship is emphasized in IET 125 and IET 126; both are supervisory development classes.