



In response to local industry needs, the INT program developed the Top Gun Machining Academy, which was approved in 2002. A team consisting of INT faculty, Aim Center staff, and industry representatives developed the curriculum for this experienced based program. The Top Gun Machining Academy program is designed to facilitate upward career mobility by technicians in the industry. Course in this program can be used as electives for the INT degree. A capstone course for this program is being developed based on industry needs. This course will enable students to apply what they have learned in a co-op situation with their employer.

The machine shop at Patterson Career Academy continues to be used in partnership by the Dayton Public Schools and the INT program. The department is in the planning stages of moving thisw program to a new location with the Dayton Public Schools. Space needs have been identified.

- \* Note: Every department is required to review Master Syllabi and Program Learning Outcomes a minimum of every two years. The Master Syllabi are reviewed and updated as needed every year and were last reviewed 2005.

**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 and were reviewed in 2005.

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:

<b>Learning Outcomes</b>	<b>Related Courses</b>
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

Learning Outcomes	Related Courses
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.

Curriculum is continually assessed and revised in the Top Gun Tooling and Machining Academy program. This is based on student and faculty feedback to the Policy Team consisting of the department chair, Aim Center representative, and members of the local Tooling Association.

- 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.

Exit interviews of graduates are conducted by the department chair. Notes are aggregated by quarter and submitted to the dean.

#### **ADD A SENTENCE ABOUT THE ADDITION OF A CAPSTONE TO THE TOP GUN PROGRAM**

- 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.

More of the students in the Tooling and Machining certificate program are choosing to complete the degree program after they have enrolled. Many students have the career goal of completing the certificate and, when they do, they join the workforce.

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 continues to informally survey 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.

While no significant changes have been made to the program since it was certified, there have been minor changes to the curriculum. The required mathematics sequence has been changed to better meet the needs of those students transferring to a baccalaureate institution. Two new courses were developed in 2004 to meet the needs of local industry. INT 145, Shop Floor Programming was added to the curriculum and INT 116, CNC Operations was developed to train CNC machine operators. Both courses train students to use ProtoTrak CNC Control which is very popular in local industry and tool and die shops.

**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.

- 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. Values/citizenship is emphasized in IET 125 and IET 126; both are supervisory development classes.