

Revision 2 (25feb05)

ACADEMIC AFFAIRS
Mission Statement, Program Outcomes, and Assessment
For Associate Degree in
General Technology
with emphasis in Engineering Graphics

Mission Statement: PROGRAM MISSION

The General Technology with emphasis in Engineering Graphics is designed to prepare students for entry level requirements in the drafting field. The graduate will complete competencies involving various tasks in different facets of Engineering. The graduate will complete drawings in the Mechanical, Civil, Electrical, Architectural, and Piping/Structural areas. He/she will require minimal supervision in constructing basic drawings in each of the fields. The General Technology Associate degree program with emphasis in Graphics helps students achieve personal and professional objectives. It provides an opportunity for the student to overcome economic and other barriers.

Program Outcomes:

GENERAL TECHNOLOGY with ENGINEERING GRAPHICS

Graduates with a degree in General Technology should be able to demonstrate knowledge and skills in the following areas:

I. Drafting skills

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| 1. Select proper medium of paper and tools | EGT 110; EGT-115 |
| 2. Use basic drafting instruments (pencils, triangles scales, dividers, protractors) | EGT 110; EGT-115 |
| 3. Develop visualization skills | EGT 110; EGT-115 |
| 4. Generate technical drawings | EGT-151, EGT-152,
EGT-110,EGT-115, EGT-151, EGT-152, |
| 5. Select proper view for layout | EGT-110, EGT-115, EGT-151, EGT-220 |
| 6. Make preliminary sketches | EGT-110-, EGT-115, EGT-151 |
| 7. Submit final drawings for approval | EGT-110-, EGT-115 |
| 8. Produce drawings representing multi-dimensional objects | EGT-110, EGT-115, EGT-151, EGT-220 |
| 9. Adhere to drafting standards (ANSI code) | EGT-110, EGT-115, EGT-151, EGT-220 |
| 10. Perform freehand drawings | EGT-110, EGT-115, EGT-151, EGT-220 |
| 11. Plan and make layout for drawings | EGT-110, EGT-115, EGT-151, EGT-220 |
| 12. Adhere to time schedule | EGT-110, EGT-115, EGT-151, EGT-220;
ENG-160, HSS-101, CET-210, |
| 13. Use standard drafting symbols and follow codes | EGT-110, EGT-115, EGT-151, EGT-220;
EGT-152, EGT-250, EGT-260, EGT-251 |

II. Communication Skills

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| 1. Plan and coordinate work | EGT-110, EGT-115, EGT-151, EGT-220;
ENG-160 |
| 2. Make oral presentations | ENG-160, EGR-175 |
| 3. Write letters and memo of transmittal | ENG-160 |
| 4. Write progress reports | ENG-160, EGR-175 |
| 5. Explain work in technical terms | ENG-160, EGR-175 |
| 6. Cooperate with others | ENG-160, EGR-175, CET-210, CET-105 |
| 7. Give and receive feedback | ENG-160, EGT-110, EGT-115, EGT-151, |

III. Computer Skills

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| 1. Develop proficiency in Microsoft Office Suite | CPT 170, EGT-151, EGT-152, EGT-250 |
| 2. Perform mail merge | CPT 170 |
| 3. Develop and read spreadsheets | CPT 170; CET-245 |
| 4. Develop internet, intranet, and e-mail skills | CPT 170, IST-225 |

IV. Leadership Skills

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| 1. Exhibit time management skills | EGT-110, EGT-115, EGT-151, ENG-160
EGT-260, CET-130, CET-105, CET-210 |
| 2. Exhibit organizational skills | (Same as #1) |
| 3. Prioritize work | (Same as #1) |
| 4. Exhibit flexibility | (Same as #1) |
| 5. Show commitment to company/department | (Same as #1) |

V. Legal

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|---|---------|
| 1. Knowledge of | |
| A. Contract law | CET-130 |
| B. Write Specification for construction application | CET-130 |
| C. Owner/Contractor Rights and Duties | CET-130 |
| D. General Liability | CET-130 |
| 2. Documentation Procedures | CET-130 |

Professional Skills Outcomes:

VI. Professionalism

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|---|---|
| 1. Exhibit positive attitude/open mind | EGT-110, EGT-115, EGT-151, ENG-160
EGR-175, EGR-190, CET-105 |
| 2. Develop interviewing skills | ENG-160, EGR-175, |
| 3. Exhibit initiative | EGT-110, EGT-115, EGT-151, EGT-152; |
| 4. Develop work ethics | EGT-110, EGT-115, EGT-151, CET-130 |
| 5. Develop stress management techniques | EGT-115, EGT-151, CET-210, CET-105 |

VII. Effective Communication

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| 1. Developing listening skills | EGT-110, EGT-115, EGT-152, CET-130, CET-210, CET-105, ENG-160 |
| 2. Write legibly and coherently | EGT-110, EGT-115, EGT-152, CET-130, CET-210, CET-105, ENG-160 |
| 3. Develop and prepare written and oral report | ENG-160, EGR-175 |
| 4. Use current technology to communicate | ENG-160, EGR-175, CPT-170, IST-225 |
| 5. Give and receive constructive criticism | ENG-160, EGT-110, EGT-115, EGT-220 |
| 6. Give and receive two-way communications | ENG-160, CET-130, CPT-170, CPT-245 |
| 7. Select appropriate format and style for written communications | ENG-160, EGR-175 |
| 8. Develop skills for effective oral and visual presentations | ENG-160, EGR-175 |
| 9. Interpret visual presentations | ENG-160, EGR-175, EGT-151, EGT-152 |

VIII. Teamwork

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| 1. Be proactive in carrying out team assignments | ENG-160, EGR-175, CET-105, CET-245 |
| 2. Proactively identify opportunities to support team members | ENG-160, EGR-175, CET-105, CET-245 |
| 3. Respect ideas and opinions of internal and external customers | ENG-160, EGR-175, CET-105, CET-245 |
| 4. Encourage creativity and generation of new ideas | ENG-160, EGR-175, CET-105, CET-245 |

Assessment Methods:

Direct Student Learning Outcomes

This program has Special Projects in Graphic Design that are evaluated not only in layout but functionally. It includes direct assessment of student performance, including line work, layout proportions, correctness of views and dimensions. Students graduating in Engineering Graphics will certify their academic knowledge and skills through a WorkKeys Career Readiness Test, which includes the following subtests: Reading for Information, Locating Information, and Applied Mathematics.

Indirect Student Learning Outcomes

The Degree Program faculty review the following indirect measures of student and program success yearly or as needed to ensure program viability: student portfolios comprised of their completing rigorous and relevant scenario-based assessments; grade distribution and failure rates; student evaluations; job placement results; employer satisfaction survey; enrollment statistics; retention rates; and graduation rates.

Internal Measures of Success

Direct measures of soft skills and academic/program foundation skills:

- ACT Work Keys: Students will score a 4 or better on three areas which are tested.
- 95% completion of design projects.
- 100% of course students will demonstrate acceptable ratings on portfolios comprised of their completed assignments.

Indirect Measures of Program Success

- Maintain or exceed an 80% or better level of job placement.
- Incorporate 100% of validated DACUM competencies into Engineering Graphics course outlines with demonstrated student performances.
- Maintain or increase enrollment over the Benchmark.
- Maintain or improve retention over the Benchmark.
- Maintain or increase budget allocation over the Benchmark.

Review Process and Use of Results:

General Technology (Engineering Graphics) program is a competency-driven curriculum. Its competencies are determined through qualified DACUM panels and are validated by industry professionals and the curriculum's own advisory committee. DACUMS are conducted every four years to ensure accuracy. The last DACUM was held in 2001. Based on the DACUM, the Engineering Graphics faculty will perform the following internal processes yearly as part of the strategic planning and review process.

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- Ensure that program outcomes are appropriate and current.
- Ensure that program outcomes are addressed in the exit competencies of at least one required course.
- Ensure that within those required courses that students demonstrate the desired program outcome either through written or performance-based tests and/or graded assignment.
- Ensure that equipment inventory, facilities, and budget support program outcomes and the strategic plan.
- Ensure that successful completion of prerequisite courses is a satisfactory predictor of student success in subsequent courses.
- Monitor student portfolios for performances against DACUM competencies.
- Review grade distribution and failure rates; student evaluations; job placement results; employer satisfaction survey; enrollment statistics; retention rates; and graduation rates.
- Ensure that the College Library can assure access to appropriate and current research materials.
- Provide feedback to the general education faculty on observed general education competencies and make recommendations as needed.
- Make a report to the advisory committee on assessment findings and solicit feedback.
- Work with Division Dean and the Curriculum Committee to revise syllabi or course offerings as needed.

What action(s) did the Program take that improved and expanded student-learning outcomes?

Changes have been made within the program to improve student success based on recommendations from our advisory committee, instructors, and DACUM panel. The DACUM panel consists of members of local industry who would be in the positions to hire our graduates or hold the same types of jobs as our graduates. The Panel meets separately from the Advisory Committee to discuss the competency requirements of the program and make recommendations for changes.

GENERAL TECHNOLOGY w/ ENGINEERING GRAPHICS ACTIONS:

Data Source: Some students were not as successful due to the lack of preparation for engineering courses such as math and English requirements. Therefore, math and English courses were changed to Mat-170, and Eng 160. Additional 3D graphics course were added to the curriculum to enhance the 3D modeling design. The Associated degree program was broken into three certificate programs, which has provided for successful completion.

Measurement: Based on data collected from graduation our students are able to complete the full degree.

Data Source: Advisor anecdotal records

A day curriculum sequence check sheet is available to guide the students through the two-year program identifying when courses should be taken during the day, but nothing available to guide our evening students. Evening students may take only general courses such as math, English, computer and history, in the evening. They are required to attend day Engineering classes to complete the program.

Measurements: Results are based on data collected from retention and graduates rates that evening students will make the change in there work schedules to attend required courses.

Data Source: DACUM panel, Advisory Committee, and instructor anecdotal records

Increased emphasis on soft skills. The DACUM panel and the advisory board stressed the importance of emphasizing soft skills in the classroom. All of the engineering courses have a soft skills component.

Measurements: Results are pending based on data collected from the selected assessment tools, including ACT WorkKeys and independent rubric-based assessments for typical design assignments.

**GENERAL TECHNOLOGY with
ENGINEERING GRAPHICS
PROGRAM REVIEW**

NOVEMBER 14, 2001

This is an update of comments/suggestions **dated 13 March 2001.**

RECOMMENDATIONS:

1. Advertisement and general knowledge of the program need to be published to inform the public of such a great program.
 - a. **EGT is now under the Computer Technology Group. A new program recruiting magazine listing all programs with general course descriptions was published and distributed to all area high schools.**
 - b. **The EGT program was featured in a local newspaper as CAREER CLOSE-UP. This was a free public article which informed the public of the program being offered. The article did get public response in which a number of potential students called in for more information.**

- c. **The state-of-art software is being continued. Purchase orders for the lease of the full ACES package of software by AutoDesk will continue. This package will allow for OCTC to have 25 CAD stations with which to teach this software. Students who complete courses at the HS are given credit for some CAD course. With this in place, it is also an effort to get the students to continue their education with OCTC. The area high schools provide potential students for the EGT program.**
 - d. **The CAD lab was just lately upgraded with new hardware to handle the latest 3D packages. This reflects the commitment our college administration is supporting this program.**
- 2. Program changes:**
- a. **The EGT program only requires 65 credit hours for an Associate degree in Engineering Graphics. The previous program required 74 hours. The new program changed many courses, some courses are no longer required and added new CAD courses which will enhance the program. The lower required credit completion should assist with getting more EGT graduates.**
 - b. **There are now three new Certificates under this program: CAD I, CAD II, and Introductory to Civil Engineering which will give students more of an opportunity to complete a course at one level, and then at their own pace complete additional certificates. Students in other programs may also take certificate courses.**

The Program Coordinator establishes objectives for maintaining/strengthening the performance level of the program.

Date: 3/12/2002

2000-2001 Recommendations	2001-2002 Actions Taken/Results
<p>A. Reduce program credit requirements to increase retention and graduation rates.</p> <p>B. Develop Certificate programs which students may complete in one year and build on an Associate Degree.</p> <p>C. Upgrade CAD software to teach 3D modeling</p> <p>D. Get area High Schools to teach same CAD software and give students course credit. This approach may build on recruiting new students into the program.</p>	<p>A. Program credit requirements changed from 79 hours to 65. (See attached Curriculum Model)</p> <p>B. Three Certificate programs were developed: CADI, CADII, and Introductory Civil Engineering. All are one year and build on an Associate Degree. (see Curriculum models)</p> <p>C. The latest AutoCAD software and related 3D modeling packages are leased.</p> <p>D. Three High Schools teach same CAD software and students are given course credit.</p>