

## Department Mission Statement

The mission of the Department of Engineering Technology and Engineering Transfer is to partner with other college departments, the community, and local industry to be the premier provider of postsecondary technical education for Engineering Technology and Engineering Transfer students in the Midlands.

In support of the Mission of the Department of Engineering Technology and Engineering Transfer, the following departmental goals have been established:

1. **Quality Instruction:** To assure consistently high-quality instruction in all modes of delivery.
2. **Student Success:** To work collaboratively with other areas of the colleges to encourage students to achieve their educational goals and succeed in work and/or continued education.
3. **Program and Curricula:** To develop, market and maintain quality programs that are responsive to the needs of our service area.
4. **Technology:** To employ appropriate technologies effectively to enhance instruction and student learning.
5. **Professional Development:** To foster continuing education and professional development for faculty and staff.

Within the Department of Engineering Technologies and Engineering Transfer, the Architectural engineering technology program produces graduates who play a major role in assisting architects and engineers in the professional setting. Students also obtain jobs in the building and construction industry as code inspectors, residential home design and construction, sales, and facilities management. To perform this work, architectural engineering technicians must possess broad knowledge and skills in such technical areas as design, building codes, mathematics, drafting, management, materials and cost estimating, and scientific use of computers.

## Program Educational Objectives

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

There are four Program Educational Objectives for the Architectural Engineering Technology Program. Upon successful completion of this associate degree program, graduates should be able to perform the following functions:

1. Apply knowledge of architectural technologies and competence in interview of clients to solve actual building solutions.

2. Apply problem solving and critical thinking skills for successful performance in the Architectural Engineering technology field.
3. Demonstrate the ability to perform research, integrate and synthesize information, and resolve information discrepancies for a design.
4. Produce design solutions in the form of working drawings for residential and lite commercial structures

## **Process for Establishing and Revising Program Educational Objectives**

Educational Objectives for the Architectural Engineering Technology Program have been established through a process that is defined in the document entitled, “Architectural Engineering Technology Program’s Outcomes Assessment Plan and Process” In essence, educational objectives for each program are established collaboratively by involving the various constituencies of the program in the Program Review process. Input has been gathered from DACUM panels, from the program advisory committee, from ABET, from faculty, and from other constituencies regarding what the educational objectives should be for a particular program. Those objectives have been established accordingly, and are reviewed every five years during a formal program review process.

## **Achievement of Program Educational Objectives**

### ***Direct Assessment***

The level of achievement of Program Educational Objectives is initially determined during the capstone course sequence. Those courses in that sequence include:

AET 232 Architectural CAD Applications  
AET 230 Architectural Graphics III

Mastery of competencies is measured by the following methods:

Project Oral Presentations  
Interview of clients and program  
Research/Special Projects  
Paper Preparation

All graduates of the Architectural Engineering Technology program are required individually to demonstrate each of these competencies while they are students in the capstone course sequence.

### ***Indirect Assessment***

In addition to the complete program review which takes place every five years, employers of recent graduates are surveyed within 6 months after graduation to determine recent graduate competency from an employer perspective. Employers are asked to rate each recent graduate employee on their level of achievement on each program educational objective. Results of this survey are tabulated and reviewed at the next program advisory committee meeting. Based on these results, recommendations for any changes in program educational objectives or how those PEO's are taught and/or evaluated are solicited from advisory committee members at that time. These recommendations are reviewed by program faculty and appropriate changes based on these recommendations are made.

## **Program Outcomes**

Program outcomes are narrower statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire in their matriculation through the program.

## **Process for Establishing and Revising Program Outcomes**

The competencies that are required to be considered proficient as an entry level Architectural Engineering Technician were determined by DACUM panel. The DACUM panel consisted of technicians and supervisors of technicians from local industries that commonly employ graduates of the program. This list of competencies was divided into groups that had some commonality. Each of those groups became the basis for the course competencies that are indicated on the syllabus for each course in the program. Course competencies are directly linked to Program Outcomes, which are determined through inclusion of input from other constituencies, including TAC of ABET. The specific Program Outcomes that each course competency is linked to is indicated on the course syllabus.

The competencies for each program are reviewed informally during each program advisory committee meeting, and are formally reviewed every five years through a formal Program Review process. The formal Program Review includes another DACUM panel which looks at the curriculum in detail and makes a determination of adequacy of the program.

The matrix at the end of this section lists all Program Outcomes in the first column, and indicates which of those outcomes feed into the Program Educational Objectives. The courses in which each Program Outcome is assessed is indicated in the last (third)

column. This list can be cross referenced to each course syllabus to find the course competencies that feed the Program Outcomes.

### **Achievement of Program Outcomes**

The program outcomes assessment process for the Architectural Engineering Technology program provides a means for continuously improving the learning experience for students. It requires identifying expected outcomes for the program and the systematic gathering of evidence on student performance, analysis and interpretation of the evidence, and use of results to document, explain, and make changes that improve performance.

The program employs direct assessment methods to measure a specific competency attainment by the student. Test questions and project requirements have been developed that are specific to particular course competencies. Student achievement levels in these particular questions and requirements are recorded on Student Learning Objective (SLO) forms which are kept for each course objective (some course objectives have multiple competencies associated with it). Trend data and analysis of results are also recorded on SLO forms. Analysis of overall achievement by students in the program is done and, as part of our efforts to ensure continuous improvement, appropriate adjustments are made.

### **Relationship of Program Outcomes to Program Educational Objectives**

Program Outcomes for the Architectural Engineering Technology program are shown in the first column of the matrix below. The five PEO's for this program are indicated in the second through 6<sup>th</sup> columns of the matrix. The specific Program outcomes that lead to particular PEO's are indicated in the matrix by a mark. Note that not all Program Outcomes lead to all PEO's, but all PEO's are addressed somewhere in the program. The courses in which those Program outcomes are taught and assessed are also indicated in the last column.

| Program Outcomes  | Program Educational Objectives |      |      |      | Courses in which PEO is evaluated   |
|---|--------------------------------|------|------|------|---|
|   | PEO1                           | PEO2 | PEO3 | PEO4 |   |
| Demonstrate an appropriate mastery of the knowledge, techniques, skills and modern tools of their disciplines                 |                                |      |      | X    | AET 110, AET 120, AET 101, AET 111, AET 221, AET 232, AET 230                   |
| Demonstrate an ability to apply current knowledge and adapt to emerging applications of mathematics, science, engineering and |                                | x    | x    | x    | AET 110, AET 120, AET 101, AET 201, AET 111, AET 221, AET 232, AET 230, CET 235 |

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| technology Engineering Ethics  |   |   |   |   |  |
| Demonstrate an ability to conduct, analyze and interpret experiments and apply experimental results to improve processes       | x | x | x |   | AET 101, AET 105, AET 201, CET 242, CET 244,   |
| Demonstrate an ability to apply creativity in the design of systems, components or processes appropriate to program objectives | x | x | x | x | AET 110, AET 120, AET 230  |
| Demonstrate an ability to function effectively on teams  | x | x | x | x | AET 110, AET 120, AET 101, AET 201, AET 111, AET 221, AET 232, AET 230   |
| Demonstrate an ability to identify, analyze and solve technical problems   |   | x | x | x | AET 101, AET 110, AET 120, AET 111, AET 201, AET 221, AET 232, AET 230, CET 242, CET 244, CET 235                  |
| Demonstrate an ability to communicate effectively  | x | x | x |   | AET 101, AET 110, AET 120, AET 111, AET 201, AET 221, AET 232, AET 230, CET 242, CET 244, CET 235                  |
| Recognize the need for, and an ability to engage in lifelong learning  | x | x | x | x | AET 101, AET 110, AET 120, AET 101, AET 201, AET 202 AET 221, AET 232, AET 230, CET 242, CET 244, CET 235          |
| Demonstrate an ability to understand professional, ethical and social responsibilities   |   | x | x | x | AET 105, AET 202, AET 230, CET 235   |
| Demonstrate a respect for diversity and a knowledge of contemporary professional, societal and global issues                   | x | x | x |   | AET 105, AET 202, AET 201, AET 230,  |
| Demonstrate a commitment to quality, timeliness, and continuous improvement  | x | x | x | x | AET 101, AET 105, AET 110, AET 120, AET 101, AET 111, AET 202 AET 221, AET 232, AET 230, CET 242, CET 242, CET 235 |
| Employ concepts of architectural theory and design in a design environment   | x |   | x | x | AET 110, AET 120, AET 232, AET230,   |

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| Utilize modern instruments, methods and techniques to produce A/E documents and presentations          |   |   |   | x | AET 110, AET 120, AET 111, AET 221, AET 232, AET 230                      |
| Conduct standardized field and laboratory testing on construction materials and/or construction layout |   | x |   | x | AET 101, AET 201, CET 242, CET 244, CET 235                               |
| Utilize modern instruments and research techniques for site development and building layout            | x | x |   | x | AET 101, AET 110, AET 120, AET 111, AET 202<br>AET 221, AET 232, AET 230, |
| Determine forces and stresses in elementary structural systems   |   |   | x | x | CET 244, CET 242, EGR 194   |
| Estimate material quantities for technical projects  |   |   | x | x | CET 235, AET 101, AET 201   |
| Calculate basic loads and demands in mechanical and electrical systems                                 |   |   |   | x | AET 101, AET 201  |
| Utilize codes, contracts and specifications in design, construction and inspection activities          | x |   | x | x | AET 201, AET 105, CET 235   |

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| Employ productivity software to solve technical problems |  |  | x | x | AET 101, AET 110, AET 120, AET 111, AET 202<br>AET 221, AET 232, AET 230 |
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