

# Quality Assurance Technology

## Associate Degree

Individuals who have high standards, are logical and observant, good at problem solving, and have an investigative mind, are a great fit for a career as a Quality Assurance Technician. Quality assurance technicians are responsible for monitoring, testing, and continuously improving the quality of products and services for today's businesses.

Coursework in Columbus State's Quality Assurance program will include an introduction to manufacturing, statistical process control, value engineering, and technical writing. Participants will study and practice the major elements and concepts of total quality management, including principles and styles of systems thinking, continuous improvement, management by data, and historic influences of leaders in quality management. Students will learn statistical methods to determine reliability, the effectiveness of data analysis, the use of simulations, and ways to improve system performance.

Graduates will find a wide range of opportunities in fields as diverse as manufacturing, banking, insurance, or food processing. A valuable member of the business team, grads will apply the tools of their chosen field in a problem-solving process to achieve significant gains for the company—such as product improvement, reducing scrap, shortening cycle time, and improving profitability. Quality assurance technicians have the satisfaction of working in an area that is essential, not only to profitability, but to survival of the business.

### Quick Notes on QA:

- Salaries for QA technician job postings in Columbus are seven percent higher than the national average. (*Source: Indeed.com*)
- Students work on quality improvement projects for local organizations as part of their course work.
- The quality movement started in manufacturing, but it is now applied to service, health care, education and government sectors.
- A career in QA may combine technical knowledge, change management, people skills and teaching.

The Quality Assurance Technology also shares related courses with the Electronic Engineering Technology and the Mechanical Engineering Technology. For additional information, refer to Electronic Engineering Technology and Mechanical Engineering Technology which are listed in this section of the Catalog.

Upon completion of the associates degree in Quality Assurance Technology, the graduate will be able to:

- Improve products, processes and systems in manufacturing and service environments by selectively applying statistical and quality improvement tools according to the Shewhart Cycle.
- Apply a variety of teamwork, leadership, and communications skills (verbal, written, and graphic) to communicate effectively with clients, suppliers, co-workers and others in the work environment.
- Apply fundamental principles of project management.
- Read and interpret engineering blueprints, drawings, specifications and quality charts.
- Apply a basic knowledge of physics, electronics, manufacturing processes, metrology, and materials testing and analysis to improving, and/or designing new products and processes.
- Apply knowledge of specifications, sampling plans and testing techniques to the analysis of materials, components and systems.
- Apply cost estimating techniques and cost containment procedures to new and existing products and systems, while maintaining or improving quality.
- Apply the elements of current quality management trends including inspection, traceability/documentation, quality audits, and nonconforming identification and review processes to business elements within an organization.

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COURSE	CR
<b>Quarter 1</b>	
ENGT 100 Introduction to Engineering Technology .....	4
MECH 112 Computer Applications in Manufacturing .....	3
MECH 115 Engineering Graphics .....	4
MECH 240 Machine Tools .....	4
ENGL 101 Beginning Composition .....	3
<b>TOTAL CREDIT HOURS.....</b>	<b>18</b>
<b>Quarter 2</b>	
MECH 150 Manufacturing Materials and Processes .....	4
QUAL 240 Total Quality Management .....	3
ENGL 102 Essay and Research .....	3
MATH 111 Technical Math I .....	4
<b>TOTAL CREDIT HOURS.....</b>	<b>14</b>
<b>Quarter 3</b>	
QUAL 250 Metrology .....	3
HUM XXX Humanities 111,112,113,151 152, or 224 .....	5
MATH 112 Technical Math II .....	4
PHYS 117 College Physics.....	5
<b>TOTAL CREDIT HOURS.....</b>	<b>17</b>
<b>Quarter 4</b>	
QUAL 150 Quality Transformation .....	4
COMM 105 Speech ( <i>or</i> ) .....	
COMM 110 Conference and Group Discussion .....	3
SSCI XXX Social Science 100,101, 102, 104, or 105 .....	5
<b>TOTAL CREDIT HOURS.....</b>	<b>12</b>
<b>Quarter 5</b>	
QUAL 251 Value Engineering .....	3

BMGT 111	Management .....	5
COMM 204	Technical Writing .....	3

Lecture: 2 hours – Lab: 2 hours  
Prerequisite: MECH 244

**And choose one of the following basic electives:**

ENGT 131	Hydraulics and Pneumatics.....	4
EMEC 250	Motors and Controls.....	4
ENVR 170	General Industry, Safety and Health.....	4
APPL 107	Introduction to Welding .....	4
PHYS 118	College Physics (Electricity, Magnetism and Light).....	5
<b>TOTAL CREDIT HOURS .....</b>		<b>15-16</b>

**QUAL 260 Reliability and Systems Maintainability (SP) 3 credits**  
This course is an examination of the basic methods that companies use to ensure the reliability of their products. Students learn statistical methods employed to determine reliability, the effectiveness of data analysis, use of simulations, and ways to improve system performance.

Lecture: 3 hours – Lab: 0 hours  
Prerequisite: MECH 244

**Quarter 6**

EET 105	Basic Electronic Systems.....	5
QUAL 260	Reliability and System Maintainability .....	3
BMGT 257	Project Management .....	3
MECH 270	Engineering Statistics.....	4
<b>TOTAL CREDIT HOURS .....</b>		<b>15</b>
<b>TOTAL DEGREE CREDIT HOURS .....</b>		<b>91-92</b>

**QUALITY ASSURANCE TECHNOLOGY**

**Chairperson**, Dick Bickerstaff, B.A., *Youngstown State University, M.A., The Ohio State University*

**Faculty**, See Mechanical Engineering Technology

**Advisory Committee**

See Mechanical Engineering Technology

## Quality Assurance Technology (QUAL)

**For Engineering Statistics, see MECH 270 in the Mechanical Engineering Technology course descriptions. For other related course descriptions, see Electronic Engineering Technology and Mechanical Engineering Technology.**

**QUAL 150 Quality Transformation (A, SU) 4 credits**

This course focuses on teamwork and the applications of Total Quality Transformation “tools.” Teams of students and employees from business and industry solve existing quality problems in their organization with careful direction.

Lecture: 3 hours – Lab: 2 hours

**QUAL 240 Total Quality Management (A, W) 3 credits**

This course is a study and practice of the major elements and concepts of total quality management, including principles and styles of quality management, systems thinking, continuous improvement, management by data, and historic influences of leaders in quality management.

Lecture: 2 hours – Lab: 2 hours

**QUAL 250 Metrology (SP) 3 credits**

Making precise measurements is an important part of producing quality products for the customer. This introductory course covers the correct procedures for the linear and angular measures of features or attributes on machine components. Traceability to standards is also presented and instrument capability discussed. Students use a variety of instruments and systems to make precision measurements.

Lecture: 2 hours – Lab: 2 hours Lab fee: \$10.00

**QUAL 251 Value Engineering (W) 3 credits**

Value engineering is the systematic application of recognized techniques which identify the function of a product or service, establish a monetary value for that function, and provide the necessary function reliably at lower overall cost. Students will be introduced to value engineering concepts and applications for the practitioner.