

USU Technology Systems Assessment Plan

Assessment Plan

The assessment plan will include ongoing formative assessment at the course and instructor level, and a programmatic summative assessment or program review conducted every three years. Instructors will use student course evaluations as a formative step in evaluating the program in addition to assignments and tests. The program faculty will have the opportunity to interact and work with other faculty from across campus to seek feedback. The department will also conduct exit interviews/surveys of graduating students and use portfolios and senior projects to evaluate the technical, written, verbal, and communication skills of the students. The program will survey alumni at three-year intervals to provide an opportunity for student reflection on the program outcomes and overall value. Industry partners will offer internships and provide feedback about the program through an advisory committee. Program assessment will include two parts: the assessment of the core Technology Systems Program, and the assessment of the individual emphasis areas. Program assessment is completed through the following methods:

- Faculty Advisory Board Meetings with people in business and industry and faculty members at the Applied Technology Colleges to determine the needs of their potential employees. The advisory board is to meet twice a year.
- Individual Course Evaluations – Course data is to be collected every year by the instructors and used for continuous improvement. This includes summative and formative assessments in the course as well as course evaluations. Every three years, data from courses is to be collected on a programmatic level with artifacts identified to assess meeting programmatic objectives. This will be done across courses and instructors to create a complete programmatic review.
- Student Employment Placement rates and employer surveys will be collected and included into the programmatic review.
- Surveys of Past Graduates, in particular, retention in Secondary Education and employer surveys will be collected and included into the programmatic review.

Core Technology Systems Program

Learning Objectives	Where Exemplified	Outcomes Data - Summative Assessments	Data-based Decisions
Develop computational skills specific to problems and critical issues that exist in one of the emphasis areas.	TEE 2300 or TESI 3300 Electronic Systems and Programming <u>a</u>	Final Exam	Direct data for individual course curriculum changes.
Demonstrate skills in: Problem solving Technical and professional communications including written, verbal, and visual communications Leadership and Teamworking	<u>Problem Solving:</u> TESY 4250 (internship) or ASTE 4900 Senior Project <u>b</u> TEE 3020 Technology Enterprises? <u>a</u> <u>Technical and professional communications including written, verbal, and visual communications:</u> BUSN 2200 Business Communications <u>c</u>	<u>Problem Solving</u> Internship/ senior project report for problem solving and written communication (TESY 4250 or ASTE 4900) TEE 3020 Final Reflection Paper <u>Technical and professional communications including written, verbal, and visual communications:</u> BUSN 2200 : Business Presentation; Persuasive Essay	TEE 3020 Final Reflection Paper - Direct data for individual course curriculum changes. Internship/ senior project report for problem solving and written communication (TESY 4250 or ASTE 4900) - Possible changes to the whole curriculum plan, as well as course-level curriculum changes, and recruitment strategies.

	<p>ASTE 3050 Technical and Professional Communications Principles <u>c</u></p> <p><u>Leadership and Teamworking:</u></p> <p>BUSN 2320 Small Business Management <u>c</u></p> <p>TEE 3020 Technology Enterprises <u>a</u></p>	<p><u>Leadership and Teamworking:</u></p> <p>TEE 3020 Final Reflection Paper</p>	
3. Acquire training and develop skills necessary for a career or an advanced degree program.	Post- graduate survey. <u>e</u>	How many students are employed in the area of emphasis, how many students continued onto a graduate program.	Possible changes to the whole curriculum plan, as well as course-level curriculum changes, and recruitment strategies.
Assess safety concerns and plan for safe conditions in an industrial environment	TESY 3000 Hazard Recognition and Control <u>d</u>	Final Exam	
Evaluate Technology as it relates to society and the environment	ASTE 3440 Technology and Society <u>d</u>	Equity Problem Project (final project)	Direct data for individual course curriculum changes.
Apply technical concepts related to the emphasis area through and industrial related project or internship	TESY 4250 (internship) or ASTE 4900 Senior Project <u>b</u>	Completion of a senior design project will be evaluated using a common rubric to assess the student standards of performance. Artifacts demonstrating student performance will be included in a portfolio and collected throughout the courses in the program. Internship students will be evaluated to the common rubric for internships.	Possible changes to the whole curriculum plan, as well as course-level curriculum changes, and recruitment strategies.
<p>Apply a design process or problem-solving process to an industry related project</p> <p>Apply creative design processes and evaluate outcomes</p>	<p>TESY 4250 (internship) or ASTE 4900 Senior Project <u>b</u></p> <p>TEE 3020 Technology Enterprises <u>a</u></p>	<p>Completion of a senior design project will be evaluated using a common rubric to assess the student standards of performance. Artifacts demonstrating student performance will be included in a portfolio and collected throughout the courses in the program. Internship students will be evaluated to the common rubric for internships.</p>	<p>Possible changes to the whole curriculum plan, as well as course-level curriculum changes, and recruitment strategies.</p>

a Courses to be evaluated by instructors on a yearly basis through course evaluations. Programmatic data to be collected on years 1 and 4 of the accreditation cycle.

b Summative programmatic data to be collected every year.

c Courses to be evaluated by instructors on a yearly basis through course evaluations. Programmatic data to be collected on years 2 and 5 of the accreditation cycle.

d Courses to be evaluated by instructors on a yearly basis through course evaluations. Programmatic data to be collected on years 3 and 6 of the accreditation cycle.

e Post graduate surveys to be conducted in years 3 and 6 of the accreditation cycle.

Complete Program Reviews including all course data, summative programmatic data (internship or senior project) and post graduate surveys to be conducted in years 4 and 7 of the accreditation cycle. Reviews, including yearly assigned course reviews and complete program reviews to be conducted in September and October or the review year.

Accreditation Cycle Years (date = Fall semester year)

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	<u>Year 7</u>
<u>2021 a & b</u>	<u>2022 b & c</u>	<u>2023 b, d & e</u>	<u>2024 Complete Program Review a, b,</u>	<u>2025 b & c</u>	<u>2026 b, d, & e</u>	<u>2027 Complete Program Review</u>
<u>2028 a & b</u>	<u>2029 b & c</u>	<u>2030 b, d & e</u>	<u>2031 Complete Program Review a, b,</u>	<u>2032 b & c</u>	<u>2033 b, d, & e</u>	<u>2034 Complete Program Review</u>

Courses assessing multiple objectives:

Course	Objectives			
TESY 4250 (internship) or ASTE 4900 Senior Project	Demonstrate skills in: Problem solving	Apply a design process to an industry related project Apply creative design processes and evaluate outcome	Apply technical concepts related to the emphasis area through and industrial related project or internship	
TEE 3020 Technology Enterprises	Demonstrate skills in: Problem solving	Apply a design process to an industry related project Apply creative design processes and evaluate outcome	Demonstrate skills in: Leadership and Teamworking	

Emphasis Area: Information and Computer Technology

Learning Objectives	Where Exemplified	Outcomes Data	Data-based Decisions
<p>Demonstrate knowledge of network protocols and data.</p> <p>Analyze system security and mitigation strategies.</p> <p>Propose methods to promote business continuity in the face of power outages or other physical exigencies.</p> <p>Demonstrate knowledge of ITIL service management processes</p>	<p>TESY 4750 - Network Administration <u>c</u></p> <p>TESY 4840 - Security and Digital Forensics <u>d</u></p> <p>TESY 4740 - Disaster Recovery and Business Resumption <u>a</u></p> <p>TESY 4720 - IT Management <u>c</u></p>	<p>Wireshark Lab: TCP</p> <p>Final project: penetration testing</p> <p>Final project: disaster recovery and business resumption plan</p> <p>Final exam</p>	
<p>Obtain at least two IT-related technical college certificates</p>	<p>Bridgerland or UBTech IT Support Tech, Networking, Security certificates</p>	<p>Achievement matrix</p>	

Emphasis Area: Product Development

Learning Objectives	Where Exemplified	Outcomes Data	Data-based Decisions
<p>1. Demonstrate technical knowledge and ability in Product Development.</p>	<p>TEE 3270 Advanced CAD <u>c</u></p> <p>TEE 3030 Computer Integrated Manufacturing Systems <u>c</u></p> <p>TESY 4310 Intellectual Property for Product Developers <u>a</u></p> <p>TESY 4330 Product Innovation Processes, Tools, and Strategies <u>a</u></p>	<p>Advanced CAD - Final Project</p> <p>CIM - Final Exam</p> <p>Provisional Patent Application for a Utility Patent</p> <p>Final Exam</p>	<p>Making adjustments at the course level</p>
<p>Explain and apply the basic decision making, production, sourcing, and creative processes involved in the conversion of finished materials to finished products.</p> <p>Conduct research into product viability including market research and intellectual property searches.</p>	<p>Industry certification? New Product Development Professional (NPDP) certification exam.</p> <p>TESY 4250 (internship) or TESI 4900 Senior Project <u>b</u></p>	<p>NPDP Exam <u>b</u></p> <p>Completion of a senior design project will be evaluated using a common rubric to assess the student standards of performance. Artifacts demonstrating student performance will be included in a portfolio and collected</p>	<p>Programmatic and course changes</p>

		throughout the courses in the program. Internship students will be evaluated to the common rubric for internships.	
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Emphasis Area: Technical Management

Learning Objectives	Where Exemplified	Outcomes Data	Data-based Decisions
Demonstrate technical knowledge and ability in Technical Management. Analyze factors affecting human resource management issues, production planning, scheduling, and inventory control relative to business goals and professional development.	ASTE 3100 Personal and Team Leadership Exit interview Reach out to Business		
Is there industry certification?			

Emphasis Area: Quality and Reliability

Learning Objectives	Assessment	Outcomes Data	Data-based Decisions
Demonstrate technical knowledge and ability in Quality and Reliability.		Final Reflection Paper	
Is there an industry certification?			

Emphasis Area: Cybersecurity

Learning Objectives	Assessment	Outcomes Data	Data-based Decisions
<p>Analyze system security and mitigation strategies.</p> <p>Demonstrate the ability to write scripts for cybersecurity purposes.</p> <p>Demonstrate the ability to assess system security.</p> <p>Demonstrate knowledge of security monitoring techniques.</p>	<p>TESY 4840 - Security and Digital Forensics <u>d</u></p> <p>TESY 4850 - Advanced Python <u>a</u></p> <p>TESY 4820 - Penetration Testing <u>c</u></p> <p>TESY 4830 - Network Defense and Traffic Analysis <u>a</u></p>	<p>Penetration testing exercise</p> <p>Port scanning assignment</p> <p>Penetration testing assessment document</p> <p>uCertify lesson 5 labs</p>	
<p>Obtain at least two IT-related technical college certificates</p>	<p>Bridgerland or UBTech IT Support Tech, Networking, Security certificates</p>	<p>Achievement matrix</p>	

Emphasis Area: Robotics Automation and Controls

Learning Objectives	Where Exemplified	Outcomes Data	Data-based Decisions
<p>Demonstrate technical knowledge and ability in Robotics, Automation, and Controls.</p> <p>Explain and apply the basic decision making, production, and creative processes involved in designing automated systems.</p>	<p>TESY 4250 (internship) or TESI 4900 Senior Project <u>b</u></p> <p>Completion of required advanced coursework from an ATC in Controls Engineering Technology or equivalent.</p>	<p>Completion of a senior design project will be evaluated using a common rubric to assess the student standards of performance. Artifacts demonstrating student performance will be included in a portfolio and collected throughout the courses in the program. Internship students will be evaluated to the common rubric for internships.</p>	<p>Possible changes to the whole curriculum plan, as well as course-level curriculum changes, and recruitment strategies.</p>
<p>Obtain industry certification with at least three industrial robotics platforms.</p>	<p>Fanuc Basic Programming, Fanuc Advanced Programming, Fanuc iRVision, Fanuc DCS, Fanuc Roboguide, Cognex Vision Systems, or CSS Lighting Certification.</p>		

Assessment Plan

Program assessment is completed through the following methods:

Instructors will use student course evaluations as a formative step in evaluating the program. The program faculty will have the opportunity to interact and work with other faculty from across campus to seek feedback. The department will also conduct exit interviews/surveys of graduating students and use portfolios and senior projects to evaluate the technical, written, verbal, and communication skills of the students. The program will survey alumni at approximate three-year intervals to provide an opportunity for student reflection on the program outcomes and overall value. Industry partners will offer internships and provide feedback about the program through an advisory committee.

- Faculty Advisory Board Meetings with people in business and industry and faculty members at the Applied Technology Colleges to determine the needs of their potential employees. Do we have anything from this?
- Individual Course Evaluations – which ones and where?
- Student Employment Placement rates and employer surveys
- Surveys of Past Graduates, in particular, retention in Secondary Education

Prior Review Notes:

AAA Comments: Objectives very broad, undefined, and not measurable. Assessment plan relies only on indirect measures, nothing measuring student level learning. Can't find outcomes or data-based decision in the links to your reports.

DATA-BASED DECISIONS - The following are recent examples of data-based decisions for program improvement.

- An option was developed for “stackable” technical credentials to align with applied technical colleges and our branch campuses as well as USU Eastern to assist students in a seamless transfer program to acquire a two-year and eventually a four-year degree at USU.

This is the only information given to us so it cannot be reviewed until the other elements are posted on the webpage.

Objectives Base Source:

From: Utah State University, "Educational Policies Committee Program Proposal, College of Agriculture and Applied Sciences, July 20, 2017 - Bachelor of Science Degree in Technology Systems" (2017). Educational Policies Committee. Paper 391. https://digitalcommons.usu.edu/fs_edpol/391

Program Assessment Identify program goals. Describe the system of assessment to be used to evaluate and develop the program. The School of Applied Sciences, Technology and Education will conduct on-going assessment of the degree program and make improvements or adjustments as needed. The objectives selected for this program include skills and knowledge identified by industry leaders. This program has four primary objectives. After completion of this degree program, students will be able to:

1. Demonstrate technical knowledge and ability in at least one of the following emphasis areas: Technical Management; Robotics, Automation, and Controls; Product Development; and Information and Computer Technology.
2. Develop computational skills specific to problems and critical issues that exist in one of the emphasis areas.
3. Demonstrate written, verbal and visual communication skills and problem solving skills.
4. Acquire training and develop skills necessary for a career or an advanced degree program.

Instructors will use student course evaluations as a formative step in evaluating the program. The program faculty will have the opportunity to interact and work with other faculty from across campus to seek feedback. The department will also conduct exit interviews/surveys of graduating students and use portfolios and senior projects to evaluate the technical, written, verbal, and communication skills of the students. The program will survey alumni at approximate five-year intervals to provide an opportunity for student reflection on the program outcomes and overall value. Industry partners will offer internships and provide feedback about the program through an advisory committee.

Student Standards of Performance List

the standards, competencies, and marketable skills students will have achieved at the time of graduation. How and why were these standards and competencies chosen? Include formative and summative assessment measures to be used to determine student learning outcomes. The student performance standards have been identified and developed through partnership with industry through an advisory committee. The standards will be evaluated and adapted as industry partners provide feedback.

Core Standards of Performance:

- Assess safety concerns in an industrial environment
- Evaluate technology as it relates to society
- Demonstrate technical and professional communication skills
- Demonstrate effective leadership, teamwork, and communication skills
- Apply a design process to an industry related project
- Apply technical concepts related to their emphasis area through an industry related project
- Apply creative design processes and evaluate outcomes Management and Technical Standards
- Analyze factors affecting human resource management issues, production planning, scheduling, and inventory control relative to business goals and professional development (technical management emphasis)
- Obtain industry certification(s) o at least three industrial robotic platforms (robotics, automation, and controls emphasis) o at least three ICT related systems/platforms (information and computer technology)
- Explain and apply the basic decision making, production, and creative processes involved in the conversion of materials to finished products (product development and robotics, automation, and controls emphases)
- Apply technical knowledge and skills related to computer hardware and software (information and computer technology emphasis) Industry partnerships will be used to evaluate and provide feedback of students' learning and performance in an industrial setting.

Completion of a senior design project will be evaluated using a common rubric to assess the student standards of performance. Artifacts demonstrating student performance will be included in a portfolio and collected throughout the courses in the program.

Technology Systems Post-graduation survey

Do we need demographics data?

Current Status Questions:

What year did you graduate with a degree in Technology Systems?

Check Boxes

What was your area of emphasis?

Check Boxes

What best describes your primary job status?

Employed in your field of study

Employed, but not in your field of study

Unemployed

Serving in the military

Enrolled in a graduate degree program

Other

Are you self-employed?

What is your salary?

Likert Scale Questions: Unprepared to Well Prepared

How well did the Technology Systems program help you develop:

- Computational skills specific to problems and critical issues in your field
- Skills in:
 - Problem solving
 - Technical and professional communications including written, verbal, and visual communications
 - Leadership and Teamworking
- Skills necessary for a career or an advanced degree program
- The ability to assess safety concerns and

- plan for safe conditions in an
- industrial environment
- The ability to evaluate technology as it relates to society and the environment
- The ability to apply a design or problem solving process to an industry related project
- Overall, how prepared were you from your college or military courses to succeed in your current role?

Open-ended

What courses helped prepare you for your current role the most?

What information, experiences, or content would you recommend adding to make the USU Technology System Program better?