Assessment Record

Program: Manufacturing & Technology Program **Assessment period:** 2020-2021

Program or Department Mission:

The mission of the Jefferson State Community College industrial Maintenance Technology Program is to prepare entry level Industrial Technology professionals who are competent, ethical, and have a good sense of work ethics. Coursework includes a strong component of practical applications, hands-on laboratory experience and industrial technology concepts. Computer applications are an integral part of the curriculum. Graduates offer their employers an immediate contribution as significant contributors equipped with a combination of technical knowledge, problem-solving experience, and communication skills.

Further, the Industrial Maintenance Technology program will continuously pursue a highly qualified faculty which constantly strives for excellence in pedagogy. Besides having technical acumen in the field of Industrial Maintenance Technology, the selected faculty will be sensitive to the educational needs and capabilities of the Industrial Maintenance Technology learners. These needs are also reflective to the changing landscape and on-going concerns of the Industrial Maintenance Technology industry.

Instructional Program Student Learning Outcomes & Assessment Plan

SLO 1 - Recognize Safety Hazards in the workplace and demonstrate methods to eliminate or mitigate the hazards.
SLO 2- Integrate knowledge of physics, mathematics, mechanics, electronics, fluid power, computers, and programming into the fabrication, installation, testing, and servicing/troubleshooting of electromechanical systems
SLO 3 - Demonstrate proficiency in advanced CADD skills by creating complex drawings using wire-frame and solid-modeling techniques
SLO 4 - Perform the duties of an entry-level technician in the maintenance/troubleshooting of industrial systems

Intended Outcomes	Means of Assessment	Criteria for Success	Summary & Analysis of Assessment Evidence	Use of Results
SLO 1 Recognize Safety Hazards in the workplace and demonstrate methods to eliminate or mitigate the hazards.	Demonstration of the safety skill: Lockout/Tagout procedure in: AUT 130 MET 201 ELM 205 MET 190 ELM 200	90% of technical learners will be able to perform Lockout/Tagout procedure reaching Skill Level 4	Total students: 33 Skill level 1: 5% of the 33 learners where able to achieve this mastery skill level for this learning outcome Skill level 2: 40% of the 33 learners where able to integrate these skills and achieve this mastery skill level for this Skill level 3: 20% of the 33 learners where able to achieve this mastery skill level for this learning outcome Skill level 4: 35% of the 33 learners where able to perform duties of and entry level technician.	In order to strengthen this skill set in students moving forward, the instructor will make the following changes/adjustments: 1. Create project learning assignments that allow the use and demonstration of safety skills in electrical safety procedures. 2. Continue to allow incumbent technicians to assist with novice learners in obtaining authentic entry level technician skills in industrial safety hazards practices. 3. Include technical learners writing reflective papers to demonstrated communicating safety hazards knowledge and practices for industrial-manufacturing facilities.

SLO 2 Integrate knowledge of physics, mathematics, mechanics, electronics, fluid power, computers, and programming into the fabrication, installation, testing, and servicing/troubleshooting of electromechanical systems	Assessment of skills in <u>ELM 205.</u> Demonstrate Setup of measuring electrical circuit parameters of halfwave rectifier power supply.	At least 75% of the technical learners will be able to present the semiconductor theory on the silicon diode using a formative method to reach Skill Level 3.	Total students: 12 Skill level 1: 5% of the 12 learners where able to achieve this mastery skill level for this learning outcome. Skill level 2: 35% of the 12 learners were able to achieve this mastery skill level for this learning outcome. Skill level 3:20% of the 12 learners were able to achieve this mastery skill level for this learning outcome. Skill level 4: 45% of the 12 learners were able to achieve this mastery skill level for this learning outcome.	In order to strengthen this skill set in students moving forward, the instructor will make the following changes/adjustments: 1. Incorporate more physic, mathematics based problem sets to improve cognitive knowledge in these subject areas. 2. Create project learning assignments that allow the use and demonstration of computer skills to manufacturing and industrial applications. 3. Continue to allow incumbent technicians to assist with novice learners in obtaining authentic entry level technician skills. 4. Include technical learners writing reflective papers to demonstrate communicating a 3 step analytic (math) procedure to solving a

				halfwave rectifier power supply.
	Assessment of skills in <u>ELM 200.</u> Perform a troubleshooting task of a DC series-parallel circuit.	At least 75% of the technical learners will be able to diagnose and troubleshoot a DC series-parallel circuit to reach Skill Level 4.	Total students: 12 Skill level 1: 10% of the 12 learners where able to achieve this mastery skill level for this learning outcome. Skill level 2: 35% of the 12 learners were able to achieve this mastery skill level for this learning outcome. Skill level 3: 25% of the 12 learners were able to achieve this mastery skill level for this learning outcome. Skill level 4: 35% of the 12 learners were able to achieve this mastery skill level for this learning outcome.	In order to strengthen this skill set in students moving forward, the instructor will make the following changes/adjustments: 1. Incorporate more physic, mathematics based problem sets to improve cognitive knowledge in these subject areas. 2. Create project learning assignments that allow the use and demonstration of computer skills (using Mulitsim Online) to manufacturing and industrial applications. 3. Include technical learners writing reflective papers to demonstrate communicating a 3 step analytic (math) procedure to solving a DC series-parallel circuit.

SLO 3 Demonstrate proficiency in advanced CADD skills by creating complex drawings using wire-frame and solid-modeling techniques	Assessment of skills in <u>MET 201.</u> Demonstrate Setup of AutoDesk AutoCAD design layout using the specialized drawing toolbars.	At least 75% of the technical learners will be able to setup a drawing layout using the drawing toolbars to reach Skill Level 4.	Total students: 4 Skill level 1: 5% of the 12 learners were able to achieve this mastery skill level for this learning outcome. Skill level 2: 5% of the 12 learners were able to achieve this mastery skill level for this learning outcome. Skill level 3: 10% of the 12 learners were able to achieve this mastery skill level for this learning outcome. Skill level 4: 80% of the 5 learners were able to achieve this mastery skill level for this learning outcome.	In order to strengthen this skill set in students moving forward, the instructor will make the following changes/adjustments: 1. Create project learning assignments that allow the use and demonstration of CAD skills to manufacturing and industrial applications. 2. Create learning activities that introduce creating wire-frame and solid modeling techniques using AutoCAD and Free CAD software.
SLO 4 Perform the duties of an entry-level technician in the maintenance/troubleshooting of industrial systems	Assessment of skills in <u>AUT 130.</u> Create basic pneumatic circuit consisting of a double acting cylinder a directional control valve (DCV).	At least 75% of the technical learners will be able to create a basic pneumatic circuit electrical symbol to reach Skill Level 4	Total students: 15 Skill level 1: 10% of the 15 learners were able to achieve this mastery skill level for this learning outcome. Skill level 2: 5% of the 15 learners were able to achieve this mastery skill level for this learning outcome. Skill level 3: 25% of the 15 learners were able to achieve this mastery skill level for this learning outcome.	In order to strengthen this skill set in students moving forward, the instructor will make the following changes/adjustments: 1. Continue to allow incumbent technicians to assist with novice learners in obtaining authentic entry level technician skills in

			Skill level 4: 60% of the 15 learners were able to achieve this mastery skill level for this learning outcome.	troubleshooting and maintaining pneumatic circuits. 2. Discuss troubleshooting techniques for pneumatic and hydraulic circuits 3. Create lab assignments that allow technical learners to demonstrate knowledge of pneumatic and hydraulic systems designing air and fluid circuits. 4. Include technical learners writing reflective papers to demonstrate competency in physics of a pneumatic circuit using Pascal's Law.
Plan submission date:			**Submitted by: Dr. Don Wilcher**	

Assessment Record

Program: Biomedical Equipment Technology

Assessment period: 2020 - 2021

Program or Department Mission:

The mission of the Manufacturing and Technology Program (Biomedical Equipment Technology Option) at Jefferson State Community College is to prepare students to enter the field of medical equipment repair as competent and entry level technicians. The Program exists to supply the medical industry with qualified people to maintain and repair the equipment found in various medical facilities such as hospitals, clinics and medical equipment manufacturers. We are committed to accomplishing this mission by properly educating the students via theory and hands on application.

Instructional Program Student Learning Outcomes & Assessment Plan

Student Learning Outcomes

1. Students enrolled into the BET program will complete the program as technically competent individuals able to service and maintain medical equipment in a safe and proficient manner.
2. Students will demonstrate the ability to work effectively with other technicians as a team.
3. Utilize effective written communication and maintain medical record and equipment preventive maintenance forms.
4. Maintain effective verbal and nonverbal communication with health care providers, patients/clients, caregivers and the general public.

<table>
<tr><th>Intended Outcomes</th><th>Means of Assessment</th><th>Criteria for Success</th><th>Summary & Analysis of Assessment Evidence</th><th>Use of Results</th></tr>
<tr>
<td>SLO 1: Students enrolled into the BET program will complete the program as technically competent individuals able to service and maintain medical equipment in a safe and proficient manner.</td>
<td>During their course of study in the BET concentration curriculum, students are required to complete several hands-on experiments and lab assignments.</td>
<td>Students participating in the concentration cohort of the BMET option (as a whole) will earn a <u>Clinical On-Site Study Electrical Safety Analyzer Performance Score</u> <u>of at least</u> (2) in BET 240.</td>
<td>Rubric Used
<table><tr><td>Grade</td><td>Points</td></tr><tr><td>F</td><td>0</td></tr><tr><td>D</td><td>1</td></tr><tr><td>C</td><td>2</td></tr><tr><td>B</td><td>3</td></tr><tr><td>A</td><td>4</td></tr></table>Class Rubric Average Goal
2 Points or Higher
Class Average – 3.2</td>
<td>The Clinical On-Site Study employer feedback is a key indicator used by the program to assess methods used to train and prepare students for real world performance within the industry. The 3.2 Class Average shown in the rubric indicates that students were well prepared and competent with regards to performing Electrical Safety.
Evidence: Click Here</td>
</tr>
<tr>
<td>SLO 2: Students will demonstrate the ability to work effectively with other technicians as a team.</td>
<td>During their course of study in the BET concentration curriculum, students will often complete the hands-on experiment assignments as a member of a team.</td>
<td>Students participating in the concentration cohort of the BMET option (as a whole) will (working as a team) earn a <u>Clinical On-Site Study Communication, Professionalism and Teamwork Performance</u></td>
<td>Rubric Used
<table><tr><td>Grade</td><td>Points</td></tr><tr><td>F</td><td>0</td></tr><tr><td>D</td><td>1</td></tr></table></td>
<td>The Clinical On-Site Study employer feedback is a key indicator used by the program to assess methods used to train and prepare students for real world performance within the industry. The 2.5 Class Average shown in the</td>
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<tr>
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<td>Rubric Score of at least (2) in BET 240.</td>
<td>
<table>
<tr><td>C</td><td>2</td></tr>
<tr><td>B</td><td>3</td></tr>
<tr><td>A</td><td>4</td></tr>
</table>
Class Rubric Average Goal
2 Points or Higher
Class Average – 2.5
</td>
<td>rubric indicates that students were well prepared and competent with regards to Professionalism and Teamwork.

Evidence: Click Here</td>
</tr>
<tr>
<td>SLO 3: Utilize effective written communication and maintain medical record and equipment preventive maintenance forms.</td>
<td>To introduce students to the importance of proper documentation, labs and assignments in BET 241 requires students to submit a research paper work centered on Law and Legal Issues in the medical profession. This research must be presented in a particular format just as would when using a BMET Equipment Database.</td>
<td>Students participating in the concentration cohort of the BMET option (as a whole) will earn a <u>Law & Legal Research Final Draft Research Paper</u> Rubric Score of at least (2) in BET 241.</td>
<td>Rubric Used

<table>
<tr><td>Grade</td><td>Points</td></tr>
<tr><td>F</td><td>0</td></tr>
<tr><td>D</td><td>1</td></tr>
<tr><td>C</td><td>2</td></tr>
<tr><td>B</td><td>3</td></tr>
<tr><td>A</td><td>4</td></tr>
</table>
Class Rubric Average Goal
2 Points or Higher
Class Average – 2.9
</td>
<td>The assessment outcomes of BET241 indicates that students have a basic understanding of the different types legalities that exist within the profession. It also indicates that the students understand the importance of attention to detail with regards to research and documentation.

Evidence: Click Here</td>
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<td>SLO 4: Maintain effective verbal and nonverbal communication with health care providers, patients/clients, caregivers and the general public.</td>
<td>To introduce students to the importance of effective communication, BET 240 requires the student to interact with other healthcare givers, patients, and the general public in a professional manner.</td>
<td>Students participating in the concentration cohort of the BMET option (as a whole) will earn a <u>Clinical On-Site Study Communication, Professionalism and Teamwork Performance</u> Rubric score of (2) in BET 240.</td>
<td>Rubric Used

<table>
<tr><td>Grade</td><td>Points</td></tr>
<tr><td>F</td><td>0</td></tr>
<tr><td>D</td><td>1</td></tr>
<tr><td>C</td><td>2</td></tr>
<tr><td>B</td><td>3</td></tr>
<tr><td>A</td><td>4</td></tr>
</table>

Class Rubric Average Goal
2 Points or Higher
Class Average – 2.5</td>
<td>The program will use the results of this assessment as a gauge. Results above the midway point indicates that our methods of educational information delivery were successful. However, we are constantly looking at ways to improve. Results below the midway point of the rubric is an indication that warrants attention. This is where we investigate the why and make changes accordingly.

Evidence: Click Here</td>
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<td colspan="3"></td>
<td colspan="2">Submitted by: Eric Carwell</td>
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SLO 1: BET 240 Clinical On-site Study

Instructor	Eric Carwell	Jefferson State Community College						0 - 4		
Class CRN	30258	BET 240 Clinical On-Site Study								
Semester	Summer 2021	Biomedical Equipment Technology *Powering Dreams*								
	Enter 0, 1, 2, 3, or 4:	0 (Unacceptable), 1 (Poor), 2 (Developing), 3 (Good), 4 (Excellent), see Guide - Rubric Levels								
		Course Student Outcomes		Course Student Outcomes						
First Name	Last Name	**Clinical On-Site Study:** Student able to perform electrical safety via electrical safety analyzer. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Demonstrated the ability to troubleshoot, repair and perform preventative maintenance. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Communicated effectively and professionally with clients, colleagues and management. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Exhibited professionalism with regards to work habits, promtness and diligence. **Method Used To Assess** Clinical Internship Hours	Student Average	Final Grade (A=4, B=3, C=2, D=1, F=0)			
15	Class Avg.	3.2	2.5	2.5	2.5	2.7	3.7	0	0	0
		Electrical Safety	Troubleshooting	Communication	Professionalism	Overall				

SLO 2: BET 240 Clinical On-site Study

Instructor	Eric Carwell	Jefferson State Community College						0 - 4		
Class CRN	30258	BET 240 Clinical On-Site Study								
Semester	Summer 2021	Biomedical Equipment Technology *Powering Dreams*								
	Enter 0, 1, 2, 3, or 4:	0 (Unacceptable), 1 (Poor), 2 (Developing), 3 (Good), 4 (Excellent), see Guide - Rubric Levels								
		Course Student Outcomes		Course Student Outcomes						
First Name	Last Name	**Clinical On-Site Study:** Student able to perform electrical safety via electrical safety analyzer. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Demonstrated the ability to troubleshoot, repair and perform preventative maintenance. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Communicated effectively and professionally with clients, colleagues and management. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Exhibited professionalism with regards to work habits, promtness and diligence. **Method Used To Assess** Clinical Internship Hours	Student Average	Final Grade (A=4, B=3, C=2, D=1, F=0)			
15	Class Avg.	3.2	2.5	2.5	2.5	2.7	3.7	0	0	0
		Electrical Safety	Troubleshooting	Communication	Professionalism	Overall				

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SLO 3: BET 241 Law and Legal Issues

Instructor	Eric Carwell	Jefferson State Community College						0 - 4		
Class CRN	30695	BET 241 Law & Legal Issues								
Semester	Summer 2021	Biomedical Equipment Technology *Powering Dreams*								
Enter 0, 1, 2, 3, or 4: 0 (Unacceptable), 1 (Poor), 2 (Developing), 3 (Good), 4 (Excellent), see Guide - Rubric Levels										
		Course Student Outcomes		Course Student Outcomes						
Last Name	First Name	**Law & Legal Research:** Student demonstrated the ability to find resources and develop a research topic by finding potential sources. **Method Used To Assess** Source Submission	**Law & Legal Research:** Student demonstrated the ability to develop an abstract based on chosen topic. **Method Used To Assess** Abstract Submission	**Law & Legal Research:** Student successfully completed the body portion of research paper based on topic and abstract submitted. **Method Used To Assess** Body Submission	**Law & Legal Research:** Student successfully completed final draft of research paper based on topic and abstract submitted. **Method Used To Assess** Final Draft Submission	Student Average	Final Grade (A=4, B=3, C=2, D=1, F=0)			
14	Class Avg.	2.3	2.3	3.1	2.9	2.64	2.57	0	0	0
		Research Sources	Abstract	Body	Final Draft	Overall				

SLO 4: BET 240 Clinical On-site Study

Instructor	Eric Carwell	Jefferson State Community College						0 - 4		
Class CRN	30258	BET 240 Clinical On-Site Study								
Semester	Summer 2021	Biomedical Equipment Technology *Powering Dreams*								
Enter 0, 1, 2, 3, or 4: 0 (Unacceptable), 1 (Poor), 2 (Developing), 3 (Good), 4 (Excellent), see Guide - Rubric Levels										
		Course Student Outcomes		Course Student Outcomes						
First Name	Last Name	**Clinical On-Site Study:** Student able to perform electrical safety via electrical safety analyzer. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Demonstrated the ability to troubleshoot, repair and perform preventative maintenance. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Communicated effectively and professionally with clients, colleagues and management. **Method Used To Assess** Clinical Internship Evaluation	**Clinical On-Site Study:** Exhibited professionalism with regards to work habits, promtness and diligence. **Method Used To Assess** Clinical Internship Hours	Student Average	Final Grade (A=4, B=3, C=2, D=1, F=0)			
15	Class Avg.	3.2	2.5	2.5	2.5	2.7	3.7	0	0	0
		Electrical Safety	Troubleshooting	Communication	Professionalism	Overall				