**Unit Strategic Plan**

**2017- 2019**

**Name of Program/Department:** *Biomedical Equipment Technology*

The Mission of the Biomedical Equipment Technology Option at Jefferson State Community College is to prepare students to enter the field of medical equipment repair as competent, entry level technicians. This Option exists to supply the medical industry with qualified technicians that will maintain, calibrate and repair the equipment found in medical facilities and other areas that might require medical equipment repair. We are committed to accomplishing this mission while assisting students to achieve their goals.

**2016-2017 Accomplishments:**

1. Reduced student to machine ratio in Nida lab by resolving expansion card issues.
2. Purchased and upgraded a few of the medical devices needed for instructional purposes
* Centrifuges
* Defibrillator Analyzers
* Defibrillator
* Vital Signs Monitors
* Biomedical Test Simulators
* Tool Kits
* AAMI CBET Certification Preparation Software.
1. Established new clinical internship partners.
* GE Healthcare
* DCH Medical Center
* Grandview Medical Center
1. Department personnel attended the following training/conferences activities:
* 2017 AAMI Annual Conference

 **Unit Goals for 2017-2018**

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| **Unit Goals** | **Objectives** | **Method of Assessment** | **Additional Funding Requests** |
| **Goal 1**: Transform the Biomedical Equipment Technology Program Option at Jefferson State Community College to be recognized as the state’s premier provider of education with regards to this discipline.**Program Outcome**Program Satisfaction: At least 75% of graduates surveyed will report satisfaction with educational preparation.Employer Satisfaction - 80% of employers surveyed will indicate that graduates were adequately prepared for entry level positions.**Program Student Learning Outcome**Perform the duties of an entry-level Biomedical Equipment Technician required of the medical equipment repair industry. | 1. Purchase necessary equipment and supplies to provide high quality campus laboratory experiences
 | 1. Students report satisfaction with instruction methods and available resources via student surveys.
2. Employers will report that at least 80% of students graduating from the program know how to use standard test equipment and know how to test basic medical equipment via clinical internship evaluations.
 | $0.00: Use existing college internal resources to perform and analyze student and industry surveys. |
| **Goal 2:** Retain quality full-time and part-time instructors to ensure the option meets the need of the students.**Program Outcome**& **Program Student Learning Outcome**Stated in Goal 1 above. | 1. Maintain present full and part-time faculty.
2. Retain work study student to assist with administrative task as well as assist with lab and classroom preparation.
3. Provide Professional Development opportunities to train instructors on curriculum applicable technologies and teaching skills.
4. Provide CBET & ETA (DC & AC) Certification preparation for program students.
5. Keep class room instruction and PC technology current as supported by the college’s IT department.
 | 1. Obtain feedback from students via student evaluations.
 | 1. Salary per appropriate salary schedule to hire and/or maintain full-time and part-time instructors as needed based on class loads.
2. Salary per appropriate salary schedule to hire and/or maintain work study student.
3. $3200: Association for the Advancement of Medical Instrumentation (AAMI) Conference, Long Beach, CA June 1-4, 2018 – Conference Fees: $1100, Travel/Living: $1400.
4. $741: Association for the Advancement of Medical Instrumentation (AAMI) Institutional Membership.
5. $0.00. Use current AAMI CBET Certification Preparation Software and Nida Software installed on the computers in the Nida Lab (MT Building – Room 028)
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| **Goal 3:** Maintain the student laboratories with up-to-date instructional equipment in order to provide quality instruction.**Program Outcome**& **Program Student Learning Outcome**Stated in Goal 1 above. | 1. Purchase necessary equipment and supplies to provide high quality campus *laboratory experiences*.
2. Establish an *Infusion Pump Station*. This station will allow students to be better prepared to test, monitor and calibrate basic medical equipment such as the infusion pump, which is frequently used in hospitals and clinics.
3. Establish a *Bedside Patient Monitor Station*. This station will allow students to be better prepared to test, monitor, calibrate and repair basic medical equipment frequently used in hospitals and clinics.
4. Establish a *Ventilator Station*. This station will allow students to be better prepared to test, monitor and calibrate a highly specialized medical device such as the ventilator, which is frequently used in hospitals, clinics and EMS.
 | 1. Students satisfaction with available resources.
2. Sufficient technical equipment meets student and program outcomes.
 | 1. $2500: Routine lab/classroom supplies and materials. Electronic components, electronic kits etc...
2. $ 3649.47/Unit: Purchase (5) Infusion Pumps (With Stands). Program option does not currently have this equipment. Would allow for a 5:1 student to machine ratio. BET211
* $2895.25/Unit: Purchase (5) Infusion Pump Analyzers. Biomedical test equipment used to test infusion pumps. The goal for area hospitals is for each BMET to have a working knowledge of basic biomedical equipment as well as the test equipment needed to maintain it Will give the program a total of five. *Would allow for a 5:1 student to machine ratio.* BET234
1. $3250/Unit: Purchase (5) Bedside Patient Monitor. Basic piece of hospital lab equipment that the entry level biomed technician should know how to test. Will give the program a total of five. *Would allow for a 5:1 student to machine ratio.* BET211, BET234
2. $9950/Unit: Purchase (5) Portable Ventilators. Program option does not currently have this equipment. Would allow for a 5:1 student to machine ratio. BET211
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| **Goal 4:** Faculty and students have access to technology and classroom resources to achieve course and program outcomes**Program Outcome**& **Program Student Learning Outcome**Stated in Goal 1 above.. | 1. Purchase necessary equipment and supplies to provide high quality campus *lab experience*.
2. Purchase necessary equipment and supplies to provide high quality campus *class experience*.
3. Purchase necessary equipment and supplies to provide instructors with tools needed to support the needs and request of the students in an inviting atmosphere.

  | 1. Students report satisfaction with available resources.
2. Faculty report satisfaction with available technology and classroom/lab resources.
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**Unit Goals for 2018-2019**

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| **Unit Goals** | **Objectives** | **Method of Assessment** | **Additional Funding Requests** |
| **Goal 1**: Transform the Biomedical Equipment Technology Program Option at Jefferson State Community College to be recognized as the state’s premier provider of education with regards to this discipline.**Program Outcome**Program Satisfaction: At least 75% of graduates surveyed will report satisfaction with educational preparation.Employer Satisfaction - 80% of employers surveyed will indicate that graduates were adequately prepared for entry level positions.**Program Student Learning Outcome**Perform the duties of an entry-level Biomedical Equipment Technician required of the medical equipment repair industry. | 1. Purchase necessary equipment and supplies to provide high quality campus laboratory experiences
 | 1. Students report satisfaction with instruction methods and available resources via student surveys.
2. Employers will report that at least 80% of students graduating from the program know how to use standard test equipment and know how to test basic medical equipment via clinical internship evaluations.
 | $0.00: Use existing college internal resources to perform and analyze student and industry surveys. |
| **Goal 2:** Retain quality full-time and part-time instructors to ensure the option meets the need of the students.**Program Outcome**& **Program Student Learning Outcome**Stated in Goal 1 above. | 1. Maintain present full and part-time faculty.
2. Retain work study student to assist with administrative task as well as assist with lab and classroom preparation.
3. Provide Professional Development opportunities to train instructors on curriculum applicable technologies and teaching skills.
4. Provide CBET & ETA (DC & AC) Certification preparation for program students.
5. Keep class room instruction and PC technology current as supported by the college’s IT department.
 | 1. Obtain feedback from students via student evaluations.
 | 1. Salary per appropriate salary schedule to hire and/or maintain full-time and part-time instructors as needed based on class loads.
2. Salary per appropriate salary schedule to hire and/or maintain work study student.
3. $3200: Association for the Advancement of Medical Instrumentation (AAMI) Conference, June, 2019 – Conference Fees: $1100, Travel/Living: $1400.
4. $741: Association for the Advancement of Medical Instrumentation (AAMI) Institutional Membership.
5. $0.00. Use current AAMI CBET Certification Preparation Software and Nida Software installed on the computers in the Nida Lab (MT Building – Room 028).
6. $1118.86/Unit: Purchase (5) Laptop computers. The program currently owns and has on order test equipment that requires a pc to perform certain task. This being the norm across the biomedical technology industry; the goal is to insure students have a good working knowledge of how to interface and use these devices with their pc counterparts. BET211, BET234. The units will also be used to introduce students to basic coding as well. BET233. The program does not have this type of equipment. This will give the program an approximate 2:1 student to machine ratio.
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| **Goal 3:** Maintain the student laboratories with up-to-date instructional equipment in order to provide quality instruction.**Program Outcome**& **Program Student Learning Outcome**Stated in Goal 1 above. | 1. Purchase necessary equipment and supplies to provide high quality campus *laboratory experiences*.
	1. Acquire digital pressure meters to be used during certain labs that require pressure verification.
	2. Acquire *Ventilator Testers.* This tester will be used during certain labs to verify the calibration of lab ventilators.

 * 1. Update equipment in the *Defibrillator Training Station.* This station allows students to be better prepared to test, monitor, calibrate and repair defibrillators.
	2. Update the equipment in the *Electrical Safety Analyzer Training Station.*
1. *Establish an Augmented Reality Training Station.* Thisstation will be used during class room lecture as well as in the lab environment.
	1. Purchase *Annual Licenses* needed for augmented reality courses included.
2. Purchase 9 additional Nida stations, which will give the department a total of 27 stations. This expansion will allow for a normal class size of 25 students. Current number of units does not sufficiently accommodate 25 students.
	1. Relocate the current 18 Nida stations in the Manufacturing & Technology Building Room 028 to Class Room 021 (George Layton Building). This move will allow for the expansion of the work stations numbers from 18 to 27.
	2. Purchase 9 desktop computers to accommodate the new Nida trainers.
3. Implement the use of a medical equipment database. Students need to be familiar with how to use an equipment database as it will be required of them in the field. It will be used here to track medical equipment in our lab as well as medical equipment in other disciplines such as Nursing & EMT as we will be looking to provide service to the equipment they house in the near future.
 | 1. Students satisfaction with available resources.
2. Sufficient technical equipment meets student and program outcomes.
 | 1. $2500: Routine lab/classroom supplies and materials. Electronic components, electronic kits etc...
	1. $132.75/Unit: Purchase (5) Digital Pressure Meter. Standard piece of BMET test equipment that the entry level biomed technician should know how to use. Will give the program a total of five. Would allow for a 5:1 student to machine ratio. BET211, BET234
	2. $4997/Unit: Purchase (5) Ventilator Testers. Standard piece of BMET test equipment that biomedical equipment technicians use to verify ventilator calibration and operation. The program currently owns five medical ventilators. However, it does not have the devices needed to accurately analyze and verify the accuracy of the ventilators. BMET’s are required to use a calibrated test device to verify accuracy. Will give the program a total of five. Would allow for a 5:1 student to machine ratio. BET211, BET234
	3. $2255.57/Unit: Purchase (4) Defibrillators. The defibrillator is a standard piece of medical equipment frequently used in hospitals to correct abnormal heart arrythmias in patients. Will give the program a total of five units of this type. Would allow for a 5:1 student to machine ratio. BET211, BET234
	4. $2765/Unit: Purchase (5) Electrical Safety Analyzers. The electrical safety analyzer is a standard piece of test equipment frequently used by BMET’s to verify the electrical integrity of medical equipment to be used on patients. It is essential that BMET students enter the work force with knowledge of how to perform electrical safety test. Will give the program a total of five units of this type. Would allow for a 5:1 student to machine ratio. BET211, BET234
2. $5335/Unit: Purchase (4) AR/VR Training Stations. These units will be used to enhance the student’s classroom and lab experience by offering a 3 dimensional view of many of the topics covered in biomedical equipment technology such as: EKG, The anatomy of the heart and lungs, the brain as well as other parts of the body; MRI, CAT Scan and X-Ray; This unit also has a developer’s kit that allows for the creation of individual augmented reality projects. This equipment will also serve as a great recruiting tool for future students.
	1. $4060: Purchase Annual Curriculum Licenses for all (4) units. There are four courses identified that will facilitate and enhance instruction in several of the BMET courses offered. Would allow for a 5:1 student to machine ratio. BET211, BET222, BET233, BET234
3. $106,142: Purchase 9 Nida trainers and peripherals to be installed in Room 021B at the George Layton Building. The Nida trainers are the industry standard with regards to training students in the area of basic electronics, digital electronics, basic electricity all of which are a huge part of the Biomedical Technology Discipline. Joint plan between Manufacturing and Biomedical programs, move existing NIDA equipment in JSM 228 to GLB 021B increasing number of total stations to 27. ELM200, ELM201, ELM202, ELM205 and ELM206S.
	1. $150/Unit. Purchase Annual Curriculum Licenses for (30) seats. These courses facilitate and enhance instruction in several of the courses offered. Would allow for a 1:1 student to machine ratio. ELM200, ELM201, ELM202, ELM205 and ELM206S.
	2. $500: Maintenance to relocate current Nida Equipment from Manufacturing & Technology Building RM028 to GLB-RM021B
	3. $8909.64: Purchase 9 desktop computers. Each Nida unit purchased will require one computer.
4. $0.00: Equipment database *(Medimizer)* used by many hospitals and biomed companies across the nation to track medical equipment repair dates and cost, PM schedules and location. *Medimizer* is a web-based database software that will be supplied at no cost. Will need a network connection. This database could possibly be used with Nida computers to offset the cost of acquiring computers just for the database.
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| **Goal 4:** Faculty and students have access to technology and classroom resources to achieve course and program outcomes**Program Outcome**& **Program Student Learning Outcome**Stated in Goal 1 above. | 1. Purchase necessary equipment and supplies to provide high quality campus *lab experience*.
2. Purchase necessary equipment and supplies to provide high quality campus *class experience*.
3. Purchase necessary equipment and supplies to provide instructors with tools needed to support the needs and request of the students in an inviting atmosphere.

  | 1. Students report satisfaction with available resources.
2. Faculty report satisfaction with available technology and classroom/lab resources.
 | 1. $15,000: Update Room 023 - George Layton Building.
	1. $8008: Replace old outdated class room furniture. Replace with new 30 x 60 tables and stackable chairs.
	2. Replace old severely stained ceiling tiles.
	3. Paint Room.
	4. Replace old blinds.
	5. Replace old floor tiles.
	6. $7422.87: Install Smart Board. This board is essential for class room instruction as it will allow for audio visual instruction, appeal to all learning modalities and allow from board to student device file sharing and student device to board engagement. The board will also be used as an aid to prepare student for CBET and ETA Certification.
2. $15,000. Update Room 021B - George Layton Building.
	1. $4865.94: Install 27 new lab stools for Nida System.
	2. Remove carpet and replace with tile.
	3. Replace old severely stained ceiling tiles.
	4. Paint Room.
	5. Replace old blinds
	6. Replace old floor tiles.
3. $15,000: Update Room 012, 12A and 012B - George Layton Building.
	1. Remove carpet and replace with tile. Install new tile. Rooms: 012, 012A, 012B.
	2. Replace old severely stained ceiling tiles.
	3. Paint Rooms.
	4. Remove old baseboard – Install new baseboard. Rooms: 012, 012A and 012B.
	5. Replace ceiling molding (the wall that connects the two offices). Rooms: 012A & 012B
	6. Install blinds. Rooms: 012A & 012B.
	7. Paint walls (Touch up). Rooms: 012, 012A, 012B.
4. $15,000: Update Room 006 - George Layton Building. (2020-2022 Plan Year)
	1. $5399.80: Replace old outdated stools.
	2. $200: Remove Chalk Board and replace with White Board.
	3. Remove carpet and replace with tile.
	4. Replace old severely stained ceiling tiles.
	5. Paint Rooms.
	6. Remove old baseboard – Install new baseboard.
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