**College of Micronesia-FSM**
**Program Modification Request**

| **Program**: | **Initiator**: |
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| Associate of Applied Science Degree in Building Technology major in Electrical | Cirilo B. Recana – Electrical Instructor |

**Suggested revisions and justifications:**

1. Restate the program description to align with new developments in the field and proposed changes described below, and to shift focus to the development of skilled manpower.

2. Change the program major title from *AAS Building Technology major in Construction Electricity (BT major in CE)* to **AAS Building Technology major in Electrical (BTE)**. This will give students broader scope in electrical concepts and skills that is more focused on the electrical trade competencies and is not limited to residential wiring.

3. Revise the PSLOs and curriculum study (CSLOs, course structure, and course credits) to enhance hands-on training in order to provide competitively- skilled graduates for the workforce and ensure that the program is current with changes in the trade.

4. There are currently 12 PSLOs for the Building Technology program. The first six PSLOs are covered and assessed in the Certificate program. From there students can continue, upon passing COMET, to the AAS degree in Building Technology which covers the remaining six PSLOs. It is proposed to reduce the PSLOs to five competency based rather than the present content based.

5. Based on previous and current years of program reviews and assessment results (https://www.comfsm.fm/?q=building-tech-2020), program instructor proposed modification for improvement that will include upgrading of the curriculum for competencies and standards in the electrical trades. The proposed revisions will also ensure implementation of best practices and servicing to enhance students skills and meet the current requirement of the nearby Pacific islands certification in practicing renewable energy technology (RET).

   The program modification proposed is to focus more on courses with hands-on time. The plan is to replace the refrigeration courses (VEM 105 & VEM 113) with a Renewable Energy course (Solar Photovoltaic Technology) to keep abreast with the current technology and skills in-demand in the Regional Pacific Technical Vocational Certification (Pacific TVET). Offering this course (Solar PV) will not require any additional budget on the college, training equipment is already available; retain VEE 222 Discrete Device II and VEE 266 Rotating machinery as required major courses. Students in the program can use the extended hours to perform practical maintenance services for the College and the community to enhance employment skills as well as to promote the program through the proposed Community Appliance and Wiring Servicing.

   Employment data from the 2016 to 2020 program review showed more than 60% of graduates were employed in fields unrelated to their program of study. One of the reasons was the marginal practical graduate skills acquired from the current program.

6. It is further proposed to change the existing course code for all AAS Building Technology major in Construction Electricity courses from Vocational Education Mechanics (VEM) to AAS Building Technology major in Electrical courses (BTE) to avoid confusion and to separate the program course offerings from those of Construction Electricity, Refrigeration and Electronics. This proposed change will again bring more focus to the program.

   With all the proposed changes, students in the program will be assured graduation in a timely manner and equipped with necessary skills and competencies required in the electrical field.

   The table below shows the comparisons of AAS Building Technology current and proposed modification request.

**Summary of the Current and Proposed AAS Building Technology Program**

| | **Current Program (AAS-BT major Construction Electricity)**<br>Source: COM-FSM Catalog | **Proposed Program (AAS-BT major Electrical)** |
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| **Mission (no changes)** | The AAS in Building Technology – Electrical is dedicated to the college mission in providing academic, career and technical educational programs. This program prepares students for employment in the electrical trades by educating and developing their skills to enter a competitive skilled workforce. | The AAS in Building Technology – Electrical is dedicated to the college mission in providing academic, career and technical educational programs. This program prepares students for employment in the electrical trades by educating and developing their skills to enter a competitive skilled workforce. |
| **Description** | The Building Technology major Construction Electricity offers academic course work, technical skills training and practical experience to prepare the students for position as Electrician in this field. Students are introduced to theory, installation and practices in troubleshooting residential circuits, motor circuits and motor control circuits. | *The AAS in Building Technology - Electrical offers academic course work necessary for more advanced study and experiential development of skills in the electrical trade. Students are introduced to theory, installation practices, troubleshooting and maintenance of solid-state devices, electrical machines, motors, controls and solar photovoltaic systems.* |
| **Goals** | The goal of the program is to (1) Demonstrate the skills that are needed to pursue a career in Building Technology as electrician in the field of construction electricity.<br>(2) Demonstrate intellectual skills and critical thinking skills to become effective learners and competent workforce. | *This program is designed to develop technical skills and practical experience to prepare students for positions as electrical technicians. Students will be introduced to theory, wiring practices, installation, troubleshooting and maintenance of electronic devices, electrical machines, motor controls and solar photovoltaic (PV) systems.* |
| **Program Learning Outcomes** | 1. Practice safety and occupational health procedures in the work place.<br>2. Use electricity hand and power tools competently.<br>3. Test electrical equipment.<br>4. Interpret schematic wiring diagrams and waveforms.<br>5. Determine the amount of load per circuit. | *1. Demonstrate proper use and maintenance of various hand and power tools used by electricians that comply with industry safety standards.*<br>*2. Develop knowledge and skills through experimentation and calculation of electrical quantities of electrical circuits.*<br>*3. Demonstrate knowledge and skills required in electrical wiring systems in* |

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| | 6. Install residential wiring circuits according to given specification and plan.<br>7. Identify and interpret basic solid state (electronics) symbols and circuit schematics commonly found in the electrical industry.<br>8. Analyze circuit operations on basic motors.<br>9. Perform basic troubleshooting on basic motors.<br>10. Install and perform basic maintenance on air-conditioning units.<br>11. Interpret and install circuits according to rules and regulations of the National Electric Code book.<br>12. Install and analyze basic motor control circuits. | *compliance with current electrical codes and standards.*<br>*4. Demonstrate competency in repair, installation and maintenance of electrical machines, solar photovoltaic systems and solid-state devices.*<br>*5. Demonstrate ability to perform installation and troubleshooting of motors and controls.* |
| **Program Requirements** | **General Education Requirements: 31 cr.**<br>ESL 050 Technical English (3) or SS 100 World of Work (3); MS 104 Technical Math I (4); MS 106 Technical Math II (4); BU 097 Introduction to Entrepreneurship (3); CA 100 Computer Literacy (3); EN 123 Technical Communications (3); CA 100 Computer Literacy (3);<br>SC 130 Physical Science w/lab (4);<br>Humanities (3 credits)<br>Any Course in art, music, history, literature, philosophy or language (3);<br>Exercise Sports Science (1 credit). | **General Education Requirements: 28 cr.**<br>*ESL 089 Reading V (3); ESL 099 Writing V (3); MS 094 Introduction to Technical Math (4) CA 095 Computer Literacy (3)*<br>*EN 123 Technical Communication (3); Science with Lab (4); MS 104 Technical Math I (4); CA 100 Computer Literacy (3); Exercise Sport Science (1)* |
| | **Technical Requirements: 21 cr.**<br>VEM 102 Electrical/Electronic Drawing and Sketching (1.5); VEM 103 Basic Electricity I (4); VEM 104 Basic Electricity II (5); VEM 110 Workshop Fabrication/Hand and Power Tool Skills (3); VEM 111 Electrical Wiring I (3); VEM 112 Electrical Wiring II (3); VSP 121 Industrial Safety Electrical/Electronics (1.5)<br><br>**Major Requirements: 23 cr.**<br>VEE 110 Discrete Devices I (3); VEE 266 Rotating Machinery (3); VEE 222 Discrete Devices II (3); VEM 105 Basic Electricity for AC (3);<br>VEM 113 Basic Refrigeration I (4);<br>VEM 212 National Electrical Code (3); VEM 240 Industrial Wiring (4)<br><br>**Total Requirements: 71 credits** | **Technical Requirements: 27 cr**.<br>*CE 102 Electrical Drawing and Sketching (3); CE 103 Basic Electricity I (3); CE 104 Basic Electricity II (3); CE 110 Workshop Practices (5); CE 111 Electrical Wiring I (3); CE 112 Electrical Wiring II (3); CE 121 Workshop Health and Safety (3); CE 150 Cooperative Education (4).*<br><br>**Major Requirements: 17 cr.**<br>*BTE 212 National Electrical Code (3); BTE 230 PV: Design Principles and Installation (4); BTE 240 Industrial Wiring: Motor Control (4); VEE 222 Discrete Device II (3); VEE 266 Rotating Machinery (3).*<br><br>**Total Requirements: 72 credits** |
| | **Year 1** | ***Year 1*** |

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| **Suggested Schedule** | **Fall Semester (17 cr.)**<br>ESL 050 Technical English or<br>SS100 World of Work (3)<br>MS 104 Technical Math I (4)<br>VEM 103 Basic Electricity I (4)<br>VEM 110 Workshop Fabrication (3)<br>VSP 121 Industrial Safety (1.5)<br><br>**Spring Semester (18 cr.)**<br>CA 100 Computer Application (3)<br>MS 106 Technical Math II (4)<br>VEM 104 Basic Electricity II (5)<br>VEM 111 Electrical Wiring I (3)<br>VEM 112 Electrical Wiring II (3) | ***Fall Semester (20 cr.)***<br>*ESL 089 (3); ESL 099 (3); CE 102 (3); CE 103 (3); CE 110 (5); CE 121 (3).*<br><br>***Spring Semester (24 cr.)***<br>*CA 095 (3); CE 104 (3); CE 111 (3); CE 112 (3); MS 094 (4)* |
| | **Year 2**<br>**Fall Semester (16 cr.)**<br>VEE 110 Discrete Device I (3)<br>VEE 266 Rotating Machinery (3)<br>EN 123 Technical Communication (3)<br>SS 150 History of Micronesia (3)<br>SC ### Science with Lab (4)<br><br>**Spring Semester (18 cr.)**<br>VEE 222 Discrete Device II (3)<br>VEM 105 Basic Electricity for AC (3)<br>VEM 113 Refrigeration II (4)<br>VEM 212 NEC (3)<br>VEM 240 Industrial Wiring (4)<br>ESS ### Exercise Sports (1) | ***Year 2***<br>***Fall Semester (15 cr.)***<br>*EN 123 (3); CA 100 (3); VEE 222 (3); VEE 266 (3); BTE 212 (3)*<br><br>***Spring Semester (17 cr.)***<br>*MS 104 (4); Science with Lab (4); ESS (1); BTE 230 (4); BTE 240 (4).* |
| | **Summer Semester**<br>**None** | ***Summer Semester (4 cr.)***<br>*CE 150 Cooperative Education (4)* |

**Summary of consultation within the division:**
CTEC Instructional Coordinator reviewed this proposal with the program instructor and then presented to CTEC Dean. They are all in full support of the proposed changes to the program.

**Summary of consultation with other campuses where this program is offered:**
BT program is not available or offered at any other campuses except CTEC.

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| **Division Chair/Instructional Coordinator/Director signature:** | **Date submitted to CC:**<br>**November 16, 2022** |
| **Decision reached by CC:** [ X ] **Approved**<br>[ ] **Disapproved** | |
| **If not approved, reasons for disapproval:** | |
| **CC Chair signature:** | **Date submitted to VPIA:** |

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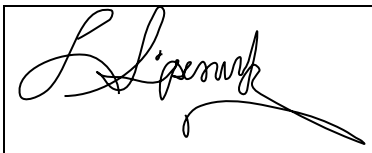
|  | **December 26, 2022** |
| **VPIA signature:**  | **Date submitted to EC:** 9/13/23 |
| **EC Chair signature:** | **Date signed/or date submitted for BOR approval, if required:** |
| | **Date approved by BOR, if required:** |