Certificate of Technical Skills – Electrician Helper

THAT
The Board of Regents of Higher Education authorizes the University of Montana to add a Certificate of Technical Skills of Electrician Helper within the Energy Technology Program.

EXPLANATION
We are requesting to add a Certificate of Technical Skills (CTS) in Energy Technology entitled “Electrician Helper” to accommodate a growing industry demand for individuals qualified to assist licensed electricians in their daily job routines. As part of the DOL TAACCCT SWAMMEI project planning and industry consulting, this is one of the target careers that is likely to be in high demand as a growing number of homes and businesses require new electrical systems and electrical system upgrades.

ATTACHMENTS
- Level I Program Form
- Curriculum Proposal
- Course List
Level I Program Form

I  Summary of Proposed Changes

<table>
<thead>
<tr>
<th>Department/program</th>
<th>Applied Computing and Electronics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary</td>
<td>We propose to offer a new “Certificate of Technical Skills” entitled “Electrician Helper” This career associated with CIP codes 15.0399 and 47.0101 has been deemed to be in high demand.</td>
</tr>
</tbody>
</table>

II  Endorsements and Approvals

Please obtain approval from the Program Chair/Director, the Dean and the Associate Provost.

<table>
<thead>
<tr>
<th>Requestor: B.E. Layton</th>
<th>Phone: x7865</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature</td>
<td>Date</td>
</tr>
<tr>
<td>Program Chair/Director:</td>
<td>9/29/14</td>
</tr>
<tr>
<td>Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>

Other affected programs:

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

Are other departments/programs affected by this modification because of:

(a) required courses incl. prerequisites or corequisites,  
(b) perceived overlap in content areas  
(c) cross-listing of coursework  

NO

III  Type of Level I Proposal (please check the appropriate space)

<table>
<thead>
<tr>
<th>Proposed Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Re-titling existing majors, minors, options, or certificates</td>
</tr>
<tr>
<td>(b) Eliminating existing majors, minors, or options. (submit with BOR program termination checklist)</td>
</tr>
<tr>
<td>(c) Adding new minors or certificates where there is a major*</td>
</tr>
<tr>
<td>(d) Adding new minors or certificates where there is an option in a major*</td>
</tr>
<tr>
<td>(e) Departmental mergers and name changes</td>
</tr>
<tr>
<td>(f) Program revisions – for minor modifications use the program modification form*</td>
</tr>
<tr>
<td>(g) Distance or online delivery of previously authorized degree or certificate program</td>
</tr>
<tr>
<td>(h) Adding option within an existing major or degree *</td>
</tr>
<tr>
<td>(i) Eliminating organizational units such as departments, divisions and colleges or schools *</td>
</tr>
<tr>
<td>(j) Consolidating existing programs and/or degree *</td>
</tr>
<tr>
<td>(k) New certificate of 29 or fewer credits</td>
</tr>
</tbody>
</table>

*Requires BOR Curriculum Proposal Form submitted to the Provost’s Office (refer to http://www.umt.edu/provost/faculty/catalog/LevelI/default.php)

IV  Catalog Language

If you are proposing a change to an existing program or major, please cut and paste the requirements as they appear in the current catalog below.

www.umt.edu/catalog

Please provide the proposed copy as you wish it to appear in the catalog. The Electrician Helper Certificate of Technical Skills prepares students for employment in the electrical industry. With an increased demand for trained electricians to work in the maintenance, installation, and service of residential, commercial and industrial electrical systems this certificate has the potential to provide a pathway to career opportunities in both conventional and emerging fields such as photovoltaics, wind, and other renewable energy technologies. Students may be required to purchase tools and books.
Please **explain/justify** the new proposal or change. ✅

Additionally, we are compelled to offer this new 16-credit certificate under our current $25M Department of Labor Trade Adjustment Act Community College Career Training (TAACCCT) grant entitled Strengthening Workforce Alignment in Montana’s Manufacturing and Energy Industries (SWAMMEI). Please see attached courses for full details.

<table>
<thead>
<tr>
<th>What other programs are affected by your proposal?</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtain signatures as requested below.</td>
<td></td>
</tr>
</tbody>
</table>

V **Department Summary** Required if several proposals are submitted. In a separate document list program title and proposed change for all proposals. See attached.

VI **Copies and Electronic Submission** After all signatures have been obtained submit the signed original and electronic file to the Faculty Senate Office, UH 221.

7/13

Revised
# TIER I: Electrician Helper (available online)

- **ETEC 105** DC Circuit Analysis  
  3 cr.
- **ETEC 106** AC Circuit Analysis  
  3 cr.
- **M 111** Technical Mathematics  
  3 cr.
- **ETEC 120** NCCER Core and NCCER Electrician Level I  
  4 cr.
- **SET 102** Safety and Rigging (incl OSHA 10)  
  3 cr.

**Total** 16 credits

## ETEC 105 - DC Circuit Analysis

An introduction to direct current (DC) and analysis of series, parallel, and series-parallel circuits. Topics include electrical quantities, units of measurement, measurement instruments, resistors, current, voltage, power, energy, network theorems, equivalent circuits, magnetism, and electromagnetism. Laboratory experiments include circuit analysis; the proper use of measurement equipment and techniques; and troubleshooting.

4.000 Credit hours  
**Levels:** Undergraduate  
**Schedule Types:** Online or Face-to-Face Spring or Autumn

## ETEC 106 - AC Circuit Analysis

Analysis of alternating current (AC) circuits and the behavior of capacitors, inductors, reactance, impedance, transformers, and signal filters. Laboratory experiments include circuit analysis, the use of proper measurement equipment, and troubleshooting.

3.000 Credit hours  
**Levels:** Undergraduate  
**Schedule Types:** Online or Face-to-Face Spring or Autumn

## M 111 - Technical Mathematics

Designed to provide the mathematical background necessary for success in the industrial areas. Topics covered include percent, ratio proportion, formula evaluation, basic algebra and geometry concepts, trigonometry, measurement, statistics, and graphing. markdowns, inventory turnover, and other basic formulas.

3.000 Credit hours  
**Levels:** Undergraduate  
**Schedule Types:** Online or Face-to-Face Spring or Autumn

---

C:\USERS\BRADLEY.LAYTON\DOCUMENTS\BLAY GRANTS\2013\04 APRIL DOL TAACCCT\STACKABLE CREDENTIALS MODEL FOR ET\TIER I ELECTRICIAN'S HELPER\TIER 1 ELECTRICIAN HELPER V9.DOCX  9/29/2014 4:50 PM
**NCCER Level I – Electrician’s Helper I & NCCER Core**

Orientation to the Electrical Trade; Electrical Safety; Introduction to Electrical Circuits; Electrical Theory; Introduction to the NEC; Device Boxes; Hand Bending; Raceways and Fittings; Conductors and Cables; Basic Electrical Construction Drawings; Residential Electrical Services; Electrical Test Equipment.

The NCCER Core Curriculum is a prerequisite to all other Level 1 craft curriculum. Its modules cover topics such as Basic Safety, Communication Skills and Introduction to Construction Drawings. Completing this curriculum gives the trainee the basic skills needed to continue education in any craft area he or she chooses.

4.000 Credit hours

**Levels:** Undergraduate  
**Schedule Types:** Online or Face-to-Face Spring or Autumn

---

**SET 102 Safety & Rigging with OSHA 10 – Occupational Safety and Health Administration**

Promotes safety culture through peer training. Training is intended to be participatory, using hands-on activities. Trainers are able to tailor the training topics based on specific needs of their audience. Outreach training content includes hazard recognition and avoidance, workers’ rights, employer responsibilities, and how to file a complaint; it emphasizes the value of safety and health to workers, including young workers. Safe Chemical Handling

3 Credit hours

**Levels:** Undergraduate  
**Schedule Types:** Two five-hour Face-to-Face sessions Spring or Autumn

---

*After successful completion of the coursework, students would either enter into an apprenticeship, internship, seek employment, or move on to higher education.

STACK 2: CAS in Energy Technology or related field

STACK 3: AAS in Energy Technology or related field
1. Overview

The Applied Computing and Electronics Department Energy Technology Program proposes to offer a new "Certificate of Technical Skills" entitled "Electrician Helper." This career associated with CIP codes 15.0399 and 47.0101 has been deemed to be in high demand.

2. Provide a one paragraph description of the proposed program. Be specific about what degree, major, minor or option is sought.

The certificate is comprised of five courses, two of which exist already and three of which we are proposing to create. This CTS is designed to be completed in a single semester, but can also be completed over multiple semesters to accommodate various learning styles and student schedules.

3. Need

A. To what specific need is the institution responding in developing the proposed program?

We are responding to a growing need for certified workers in the electrical fields and have partnered with both NCCER and OSHA.

B. How will students and any other affected constituencies be served by the proposed program?

We plan to offer a portion of this certificate online in conjunction with our other TAACCCT SWAMMEI consortium colleges.

C. What is the anticipated demand for the program? How was this determined?

We expect to see five to twenty students enroll in this program per year. This was based on conversations with local electrical contractors and industry surveys conducted as part of our DOL grant application.

4. Institutional and System Fit

A. What is the connection between the proposed program and existing programs at the institution?

As can be seen from the attached overview, two core courses, ETEC 105 and ETEC 106 form the backbone of this certificate, with Technical Mathematics, NCCER and SET 102 Safety and Rigging completing the 16-credit suite.

B. Will approval of the proposed program require changes to any existing programs at the institution? If so, please describe.

No, this has no effect on either the AAS or the CAS currently offered in Energy Technology.

C. Describe what differentiates this program from other, closely related programs at the institution (if appropriate).

This certificate is unique.
D. How does the proposed program serve to advance the strategic goals of the institution?

1. This certificate will strengthen our ties with local electrical contractors as we “Partner for Student Success,” by preparing them for internships, apprenticeships, and careers in the electrical industries.
2. This certificate will also provide a pathway towards “Education for the Global Century” which will see electricity and electronics become ubiquitous throughout the planet.
3. As there will be many hands-on learning experiences for students pursuing this certificate, we will create a “Dynamic Learning Environment.”
4. By providing this one-semester opportunity for students, it will allow us to fine-tune the Energy Technology Program as part of its “Planning-Assessment Continuum.”

E. Describe the relationship between the proposed program and any similar programs within the Montana University System. In cases of substantial duplication, explain the need for the proposed program at an additional institution. Describe any efforts that were made to collaborate with these similar programs; and if no efforts were made, explain why. If articulation or transfer agreements have been developed for the substantially duplicated programs, please include the agreement(s) as part of the documentation.

There is a similar certificate offered at FVCC, but due to the hands-on nature of this certificate, it is preferable to offer it locally.

5. Program Details

A. Provide a detailed description of the proposed curriculum. Where possible, present the information in the form intended to appear in the catalog or other publications. NOTE: In the case of two-year degree programs and certificates of applied science, the curriculum should include enough detail to determine if the characteristics set out in Regents’ Policy 301.12 have been met.

Apparently since this newly created Certificate of Technical Skills (CTS) does not meet the characteristics of 301.12.C.2, it must be reviewed by the deputy commissioner for academic and student affairs. We are thus requesting an exception under the Department of Labor Trade Adjustment Act Community College Career Training grant under which we are currently acting. Depending on the success of this education model, we may or may not request to keep this model intact beyond the performance period.

B. Describe the planned implementation of the proposed program, including estimates of numbers of students at each stage.

We plan to begin offering this certificate in Spring 2015. We have identified an instructor for all five courses and have already recruited two students and expect there to be at least five by Spring 2015 with an expected matriculation of ten per year.

6. Resources
A. Will additional faculty resources be required to implement this program? If yes, please describe the need and indicate the plan for meeting this need.

Yes. We will hire an OSHA specialist to teach the Safety and Rigging course. DOL funding will cover this expense. Energy Technology Program Director, Bradley Layton is being trained to administer the NCCER course and will likely collaborate with other DOL TAACCT consortium faculty to deliver this online.

B. Are other, additional resources required to ensure the success of the proposed program? If yes, please describe the need and indicate the plan for meeting this need.

We will likely use our existing Mobile Wind and Solar trailer to deliver a portion of the NCCER course to consortium schools such as Little Big Horn. This expense will be covered during the DOL funding period with the hope that LBH College will be in a position to purchase our trailer and continue the teaching on their own once DOL funding has expired.

7. Assessment
   How will the success of the program be measured?

As part of the SWAMMMEI project, grant staff will track the following outcome measures for each program: annual graduation rate for all students by program; employment rate of program completers by program; employment retention rate of completers, one year following program completion, by program; average earnings of completers, one to three years following program completion, by program; transfer rate for program that have facilitating transfers as a substantial part of their mission; total number of participants employed at enrollment who receive a wage increase post-enrollment; total number of participants retained in employment after grant-funded program of study completion; total number of participants employed after grant-funded program of study completion; total number of participants enrolled in further education after grant-funded program of study completion; total number of participants earning credential; total number of participants completing credit hours; total number of participants still retained in their program of study or another TAACCCCT-funded program; total number of participants who have completed a TAACCCCT funded program, and; total unique participants served.

Success for grant purposes will be based upon the number of students enrolling in, completing, obtaining employment and retained in employment as per the outcome estimates included in our approved grant application.

For purposes of long-term success, the newer certificate program data will be compared to previous CAS/AAS completion-rate, placement-rate, wage-rate, employment-retention to assess if the new mechanism is leading to improved labor market outcomes for students.

8. Process Leading to Submission
   Describe the process of developing and approving the proposed program. Indicate, where appropriate, involvement by faculty, students, community members, potential employers, accrediting agencies, etc.
This curriculum was the result of at least four planning meetings with DOL TAACCCT SWAMMEI consortium members including Matt Springer, TAACCCT SWAMMEI Director, Vida Wilkinson, Missoula College TAACCCT SWAMMEI Principal Investigator, Penny Jakes, Missoula College Applied Computing and Electronics Department Chair, Bruce Gottwig, Great Falls Community College Director of Business, Trades and Technology, Francisco Saldivar, Instructor of Sustainable Energy Technology at City College, and Mickey Lyngholm, Workforce Navigator DOL TAACCCT SWAMMEI Missoula College. The curriculum was also discussed with local potential employers such as Satic, Energetechs, McKinstry etc. ANSI-IREC is the accrediting agency that will ultimately approve the curriculum.