Year- End Report
2013-2014

Department: Applied Technology
903/923

Electrical Controls Engineering Technology

Electrical Controls/Mechatronics

Document Prepared By:

Michael Kiss
Department Information

**Annual Updates**

**Review & Documentation:**

**Current year goals & outcomes**

1. Update curriculum for EL161, EL262, EL201 and EL204
2. Add lab equipment and update curriculum in EL201 in Grand Rapids
3. Update Holland modules with Windows 7 compatible software.
4. Begin offering degree and certificate in Controls and Mechatronics.

All current year goals were completed as planned. Curriculum in all locations are now using the same equipment and curriculum, this has helped the consistency of the program. All courses in the plan were updated with new materials and labs. Programs in Holland were updated to Windows 7. Programs were begun in Mechatronics and Controls. One student graduated with the Mechatronics/Controls certificate.

**Goals for next year**

*Increase awareness of new programs and classes, both internally and externally.*

Add a fourth tenured faculty position, the program had 5 full time tenured faculty in 2008-2009, in the fall of 2014, there will be 3. This is not an adequate amount to service the programs.

There will be a continued effort to recruit students and advising to increase graduation rates.

**Internal collaborations and partnerships**

Working with admissions and enrollment center to assist with student recruitment. Working with the counseling department to assist student in the programs.

**External collaborations and partnerships**

Partnering with the area medical institutions to develop medical repair class to be offered winter 2015.

Working with Ferris State University to articulate the 903 and 903 program into FSU, giving student an easier transfer in the BS program at FSU. The programs at FSU are not approved at this time.

Departmental needs for support from other departments within the college Admissions, and any student recruitment efforts.
Program accreditation Updates
N/A

Description of departmental advising plan and outcomes
Students are advised on class selection the week prior to the enrollment periods for all semester, during class time. Early enrollment is encouraged, to increase section management efficiency. The department will take additional time at the end of each semester to advise students on course development plan.

Departmental professional development activities
The department met with Paula Sullivan in the fall semester. Paula highlighted the FPE process and took the department through their requirements. During the winter meeting, Jill Woller-Sullivan met with the department to update them on new degree requirements, the Michigan Transfer Agreement and other student counseling issues. Faculty were appreciative of the information.

Tom Street will be attending training on Lab View the summer of 2014.

Student Awards
Stosh Dexter received a $1000.00 scholarship from the Power for America trust.

Other department updates
The labs are in the process of renovation, should be completed before summer start up.
As a new program, there are no new updates this year.
Faculty & Staff

**Faculty & Staff Annual Updates**

Professional Development Activities
Tom Street will attend Lab View training summer 2014.

EOL/Release Time Work
N/A

Faculty & Staff Accomplishments/Awards
Jonathan Larson completed his Master’s degree from Kettering University.

Faculty Development for Upcoming Year
Jonathan Larson will be taking over as Applied Technology department head.

<table>
<thead>
<tr>
<th>CIP Code</th>
<th>Program Code</th>
<th>Program</th>
<th>1p1 Technical Skills</th>
<th>2p1 - Degree/Cert Award</th>
<th>3p1 Retention &amp; Transfer</th>
<th>4p1 Placement</th>
<th>5p1 Non Trad Participation</th>
<th>5p2 Non Trad Completion</th>
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<tbody>
<tr>
<td>47.0201</td>
<td>912</td>
<td>HVAC</td>
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<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
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<td>47.0201</td>
<td>914</td>
<td>HVAC/HVAC Cert</td>
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<td>yes</td>
<td>no</td>
<td>no</td>
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<tr>
<td>15.0303/47.0101</td>
<td>906</td>
<td>Electronics Technology</td>
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<td>yes</td>
<td>yes</td>
<td>N/A</td>
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<tr>
<td>15.0303/47.0101</td>
<td>926</td>
<td>Electronics Technology/Cert</td>
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<td>no</td>
<td>yes</td>
<td>no</td>
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</table>

**Perkins Indicators Analysis & Summary**

Perkins indicators were met for the most part. The degree programs met their 2P1, 3P1 and 4P1 standards. The certificate program for HVAC did not meet the retention and transfer goal, we believe this is due to the improved economy, more students are gaining employment earlier in the program. The Electronics department anticipated some fluctuation in the programs as the new Electrical Controls program came on line this year, some students switched into the new program before receiving their 926 Electronics Certificate. Both the HVAC and Electronics programs do not have a population of non traditional students. The department continues to encourage female students to enroll, without much success.
Assessment of Student Learning

*Electrical Controls Engineering Technology*

*Electrical Controls/Mechatronics Certificate*

Program Outcomes:

1. Prepare students for employment in the electrical controls/mechatronics areas by providing learning opportunities that are in line with and meet electrical expectations/standards.
2. Prepare students for higher/transfer education by providing learning opportunities that establish required foundational skills.

<table>
<thead>
<tr>
<th>Program Learning Outcomes</th>
<th>ILO</th>
<th>Measure</th>
<th>Findings/ Improvements/Impact</th>
<th>Status, Fall 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students will obtain a knowledge base of electrical/electronics theory and its uses in manufacturing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will be able to identify and use experimental procedures in electrical/electronics troubleshooting.</td>
<td>Critical thinking</td>
<td>Faculty observed students’ performance</td>
<td>Added extra training for Winter 2013. Fall – 75%, Winter 85% passed the assessment. Target is 90% - so further improvements are planned.</td>
<td>Assessed impact Added remediation fall and winter and re-assessed.</td>
</tr>
<tr>
<td>Students will demonstrate professional work behavior.</td>
<td>Personal responsibility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students will use proper</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>
Assessing Student Learning

Title: Assessing student’s troubleshooting skills in EL163 Electrical Troubleshooting:

Student Learning Outcome: Analyze faults in a variety of electronic circuits.

My project, Assessing student’s troubleshooting skills in EL163 Electrical Troubleshooting, was started in and completed during the 2013/2014 calendar year. The fall 2013 semester I measured baseline data on how many students successfully completed the course and how long they spent troubleshooting during the comprehensive final experiment. In the winter 2014 semester I modified my teaching strategies with the goal of improving student’s troubleshooting skills. I then measured the same data during the winter 2014 semester. The following outlines my reflection of the project.

EL163, like many of our electronics courses, is overloaded with content. During most sessions there is little time allotted for review or reflection from previous sessions. My plan to improve teaching effectiveness is to allocate at least 15 minutes during every session to review and explain the troubleshooting problems from the previous week. We will reiterate the troubleshooting process, the symptoms, the diagnostics and proper sequence for discovering each of the faults.

<table>
<thead>
<tr>
<th>Section</th>
<th>Class Average Final Grade</th>
<th>Fault 1 Average Time</th>
<th>Fault 2 Average Time</th>
<th>Fault 3 Average Time</th>
<th>Fault 4 Average Time</th>
<th>Fault 5 Average Time</th>
<th>Fault 6 Average Time</th>
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<tr>
<td>Fall 2012</td>
<td>95%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Winter 2013</td>
<td>86%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Fall 2013</td>
<td>91%</td>
<td>10 min</td>
<td>15 min</td>
<td>22 min</td>
<td>30 min</td>
<td>5 min</td>
<td>8 min</td>
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<tr>
<td>Winter</td>
<td>89%</td>
<td>9 min</td>
<td>18 min</td>
<td>20 min</td>
<td>25 min</td>
<td>8 min</td>
<td>7 min</td>
</tr>
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</table>
The data collected shows the Winter 2014 group improved in 4 of 6 fault areas. I think more data is required to come to a definitive conclusion. I did receive positive feedback from my students during the review time at the beginning of class. In the future I plan to continue spending class time reviewing the previous experiment.