

PURPOSE

The Electricity/Electronics/Instrumentation program at Western Wyoming Community College provides quality, current occupational training in fields closely related to the electrical industry. The program provides students with comprehensive knowledge and employers with quality employees.

OVERVIEW

ELECTRICAL PROGRAM

The ELAP (Electrical Apprenticeship) classes are a cooperative effort between Western Wyoming Community College and the electrical industry. The program offered is a bureau of Apprenticeship and Training certified course. These nationally recognized courses offer our students the same training they would receive at any location nation wide. To participate in electrical apprenticeship training, an electrical contractor must sponsor the student in apprenticeship classes; the contractor is responsible for registering the apprentice with the state and declaring what training program they will use. This puts the burden of employment for apprentices on the contractors. We can not recruit students for these programs because they have to be employed to participate. We can, however, recruit contractors. It is important that local contractors know that we offer these programs and the quality of instruction that apprentices receive at WWCC.

ELECTRONICS AND INSTRUMENTATION PROGRAM

The Electronics and Instrumentation programs strive to train technicians and electricians for the electrical industry. The program trains in a broad subject area offering students the background to be successful in any electrical industry. Local industry provides many jobs for our students, and many students are sent by the mining and utility companies. Students who are new to the work environment look to get training to acquire internships or entry-level employment in industry. The courses that are part of the electronics and instrumentation curriculum at WWCC are presently taught as flex entry/flex exit classes. The method of instruction is self-paced, individualized instruction in a lab environment. Courses are taught concurrently; this format allows maximum flexibility for students employed in shift work or who have other obligations. The format also releases the student from lock step courses and allows the student to complete the course based on the hours of attendance and the student's understanding of the material. Those students who complete this program receive a certificate of completion or an A.A.S. two-year degree. These are both terminal credentials and intended to prepare a student for the job market.

Identify and Assess Program's Purpose and Primary Learning Goals

Program Specific Goals	Electricity/ Electronics/ Instrumentation	Assessment Method
<p>Safe work practices</p> <p><i>Criteria for Success:</i> 100% mastery of subject</p>	<p>The student will be able to recognize and avoid electrical hazards.</p>	<ol style="list-style-type: none"> 1. See appendix B rubric on short answer essay 2. See appendix B rubric on lab write-ups 3. See appendix B rubric on lab experiments
<p>Electrical and Instrumentation Theory</p> <p><i>Criteria for Success:</i> 80% mastery of subject</p>	<p>The student will acquire electrical concepts; Ohm's law, circuit analysis, Boyle's laws, ladder logic, control, and trigonometric concepts.</p>	<ol style="list-style-type: none"> 1. See appendix B rubric on short essay 2. See appendix B rubric on lab write-ups 3. See appendix B rubric on lab experiments
<p>Communicate Electrical and Instrumentation concepts</p> <p><i>Criteria for Success:</i> 70% mastery of subject</p>	<p>The student will be able to demonstrate a knowledge of these concept through oral and written skills.</p>	<ol style="list-style-type: none"> 1. See appendix B rubric on short essay 2. See appendix B rubric on lab write-ups 3. See appendix B rubric on lab experiments
<p>Utilize electrical concepts to design and trouble shoot</p> <p><i>Criteria for Success:</i> 70% mastery of subject</p>	<p>The student will be able to select, justify and design; basic circuits, instrument instillation, and utilize trouble shooting skills.</p>	<ol style="list-style-type: none"> 1. See appendix B rubric on lab experiments

WWCC Goals For Student Success	Electricity Electronics Instrumentation	Assessment Method
Communicate Competently Criteria for Success: 70% mastery of subject	<i>Students Will:</i> 1. Express ideas clearly and effectively when writing. 2. Receive meaning and interpret ideas through reading and from various types of media.	1. See appendix B rubric on short answer essay 2. See appendix B rubric on lab write-ups 3. See appendix B rubric on lab experiments
Retrieve Information Criteria for Success: 70% mastery of subject	<i>Students Will:</i> 1. Read and interpret schematic diagrams of circuits. 2. Effectively utilize the library. 3. Utilize manufacturer's literature and data.	1. See appendix B rubric on short answer essay 2. See appendix B rubric on lab write-ups 3. See appendix B rubric on lab experiments
See Issues from Multiple Perspectives Criteria for Success: 70% mastery of subject	<i>Students Will:</i> 1. Evaluate results of projects based on the best solution. 2. Evaluate results of projects based on the economics' 3. Evaluate results of projects based on the impact on personnel.	1. Student justification of choices. 2. Appropriate solution to lab
Solve Problems Criteria for Success: 70% mastery of subject	<i>Students Will:</i> 1. Evaluate circuits. 2. Identify and demonstrate proper use of test equipment for circuits.	1. See appendix B rubric on lab experiments 2. Use proper techniques with test equipment.

<p>Developed Life Skills</p> <p>Criteria for Success: 70% mastery of subject</p>	<p><i>Students Will:</i></p> <ol style="list-style-type: none"> 1. Demonstrate proper procedures and practices for safety in the work area. 2. Demonstrate acceptance of responsibility for learning. 3. Work effectively without close supervision, and as a member of a team. 	<ol style="list-style-type: none"> 1. See rubric on lab experiments 2. Work in small group's for lab experiments. 3. Attend class regularly. 4. Take responsibility for learning.
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Analyze the Program's Enrollment and Audience

The audience that the program serves consists of traditional students, non-traditional students returning to work, and non-traditional students employed in local industry. The students employed in local industry have become a major portion of the total student population. Since the national energy crisis, there has been a greater demand for petroleum products. This has spurred an influx of jobs and oilfield employees. The local population has increased dramatically, and this is reflected by increases in the student population. Many of the students we are now seeing are employed in the oil industry or are seeking employment in that industry.

The existing local workforce is aging and industry is now recognizing that years of hiring freezes have had the effect of providing a technical workforce that is approaching retirement with few replacements in the process of being trained. The program has seen increased student enrollment from the local mining and power industry as well as oil and gas.

With this new audience, the occupational programs at WWCC should see increased enrollment, and with the addition of the oil and gas program we should be able to serve these industries. The instrumentation program is part of the Oil and Gas program and should have increased enrollment in those classes that are a suggested part of that program. The total program should see increases in students as there are increases in employment opportunities

As can be seen from appendix A (figure 1-2), the program FTEs have improved substantially from the previous five years. While there has been a drop in FTEs over the years 2004 and 2005, this was expected as one of the full-time faculty members was on sabbatical. The electronics faculty was gone in the fall of 2004 and the spring of 2005. Two additional adjunct faculty were employed to cover the load. This brought the total adjunct faculty to four instructors.

These figures are compared to the reference year of 2000:

- From 2000-2001, this program's FTEs increased 11%
- From 2000-2002, this program's FTEs increased 26%
- From 2000-2003, this program's FTEs increased 44%

- From 2000-2004, this program's FTEs increased 29%

The Small Computer Repair classes previously taught under the Electronics program were moved to the Computer Science Program. There were two courses at 4 credits each: Small Computer Repair and Small Computer Networking. These classes were taught by the full-time electronics faculty, from 2002-2004. The FTEs from these courses are not reflected in this program review. The FTEs for the Electrical Apprenticeship program dropped in 2003 when the union apprenticeship moved to Casper; in addition the credit hours for this program went from 6 credits per semester to 3 credits per semester in 2004. The change in credit hours was made to accommodate concurrent enrollment and actual contact hours.

Review the Recommendations Noted in the Previous Program Review

Recommendations from 1999-2000 Program Review	Actions:
<p>Increase the revenues of the program through;</p> <ul style="list-style-type: none"> • Enrollment • FTE • Student fees 	<ol style="list-style-type: none"> 1. Increased effort in industry training <ul style="list-style-type: none"> • Basic Electricity for underground utility • Basic Schematic and Blueprint reading • National Electrical Code • Variable Speed Drives • Basic Industrial DC Electricity • Basic Industrial AC Electricity • PLC: SLC 500 fundamentals • Instrument systems maintenance techniques
	<ol style="list-style-type: none"> 2. Offered courses in Small Computer repair <ul style="list-style-type: none"> • Computer Repair, 2002-2004 • Computer networking, 2002-2004

	3. Sponsored concurrent enrollment <ul style="list-style-type: none"> • Electronic courses offered in Kemmerer • Electronic courses offered at Lyman High School
	4. Added full semester night course <ul style="list-style-type: none"> • National Electrical Code review • 5 week block PLC & Instrumentation
	5. Increased student fees <ul style="list-style-type: none"> • Student fee's were increased to \$100 for Electrical courses and \$20 for Electronic and Instrumentation program courses

Evaluate the Facilities and Equipment

The program facilities at Western Wyoming Community College consist of three labs.

The Industrial Plant:

The mock plant is in good condition and has not suffered many problems that could not be overcome with basic maintenance. The electrical components are current and in good repair. With changing job markets and technologies at the forefront of our training efforts, it will be necessary to continue to find innovative ways to utilize this space and equipment to meet the needs of our students and their employers. Continual investment in new technologies and practices will keep the plant in the best position possible as a useful training area.

Plant needs:

- Distributive control systems
- Motor protective circuits
- Power monitoring equipment

The Electronics Lab:

The electronics lab is in good condition. The structure is holding up well and serves the educational need. With routine maintenance the lab has held up well, given its age. The layout of the lab works well with the instructional method utilized and will continue to be a good resource given future changes in the program. There are 8 tables that will seat 2 students each with the exception of one table which will seat one. This allows 15 students to sit in a lecture. There are 12 lab benches which are in good condition and work well as working space for hands on learning experiences. There are also three VCR-TV combinations for viewing video tapes and six computers for internet research, word processing, Computer Based Training programs and Virtual lab environments. The work benches are well supplied with signal generators, power

supplies, and test equipment. These basic components should be current for several years into the future. The equipment that exists is in good repair; new challenges come from the new job markets and employee qualifications. The addition of network access has allowed better research potentials and utilization of college resources.

Electronics Lab needs:

- Paint job on interior

The Instrumentation Labs:

The instrumentation labs are in good condition. The structure is holding up well and serves the educational need. The equipment is current but will not stay so indefinitely. With the advent of new hardware to establish instrument communication, a fast Ethernet network has been built utilizing fiber optic, copper, and wireless links that connects the instrument lab, PLC lab and the industrial plant components into a single control network. This network will be extended via spread spectrum radio to the new gas well training site. Industrial controllers are changing and new industrial job markets may require varied equipment. The equipment that exists is in good repair and will serve the existing educational need, new challenges come from the new job markets and employee qualifications. The addition of internet access has allowed better research potentials and utilization of college resources.

Instrumentation Lab needs:

- The Oil and Gas program requires new instrumentation, Software, and Networking Capability

Summarize Strengths, Limitations, and Opportunities

Summary of Strengths:

The strength in this department, as in all departments, is the personnel. The employment and educational backgrounds of the faculty make the program viable. Being both reactive and proactive, the faculty has been able to create curriculum to meet industry need in a timely manner.

- The faculty has developed several courses for industry, while continuing to carry a full-time core curriculum load. These new courses have been presented as Work Force Training/Continuing Education classes.
 - Basic Electricity for underground utility
 - Basic Schematic and Blueprint reading
 - National Electrical Code
 - Variable Speed Drives
 - Basic Industrial DC Electricity
 - Basic Industrial AC Electricity
 - PLC: SLC 500 fundamentals
 - Instrument systems maintenance techniques

- The variety of courses offered allows a program with two full-time instructors to cover the material of programs with three times the staff. Comparison of Casper College program to WWCC. **Casper college does not offer Instrumentation or PLC courses. .* See Appendix C
- The method of delivery has facilitated maximum flexibility for students who have conflicts with work or school.
- The faculty has stayed current with changing technologies both in the electrical and educational field.
 - The completion of an Electronic Engineering Technology degree
 - Tech Prep Conference: Nashville Tennessee
 - Tech Prep Conference: Orlando Florida
- The faculty has stayed current with changing computer programs and the applications of these programs.
 - Electronic Workbench
 - Microsoft office, PowerPoint, Excel, Word, Library science. 4 credits total
 - Citect, Valvlink, RSView, RSlogic, RSlinx, Wonderware, Iconfig, PC 20, Sixnet .1, Logo 4.0, Isagraph, Cygnet

Summary of Limitations:

The limitations in this department are both physical and programmatic.

- The program is highly technical and trains technicians who serve in positions that are technical in nature, proportionally a small part of the work force.
- The program is sequential; the courses are reliant on previous work. Each course should be successfully taken before the next more advanced course.
- The physical constraint of the training rooms allows a finite number of students to be trained. The program has three labs and two full-time instructors and two adjunct faculty. No more than two labs can be utilized by the full-time faculty at one time. Each lab has an enrollment limit because of seating:
 - ◆ The Electricity/Electronics Lab can seat 15 students.
 - ◆ The Instrumentation Lab can seat 12 students.
 - ◆ The Controls Lab can seat 12 students.

Opportunities:

The opportunities for the department to grow include but are not limited to these areas:

The program can maximize use of training rooms to increase student counts.

- 5 week block classes can be implemented to allow the space to be utilized more efficiently to accommodate student numbers and industry time constraints.

The program can produce the best trained technical workforce to man new and existing jobs.

- Continue efforts to provide the best, most comprehensive training program, fully funded and designed to allow our students the maximum in job portability.

The program can look for new audiences to serve and new job markets to train.

- Continue efforts to recruit students from traditional, non-traditional and distance sources.

ACTION PLAN

These actions could improve our services.

Task or Action	Purpose & Measure of Success	Who is Responsible?
Implement 5 week block, lock step curriculum.	To increase student counts and maximize use of training space. More students	FY 2005-2006 N. Joe Patterson Alan Tominc
Increase industry training and two day seminar courses.	To increase part time student counts. More students	FY 2006-2007 N. Joe Patterson Alan Tominc
Concurrent enrollment courses.	To increase concurrent enrollment FTE's and new perspective students. More students	FY 2006-2007 N. Joe Patterson Alan Tominc
Advertising	To increase efforts to recruit students, use television ads, radio and visual media (posters, bill boards, movie preview advertising).	FY 2006-2007 Carma Cora
Scheduling for students to fit required courses into an attainable time frame.	Schedule 5 week block classes so all coursework, major area and general ed courses can be accomplished in a 2 year period	FY 2005-2006 Glenn Dalton Ken Fitchen Academic Council
Continue assessment of program audience	Seek the advice of local industry through the use of advisory committee and job market figures	FY 2005-2009 N. Joe Patterson Alan Tominc
Continue to assess new technologies	Continue to upgrade skills of instructors and instructional technology	FY 2005-2009 N. Joe Patterson Alan Tominc
Assessment of student planning	Implementation	FY 2005-2009 N. Joe Patterson Alan Tominc
Recruit Students	Recruit in industry and high schools	FY 2005-2009 N. Joe Patterson Alan Tominc

APPENDIX

A

FTE's by parts

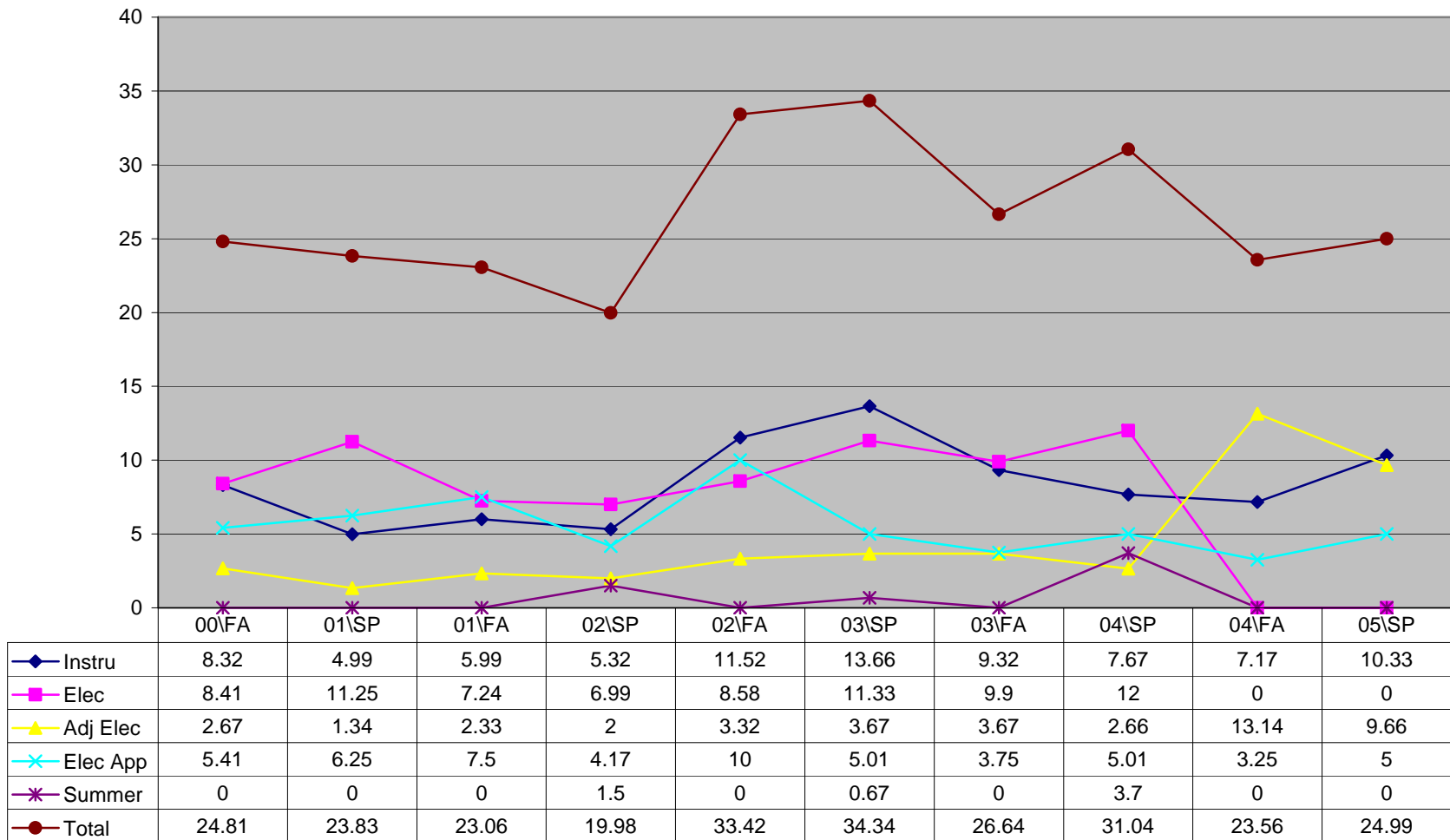


Figure 1-1

Local FTE in Electricity/Electronics/Instrumentation Program for Past 5 years

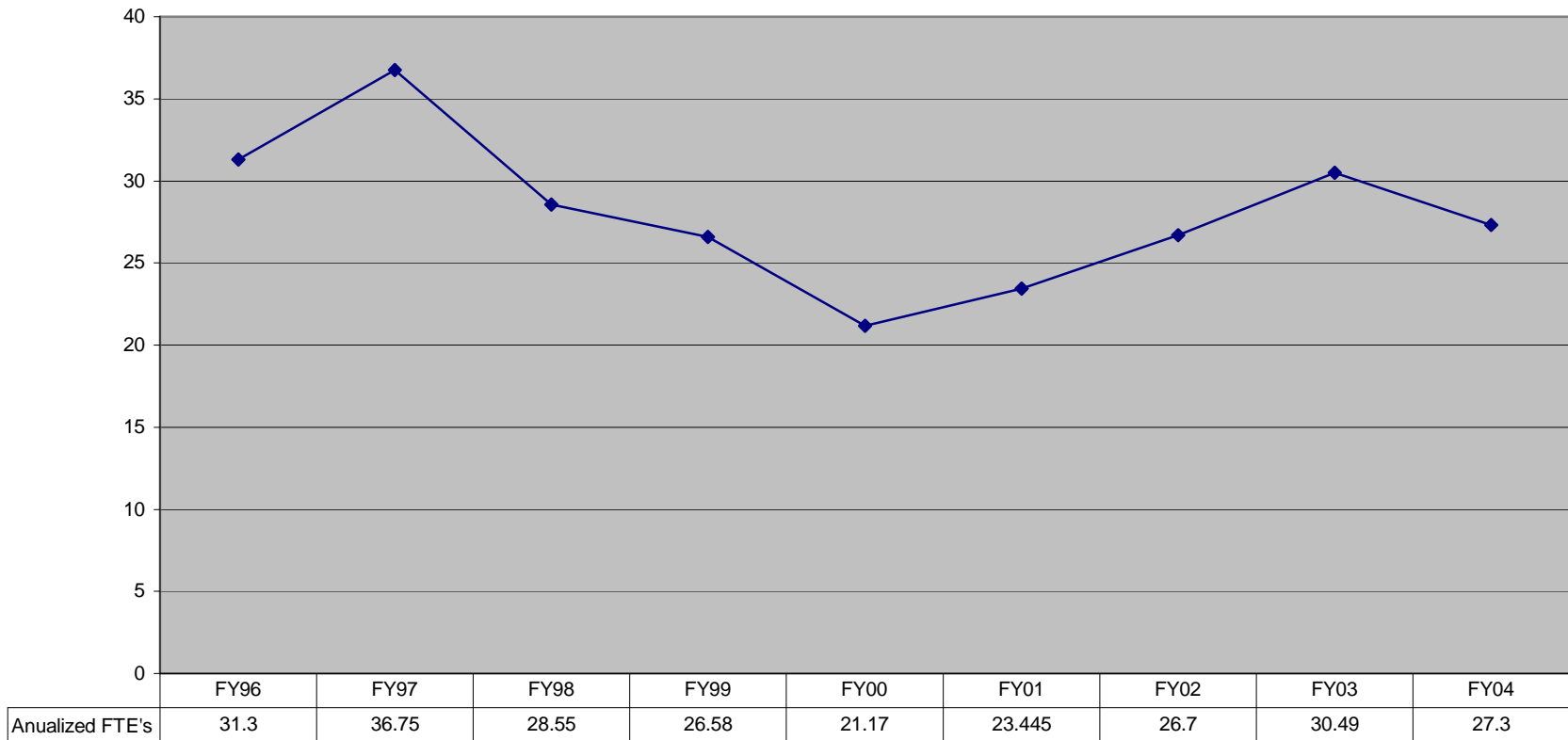
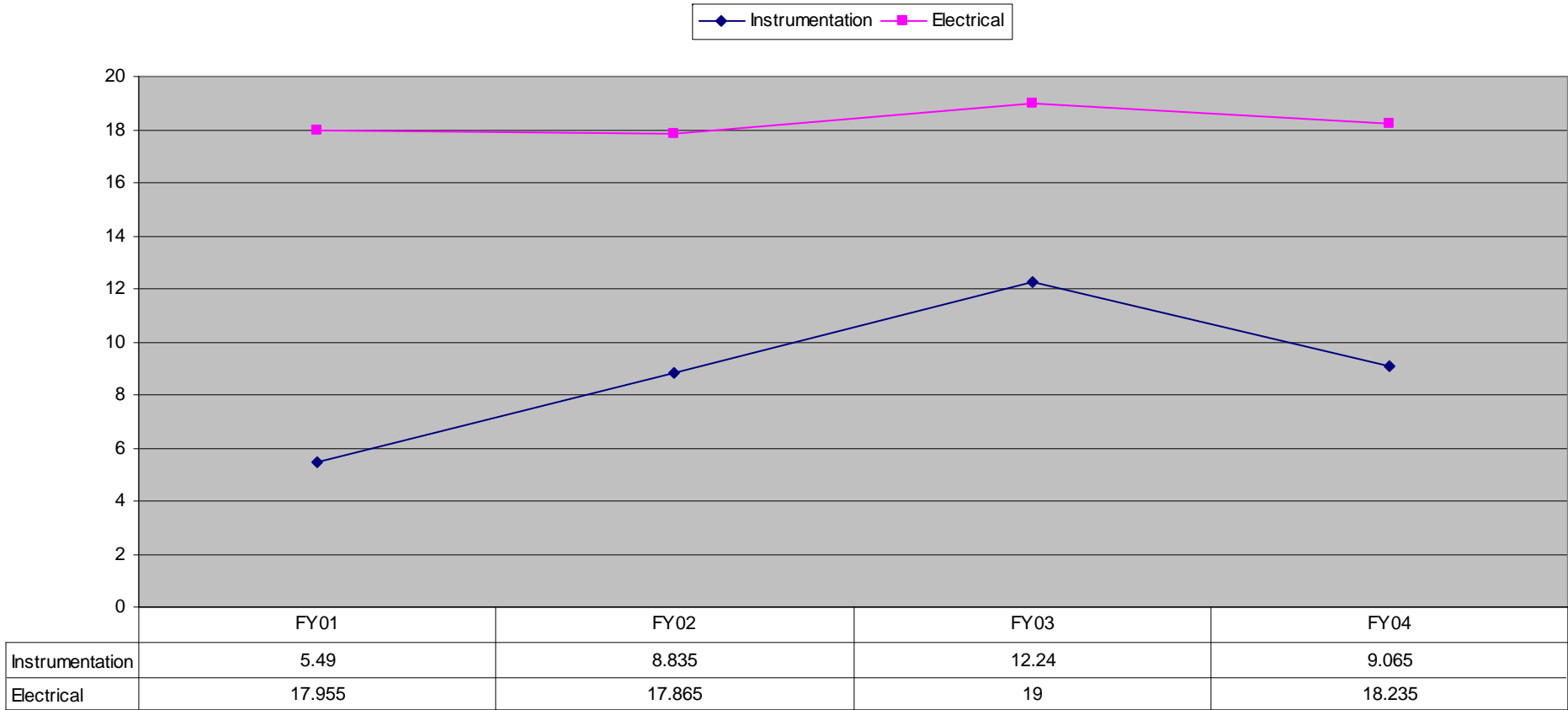


Figure 1-2

Total FTE's for Programs



APPENDIX

B

WRITING RUBRIC

Short essay papers

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Opening statement	Contains an opening statement	Contains an opening statement with clarity	Contains insight about subject	Contains all these in a captivating manner	
Data is accurate and correct	Data is accurate to within 15% of the theoretical values	Data is accurate to within 10% of the theoretical values	Data is accurate to within 5% of the theoretical values	Data is accurate to the theoretical values	
Spelling	There are fewer than 10 errors in spelling	There are fewer than 5 errors in spelling	There are fewer than 3 errors in spelling	There are no errors in spelling	
Grammar	Uses simple sentences	Uses compound sentences	Uses complex sentences	Uses an appropriate combination for best effect	
Conclusion	Reports data	Reports data and offers comparison	Reports data and shows insight	Reports data and shows understanding of concepts	

Figure 2-1

WRITING RUBRIC

Lab experiment write-ups

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Entry is Clear and Legible	Hand written data is legible and complete	Hand written data is legible and complete and organized	Typed data is complete, organized, and easily located	Typed data is complete, organized, easily located and consistent.	
Statement of Purpose	There is a general statement of purpose	There is a specific statement of purpose	There is a statement of purpose that shows insight into the problem	There is a statement of purpose that shows insight and a grasp of the concept	
Data is accurate and correct	Data is accurate to within 15% of the theoretical values	Data is accurate to within 10% of the theoretical values	Data is accurate to within 5% of the theoretical values	Data is accurate to the theoretical values	
Format of notebook is correct	The notebook has the name of the student and the class name	The notebook has the name of the student, class name, date and lab number	The notebook follows standard format with less than 5 errors.	The notebook follows standard format with two or fewer errors	
Spelling and Grammar are correct	There are fewer than 10 errors in spelling and grammar	There are fewer than 5 errors in spelling and grammar	There are fewer than 3 errors in spelling and grammar	There are no errors in spelling and grammar	

Figure 2-2

EXPERIMENT RUBRIC

Lab experiment

	Beginning	Developing	Accomplished	Exemplary	Score
	1	2	3	4	
Safety	No attempt to address safety before beginning the experiment	An attempt was made to address safety but contained omissions and errors	Safety was addressed within the experiment	Safety was addressed within the experiment and the surrounding area	
Prediction of outcome based on concept or explanation	No attempt was made to predict outcome. The experiment is not used to explore	An attempt was made to predict outcome but was not based on concept or explanation	A prediction was made based on concept or explanation but contained errors	A prediction was made based on concept or explanation	
Lab procedures	No attempt was made to follow lab procedures	An attempt was made to follow lab procedures but contained omissions	Lab procedures were followed but was not well organized	Lab procedures were followed and were well organized	
Oral communication	No attempt to participate in lab discussion	Some participation in lab discussion	Participated in lab discussion, asked questions	Participated in lab discussion, asked and answered questions	
Conclusion	Made no effort to put away or clean	Made an effort to clean area and put away materials	Cleaned area and put away materials	Cleaned area and put away materials, checked to see expendables were replaced	

Figure 2-3

APPENDIX

C

COMPARISON BETWEEN CASPER COLLEGE AND WWCC

** Casper College Information is in Italics*

PC Support Technician

Credit 4

Preparation for the CompTia A+ Certification. A practical study of theory, service and repair of small computers (PC's). Subjects covered include computer systems, Peripherals, software, microcomputer architecture, memory, input/output devices and troubleshooting

ELTR 2920 (54-108) (ELTR 1790)

SMALL COMPUTER REPAIR TECHNIQUES

Credit 3

Microcomputer systems have become an integral part of all industrial equipment. Such systems are used to operate and control equipment ranging from punch presses and conveyor belts to chemical processing and steam generation plants. Topics of study include computer systems, peripherals, software, microprocessor architecture, memory input/output devices and troubleshooting. Students will demonstrate their knowledge of typical microcomputer circuits, signals and components. In the laboratory, students will demonstrate skills in the operation and servicing of a typical microcomputer system.

Prerequisites: ELTR 1760. Competency Based Instruction in the Lab; Flex Entry/Flex Exit

ELTR 1010

Basic Hardware for IBM PC Compatibles

Credit 1

An introduction to the basic hardware common to past and current types of IBM compatible personal computers.

ELTR 2920

Small Computer Repair Techniques

Credit 5

Techniques used to install and maintain both mini and microcomputers. Emphasis on basic computer trouble-shooting techniques, both at the system and board level. State of the art maintenance tools such as the Fluke Microsystem analyzer and the Tektronix system logic analyzer will be used in laboratory situations on representative small computer systems. Mass storage techniques for small systems, their strong and weak points and repair. Prerequisite: ELTR 2915 or permission of the instructor.

ATEC 2650*Small Computer Hardware and Software,**Credit 5*

Techniques used to install and maintain both IBM PC compatible and Apple type microcomputers. Emphasis will be made on both basic computer assembly, upgrading of peripherals, and trouble shooting at the board level. The installation of operating system software including MSDOS, WIN31 and WIN95 will be covered.

ELTR 1520 (54-100)

BASIC ELECTRICITY-DC

Credit 4

This self-paced course is offered all semesters as both a day and evening class, and students employed in shift-work may attend either session. The student will develop electrical safety and good shop practice skills. Topics of study include DC electricity theory, units of electricity, Ohm's Law, Kirchhoffs Laws, power, resistance, series-parallel circuits, electrical math and the use of formulas, and the use of basic meters. The student must demonstrate the ability to troubleshoot a complex DC series-parallel circuit upon completion of this course.

Prerequisites: Students either should have completed, or be enrolled in the equivalent of high school math or Introduction to Technical Math. Competency Based Instruction in the Lab; Flex Entry/Flex Exit

ELTR 1530 (54-101)

BASIC ELECTRICITY -AC

Credit 4

This self-paced course is offered all semesters as both a day and evening class, and students employed in shift-work may attend either session. Topics of study include AC electricity theory, magnetism, inductance, capacitance, reactance, impedance, resonance, AC series-parallel circuits, electrical math and the use of formulas, and the use of the oscilloscope and AC test equipment. The student must demonstrate the ability to troubleshoot a complex AC series-parallel circuit upon completion of this course.

ELTR 1500*Electronics I**Credit 2*

Ground work in electrical fundamentals needed for an understanding of modem electronics. Prerequisites: high school mathematics or work experience.

ELTR 1550*Semi conductors**Credit 2*

Fundamentals of electronics. A continuation of ELTR 1500 with emphasis on semiconductors, diodes, SCRs, triacs, diacs, transistors, fets, integrated circuits. (Fall semester.)

Prerequisites: ELTR 1500 or permission of the instructor .

ELTR 1730*Language 'for Microprocessor Control Systems I' Credit 2*

Basic languages with application to their usage in microprocessor control systems. Students will be given an opportunity to apply their knowledge through laboratory experiments using the department's 80386 MS-DOS microprocessor system.

ELTR 1760 (54-211)**INTRO. TO DIGITAL ELECTRONICS****Credit 4**

This self-paced course is offered spring semesters as both a day and an evening class and students employed in shift-work may attend either session. Topics of study include safety, principles of digital circuits, logic gates, counting circuits, registers, and *ND* converters. The student must demonstrate the ability to properly connect and troubleshoot a basic logic control system upon completion of this course.

Prerequisites: ELTR 1700. Competency Based Instruction in the Lab; Flex Entry/Flex Exit

ELTR 1760*Introduction to Digital Electronics,**Credit 4.5*

Logic circuits associated with the control and operation of a digital computer. Application of the specific logic circuits through selected laboratory experiments.

ELTR 1770*Microprocessor Fundamentals**Credit 4.5*

Microprocessors their architecture, language, and capabilities. Students will have an opportunity to work with those that are most commonly used in industry and will be expected to develop individual projects in addition to the required laboratory experiments.

Prerequisites: ELTR 1760 or permission of the instructor.

APPENDIX

D

REPLY TO DEAN'S COMMENTS FROM 1996 – 2000 PROGRAM REVIEW

**Dean's comments are in italics, the response is in Bold*

Re **Electricity/Electronics Program Review**

The report provides both a useful summary of the many changes that have occurred and the efforts made to improve the curriculum and the equipment. I have no doubt that both needed to be updated and that it took the two faculty consider time to do so. The report, however, remains general and lacks specific data both regarding these improvements and the enrollments.

While it acknowledges that its students are primarily people who work in industry and use these skills for job advancement, it does not offer solutions for meeting the needs of this primary source of students, yet enrollments are declining. It does not acknowledge or address the issue of declining enrollments at all. This is an issue that must be addressed.

Below I provide some feedback on some specific items in the report.

Page 3, **Overview**

This is a very clear and useful summary of the program. It notes that its primary audience is people in industry seeking training and re-training.

While the overview pointed out that a large portion of our students are presently working in industry, the students entering the work force are still a significant portion that is necessary for the program. Many of the students employed in industry are not in one of the electrical fields and are not being sponsored by industry. The program's audience is varied in work experience, age and goals.

Page 8, **Enrollment Limitations**

The report clearly explains that there are enrollment limits, but, at the same, it does not indicate what the capacity of the lab is. There are 3 labs for these programs. I understand that capacity would depend on equipment needed for a particular course(s), but some number would be useful to more clearly understand the limits.

The program has three labs and two instructors. No more than two labs can be utilized by the primary faculty at one time. Each lab has an enrollment limit because of seating;

- **The electricity\electronics lab can seat 15 students.**
- **The instrumentation lab can seat 12 students.**
- **The controls lab can seat 12 students.**

Page 7-8, Equipment

Both Joe and Alan are to be commended for upgrading the equipment. I understand that upgrading equipment entailed more than just purchasing "off the shelf" equipment. To make this new equipment work as instructional tools took the time and talent of both of you. The completion of the Plant Simulation Project is exceptional.

Thank you.

Page 8, Recommendations from Previous Program Review

#2. That many of the students are working in the field already is clear in the report. However, reducing the night time hours in the Fall 2000 semester seems to be incongruent if this group is the primary audience.

The adjunct instructor that taught on Tuesday and Thursday evenings had to leave due to a personal situation. After unsuccessfully looking for a replacement, the situation was discussed and suggested that with declining enrollment the best use of resources was to temporarily not fill the position.

The report states that there is a drop in enrollment but provides no numbers to indicate the extent of the drop. Similarly, there is no evidence that retention has not declined--just an unproven statement.

While the declining numbers are not readily available, all level III and college enrollment declined significantly over the same period. Perhaps the numbers are reflected in the FTE table sighted in this document.

Page 10, Advisory Council

I can understand that is not the sole responsibility of this program to have follow-up information on its students. However, it would have been useful to have information on some "success stories."

There were several attempts by the college to gain follow-up information on occupational students. I am not aware of any compilation of this data. As for "success stories" We continue to see students sent by local industry for training and retraining.

Page 10, Continuing Education

Unclear how much or how little industry training has been provided. I understand that both instructors are relatively new and that equipment had to be upgraded, but a clearer statement about specific training provided would clarify this section. Again, as this audience is primary for these programs working with CE seems critical.

During this time period there was competition for a common pool of students, this problem has been addressed. We still draw from a common group of perspective students but Work Force Training/Continuing Education credits are now used in program FTE calculation. Observation shows if you have a group of perspective students and they are divided the result will be reduced numbers for either program.

Page 10-11, Summary of Strengths and Limitations
Strengths

Clear summary of strengths

- *Broad spectrum of courses*
- *An open concurrent class schedule that allows access*
- *Newest technology that allows training on equipment used in the industry*
- *CAI training programs with updated computers*
- *High cost of technology and budget constraints (think this was misplaced as it is a limitation)*

Limitations

- *Budget limitations: Certainly obtaining funds from the end-of-the-year purchases is limited and unpredictable. However, revenues from course fees should be reviewed; the use of these fees for maintenance and repair is appropriate. The fees have not changed since 1993, yet the report acknowledges the cost of technology increases.*

The report also notes that many of these students are paid or reimbursed by industry. Therefore, increasing fees is worth considering. The revenues from fees has declined with reduced enrollment over the past 4 years as the chart below indicates:

Revenues from Course Fees for Past 4 Years

<i>Course</i>	<i>Fy2000</i>	<i>FY99</i>	<i>FY98</i>	<i>FY97</i>
<i>E/E</i>	<i>\$2112</i>	<i>2416</i>	<i>2880</i>	<i>3364</i>
<i>Elap</i>	<i>\$900</i>	<i>1410</i>	<i>1340</i>	<i>1630</i>
<i>Total</i>	<i>\$3012</i>	<i>3826</i>	<i>4220</i>	<i>4994</i>

- *Obtaining funds to build the simulation plant is to be applauded.*
- *Providing industry training: The report discusses the limitations. However, the report also acknowledges that this has become the primary source of students with the decline in this program's enrollment. See the chart below.*

Local FTE in Electronics/Electricity Program for Past 5 Years

<i>FY2000</i>	<i>FY99</i>	<i>FY98</i>	<i>FY97</i>	<i>FY96</i>
<i>21.17</i>	<i>26.58</i>	<i>28.55</i>	<i>36.75</i>	<i>31.30</i>

- *From 96-2000, this program's FTEs declined 32.11% while all "Level III" programs declined 23 %.*
- *From 97-2000, this program's FTEs declined 42.4% while all "Level III" programs declined 18 %.*
- *From 98-2000, this program's FTEs declined 25.9% while all "Level III" programs declined 18 %.*

The cause for this program's decline in enrollment can NOT be laid at the feet of the two instructors presently in the program. They inherited this situation and as the report states have done much to upgrade the equipment and the curriculum.

*However, the present instructors must try new ways to meet the needs of this **primary** source of students. Other T & I programs have tried alternate schedules, block courses, and CE for Credit and Non-Credit to meet the needs of industry.*

FTE Trend for Occupational Programs FY 1996 – FY 2000				
Fa2000	Fa1999	Fa1998	Fa1997	Fa1996
260	238	311	312	366
Sp2000	Sp 1999	Sp 1998	Sp 1997	Sp 1996
249	315	317	347	386

This document demonstrates that all Level III programs have declined in FTE and enrollment over this period of time. As the situation was inherited by this program it was inherited by the college.

- **From Fall 96-2000, occupational program FTEs declined 28.96%**
- **From Spring 96-2000, occupational program FTEs declined 35.49%**
- **From Fall 97-2000, occupational program FTEs declined 16.66%**
- **From Spring 97-2000, occupational program FTEs declined 28.42%**
- **From Fall 98-2000, occupational program FTEs declined 16.39%**
- **From Spring 98-2000, occupational program FTEs declined 20%**

These figures show a general decline in FTE across program, division and college lines. The 1997 figure is probably not the best reference because college enrollments have been in decline since that point.

Limitation #2 (page 12): If training becomes part of full-time load, it would have impacts on other offerings. However, the major source of students is from industry and enrollment has been steadily declining. New approaches must be tried or the viability of the program will be questioned.

Limitation # 3 (page 12): The fact that industry courses for credit cost more was a legitimate limitation when this report was written. However, that limitation has been removed. The cost is the same for credit or non-credit industry courses.

Limitation #4 (page 12): The report lists legitimate concerns that hopefully have been rectified. An administrative policy was recently approved clarifying and encouraging full time faculty to provide industry courses for credit was recently approved.

Page 12, Recommendations for Improvement

The problem about integrating vocational education into WWCC is unclear. No disagreement that these programs are quite different than the transfer programs. Not sure which policies are unfair to all vocational programs as the paragraph did not mention any specific policies.

Page 13, Comments

Misclassifying Courses: Only one vocational instructor that I am aware of has felt that the system of classifying courses has been unfair. It is true that almost every department or group of faculty has a different view about workload.

Revising Horizontal Advancement: Myself and other administrators agree that the horizontal advancement policy needs to be revised to better address the accomplishments and requirements of faculty in the vocational areas.

I do agree that this policy tried to "shoehorn" these faculty into an inappropriate model. However, vocational faculty were on the committee in 1993 that approved this policy. Unfortunately, a number of people including vocational faculty were not alert to the implications of the changes made in 1993-- the last time this policy was revised.

A committee is attempting to develop a fairer policy. I hope that they are able to do so-- particularly to address the issue of developing a fairer system of acknowledging the unique requirements and accomplishments of vocational faculty.

In Conclusion

The report provides a general summary of how this program's staff, equipment, and curriculum have been strengthened. All three of these areas are much stronger.

It presents limitations--particularly regarding industry courses--that we have begun to address.

The report does not, however, address or acknowledge the decline in enrollment nor does it provide or suggest solutions. With the improved curriculum, equipment, and larger staff, solutions need to be found.

The major concern expressed here is FTE's and enrollment. Addressing of problem with Continuing Education, and offering more CE courses for credit has helped to limit the impact of a declining enrollment in this program and all occupational programs. The addition of semester long courses to address specific topic matters and the use of concurrent enrollment (although not represented in these figures) will help with FTE's and increased enrollment. The problem with declining enrollment in the college has been helped as well. The decline in enrollment is a college wide concern and more generally declines in population have affected the community.

Page 8, Point # 2

The reduction of staff was questioned and now the "larger staff" is sighted as a reason to increase enrollment. There is always a need to increase enrollment, this is a given. The use of nebulous terms to describe what is an acceptable number, or that it has not been reached is not an achievable goal. Programs have differing demands and markets to address. Some programs have student to faculty ratios as low as 8:1 and others much higher. The college wide ratio during this time was 15:1. Occupational program vary by their nature since they are subject to population and job market.

APPENDIX

E

Initial Feedback from Associate Dean of Academic Affairs on Electricity/Electronics/Instrumentation Program Review Draft

See my comments throughout the document.

This really seems like the last program review was the model for this new program review. I would highly recommend reviewing the outline for required components, particularly for the Identify and Assess Program's Purpose and Primary Learning Goals, in the Instructional Programs Program Review Manual FY2006. More emphasis on where the program is now and where it is headed.

Below are some comments that I wanted to highlight. All comments are intended to be useful and positive. These comments are intended to add to and provide structure to this report.

1. What are the Primary Learning Goals for students who matriculate through the program? I only see the 5 Goals for Student Success that WWCC identified for all students. However, there is no mention of the 4-7 goals for students. What skills or knowledge must the students retain and apply? Of the 13 objectives you have listed under EEI, eight are not specific to the program. I couldn't get a sense of what students are supposed to learn as a result of matriculating through this program.
2. The Assess section is difficult to comment on. Without clear objectives of student learning, you don't know what you're assessing. Some of the methods listed could be used IF they were substantiated. You really need to identify learning goals and outcomes of the program as measurable objectives in order to identify appropriate MULTIPLE means of assessment. Once you have measurable objectives, you have to identify the methods and processes to actually measure the objectives and use the results. Each objective will not only need methods to assess, but also criteria for success (benchmarks). In other words, how will measures be obtained and what will be the indicator or satisfactory student learning?
3. For the objectives that you did identify, where are the actual assessments, criteria for success (benchmarks), results, and use of results? In other words, where is the data and the summary? How do the assessment **outcomes** tie to the Primary Learning Goals? Where is the impact on student learning and "Close the Loop?"

Overall, this report needs to focus on what the program is about. Focus on developing the Primary Learning Goals of this Program, not just the 5 Goals for Student Success. Some real thought about direction in terms of student outcomes in the content needs to occur.

Sandy Caldwell