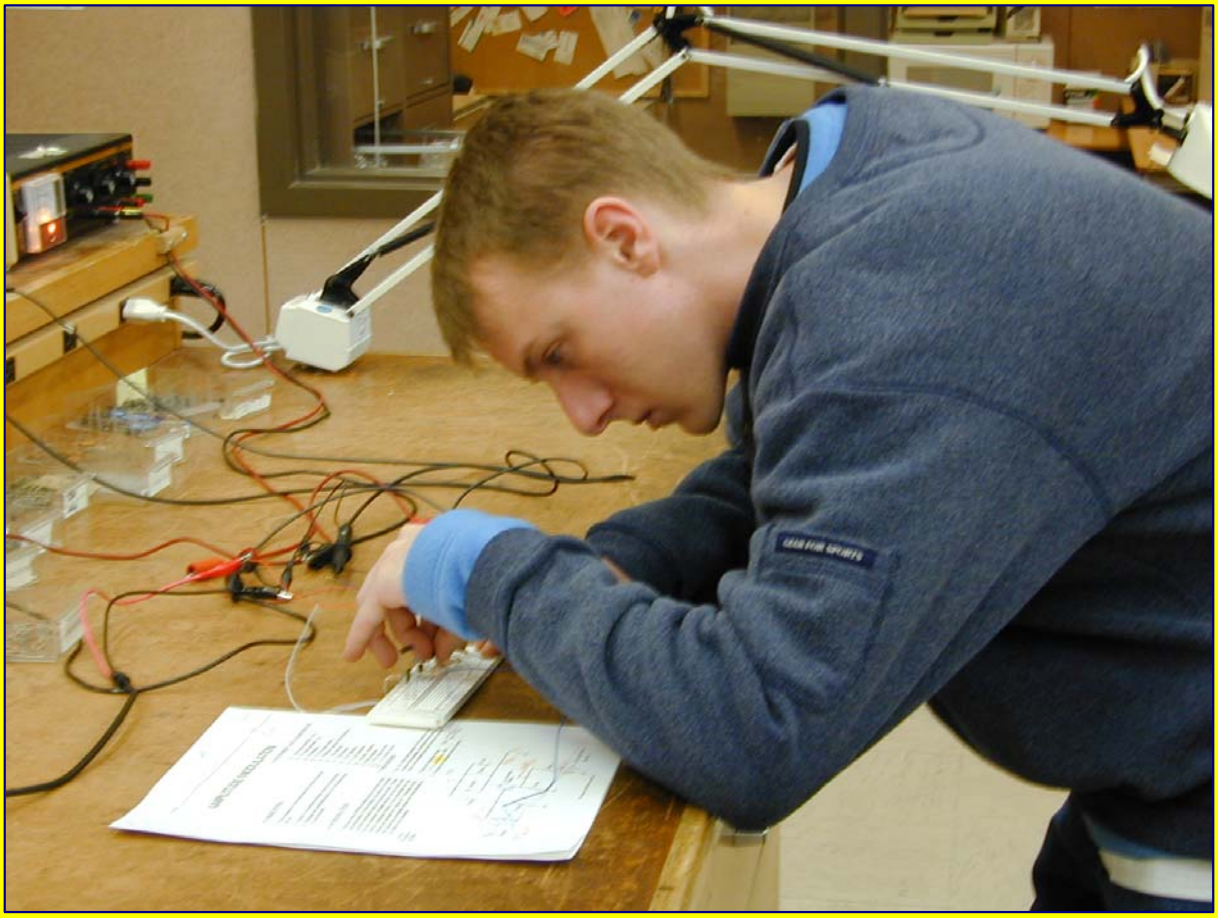
Advanced Technology Division

Electronic Technology

Unit Plan

2004 - 2005



Lane Community College SM

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Lane Community College
Electronic Technology Unit Plan 2004 - 2005

Part I. Alignment with the College

1) Core Values

The electronic technology program is a credit instructional program and has been offered at Lane Community College since 1976. The program is administered under the Office of Instruction and Student Services through the Advanced Technology Division. This program is centrally aligned with the College's strategic directions, core values, and learning centered principles.

Learning: Learning is both theoretical and applied. Student learning progresses from basic to advanced technical, academic and employability skills.

Diversity and Accessibility: The program faculty welcome students from diverse backgrounds. Students with special needs are accommodated with appropriate supplemental learning technologies and experiences.

Innovation: Faculty maintain their expertise in the field and incorporate advanced technologies in the curriculum. The faculty has made a commitment to maximize the use of innovative instructional technologies to transform the curriculum. Some examples of this include …

Collaboration and Partnership: The faculty work very closely with their program advisory committee. This committee is a representation of active community business partners who provide advice and program support. The electronic technology faculty also work very closely with other divisional programs, especially diesel, automotive technology, aviation maintenance and drafting.

Integrity: The program faculty has demonstrated a high degree of integrity. They are openly accountable to perform according to the policies, procedures and expectations of the College, the division, the advisory committee, and most importantly, the students.

2) Strategic Directions

Transforming Students' Lives Foster the personal, professional, and intellectual growth of learners by providing exemplary and innovative teaching and learning experiences and student support services. Commit to a culture of assessment of programs, services and learning. Position Lane as a vital community partner by empowering a learning workforce in a changing economy.	The electronic technology program is a professional technical education credit program that provides career learning and counseling. The program includes both classroom and industry equivalent laboratory instruction using current and specific equipment and technologies. The curriculum provides instruction in employability, applied academic and technical skills. The program and course outcomes are assessed using multiple measures including: attainment of program outcomes, core abilities and learning college principles. Each course has identified specific assessment methods including: technical skill demonstration, group projects, research, portfolios, written tests, etc. The program has an active advisory committee, with representation from the employer community. The program works closely with other credit and non-credit programs to facilitate training a "learning workforce".

Transforming the Learning Environment Create a diverse and inclusive learning college: develop institutional capacity to respond effectively and respectfully to students, staff, and community members of all cultures, languages, classes, races, genders, ethnic backgrounds, religions, sexual orientations, and abilities. Create, enhance, and maintain inviting and welcoming facilities that are safe, accessible, functional, well-equipped, aesthetically appealing and environmentally sound.	This is an inclusive learning-centered program that actively seeks and responds to diversity in its students and staff. The faculty create and maintain the best learning environments possible, within their existing resource constraints, to support students in obtaining their educational goals. Instructors in this program must constantly renew and improve their curriculum and learning environments to align to the industry training standards.
Transforming the College Organization Achieve and sustain fiscal stability. Build organizational capacity and systems to support student success and effective operations. Promote professional growth and provide increased development opportunities for staff both within and outside the College	The electronic technology program is constantly assessing its operational efficiency and effectiveness. The program has been developing operating benchmarks (performance indicators) by which it can compare its actual to its planned operations. This methodology provides the basis for analyzing deviations and trends, identifying causes, and formulating solutions. The faculty in the electronic technology program have continuously developed their knowledge, skills and abilities as instructors and as industry experts.

3) <u>Learning Centered Principles</u>

Lane provides opportunities for transformation through learning.	The primary learning outcome of the electronic technology program is to provide instruction and hands-on training to enable students to obtain career employment. The program prepares students by focusing on both technical and employability skill development. Qualifying for entry-level and advanced employment transforms the student's life.
Lane engages learners as active partners in the learning process.	Students must actively demonstrate their technical and employability skills. Students initiate and manage their progress through the learning process.
Lane creates a learning environment that motivates and inspires students to recognize their responsibility for their own learning.	Students recognize their active involvement may lead to high-paying career positions. The learning environment includes both classroom and laboratory experiences that emulate the workplace.
Lane offers multiple options for learning based on proven and innovative theories and methods that address the needs of diverse learners.	Learning methods include lectures, reading, writing, demonstrations, laboratories, problem solving, researching, building, diagnosing, repairing, modeling, computer-based, cooperative work experiences, group/team projects, formal and self-assessment. Students receive appropriate learning accommodations to ensure success in the program.

Lane commits to a culture of assessment of programs, services and learning, honoring the values of intellectual freedom, community responsibility and student need.	The electronic technology program conducts both formative assessment of a student's knowledge, employ-abilities, technical skills and academic skills; and, summative assessment based on industry or national standards. Faculty assess the stated achievement of the program learning and operational outcomes. Advisory committees provide additional assessment on the relevancy of the curriculum and the quality of the student completers.
Lane fosters knowledge and appreciation of diversity among staff and students and encourages pluralism and intercultural competence. Lane engages learners from diverse cultural and social contexts.	The mission of the electronic technology program is to transform student lives through learning. The "student" should be representative of the diversity of the community. The program faculty work closely with the college's cultural and diversity programs and initiatives.
Lane is committed to both individual and organizational learning.	Program students, faculty, staff, administrators and community members are committed to learning. Each organizational member gains knowledge and intrinsic reward for actively engaging in learning.
Lane students and staff are a community of learners, all of whom contribute to learning.	The electronic technology program faculty are continuously engaged in keeping current with the new advances in the industry. They are active learners engaged with students and other colleagues to promote a community of learners.
Lane promotes open communication among staff, students and the community within and across organizational and physical boundaries.	The students, faculty and staff have open access to many forms of operational and governance communications: e-mail, The Daily, the web, meetings, forums, governance councils, etc.

Part II. Unit Description

1) Unit Mission/Vision

The electronic technology program aligns with the College's mission. *Lane is a learning-centered community college that provides affordable, quality, lifelong educational opportunities that include: Professional technical and lower divisional college transfer programs.*

The electronic technology program's vision is the same as the College's vision: *Transforming lives through learning.*

2) Catalog Description

The Electronic Technology program is an occupational, preparatory, two-year Associate of Applied Science degree Program.

The Electronic Technology program features state-of-the-art laboratories where students learn the basic principles of electronic theory and the associated lab skills needed for work in the electronics industry. The advanced equipment and expertise of the faculty make Lane's Electronic Technology program the best way to enter the field.

Faculty in the program bring considerable field experience to the classroom and regularly attend workshops at manufacturer training centers to help them keep up with technological changes in the industry.

The program provides classroom instruction and lab projects where students learn to generate and read schematic drawings; construct, modify and test an operational multistage digital or analog circuit; troubleshoot and repair circuits; use programmable controllers, ladder logic, and robotics; and test and troubleshoot a personal computer.

Graduates of this program begin careers electronic engineering technicians, electronic production technicians, electronic instrument technicians industrial electronic technicians, or for employment in the military.

This training can lead to employment in entry occupations with an average median income of $40,400 annually. Employment is estimated to be larger than average with annual new openings expected to be much higher than average. Reasonable employment opportunities exist for competitively trained workers. Short-term swings in activity in the "high-tech" manufacturing industries can affect the demand for workers. Workers must have an associate's degree to gain the necessary skills for this occupation.

New students can enter the program at the beginning of fall term. First year major courses are all terms through computer-based training. A program orientation is held for new students in fall term. All interested applicants should complete placement testing (Assessment & Testing Office, Building 1) in reading, writing and math. Minimum placement scores of 68 in Reading and 64 in Writing are required. Beginning Algebra MTH 060 is a pre-requisite to the program

3) History/Significant Program Events

How did your instructional unit evolve at Lane?

If not one of the founding programs of the College, the electronic technology program originated within a very few years of that founding. Begun with a welding only curriculum it has evolved into its current form as a program offering both welding and metal fabrication training. In support of this curricular transition the program has over the span of the last two decades worked to obtain funding for machine tools to support its significant metal fabrication offerings. This transformation was accomplished with the direction and support of the program's advisory committee.

What significant events have marked your growth?

1) The electrics engineering technician and electronic technician programs were merged in 2002.
2) The electronic technology program was designated as a high cost program and was scheduled to be canceled in 2002. The program was not canceled, but the negative publicity did effected the enrollment.
3) The evening open-entry computer-based training lab has offered access to many working adults.

Do you have a system for maintaining an archival history of your unit?

General historical information relies on oral transmission. Hard copy documentation is limited to instructors' record keeping of student class performance and classified personnel's recordation of budgetary information.

Do you have annual events that are representative of your unit's goals or teaching methods?

The program provides annual opportunity for students to take industry standard tests and usually to make products that demonstrate skill development.

4) Degrees and Certificates

Two-Year Associate of Applied Science Degree	*Credits*
AAS Program Total	**106 - 110**
First Year	
Fall	
Electrical Theory 1 EET 129	4
Shop Practices for Electronics EET 121	1
Concepts of Computing CS 120 or Intro to Programming CS 160 or higher level Computer class	4
Elementary Algebra MTH 065 or higher	4
English Composition WR 121	3
Total Credits	**16**
Winter	
Digital Electronics 1 EET 151	4
Electrical Theory 2 EET 130	4
Semiconductor Devices 1 EET 145	4
Intermediate Algebra MTH 095 or higher	5
Total Credits	**17**
Spring	
Digital Electronics 2 EET 152	4
Electronic Elective (Electrical Theory 3 EET 131 recommended)	4
Semiconductor Devices 2 EET 146	4
College Algebra MTH 111 or higher	5
Total Credits	**17**
Second Year	
Fall	
Electronics Troubleshooting ELT 277	4
Hardware Computer Systems: (Interfacing and Input/Output) ELT 282	4
Linear Circuits EET 247	4
Technical Report Writing WR 227	3
Total Credits	**15**
Winter	
Programmable Controllers EET 234	4
Microprocessor Applications EET 239	4
Human Relations requirement	3

Cooperative Education: Electronic Technology EET 280	3
Total Credits	**16**
Spring	
Industrial Instrumentation EET 201	4
Radiotelephone & Communications Equipment ELT 281	4
Robotics EET 232	4
Work Place Safety HE 125 or First Aid HE 252 or PE/Health requirement	3
Total Credits	**15**

5) Organizational Structure

Board of Education
President
Vice President of Instruction
Associate Vice President of Instruction
Division Chair Advanced Technology
Faculty Electronic Technology Program

6) Staff/Faculty

Name	Dale Schaper
Classification	Full-Time Faculty
Year Hired	1992
Degrees/Credentials	MSEE

Name	Doug Weiss
Classification	Temporary Contracted Full-time; Part-time classified / part-time instructor
Year Hired	
Degrees/Credentials	

Name	Dave Kruse
Classification	Temporary Contracted Full-time; Part-time instructor
Year Hired	
Degrees/Credentials	

7) Student Profile

Please refer to the Program Learning Outcomes, Goals and Performance Indicators on page 9.

8) Facilities and Equipment

9) Budget Profile

Refer to the Program Operations charts on pages 12 and 13.

Program Learning Outcomes, Goals and Performance Indicators

Program Learning Outcomes/Goals	Performance Indicators
1) Demonstrate employability skills required for initial employment and advancement in the industry that include: attendance, proper attire, customer relations, following directions, working in teams, and understanding work rules and ethics.	80% of the first year students will qualify for the "select student" status by receiving a recommendation from a full-time contracted faculty member. 90% percent of the second year students will complete their programs as "select students". Criteria to qualify for the "select" status will be determined and published by the faculty prior to the start of the academic year.
2) Demonstrate safe work practices and tool usage while performing operations in a shop environment.	95% of all students will pass a shop safety written and demonstration test.
3) Demonstrate the ability to generate and read schematic drawings and apply that knowledge to understand the operation of a physical circuit.	All students will be assessed for mastery of these skills. 80% of all first year students will complete the courses with a C- or better. 90% of the second year students will have obtained industry employment within one year of their completion of the program.
4) Construct, modify, and test an operational multistage digital or analog circuit.	All students will design, construct, test and present a project prior to completing the program
5) Follow the flow of an automated manufacturing process, recognize the transducers used to monitor a process and, using programmable controllers (PLCs), ladder logic and robotics, create, test and troubleshoot an automated process.	All students will design, construct, test and present a project prior to completing the program.
6) Demonstrate the operation of a microprocessor based system, write low level code, assemble and troubleshoot a personal computer.	All students will assemble and troubleshoot a personal computer and demonstrate the knowledge of low level coding prior to completing the program.
7) Interpret the concepts of a problem-solving task to troubleshoot a faulty circuit.	All students will troubleshoot a faulty circuit while explaining the principle electronic concepts.
8) Use appropriate library and information resources to research professional issues and support lifelong learning.	All students will conduct research with citations in a written report in both the first and second year of the program.
Enrollment Goals	**Performance Indicators**
Students will have access to the program.	The program will achieve the following student to faculty ratios: R-SFTE / FFTE = 22 : 1 CH-SFTE / FFTE = 16 :1 This means for every funded faculty position 22 reimbursable student full-time equivalents should be enrolled or 16 credit hour student full-time equivalents. The program did not achieve the student access goals of the 18.72 to 1 R-SFTE/FFTE ratio, and the 14.04 to 1 CH-SFTE to FFTE ratio.
Students who declare their major in this program will increase as a percentage of the total students enrolled.	FY2004 was the base year. 59 of the unduplicated headcount were declared majors.

Program graduates will increase as a percentage of the total students enrolled.	FY2000 was the base year. AAS graduates = 9
The percentage of enrolled female students in the program will exceed the percentage of females in the division programs.	12% of students enrolled in the advanced technology division were female. 7% of the fabrication/welding technology students were female.
The percentage of enrolled non-Caucasian program students will exceed the percentage of the non-Caucasian students in the college.	27% of the fabrication/welding technology students are non-Caucasian.
The percentage of program students who complete each term will exceed the college completion rate.	The college completion rate was 83.24%. The program completion rate was 92.52%.
The percentage of program term completers who receive a C- or greater will exceed the college "success" rate.	The college "success" rate is 79.08%. The program "success" rate is 91.97%.

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Program Learning Outcomes Assessment Matrix

Electronic Technology	Program Courses																
	EET 129 Electrical Theory 1	EET 121 Shop Practices	EET 151 Digtal Electronics 1	EET 130 Electrical Theory 2	EET 145 Semiconductor Devices 1	EET 152 Digital Electronics 2	EET 131 Electrical Theory 3	EET 146 Semiconductor Devices 2	ELT 277 Electronics Troubleshooting	ELT 282 Hardware Computers : IO	EET 247 Linear Circuits	EET 234 Programmable Controllers	EET 239 Microprocessor Applications	ENGR 280E Cooperative Education	EET 201 Industrial Instrumentation	ELT 281 Radiotelephone and Comm Equip	EET 232 Robotics
Associate Degree Credit Hours (94 Total Credits)	4	1	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4
Program Learning Outcomes																	
Demonstrate employability skills required for initial employment and advancement in the industry that include: attendance, proper attire, customer relations, following directions, working in	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Demonstrate safe work practices and tool usage while performing operations in a shop environment.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Demonstrate the ability to generate and read schematic drawings and apply that knowledge to understand the operation of a physical circuit.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Construct, modify, and test an opeerational multistage digital or analog circuit.	P	P	P	P	P	P	P	P			P	P	P	S	P	P	
Follow the flow of an automated manufacturing process, recognize the transducers used to monitor a process and, using programmable controllers (PLCs), ladder logic and robotics, create, test and troubleshoot an automated process.												P	P	S	P		P
Demonstrate the operation of a microprocessor based system, write low level code, assemble and troubleshoot a personal computer.									P	P		P	P				P
Interpret the concepts of a problem-solving task to troubleshoot a faulty circuit.	S	S	S	S	S	S	S	S	P	P	S	S	S	S	S	S	S
Access library, computing, and communications services and obtain information and data from regional, national, and international networks.		S							S								
Core Abilities																	
Communicate effectively.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
think critically and solve problems effectively	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Increase understanding of the relationship between self and community, including self-awareness and personal responsibility.																	
Explore academic disciplines of liberal arts, social sciences, and physical sciences.																	
Learning College Principles																	
Learners are active partners in the learning process.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Learners are self-directed.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Multiple learning options for diverse learners.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Learning is promoted across organizational boundaries.																	
Learning is substantive and documented.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Assessment Methods																	
Technical Skill Performance Observation/Evaluation	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Employability Skills Evaluation						P	P	P	P	P	P	P	P	P	P	P	P
Group Project	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Journaling																	
Library Research									S				S		S		
Oral Report/Presentation																	
Peer Assessment																	
Portfolio															S		
Pre and Post Test	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Project Evaluation	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Quizzes	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
Self Assessment																	
Written Report																	
Written Tests/Examinations	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

Program Learning Outcomes Assessment Matrix (continued)

Electronic Technology	General Education											
	Human Relations *	MTH 095 Intermediate Algebra	MTH 111 College Algebra	WR 121 English Composition		WR 227 Technical Report Writing	CS 120 Concepts of Computing	CS 160 Intro to Programming	Mth 065 Elementary Algebra	HE 125 Work Place Safety	He 252 First Aid	PE Health Requirement
Associate Degree Credit Hours (94 Total Credits)	3	5	5	3		3	4		4		3	
Program Learning Outcomes												
Demonstrate employability skills required for initial employment and advancement in the industry that include: attendance, proper attire, customer relations, following directions, working in	S	S	S			P	S	S			P	
Demonstrate safe work practices and tool usage while performing operations in a shop environment.											S	
Demonstrate the ability to generate and read schematic drawings and apply that knowledge to understand the operation of a physical circuit.												
Construct, modify, and test an opeerational multistage digital or analog circuit.												
Follow the flow of an automated manufacturing process, recognize the transducers used to monitor a process and, using programmable controllers (PLCs), ladder logic and robotics, create, test and troubleshoot an automated process.												
Demonstrate the operation of a microprocessor based system, write low level code, assemble and troubleshoot a personal computer.												
Interpret the concepts of a problem-solving task to troubleshoot a faulty circuit.												
Access library, computing, and communications services and obtain information and data from regional, national, and international networks.												
Core Abilities												
Communicate effectively.				P		P						
think critically and solve problems effectively		p	p	s		s	p					
Increase understanding of the relationship between self and community, including self-awareness and personal responsibility.	P						S					
Explore academic disciplines of liberal arts, social sciences, and physical sciences.												
Learning College Principles												
Learners are active partners in the learning process.												
Learners are self-directed.												
Multiple learning options for diverse learners.												
Learning is promoted across organizational boundaries.												
Learning is substantive and documented.												
Assessment Methods												
Technical Skill Performance Observation/Evaluation												
Employability Skills Evaluation						P						
Group Project												
Journaling												
Library Research												
Oral Report/Presentation												
Peer Assessment												
Portfolio						S						
Pre and Post Test												
Project Evaluation												
Quizzes												
Self Assessment												
Written Report												
Written Tests/Examinations												

P = this is a primary course for meeting the program learning outcome, core ability, learning college principle, or assessment method.
S = this course meets some of the program learning outcome, core ability, learning college principle or assessment method.

Lane Community College
Electronic Technology Unit Plan 2004 - 2005

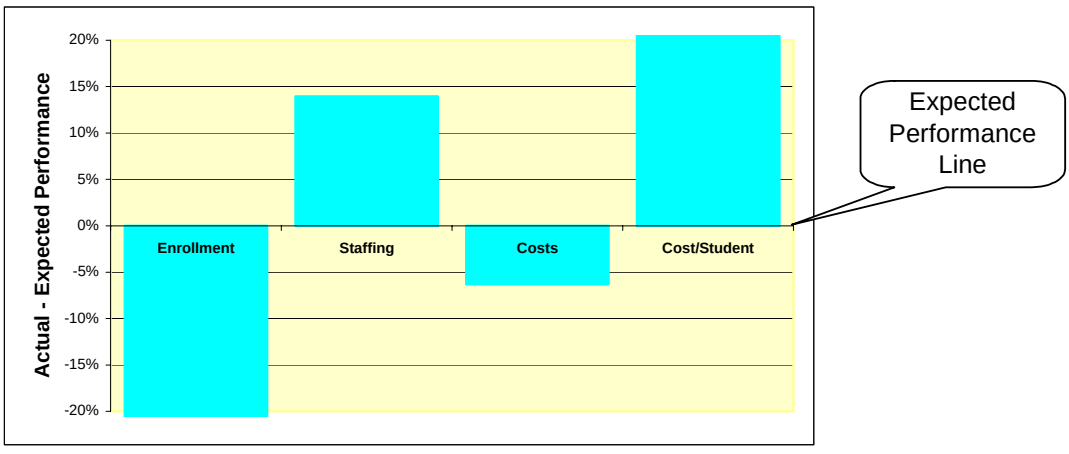
Part III. Unit Performance

Program Operations – Actual to Expected Analysis

Electronic Technology

	2003 - 2004 Outcomes	Expected*	Actual	Difference	Analysis
1	**Enrollment**				
2	Reimbursable Student FTE	73.893	51.880	70%	Enrollment is lower than expected.
3	Credit Hour Student FTE	44.336	38.910	88%	Enrollment is lower than expected.
4	Student Head Count	111		0%	**Enrollment is lower than expected.**
5	**Staffing**				
6	Full-time Equivalent Faculty	1.946	1.733	89%	Staffing is lower than expected.
7	Part-time Equivalent Faculty	0.486	1.038	213%	Staffing is higher than expected.
8	**Total Faculty FTE**	**2.432**	**2.771**	**114%**	**Staffing is higher than expected.**
9	**Budget**				
10	FT Faculty Dollars	121,627	108,342	89%	Expenses are lower than expected.
11	PT Faculty Dollars	15,445	32,962	213%	Expenses are higher than expected.
12	Lab Assistant Dollars	11,084	3,948	36%	Expenses are lower than expected.
13	Other Payroll Expenses	67,304	65,985	98%	Expenses are lower than expected.
14	Materials and Supplies	17,023	6,628	39%	Expenses are lower than expected.
15	**Direct Instruction Costs**	**232,483**	**217,865**	**94%**	**Expenses are lower than expected.**
16	**Operating Ratios**				
17	R-SFTE/Faculty FTE	30.39	18.72	62%	Faculty are serving fewer students.
18	CH-SFTE/Faculty FTE	18.23	14.04	77%	**Faculty are serving fewer students.**
19	Cost / R-SFTE	3,146.20	4,199.40	133%	Cost per student is more than expected.
20	Cost / CH-SFTE	5,243.67	5,599.20	107%	**Cost per student is more than expected.**
21	**Non-tuition Revenues**				
22	Course Fees				
23	Differential Fees				
24	Program Fees				
25	Sales				
26	Donations				

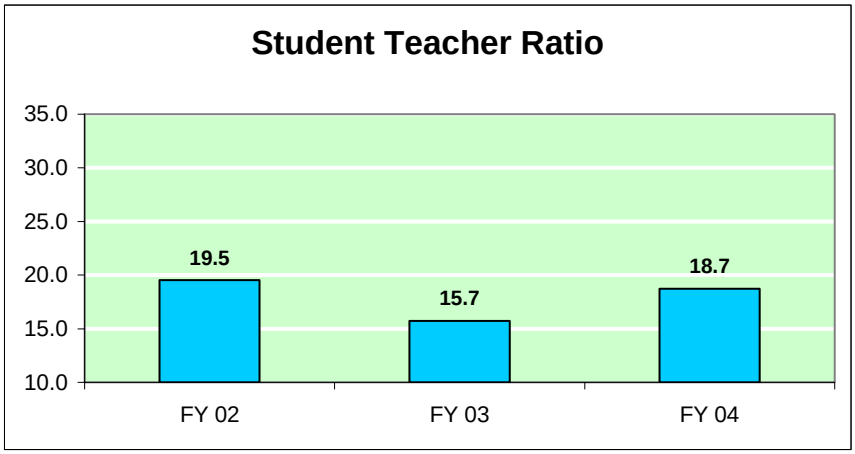
* Expected calculations are based on the instructional program benchmarks model.
* This program is a medium cost program in the benchmark model.

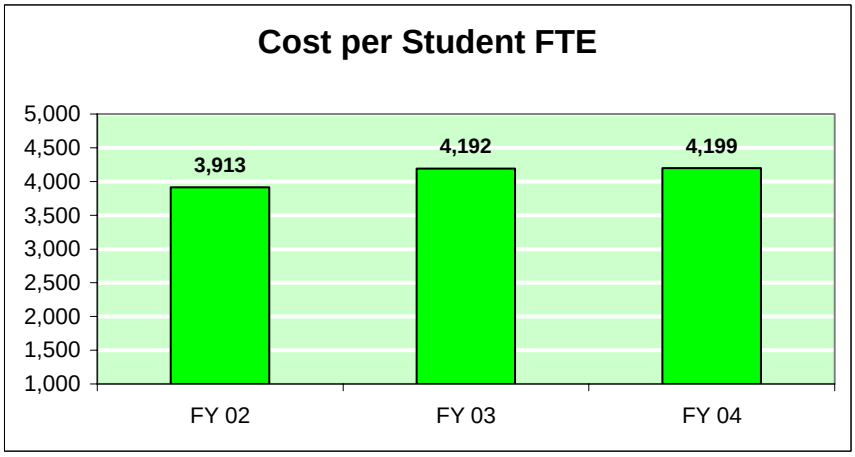


Program Operating Trends

Electronics Technology

	Operating Data	FY 02 Actual	FY 03 Actual	FY 04 Actual
1	Full-Time Faculty FTE	3.000	2.000	1.733
2	Part-Time Faculty FTE	1.646	1.000	1.038
3	Total Faculty FTE	4.646	3.000	2.771
4	Student FTE	90.810	47.208	51.880
5	SFTE / FFTE	19.546	15.736	18.722
6				
7	Full-Time Faculty	162,112	103,621	108,342
8	Part-Time Faculty	60,101	33,715	32,962
9	Lab Assistant	22,475	3,949	3,948
10	Other Payroll Expenses	100,610	50,488	65,985
11	Materials and Supplies	10,035	6,104	6,628
12	Total	355,333	197,878	217,865
13	Cost per Student FTE	3,913	4,192	4,199





Program Outcomes Analysis

1. How effectively did you fulfill your unit's mission?

Primary outcome is student employability upon completion of the program in at least an entry-level capacity, with expectation of prompt advancement. Ideal outcome would be 100% employment upon completion of program. All students completing the program will possess the entry level electronic skills needed for employment in an automated manufacturing environment

Idealistic program outcomes: All students admitted to the program would be pursuing a career in the electronic industry. All students would graduate with the fundamentals of electrical, digital and semiconductor theory. The second year builds upon the basics of the first year in three advanced areas: computer technology, automated systems and general electronics. Computer technology is a three-course sequence in PC hardware, PC troubleshooting and micro-controllers (68HC11). Automated Processes is a three-term sequence of Programmable logic controllers, Robotics and Industrial Instrumentation. The general courses help to give the students a more rounded education and include Linear Circuits, Communications and Co-op education in electronics.

Desired outcomes

- Maintain an average student to teacher load 16:1 (Credit Hour Student FTE)
- All students have access to co-op work experience
- Courses are arranged such that students can complete this program in two years
- Students are employable as an entry-level electronic technician upon graduation
- The laboratory equipment must be both current with industry standards and reliable in operation
- Consistency of equipment between Electronic Laboratories is to be maintained
- Student grading is based on Lab work class participation and examinations
- Availability of the electronics resource center is maintained each term so students may begin the program in any quarter
- Software is to be maintained to industry standards
- Instructor training and Professional Development is to be promoted and Encouraged within this program

2. How well did students meet your learning outcomes?

3. How well did students meet the Core Abilities outcomes?

Refer to the Program Learning Outcomes Assessment Matrix on page ….

4. How efficiently did you use the resources you were given?

Refer to the Program Operating Outcomes Assessment Matrix on page …

5. How well are you utilizing current technology?

Advisory committee input and feedback from industry is used to determine the currency of the existing program equipment. Lab equipment is replaced on a need basis . Bench equipment periodically needs replacement and not necessarily on a regular basis. Two indicators are monitored for when a general replacement is needed. First, if it is determined that the equipment is not current with industrial standards then it is time it initiate replacement. Second, once a particular piece of equipment fails, it is often the case that an exact replacement is no longer available. If it is determined that the instruction in a lab environment is being inhibited by cross training on different types of instruments, the equipment should be replaced

An annual inventory of division equipment is performed. When equipment is replaced in a lab, all stations are to be replaced with functionally identical equipment. Software should be replaced to maintain current industrial standards. For operating systems, this means cycling every two to three years to a current version. We use several application programs that are currently appropriate but could change without much advance notice.

6. How effective was your relationship with your advisory committee in achieving unit goals?

The electronic technology program is re-energizing its advisory committee.

7. How well did you meet faculty and staff goals?

8. Did last year's funded initiatives meet your goals?

Initiative:
ET M04
ET M07

Benefits:
$2400
$3600

Challenges:
Existing computers would support modern operating systems.
Selecting power supplies that will still be available for when it is time to replace additional units.

Effectiveness:
30% replacement

The selected units are state of the art and represent a positive addition to our electronics lab.

9. What are the overall unit's strengths?

The program accomplishes what it intends. Those students entering the program with average to above average preparatory skills, e.g. especially academic and work ethic, will succeed given the current curriculum, facilities, instructional and support staff. Those who are successful, not to be confused with only those graduating, typically are able to perform targeted skills at entry-level or, in fact, obtain employment in the field for which they were trained.

10. What are the overall unit's challenges?

Increasing enrollment and building partnerships with stakeholders.

11. Program Analysis Findings

Finding 1: The electronics technology program needs to consolidate its operations to be more efficient with operating resources. The program should develop partnerships with the apprentice program and with the emerging regional technical education center programs.

Finding 2: The electronic technology program needs to gain enrollment. The drop in enrollment is primary due to the tremendous four recent negative events: the loss of a full-time faculty position, the public impression that the program was or is going to be canceled, the collapse of two programs into one, and the effects of significant student tuition and fee increases (including the differential fee).

Finding 3: The electronics technology program needs to maintain its laboratory equipment.

Finding 4: The electronics program needs to continuously improve its curriculum and operations.

Part IV: Projected Performance

Program Initiatives

1. 1. Initiative Title and Identifier (Unit Abbreviation, Fiscal Year, Type, Sequence Number)
Division Priority: 2

Initiative 1: Consolidate and Upgrade the Electronics Resource Laboratory
Electronic Technician, FY 2005, Maintenance, 01 = **ET05M01**

2. Linkage to Program Analysis Findings

Finding 1: The electronics technology program needs to consolidate its operations to be more efficient with operating resources. The net effect of moving and upgrading this lab is twofold. First, evening students which currently do not have the option of taking second year classes in the existing lab, will be able to continue with second year classes due to the close proximity of needed equipment. Second, the ability to offer computer based training, with support hardware close by, we give us the opportunity to offer specialized training that would be of interest to the local community. In addition, the program should develop partnerships with the apprentice program and with the emerging regional technical education center programs.

The function of this initiative is to update the 5 year old computers currently being used in the AIR 200 computer lab and move them to building 15, room 206. The upgrade of this lab will provide modern computer equipment which will accommodate modern operating systems (Windows XP) and software that is current with industrial standards. This is a shared initiative between Apprenticeship, Instructional Computing and the Advanced Technology Division.

3. Describe the Initiative

THIS IS A SHARED INITIATIVE WITH THE ADVANCED TECHNOLOGY DIVISION AND INSTRUCTIONAL COMPUTING

Based on the first initiative of the 2003-2004 unit plan, we have found that the incorporation of computers within the learning environment has addressed a fundamental problem. Certain classes are subject to fluctuation of enrollment. While a class with low enrollment would, under normal circumstances, be cancelled, many of our classes are part of a larger sequence that cannot survive without each educational element remaining intact and on schedule. In an effort to fully utilize the available software and computer based presentational tools, we need to use computers with a modern operating system, a larger hard-drive and processor speeds that meet current software requirements. Computer- based training is critical to the success of our program. An instructor can maintain nontraditional CBT classes along with standard lab classes simultaneously by rotating students through computer instruction, where appropriate, and the more hardware intensive “hands on” classes. The success of this initiative is based on the ability of our computers to accommodate modern software requirements.

4. Requested Resources

Replace 23 PC’s and monitors at $1400 per station. Total cost = $32,200
Rewire electronics resource laboratory at $150 per station (23) = $3,450
Renovate the displaced laboratory space = $3,000.

5. Funding Sources

Instructional Technology Fees (TACT)
Carl Perkins

5.1 Alignment to Carl Perkins Act goals?

Student Skills Goal
This initiative provides technical enhancement to existing classes through the use of computer based teaching tools. In addition, this lab will represent a shared resource between, at least, two separate campus groups. This represents an unprecedented partnership be of resources between these two groups. There has been some

discussion of opening lab times between programs which would increase student access time to college resources at no additional cost to the college.

Work-based Learning Goal
It is an economic reality that classes cannot consistently be maintained when there is low enrollment. Keeping classes viable serves the students by letting them complete their programs on schedule. These classes deserve modern software which cannot be supported by older computers.

Effect on Profession Technical Education student success?
Students will gain industry specified skills which lead to higher paying employment.

Brief Carl Perkins funding history
The Electronic technology program has utilized Carl Perkins funding over the last 20 years to enhance its capability to offer effective, efficient training through purchase of equipment. In that time CP money has allowed the program to align its capabilities with the needs of the industry for which it trains students. The result is better qualified students, a better and broader relationship with industry and more efficient use of educational time.

Our funding has focused on improving classes with curriculum development funds, the purchase of software instructional tools and procurement of modern technical training equipment.

5.2 Alignment to Student Technology Fees.

This initiative is seeking TACT funds.

5.3 Curriculum Development

How will this initiative improve learning?

What specific curricular materials will be produced?

Why is this curriculum development and not just curriculum maintenance?

6. Fund, Organization, Account, Program Codes

611705 112000

7. Alignment to the College's goals

This initiative aligns with the following college goals:

- Transforming Students' Lives
- Transforming the Learning Environment

This initiative is in alignment with the college vision by offering support to those transforming their lives. Support of our program is actually support of several professional technical programs. Administration of Computer Based Training is consistent with several core values by providing an innovative classroom environment and maintaining accessibility to students who otherwise could not achieve their educational goals due to unavailability of classes. The execution of Computer Based Training, to date, has proven extremely viable which offers fiscal stability to our programs and, consequently, the college.

Program Initiatives

2. 1. Initiative Title and Identifier (Unit Abbreviation, Fiscal Year, Type, Sequence Number)
Division Priority: 28

Initiative 2: Enhancement: Provide Instruction for a Fundamentals of Technology/Electronics Curriculum. Electronic Technician, FY 2005, Enhancement, 01 = **ET05E01**

2. Linkage to Program Analysis Findings

Finding 2: The electronic technology program needs to gain enrollment. The drop in enrollment is primary due to four recent negative events: the loss of a full-time faculty position, the public impression that the program was or is going to be canceled, the collapse of two programs into one, and the effects of significant student tuition and fee increases (including the differential fee).

Finding 4: The electronics program needs to continuously improve its curriculum and operations.

3. Describe the Initiative

What is the need or intended use?
To increase the number of students who enter into the program. The program can benefit through partnering with the Regional Technical Education Center (R-TEC) to provide fundamentals of technologies/electronics courses. These courses will provide high-school students an opportunity to develop the basic understandings of technical electronics, pneumatics, employability skills and career academic skills. We believe that some of these classes might also appeal to local industries for specialized training of employees.

How was that need assessed?
The program enrollment trends during the last five years shows a marked drop when the college made its first budget decisions to cancel the program and then to restore it. Enrollment dropped by 50%.

What is your evidence of the need?
The R-TEC is an emerging regional initiative and the College is a major partner. High schools are not able to teach basic electronics at their sites. This is a win-win initiative: it serves the community (high school students) and it increases the enrollment (and marketing) for the electronics program

Given college resources, is it feasible?
Yes. This initiative can be funded by combining existing part-time salary general funds and charging the R-TEC partners a fee to cover the additional costs.

Is it an efficient use of college resources?
This initiative can be implemented with little or no new college funds. The new courses can be taught in the program's existing facilities and laboratories.

What would be the campus location of this request/project?
The Electronic technology program is located on the main campus building 15.

How many students (per year) will benefit?
60 new students and as many as 15 existing students which will produce about 30 reimbursable student FTEs per year.

How will students benefit?
Students will benefit by learning to industry entry-level how to operate equipment that they will be expected to operate as they obtain employment in the field for which they are being trained. They will benefit by having access to dependable, safe and current technology. They will benefit by learning to work efficiently with efficient equipment.

4. Requested Resources

Full-time faculty position = $80,000 (with OPE). This initiative will combine existing part-time salary funds with the contracted R-TEC revenues. The current R-TEC contract rate is $1,000 per student seat per academic year for 12 credits.

Curriculum Development (100 hours) = $3,800.

5. Funding Sources

Curriculum Development Funds
General Funds
Self-support Funds

5.1 Alignment to Carl Perkins Act goals?

Student Skills Goal
This initiative will improve technical skills of students by providing opportunity for those students to learn how to operate safe and reliable equipment of a type that they will be expected to operate by their future employers

Work-based Learning Goal
Students taking these courses will become aware of the many career pathways that include electronic technology technicians. Students may continue their career education at the College and then enter the workforce in entry level technical positions.

Effect on Profession Technical Education student success?
Students will gain industry specified skills which will lead to higher paying employment. High school students will become motivated to pursue and complete a technical degree.

Brief Carl Perkins funding history
The Electronic technology. program has utilized CP funding over the last 20 years to enhance its capability to offer effective, efficient training through purchase of equipment. In that time CP money has allowed the program to align its capabilities with the needs of the industry for which it trains students. The result is better qualified students, a better and broader relationship with industry and more efficient use of educational time.

5.2 Alignment to Student Technology Fees.

This initiative is not seeking TACT funds.

5.3 Curriculum Development

How will this initiative improve learning?
Exposing high school students to the career opportunities and educational requirements will motivate the students to enter and complete the program.

What specific curricular materials will be produced?
The fundamentals of technology: electronics curriculum must be developed. This curriculum will focus on basic electricity/ electronics, employability and applied academic skills. The curriculum will include orientation to career pathways.

Why is this curriculum development and not just curriculum maintenance?
This is a new sequence of courses for a new type of student.

6. Organization and Program Codes

611705 112000

7. Alignment to the College's goals

This initiative aligns with the following college goals:

- Transforming Students' Lives

- Transforming the Learning Environment
- Transforming the College Organization (building capacity)

Program Initiatives

3. 1. Initiative Title and Identifier (Unit Abbreviation, Fiscal Year, Type, Sequence Number)
Division Priority: 23

Initiative 3: Replace or Upgrade Existing Program Equipment and Software
Electronic Technician, FY 2005, Maintenance, 02 = **ET05M02**

2. Linkage to Program Analysis Findings

Finding 3: The electronics technology program needs to maintain its laboratory equipment and software.

3. Describe the Initiative

What is the need or intended use?
The program has an existing inventory of equipment and software that needs to be replaced or upgraded. Students should have current and operational equipment to ensure they are appropriately trained.

How was that need assessed?
There is a life cycle cost for all equipment and software. Equipment and software required for the delivery of the instructional program must eventually be replaced or upgraded. If the average life of the equipment inventory is 7 years, then every year the program should (on average) replace or upgrade 15% of its existing equipment. The average life of software is 4 years.

What is your evidence of the need?
The program has an equipment inventory.

Given college resources, is it feasible?
Yes. The College should strive to maintain or improve its level of quality in the instructional programs.

Is it an efficient use of college resources?
Yes. Funding the life-cycle costs of equipment will minimize the cost of funding critical failures.

What would be the campus location of this request/project?
The electronic technology program is located on the main campus building 15.

How many students (per year) will benefit?
The program serves approximately 111 students (head count) per year. (51.88 R-SFTE).

How will students benefit?
Students will benefit by learning to industry entry-level how to operate equipment that they will be expected to operate as they obtain employment in the field for which they are being trained. They will benefit by having access to dependable, safe and current technology. They will benefit by learning to work efficiently with efficient equipment.

4. Requested Resources

Replace 26 oscilloscopes = $26,000

5. Funding Sources

Carl Perkins
General Fund

5.1 Alignment to Carl Perkins Act goals?

Student Skills Goal
This initiative will improve technical skills of students by providing opportunity for those students to learn how to operate safe and reliable equipment of a type that they will be expected to operate by their future employers

Work-based Learning Goal
Students should be trained on equipment similar to what they will work with when employed. Employers are seeking employees with knowledge and training on the equipment they have.

Effect on Profession Technical Education student success?
Students will gain industry specified skills which lead to higher paying employment.

Brief Carl Perkins funding history
The Electronic technology. program has utilized CP funding over the last 20 years to enhance its capability to offer effective, efficient training through purchase of equipment. In that time CP money has allowed the program to align its capabilities with the needs of the industry for which it trains students. The result is better qualified students, a better and broader relationship with industry and more efficient use of educational time.

5.2 Alignment to Student Technology Fees.

This initiative is not seeking student technology fees (TACT).

5.3 Curriculum Development

How will this initiative improve learning?

What specific curricular materials will be produced?

Why is this curriculum development and not just curriculum maintenance?

6. Organization and Program Codes

611705 112000

7. Alignment to the College's goals

This initiative aligns with the following college goals:

- Transforming Students' Lives
- Transforming the Learning Environment
- Transforming the College Organization
    - o implementing a "life-cycle" approach for funding equipment

Program Initiatives

4. 1. Initiative Title and Identifier (Unit Abbreviation, Fiscal Year, Type, Sequence Number)
Division Priority: 13

Initiative 4: New Equipment, Software and Curriculum to Improve the Program
Electronic Technician, FY 2005, Enhancement, 02 = **ET05E02**

2. Linkage to Program Analysis Findings

Finding 4: The electronics program needs to continuously improve its curriculum and operations.

3. Describe the Initiative

What is the need or intended use?
The electronic technology program needs to continuously improve its instruction to keep current with advances in the industry.

How was that need assessed?
Faculty assess the need to adapt and or create new instructional opportunities. This assessment involves investigating the emerging technology needs of local industries. Additionally, the faculty research national and regional trends through reviewing the literature and talking with other professional colleagues.

What is your evidence of the need?
There is a discrepancy between what the program can teach and what an entry level graduate will be required to know. Ethernet, robotics, digital circuit boards and electronics workbenches are currently prevalent in industry or at other educational organizations but not fully available in the current electronic technician program.

Given college resources, is it feasible?
Yes. The College should strive to improve its level of quality in the instructional programs.

Is it an efficient use of college resources?
Yes. A current and relevant program will attract and retain more students. Students who complete a current and relevant program are much more employable.

What would be the campus location of this request/project?
The electronic technology program is located on the main campus building 15.

How many students (per year) will benefit?
The program serves approximately 111 students (head count) per year. (51.88 R-SFTE).

How will students benefit?
A current and relevant program will attract and retain more students. Students who complete a current and relevant program are much more employable.

4. Requested Resources

Ethernet technology = $8,000 (this will enhance the computer hardware, programmable logic controllers, and communications courses.

Stamp Card Expansion = $3,800 for curriculum development (100 hours at $38/hr with OPE).

Robots = $17,500 (2 additional robots to support the process control courses)

20 Altera UP-2 circuit boards and software = $4,000; and,
Curriculum development = $3,040 (80 hours to integrate the Altera equipment into the existing courses).

Electronic Work Bench circuit board analysis software = $1,500 (25 copies to support existing courses); and,

Curriculum development = $3,040 (80 hours to integrate the EWB software into the courses).

Electronic Work Bench communications software = $1,500 (15 copies to support the communications courses);
Curriculum development = $3,040 (80 hours to integrate the EWB software into the courses).

LCD overhead projector = $3,500 (includes installation and a spare bulb).

5. Funding Sources

Student Technology Fees (TACT)
Carl Perkins
Curriculum Development

5.1 Alignment to Carl Perkins Act goals?

Student Skills Goal
This initiative will improve technical skills of students by providing opportunity for those students to learn how to operate safe and reliable equipment of a type that they will be expected to operate by their future employers

Work-based Learning Goal
Students should be trained on equipment similar to what they will work with when employed. Employers are seeking employees with knowledge and training on the equipment they have.

Effect on Profession Technical Education student success?
Students will gain industry specified skills which lead to higher paying employment.

Brief Carl Perkins funding history
The Electronic technology program has utilized Perkins funding over the last 20 years to enhance its capability to offer effective, efficient training through purchase of equipment. In that time, Perkins money has allowed the program to align its capabilities with the needs of the industry for which it trains students. The result is better qualified students, a better and broader relationship with industry and more efficient use of educational time.

5.2 Alignment to Student Technology Fees.

This initiative is seeking Student Technology Fees.

5.3 Curriculum Development

How will this initiative improve learning?
By incorporating new technologies and training materials into the curriculum.

What specific curricular materials will be produced?
New course laboratory training materials, projects and tests.

Why is this curriculum development and not just curriculum maintenance?
These items are new to the curriculum. The faculty must become proficient with the equipment/software and prepare new learning materials.

6. Organization and Program Codes

611705 112000

7. Alignment to the College's goals

This initiative aligns with the following college goals:

- Transforming Students' Lives
- Transforming the Learning Environment

Lane Community College
Electronic Technology Unit Plan 2004 - 2005

Program Initiatives

Initiatives Spreadsheet

Division Priority	Initiative ID	Expected completion date	Initiative Title	Resource Description	$$	Recurring	Resource Type (mark with an "X")				Funding Sources (mark with an "X")					
							Payroll (w/OPE)	Equipment	Space	Other	Existing	New Gen Fund	Carl Perkins	Stud Tech Fee	Curr Dev	Other
1	ET05M01	9/1/2005	Consolidate and Upgrade the Electronics Resource Laboratory	Replace 23 computers and monitors. The existing computers are over 5 years old.	$32,200.00	Non		X						X		
1	ET05M01	9/1/2005	Consolidate and Upgrade the Electronics Resource Laboratory	Rewire computer stations	$3,400.00	Non				X				X		X
1	ET05M01	9/1/2005	Consolidate and Upgrade the Electronics Resource Laboratory	Renovate the vacated space	$3,000.00	Non				X						X
2	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	Incorporate ethernet technology Into Computer Hardware, Programmable Locic Controllers and Communications classes.	$8,000.00	No		X					X			
3	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	Curriculum development to incorporate stamp technology into Digital Theory 2, Programmable Logic Controllers, and Communications classes.	$3,800.00	No	X						X		X	
4	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	2 robots for the process control courses	$17,500.00	No		X					X			
5	ET05M02	9/1/2005	Replace or Upgrade Existing Equipment and Software	Replace 26 oscilloscopes	$26,000.00	No		X					X			
6	ET05E01	9/1/2005	Provide Instruction for a Fundamentals of Technology Electronics Curriculum.	Full-time faculty position	$80,000.00	Yes	X				X					X
7	ET05E01	9/1/2005	Provide Instruction for a Fundamentals of Technology Electronics Curriculum.	Curriculum development (100 hours)	$3,800.00	No	X						X		X	
8	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	20 Altera UP-2 circuit boards and software.	$4,000.00	No		X					X			
9	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	Electronic Work Bench (EWB) circuit board analysis software (25 copies)	$1,500.00	No		X					X	X		
10	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	Curriculum development for the EWB circuit boards (80 hours)	$3,040.00	No	X						X		X	
11	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	LCD overhead projector to project EWB materials	$3,500.00	No		X					X	X		
12	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	EWB communications software (15 copies)	$1,500.00	No		X					X	X		
13	ET05E02	9/1/2005	New Equipment, Software and Curriculum to Improve the Program	Curriculum development for the EWB communications (80 hours)	$3,040.00	No	X						X		X	

Equipment Inventory Spreadsheet

Existing Equipment Inventory

Program	Description	#	Unit Cost	Total Cost	Years of Life	Annual Cost
ET	Laboratory workbench equipment	1	200,000	200,000	7	28,571
ET	Upgrade of lab equipment over 5 yr. cycle	1	25,000	25,000	5	5,000
ET	ERC Computers	23	1,400	32,200	5	6,440
ET	Oscilloscopes	26	1,000	26,000	10	2,600
	Existing Equipment Total			**283,200**		
	Annual Replacement Costs					**42,611**

Projected FY06 Program Outcomes

1. What program level outcomes do you expect to achieve?

The program has developed a set of learning outcomes and operational goals. Assessment of these program outcomes will be based on the measurement of the actual performance to the performance indicators. Please refer to the Program Learning Outcomes, Goals and Performance Indicators chart on page 9.

2. How will your program enhance your students' abilities to meet Core Abilities outcomes?

The program has developed an Learning Outcomes Assessment Matrix that maps all of the program and general education courses required to compete an associates degree against the program's learning outcomes, core abilities and learning college principles. The primary and secondary assessment methods are also identified. Please see this chart on page 11.

3. What course level outcomes do you expect to achieve?

What goals do you wish to set for 2004-2005?

How will your courses grow, change or adapt?

How will your instructional methods change or adapt?

What goals do you have for your instructional environment (classrooms and/or technologies and equipment)?

4. What plans do you have for enhancing your use of current technologies?

Almost by definition equipment that is new, even though replacing an existing function, typically brings new efficiencies not available in the older equipment and, therefore, is, in effect, an enhancement. (See above for planned equipment replacement.

5. What plans do you have for working more effectively with your Advisory Committee?

A goal of program staff is to recruit additional members to its advisory committee. We would like to have members from welding sales/supplies, as well as welding inspection. If we are successful in reaching this goal we will have a broader based, more effective committee, representing more electronic technology disciplines.

6. How will you set faculty and staff goals?

The faculty and staff in this program will use this unit plan to help set goals. The inclusion of learning outcomes and operating goals provide the basis for assessment. The faculty and staff must continuously maintain and improve the program.

7. Enrollment Projections

The student enrollment is constrained by the number of faculty. If more faculty are hired, then the student enrollment will increase.

8. Student Success Projections

The student success projections are part of the Program Learning Outcomes, Goals and Performance Indicators (page 9). Additional measures of student success will be developed during the year and added to the chart.

9. Facilities and Equipment Need Projection

This program operates in an outstanding facility. Equipment needs include the costs of acquiring new technologies, and, maintaining, repairing, upgrading and replacing existing equipment.

10. Budget Projections

The general fund budget is not expected to increase. Carl Perkins and Technology Fee dollars will be required to maintain and enhance the equipment.

_____ _____
Advisory Committee Chair Date

_____ _____
Division Chair Date