Oklahoma City Community College

Program Review Self Study Year: 2012-2013
Division of Information Technology
Associate in Applied Science in Electronics Technology (013) Options: Instrumentation and Control Computer Integrated Manufacturing Semiconductor Manufacturing Technology
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I. Introduction

This section should reference the general process of the review and any unique features of the review (such as the use of outside consultants or conducting the review in relation to an accreditation visit).

If the program has been reviewed previously, this section should include a brief summary of prior recommendations and how they were addressed.

The previous recommendations for this program were: To offer courses at different times and days of the week to accommodate student interest. The program has been expanded and multiple offerings are available. The program is offered days, evenings, and on Saturdays to meet student needs.

II. Executive Summary

The Executive Summary will include the program's connection to the institution's mission, program objectives, and the strengths and areas for improvement of the program. It will also include the key findings and recommendations of the internal or external reviews with regard to the Program Review Principles and Program Review Criteria.

The Electronics program fits into the mission and strategic plan of the institution through the following: educational accessibility, college success readiness, student achievement of educational goals (i.e., certificates of mastery and/or associate degrees), development of an economic, social and cultural community.

The list of objectives are taken from the career technology center's website. Their curriculum is industry driven and also is in compliance with the standards set forth by the Oklahoma State Department of Career Tech. Career Tech is an innovative industry whose purpose is to serve the needs of the business and industry partners in Oklahoma.

The strengths of the Electronics program are that the technology centers have excellent learning/training facilities and well qualified instructors who are certified in their field of expertise. Students finishing the technical/occupational portion are positively placed quickly and are offered high starting salaries. 92% of students in this program are positively placed. The course content for the programs is updated and relevant. Advisory committees offer significant input that shapes the programs and meets industry needs.

The weakness of the program is program completion. This program produces highly skilled and trained individuals. Many of the students in this program find employment after they complete the technical/ occupational portion of their degree and cannot take degree requirements full-time. Many are working adults who are only able to take a limited number of courses per semester/year, so they cannot complete the Associate in Applied Science degree in the traditional two-year track.

III. Analysis & Assessment

This section will include a complete review and analysis of the Program Review Criteria based on the internal or external team's review. It will also assess developments since the last program review in the context of the current recommendations of the internal review and any recommendations.

A. Centrality of the Program to the Institution's Mission

An assessment and written analysis as to the centrality of the program to the institution's mission and in the context of the institution's academic plan are required. The purpose of the mission of an institution is to indicate the direction in which the institution is going now and in the future. The mission defines the fundamental reason for the existence of the institution.

Together with the planning principles and goal statements, the mission reveals the philosophical stance of the institution with respect to education and learning while at the same time providing a framework for the maintenance of institutional integrity and development.

Describe how the program is central to the institution's mission:

The Electronics program is available through a Cooperative Alliance between Francis Tuttle, Moore Norman, Metro Tech, and OCCC. The Alliances provide educational opportunities for students by enabling students who are enrolled in college level programs at the career technology center to earn college credit through OCCC.

The Electronics program fits into the mission and strategic plan of the institution through the following: educational accessibility, college success readiness, student achievement of educational goals (i.e., certificates of mastery and/or associate degrees), development of an economic, social and cultural community.

The purpose of the Cooperative Alliances is to allow students access to higher education. The Cooperative Alliances serve the needs of the community by reaching beyond the traditional college mold, and embracing a wider variety of technical programs that are economically emerging. Oklahoma is competing in the global economy, as well as the national economy, and the Cooperative Alliances are creating an opportunity for students to earn degrees and higher wages.

B. Vitality of the Program

Vitality of the program refers to the activities and arrangements for insuring its continuing effectiveness and efficiency. To maintain its vitality and relevance, a program must plan for the continuous evaluation of its goals, clientele served, educational experiences offered, educational methods employed, including the effective incorporation of technology, and the use of its resources. This vital principle or force can best be observed by examining the past and present initiatives to insure the vitality of the faculty, students, and program.

1. List Program Objectives and Goals

Instrumentation and Control Emphasis:

Upon completion of this program the student will be able to:
· Demonstrate knowledge of basic industrial electronic principles and devices by solving problems and constructing lab experiments in subjects such as resistive circuits, Ohms law and power, series and parallel circuits, DC and AC circuits, solid state circuits and devices, and operational

amplifiers.
· Analyze, construct, test and interface fundamental digital circuits including logic gates, combinational logic circuits, Flip-flops, counters, encoders and decoders, shift registers arithmetic circuits, digital to analog conversions, and analog to digital conversions.
· Demonstrate characteristics of industrial control devices.
· Demonstrate problem maintenance and troubleshooting procedures on various types of electrical motors and electromechanical systems.
· Demonstrate the characteristics of an industrial control system consisting of transmitters, controllers, control valves, and transducers.
· Demonstrate system operations by proper measurement and control techniques of flow, pressure, temperature and level control with the system.
· Demonstrate pneumatic logic components within a pneumatic system and integrate each component into a control loop.
· Use hydraulic pumps and motors and make hydraulic connections, measurements, and calculations.
· Demonstrate the operation of a programmable controller by writing a program to control on-delay and off-delay timers, test the program for correct, operation and apply troubleshooting techniques as necessary.

General Emphasis:
Upon completion of the program the student will be able to:
· Demonstrate knowledge of principles by solving problems relating to both DC and AC in subjects such as resistive circuits, reactance impedance, AC circuits and resonance.
· Demonstrate and solve problems relating to various sold state devices and associated circuits such as diodes, transistors, F.E.T.'s power supplies, filters, regulators, and amplifiers.
· Demonstrate digital logic fundamentals by applying digital devices in a laboratory setting and by solving problems related to circuit theory, number systems, and Boolean algebra. Specific devices included are basic gates, combination logic, flip-flops and MSI devices.
· Use hand tools to construct, solder and desolder electrical circuitry. In addition, the student will use electronic measuring instruments such as oscilloscopes, multimeters, and function generators to measure and record voltages, currents, frequencies, resistances, and other circuit values.
· Analyze electronic circuits associated with amplitude modulation, frequency modulation, transmission lines, antennas and fiber optics.
· Apply digital fundamentals to the design of logic systems such as counters, arithmetic circuits, memory circuits, analog/digital converters, digital/analog converters, and microprocessors.
· Apply basic electronic principles to solve problems concerning operational amplifier specifications and applications in inventing and non-inverting amplifiers, summing circuits, differential amplifiers, integrators, differentiators, and other waveshaping circuits.
· Use microprocessors and support devices to evaluate microcontrollers and support devise to evaluate microcontroller applications related to the electronics industry. Microcontroller drive capabilities related to input/out interfacing, programming, motion control, A/D and D/A conversions, and embedded controller applications will be analyzed and tested.

2. Quality Indicators

Quality indicators may vary by institutional mission; however, institutions should measure the efforts and quality of their programs by: faculty quality, ability of students, achievements of graduates of the program, curriculum, library, access to information technology resources including efficiencies and improved learner outcomes through appropriate use of this technology and appropriate use of instructional technology to achieve educational objectives, special services provided to the students and/or community, and other critical services.

As appropriate, institutions should evaluate the program against industry or professional standards utilizing internal or external review processes. Institutions must provide specific documentation of student achievement. Such documentation should include programs outcomes assessment data consistent with the State Regents' *Assessment Policy*. Program quality may also be reflected by its regional or national reputation, faculty qualifications, and the documented achievements of the graduates of the programs. This includes a program self review that provides evidence of student learning and teaching effectiveness that demonstrates it is fulfilling its educational mission and how it relates to Higher Learning Commission Criteria and Components listed below:

a. The program's goals for student learning outcomes are clearly stated for each educational program and make effective assessment possible. List of the student learning outcomes.

Instrumentation and Control Emphasis:

Identify and troubleshoot operational procedures on electrical motor control circuits and electromechanical devices.

Graduates of the Electronics-Instrumentation and Control Program will be prepared for the workforce with the skills and education necessary by today's industry standards.

General Emphasis:
Demonstrate knowledge of principles by solving problems relating to both DC and AC in subjects such as resistive circuits, reactance impedance, AC circuits and resonance.

Graduates of the Electronics-General Program will be prepared for the workforce with the skills and education necessary by today's industry standards.

Well defined the criteria for measurement and how the criteria were used in the program.

Instrumentation and Control Emphasis:
Students must have taken and passed ET 2124-Control Systems with a pass rate of 80% or above.

75% of the program graduates will be positively placed in the field, related fields, or in continuing education within the first year of graduation, as indicated by the Student Follow-up Survey report.

General Emphasis:
Students of the program must take and successfully pass ET 1014-DC/AC Fundamentals with a rate of 80% or above.

75% of the program graduates will be positively placed in the field, related fields, or in continuing education within the first year of graduation, as indicated by the Student Follow-up Survey Report.

The evaluation, results, and recommendations based on the criteria used.

Instrumentation and Control Emphasis:
Over the last five years, data indicates pass rates for ET 2124-Control Systems are 89.4%. This is above the 80% minimum for the program.

Over the last five years, when placement data has been available, data indicates a positive

placement rate of 92%, which is significantly higher than the 75% minimum requirement. The positive placement rate is directly related to our institutional mission's plan of economically enriching the community.

The program's content and requirements are industry driven, and we will continue to defer to advisory committee recommendations, if changes are needed.

General Emphasis:
Over the last five years, data indicates pass rates for ET 2124-Control Systems are 100%. This is well above the 80% minimum for the program.

Placement data is unavailable for this program.

The program's content and requirements are industry driven, and we will continue to defer to advisory committee recommendations, if changes are needed.

General Education requirements represent just over sixty percent of each Associate of Science or Associate of Arts degree, making the careful assessment of these broad competencies OCCC considers essential for all graduates very important.

Strategy:

The General Education Committee will create six interdisciplinary teams with members from multiple divisions. Each team will consist of five members with two members specifically teaching in one of the General Education Core Areas. Also, at least one team member will be a representative of the General Education Committee.

Twice a year these teams will evaluate one hundred artifacts from students having attained at least 36 hours of General Education Courses from OCCC. Reports, recommendations, and actions created from the General Education Assessment Process will be stored on the General Education Committee Website.

Evidence should be presented that shows a systematic review of the curriculum is conducted regularly. This review should indicate how the general education competencies are being met:

General Education Assessment Plan

Objective:

To assess and recommend actions for the general education component of Oklahoma City Community College's curriculum.

Method:

Developed rubrics will provide common criteria for assessing “artifacts” gathered from various courses. Artifacts may include but are not limited to recorded performances, PowerPoint Presentations, essays, lab reports, research projects, service-learning projects, or any assignment preexisting in a faculty's course.

Nevertheless, the underlying principle of this method is (1) to reduce the intrusive nature of assessment within faculty courses, (2) to create a real environment of student performances within a classroom setting instead of a contrived environment of a forced examination (i.e. CAAP exams not counting for a classroom grade), and (3) to collect artifacts already designed and administrated by our professional faculty at OCCC.

Data Collection:

The Office of Institutional Effectiveness will identify each semester students completing at least 36 credit hours in General Education Courses.

The General Education Core

General Education at Oklahoma City Community College is an integral component of each student's experience. Every student receiving an Associate Degree (AAS, AA, or AS) must complete at least one course from each of the following areas, indicating a general understanding of that area.

I. Human Heritage, Culture, Values
II. Public Speaking
III. Writing
IV. Social Institutions
V. Mathematical Methods
VI. Scientific Methodology

Program Response to General Education Assessment Data

Provide Evidence that shows a systematic review of the curriculum is conducted regularly. This review should indicate how the general education competencies are being met.

The general education competencies are met through thorough review of the instructional material delivered to the students. The curriculum is reviewed by instructional designers, faculty, and business/industry partners, to insure that the curriculum is relevant to the needs of the field. The general education competencies addressed in this program include Scientific Methodology and Mathematical Methods.

V) Mathematical Methods
The student must analyze, construct, test and interface fundamental digital circuits including logic gates, combinational logic circuits, Flip-flops, counters, encoders and decoders, shift registers arithmetic circuits, digital to analog conversions, and analog to digital conversions.
The student must analyze electronic circuits associated with amplitude modulation, frequency modulation, transmission lines, antennas and fiber optics.
The student must apply digital fundamentals to the design of logic systems such as counters,

arithmetic circuits, memory circuits, analog/digital converters, digital/analog converters, and microprocessors.
The student must apply basic electronic principles to solve problems concerning operational amplifier specifications and applications in inventing and non-inverting amplifiers, summing circuits, differential amplifiers, integrators, differentiators, and other waveshaping circuits.

VI) Scientific Methods
The student must demonstrate knowledge of basic industrial electronic principles and devices by solving problems and constructing lab experiments in subjects such as resistive circuits, Ohms law and power, series and parallel circuits, DC and AC circuits, solid state circuits and devices, and operational amplifiers.
The student must demonstrate characteristics of industrial control devices.
The student must demonstrate problem maintenance and troubleshooting procedures on various types of electrical motors and electromechanical systems.
The student must demonstrate the characteristics of an industrial control system consisting of transmitters, controllers, control valves, and transducers.
The student demonstrate system operations by proper measurement and control techniques of flow, pressure, temperature and level control with the system.
The student must demonstrate pneumatic logic components within a pneumatic system and integrate each component into a control loop.
The student must use hydraulic pumps and motors and make hydraulic connections, measurements, and calculations.
The student must demonstrate the operation of a programmable controller by writing a program to control on-delay and off-delay timers, test the program for correct, operation and apply troubleshooting techniques as necessary.
The student must demonstrate knowledge of principles by solving problems relating to both DC and AC in subjects such as resistive circuits, reactance impedance, AC circuits and resonance.
The student must demonstrate and solve problems relating to various sold state devices and associated circuits such as diodes, transistors, F.E.T.'s power supplies, filters, regulators, and amplifiers.
The student must demonstrate digital logic fundamentals by applying digital devices in a laboratory setting and by solving problems related to circuit theory, number systems, and Boolean algebra. Specific devices included are basic gates, combination logic, flip-flops and MSI devices.
The student must use hand tools to construct, solder and desolder electrical circuitry. In addition, the student will use electronic measuring instruments such as oscilloscopes, multimeters, and function generators to measure and record voltages, currents, frequencies, resistances, and other circuit values.
The student must use microprocessors and support devices to evaluate microcontrollers and support devise to evaluate microcontroller applications related to the electronics industry. Microcontroller drive capabilities related to input/out interfacing, programming, motion control, A/D and D/A conversions, and embedded controller applications will be analyzed and tested.

b. The program values and supports effective teaching.

Faculty Performance Review and Evaluation

Faculty will be evaluated on the basis of the established standards of performance and objectives established in the person's contract and any subsequent memorandums of agreement established for the position/person. Faculty are defined as employees who primarily perform teaching and instruction-related duties and who are employed on the basis of a written contract setting forth the duties to be performed and the compensation to be paid. The performance appraisal for each faculty member will be conducted by the Division Dean or Director as appropriate.

Course and Faculty Evaluation

The Student Input on Instruction process is a means of gathering student perceptions of instruction at the college. The results are intended to be used by faculty as means of identifying ways to improve instruction. A copy of the questionnaire may be found in the appendix of this document. Up to three (3) questions, unique to the course or section, may be created for inclusion as optional questions. The forms and supportive instructions will be available to students online during the 8th, 9th, or 10th week of 16-week courses or the 5th or 6th week of eight-week courses.

c. The program creates effective learning environment.

The students in this program have opportunities to participate in programs that facilitate effective learning. Aside from in class instruction/testing the programs offer:
1) The classroom equipment is updated as dictated by advisory committees and is the most advanced technology needed for students to succeed in their field of study.
2) Advisory Committees offer feedback concerning the programs' efficacy and suggestions on improvement.
3) Internships give students the chance to build career experience and "apply" their skills in a relevant job.
4) Hands-on practical application and experience tied to industry related tasks.
5) Learning activities and hands-on training that are applicable to real world tasks.

d.The program's learning resources support student learning and effective teaching.

The Electronics program is part of the Cooperative Alliances with Oklahoma City metro area technology centers. Major courses for these programs are taught at technology centers, and thus the majority of research needs for the technology programs are met at the technology center facilities.

For this reason the OCCC Library mainly focuses on providing materials for the general education needs of students, while supplying a general interest, less comprehensive level collection of technology materials, rather than in-depth coverage for each specific technology area. The Library will continue to update the print technology collection, while adding options. For example, this fall the Library will add the 40,000 title EbscoHost Community College ebook collection, which includes ebooks in a wide range of technology topics.

Finally, the Library continues to subscribe to excellent online article databases such as EbscoHost. These provide access to vast amounts of current reporting and research in all subject areas, and are searchable both on- and off-campus by anyone associated with OCCC.

e. The institution's curricular evaluation involves alumni, employers, and other external constituents who understand the relationship among the course of study, the currency of the curriculum, and the utility of the knowledge and skills gained.

OCCC has established specific curriculum patterns for transfer programs leading to the Associate in Arts (A.A.) or Associate in Science (A.S.) degrees. Describe program coordination efforts, partnerships and relationships with transfer institutions.

The Electronics program has advisory committees consisting of industry experts, former students and representatives who are profoundly involved in the program's industry. These committee members communicate their industry's requirements, which shapes the program to meet business needs. This program is a Cooperative Alliance A.A.S. program. This program does not transfer to other institutions.

f. The organization learns from the constituencies it serves and analyzes its capacity to serve their needs and expectations.

Advisory committee meetings are held twice a year in order to determine whether the programs are meeting the needs of business and industry. Changes in curriculum and/or technology are made based on the advisory committee recommendations.

Students are also surveyed by the schools regarding their classroom experience, equipment used, and instruction. The surveys are used to address concerns and areas for improvement.

3. Minimum Productivity Indicators

The following are considered to be the minimum standards for degree program productivity (averaged over five years). Programs not meeting these standards may be identified for early review as low producing programs. Institutions will be notified of programs not meeting either one of the two standards listed below and other quantifiable measures in this section.

a. Number of degrees conferred (averaged over five years, minimum standard: AA/AS/AAS 5)

An average of 6.6 degrees have been conferred over the past five years.

b. Number of majors enrolled (averaged over five years,minimum standard: AA/AS-25 AAS-17)

An average of 73 majors have been enrolled over the past five years.

4. Other Quantitative Measures

a. The number of courses taught exclusively for the major program for each of the last five years and the size of classes for each program level listed below:

1000 Level
FY 2008: 10 with an average class size of 7.8
FY 2009: 16 with an average class size of 7.3
FY 2010: 11 with an average class size of 7.7
FY 2011: 13 with an average class size of 9.8
FY 2012: 10 with an average class size of 8

2000 Level
FY 2008: 11 with an average class size of 6.1
FY 2009: 10 with an average class size of 8.7
FY 2010: 11 with an average class size of 10.1
FY 2011: 12 with an average class size of 9.1
FY 2012: 9 with an average class size of 12.8

b. Student credit hours by level generated in all major courses that make up the degree program for five years.

1000 Level
FY 2008: 297
FY 2009: 309
FY 2010: 320
FY2011: 492
FY 2012: 305

2000 Level
FY 2008: 297
FY 2009: 368
FY 2010: 454
FY2011: 426
FY 2012: 462

c. Direct instructional cost for the program for the review period.

Oklahoma City Community College (OCCC) offers online courses (computer based/Internet) which allow students the freedom from attending regularly scheduled course meeting times while still earning college credit. Online courses are similar to traditional, on campus courses in that they have a regular class schedule, assignment due dates, and the expectation of student interaction. OCCC has committed resources for the creation of specialized resources for online students with the goal of increasing student success. These resources include a customized section of the OCCC website to assist them as they progress in their academic studies via distance and an orientation to the College's Learning Management System. We also provide virtual tutoring in the Math and Communication labs in addition to 24-7 tutor support through GradeResults to further customize and personalize online students' education. The cost of these initiatives and efforts totals $55,000.00. The cost of 24-7 technology support for student and faculty support those working within the learning management system is $65,000.00.

Technology use in the classroom continues to expand to meet the needs of our students. 150 of our classrooms are equipped with permanent multimedia equipment with the availability of mobile carts to increase the number of high tech classrooms to 100%. The cost incurred with this multiyear effort was $1.22 Million. Faculty members are continuing to utilize student response systems, SmartBoards, slates and are implementing the use of IPads within the classroom. OCCC continues to support the utilization of technology in the classroom so faculty can continue to engage students. The use of IPads in the classroom is a new effort on campus and the cost thus far has only been $50,000.00. The Center for Learning and Teaching offers multiple learning opportunities for faculty related to strategies for incorporating technology into instruction effectively as well as the use of the College's Learning Management System, Moodlerooms. The CLT team has strategically worked to meet the needs of our 157 full-time faculty as well as the 500 adjunct faculty members. They support them through organized workshops, online training modules, and individual faculty consultations conducted via phone, Skype, email, or in person. The consultations focus on the use of the college's LMS as well as the choosing of instructional technology to match learning objectives.

d. The number of credits and credit hours generated in the degree program that support the general education component and other major programs including certificates.

General emphasis: Thirty credits and 98 credit hours have been generated in fiscal year 2012 that support the general education component.
Instrumentation and Control emphasis: Fifteen credits and 51 credit hours have been generated in fiscal year 2012 that support the general education component.

e. A roster of faculty members including the number of full-time equivalent faculty in the specialized courses within the curriculum.

William Byrd
Kevin Gunter
Brian Hart
Donald Hudock
Danny Ware
Matthew Maynard
Matthew Younkins

f. If available, information about employment or advanced studies of graduates of the program over the past five years.

This information is not tracked through the technology centers or the Cooperative Alliance department.

g. If available, information about the success of students from this program who have transferred to another institution.

This information is not tracked through the technology centers or the Cooperative Alliance department.

5. Duplication and Demand

a. Demand from students, taking into account the profiles of applicants, enrollment, completion data, and occupational data.

This information is not readily accessible.

b. Demand for students produced by the program, taking into account employer demands, demands for skills of graduates, and job placement data.

Local industries such as Tinker Air Force Base, Surface Mount Depot, DCP Midstream, Chesapeake, Superior, Atlas, Braums Factory, Lopez foods, Purina, Scale Source, Kimray, Cameron Valve, Temple Inland, Federal corp, ONG, OGE, Southwest electric, ICM, Quad graphics, Fitness Matters, Hitachi and Johnson Controls hire students who complete the technical-occupational portion of this program. This program has had a 92% positive placement rate.

c. Demand for services or intellectual property of the program, including demands in the form of grants, contracts, or consulting.

Not applicable to this program.

d. Indirect demands in the form of faculty and student contributions to the cultural life and well-being of the community.

Not applicable to this program.

e. The process of program review should address meeting demands through alternative forms of delivery.

The Electronics program takes a hands-on approach to student learning. Students must attend class in order to show competency in the curriculum. However, an alternative form of delivery may include blended curriculum, which allows students to complete theoretical portions of the assigned curriculum in an online format.

6. Effective Use of Resources

The resources used for a program determine, in part, the quality of the educational experiences offered and program outcomes. Resources include financial support (state funds, grants and contracts, private funds, student financial aid); library collections; facilities including laboratory and computer equipment; support services; appropriate use of technology in the instructional design and delivery processes; and the human resources of faculty and staff. The efficiency of resources may be measured by cost per student credit hour; faculty/student ratio; and other measures as appropriate. The effective use of resources should be a major concern in evaluating programs. The resources allocated to the program should reflect the program's priority consistent with the institution's mission statement and academic plan.

The Electronics program available at Francis Tuttle, Moore Norman technology, and Metro Technology centers provide their own operation budgets. They operate independently, separately funded by both local tax dollars as well as state appropriations.
Each site has expansive facilities. The technology centers and OCCC jointly plan and implement a sharing of physical resources to support the Cooperative Alliance Programs. This includes classrooms, instructional technology, lab space, and related facilities.

The faculty at the technology centers are well supported. They have the appropriate equipment to teach courses, as well as access to technology, supplies and any materials necessary.
Students may use all of the facilities that on-campus students use, such as the Library, the Computer Lab, the Mathematics Lab, etc. The technology centers have academic resources departments that the students may also utilize.

IV. Program Review Recommendations

This section is a description of recommendations that have been made as a result of the review and of actions that are planned to implement these recommendations. Recommendations should be clearly linked and supported by the information and analyses that were articulated in the previous sections and should contain a realistic strategy for implementation of any changes.

A. Describe the strengths of the program identified through this review.

Strengths:
1) Excellent learning/training facilities.
2) Well qualified instructors who are certified in their field of expertise and meet college standards.
3) Course content for the programs is relevant because they are dictated by both the Oklahoma State Department of Career Technology Education (ODCTE) and business and industry.
4) Advisory Committees that offer relevant input.
5) Placement in these programs is high.

B. Describe the concerns regarding the program that have been identified through this review.

Students do not complete the general education portion of the degree within two years.

C. Develop a list of recommendations for action that addresses each of the identified concerns and identify planned actions to implement recommendations.

Encourage students to meet with OCCC's Cooperative Alliance advisor to discuss graduation benefits.

D. Provide institutional recommendations as the result of the program review and planned actions to implement recommendations.

These programs are reviewed annually through Outcomes Assessments. Continue to review the program to insure that it is serving the needs of the students and the needs of business and industry.

Appendix

Program Curriculum

Program Requirements

Minimum Required Hours 61

Major Courses		
Prefix & Number	Course Title	Credit Hours
ET 1014	D.C./A.C Fundamentals	4
ET 1114	Solid State Circuits	4
ET 1124	Digital Logic Fundamentals	4
ET 1544	Electronics Shop Practices	4
ET 2024	Communications Systems	4
ET 2334	Digital Logic Systems	4
ET 2384	Operational Amplifiers	4
ET 1144	Industrial Electronics	4
ET 1223	Digital Electronics	3
ET 2014	Control Devices	4
ET 2044	Electromechanical Devices	4
ET 2124	Control Systems	4
ET 2353	Instrumentation and Control I	3
ET 2363	Instrumentation and Control II	3
PRDT 1413	Fluid Power	3
PRDT 1534	Programmable Controller Programming	4

General Education Courses		
Prefix & Number	Course Title	Credit Hours
ENGL 1113	English Composition I	3
OSRHE*	Any OSRHE approved gen ed communications or English course.	3
HIST 1483	U.S. History to the Civil War --OR--	3
HIST 1493	U.S. History Since the Civil War	
POLSC 1113	American Federal Government	3
GEN ED	General Education Elective	6

Support Courses		
Prefix & Number	Course Title	Credit Hours
MATH1	Mathematics that meet OCCC's Mathematics proficiency	3
SUPP ELEC	Support Electives	7

Life Skills Courses		
Prefix & Number	Course Title	Credit Hours
SCL 1001	Success in College and Life	1