New Program Request Form
CA1

General Information

Institution submitting proposal	Kansas City Kansas Community College
Name, title, phone, and email of person submitting the application *(contact person for the approval process)*	Mr. Jerry Pope Vice-President of Academic Affairs (913) 288-7634 jpope@kckcc.edu
Identify the person responsible for oversight of the proposed program	Dr. Edward Kremer Dean of Math, Science and Business Technology (913) 288-7111 ekremer@kckcc.edu
Title of proposed program	Electronics Engineering Technology
Proposed suggested Classification of Instructional Program (CIP) Code	15.0303
CIP code description	A program that prepares individuals to apply basic engineering principles and technical skills in support of electrical, electronics and communication engineers. Includes instruction in electrical circuitry, prototype development and testing, systems analysis and testing, systems maintenance, instrument calibration, and report preparation.
Standard Occupation Code (SOC) associated to the proposed program	17-3023
SOC description	Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, calibrate, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.
Number of credits for the degree and all certificates requested	Certificate A: 18 Certificate B: 33 AAS: 60-62
Proposed Date of Initiation	Fall 2022
Specialty program accrediting agency	Not applicable
Industry certification	International Society of Certified Electronics Technicians (ISCET) Associates Level Exam Certification would be appropriate for those who have completed the technical portion of the AS degree, or possibly those who have completed the Certificate B. The other ISCET certifications would be appropriate for someone with experience in a field after completion of the Associate-Level exam.

Signature of College Official Jerry Pope Date 3-22-22

Signature of KBOR Official _____ Date _____

Narrative

The Electronics Engineering Technology Certificate(s) and Associates Program commencing in the Fall 2022 is a comprehensive education program preparing individuals for a career as an Electronics Technician. There is a strong need for trained electronics technicians throughout the greater Kansas City Metro area. Recent growth of local aerospace, and related, engineering companies and of need in biomedical companies and providers have a need for trained, skilled technicians to do assembly, testing, and repair of advanced electronics technology. Students will learn electronics theory, and how to apply that theory to real circuits, both analog and digital, and will learn hands-on skills for circuit construction, testing, and analysis with standard electronics test equipment.

Upon completion of the program, students will be in a position to pass The International Society of Certified Electronics Technicians (ISCET) associate level exam for students. ISCET is a recognized accreditation society in the field of electronics engineering technology. ISCET offers an associate level exam for students on work professionals with less than four years of experience covering basic electronics, mathematics, DC circuits, AC circuits, transistors, and circuit troubleshooting. The program of study in the AAS in Electronics Engineering Technology is designed, in part, to prepare students to successfully pass this examination so they can start their life-long path in as a certified technician in the field. The program certificates A &B are geared to prepare students to be immediately productive employees while completing the AAS.

The Kansas Department of Labor 2018-2028 Longterm Labor Projection show a 3.4% growth in the demand for Electrical and Electronics Engineering Technicians in the state. Additionally, growth in Electrical and Electronics Equipment and Installation and Repair Technicians is 7.2% over that same time in Kansas. These are statewide numbers, and as such it seems clear that given the business climate of the Kansas-side of the Kansas City Metro area, that those will both be higher in the region that KCKCC serves.

The Missouri Department of Labor 2018-2028 shows an expected growth of 2.64% in Electrical and Electronics Engineers, and a 4% growth in Electrical and Electronics and Installation and Repair Technicians. It is important to exam Missouri data in addition to Kansas Data when looking at career opportunities served by KCKCC. Additionally, there is no comparable program on the Missouri-side of the metro area at this time to serve those companies.

Those seeking careers in Electronics Engineering Technology will be those students who complete the AAS, while those seeking in careers in Electronics Equipment and Installation and Repair Technicians will be more likely to complete at the certification level.

Median 2018 Wages for Electrical and Electronics Engineering Technicians (SOC 17-3023) is $69,851 in Kansas according to the KC Occupational 2018-2018 long-term projections. Median 2018 Wages for Electrical Equipment Installers and Repairers (SOC 49-2094) are $46,638 and Wages for the catch-all Installation, Maintenance, and Repair Workers (SOC 49-9099) are $57,814.

In addition to the data on overall job growth, these are fields largely occupied at present by Baby Boomers who are approaching retirement, so there is a larger gap in trained electronics technicians than raw statistics would suggest. This is confirmed by local companies who have approached KCKCC on their own looking to fulfill needs in their skill sets.

There is currently a push in local school districts to have more technical education for students in high school, as well as college credit courses. Currently, KCKCC is working directly with Piper High School (USD 504) and Garmin Ltd. to develop the baseline program to be accessible to high school students who can complete one of the technical certificates by the time they complete high school. That will allow students to directly enter the market as electronics technicians, while they complete their degrees at KCKCC. This program is expected to expand to include other school districts in the KCKC service area.

Catalog Description

This program is designed to prepare students to work in the field of electronics. The program provides a solid foundation in electronics theory, applications, and a view into emerging technologies. Core courses focus on fundamentals of electrical theory, electronic theory, and digital electronics. Emphasis is placed on hands-on experiential learning and general lab skills. Students will be prepared to operate, install, troubleshoot, repair, maintain, and service electronic equipment and systems. Courses in this program emphasize mastery of theory and the attainment of skills and competencies vital to workforce needs.

Program Objectives

1. Demonstrate proper use of electrical test equipment and associate measured results with circuits behavior in the laboratory.

2. Quantitatively determine unknown electrical parameters from given measured values and use those results to assess or troubleshoot faults in circuits and system operation.

3. Communicate both verbally, and in writing, knowledge of electrical concepts and their applications to the observed behavior of circuits and systems.

4. Graduates will, upon graduation, be prepared to take and pass the International Society of Certified Electronics Technicians (ISCET) Certification exam.

Admission Requirements

Admission to the Electronics Technology AAS program must meet the following requirements:

1. Apply for admission to KCKCC.
2. Make an appointment with an Academic Adviser.
3. Submit a high school transcript (or GED) with graduation date.
4. Take any necessary placement exams.

5. Complete the Electronics Engineering Technology Certificate B with an overall GPA for at least 2.0.

Graduation Requirements
page
AAS 60-62

Cert B 33

Cert A 18

Students must have an accumulated GPA of 2.0 and pass all technical courses with a C or higher.

Demand for the Program

The following information was gathered using the Kansas Department of Labor's Long Term Occupational Outlook (http://klic.dol.ks.gov): Electrical and Electronics Engineering Technicians (Occupation Code 17-3023) are projected to have growth of 3.4% in the 2018-2028 timeframe with annual an average of 92 annual openings in the field. Estimated annual median wages are $60,950 with an Associates of Science Degree.

Since KCKCC is in the greater Kansas City Metro area, data on Electrical and Electronics Engineering Technicians (Occupation Code 17-3023) from the state of Missouri was also obtained (meric.mo.gov) showing a 2.64% growth in the 2018-2028 timeframe with an annual median salary of $60,650.

The preceding information is representative of the entire states of Kansas, as well as Missouri. A large proportion of those opportunities are centered in the Kansas City Metro area, on both sides of the state board. Growth in local aerospace and medical fields in particular have produced a high demand for electronics technicians for new job roles, as well as replacing those leaving the field. This is a field that has been dominating by Baby Boomers who are leaving the field for retirement. KS 2020-2022 projections are 53 posting in the Electronics Technician area and Missouri is 106 for the same job 17.3023. Approximately half of these are in the KC metro.
The proposed electronics program has grown out of meetings to discuss the existing electronics courses at KCKCC and within the region. Specifically, the engineering instructor met with Piper Schools and the identified industry partners to discuss the need for the proposed program. Two of the industry partners (Garmin and Honeywell) participated in the Perkins V needs assessment meetings in fall 2021, and further discussed their support and need for the program. It was noted that there are 52 openings and additional openings in the KC metro on the Missouri side. Currently, JCCC has the only other program in the region and there is a gap with Concentrators available for these job openings (including the jobs in the metro area).

Duplication of Existing Programs

Johnson County Community Colleges

- Electronics Technology AAS (CIP 47.0101)
- Number of Declared Majors – 128

- Number of Concentrators - 66
- Number of Program Graduates - 19
- Number of Graduates Exiting and Employed - 9
- Annual Median Wage of Graduates Exited and Employed - $77,740 (from 2019 K-Tip Report as no wages are listed on the 2020 report)

Wichita State University Campus Applied Sciences and Technology

- Electronics Technology AAS (CIP 15.0303)
- Number of Declared Majors – 31
- Number of Concentrators - 18
- Number of Program Graduates - 6
- Number of Graduates Exiting and Employed – 5
- Annual Median Wage of Graduates Exited and Employed - $20,819

Hutchinson Community College

- Electrical Technology Cert B (CIP 15.0303)
- Number of Declared Majors – 11
- Number of Concentrators - *
- Number of Program Graduates - 6
- Number of Graduates Exiting and Employed – 5
- Annual Median Wage of Graduates Exited and Employed -

Johnson County Community College, Wichita State University Campus of Applied Sciences and Technology, and Hutchinson Community College have Electronics Engineering Technology AAS or Certificate programs. There are a number of common courses between all the programs. Those courses are very similar. There are several differences in the program requirements for the KCKCC program. Therefore, no direct collaboration was possible between programs, though there are a number of courses that could transfer between them.

Attempts were made to connect with JCCC about concurrence of programs, but no formal agreement was made between them. WSU and Hutchinson CC serve a different industry with different needs than KCKCC's proposed program, and there is a significant geographic separation, so no attempt was made to collaborate.

Certificate A Course Descriptions

ENGR-0108 Electronic Circuit Fundamentals **3 cr.**
This introductory course in electronics technology provides an overview of electronic principles and theory. It is designed to introduce students to standard laboratory equipment, components, and the fabrication of select electronic circuits. This course is appropriate both for electronics technology majors and non-majors.

ELEC-0120 DC Circuits **4 cr.**
This course covers the fundamentals of direct current (DC) as applied to resistive circuits. Emphasis is placed on the study and application of network theorems interrelating voltage, current, and resistance.

Laboratory work will emphasize practical application of the mathematical principles developed in class. Pre-requisites: ENGR-0108 Electronic Circuit Fundamentals.

ELEC 0115 Digital Electronics I **4 cr.**

This course covers the operation, application, and troubleshooting of electronic logic devices, the design and construction of combination and sequential logic circuits, and the interface between digital and analogy devices. Topics include number systems, Boolean logic, digital arithmetic, logic gates, flip-flops, counters, and registers. Co-requisite: ENGR-0108

ELEC-0215 Digital Electronics II **4 cr.**

This course is a continuation of Digital Electronics I. More complex digital logic circuits constructed from integrated circuits. Basic concepts of computer architecture and organization are covered. Emphasis is places on logic circuit design and construction, fault-testing, and repair. Pre-requisites: ELEC-0115 Digital Electronics I.

MATH-0106 College Algebra **3 cr.**

College Algebra includes a brief review of Intermediate Algebra; analysis and graphing of functions, including constant, linear, absolute value, square root, polynomial, rational, exponential and logarithmic functions and non-functions; and solving equations and inequalities, including polynomial equations, exponential equations, logarithmic equations, and systems of linear equations and inequalities. Students will be expected to use appropriate technology as one tool to achieve competency in College Algebra. Pre-requisites: Students need to meet the correct placement measure for this course or have completed MATH-0104 Intermediate Algebra with a grade of "C" or higher.

Certificate B Course Descriptions

The following courses to be taken in addition to the courses required for the Electronics Engineering Technology Certificate A:

ELEC-0210 AC Circuits **4 cr.**

This course applies circuit analysis to Alternating Current (AC) circuits. The response of circuits that have resistance, capacitive and inductive reactance, and impedance in series, parallel, and series-parallel circuits will be analyzed. Topics will also include filters, resonance, and transformers. Pre-requisites: ELEC 0120 DC Circuits.

ELEC-0212 Semiconductor Devices **4 cr.**

This course is an introduction to semiconductor materials, the concept of junction and biasing, diodes, transistors, and some integrated circuits. Topics will include special purpose diodes, bipolar junction transistors (NJT), field effect transistors (FET), operational amplifiers (Op-Amps), voltage regulators, and four-layer semiconductors. Both circuit analysis and understanding, and circuit construction and trouble shooting will be emphasized. Co-requisites: ELEC -0210 AC Circuits

CIST-0101 Computer Concepts and Applications **3 cr.**

Computer Concepts and Applications is designed to demonstrate to the student the various accomplishments, forms of work, and applications a computer can perform. The course includes experience using a variety of projects on the computer. The World Wide Web on the Internet will be explored and integrated into many segments of the course. Computer Concepts and Applications is an

introductory computer course that emphasizes the concepts of computing and fundamental vocabulary for computers. No previous knowledge of computer is required.

CIST-0120 Programming Fundamentals **4 cr.**
This course is an introduction to computer programming and software development. The goals of this course are to introduce novice programmers to the systematic and explicit design of programs and to expose students with prior programming experience to design. A multi-purpose programming language is used, but the emphasis is on designing and constructing programs and not learning a specific programming language. Extensive hands on experiences are emphasized. Co-requisite(s): CIST-0101 Computer Concepts and Applications.

AAS Course Descriptions

The following courses to be taken in addition to the courses required for the Electronics Engineering Technology Certificate B:

ELEC-0220 Microcontrollers **4 cr.**
This course is an introduction to the basic principles and fundamental concepts of microprocessor systems. This course is a continuation of topics introduced in Digital Electronics I and II. Included are hardware and software topics in operating systems, peripherals, displays, processors, storage media, maintenance, diagnostics and troubleshooting. Analog and digital data acquisition and processing will also be covered. Pre-requisites: ELEC-0215 Digital Electronics II and CIST-0120 Programming Fundamentals.

ELEC 0225 Electronic Communication Systems **4 cr.**
This course explorers how information signal is transmitted and received in communication systems. The emphasis throughout the course is on developing the ability to describe and analyze the various aspects of communication systems. Pre-requisites: ELEC 0210 AC Electronics and ELEC-0212 Semiconductor Devices.

Technical Electives

ELEC-0250 Electronics Internship **1-3 cr.**
This course affords the student the opportunity to gain practical professional experience in concordance with academic experience. The student is responsible for organizing the internship opportunity, which must be approved in advance to receive credit. Prerequisite ELEC 0215 Digital Electronics II

ALHT-0127 Medical Terminology **3 cr.**
This course will study the use of prefixes, suffixes and root words to build a vocabulary for medical personnel. The student begins by identifying roots, suffixes and prefixes of medical terminology, and then progresses by studying related medical terms of the body system (skin, skeleton, muscle, blood & lymph, cardiovascular, respiratory, digestive, and urinary systems). The student will explore how these terms relate to the general anatomy of the body.

CIST-0117 Networking I **3 cr.**
The students in this course will be introduced to LAN (local area networks), MAT (metropolitan area networks) and WAN (wide area networks). The students will be study network topologies, network protocols, network hardware, and network software. Students will also perform experiments and

troubleshoot common network failures. Co-requisites: CIST-0101 Computer Concepts and Applications and knowledge of OS recommended

CIST-0180 Programming Algorithms **4 cr.**
This course is an introduction to the elementary of computer programming. Java will be used by students to create java programs using Window Operating system. Students will demonstrate the basics and the fundamentals of computer programming by creating java programs. Extensive hands on experiences are emphasized. Pre-requisites: CIST-0120 Programming Fundamentals.

General Education Requirements

BLUE-0101 Freshman Seminar **1 cr.**
Better Life Utilizing Education 1 hour credit. This course will include topics designed to acquaint the student with the campus community, classroom expectations, counseling services, testing, and other experiences incidental to a successful adjustment to college life. Also covered are study skills, note taking, stress and fitness, and human relationships. Freshman Seminar: Bettering Life Utilizing Education is a required course for all freshmen except those who meet one of the six exemptions listed in the KCKCC catalog. Freshman Seminar: Bettering Life Utilizing Education is a Graduation requirement. Should a student not pass this one-hour orientation course, he/she assumes the responsibility to re-enroll each semester until the course is satisfactorily completed.

ENGL-0101 Composition I **3 cr.**
Composition 101 is the first of two required composition courses. It is designed to help students achieve language proficiency and write paragraphs and essays which demonstrate unity, coherence, and levels of usage appropriate to the topic, purpose, and audience. Pre-requisite: COMPASS scores of 73 or better in reading & 45 or better in writing or completion of ENGL-0099 with a "C" or higher.

ENGL-0102 Composition II OR ENGL-0206 Technical Writing

ENGL-0102 Composition II **3 cr.**
Composition 102 is the second of two required composition courses. A continuation of ENGL-0101, Composition I, this course emphasizes research, bibliographic, and writing skills. Students write a minimum of four (4) graded documented essays in MLA format. Pre-requisite: Completion of Composition I, ENGL-0101, with a "C" or higher.

SPCH-0151 Public Speaking OR SPCH-0201 Interpersonal Communication

SPCH-0151 Public Speaking **3 cr.**
This is a basic speech course dealing with the oral communication process through the study of public speaking. Students will learn to select topics, analyze their audience, organize and gather support for a speech, improve delivery skills and reduce communication apprehension, listen for information and evaluation purposes, and distinguish between different types of speeches. Each student will develop and deliver a minimum of four speeches during the course.

SPCH-0201 Interpersonal Communication **3 cr.**
This is a basic speech course dealing with the oral communication process through the study of interpersonal communication. Interpersonal communication is the study of communication that takes place between two or more persons in day-to day life. This course will help you understand what works and what doesn't in your communication with friends, families, and coworkers. Areas of study include:

perception, verbal and nonverbal messages, listening, relationship development, relationship, maintenance, repair, and/or dissolution, and the differences in these things between cultures.

NASC-0130 Introductory Physics OR BIOL-0143 Human Anatomy

NASC-0130 Introductory Physics **3 cr.**
This is a concept-based course rather than mathematical emphasis. This course covers almost all areas of physics including mechanics, heat, fluids, oscillations, waves, sound, thermodynamic, electricity and magnetism, light and optics, and nuclear physics. This course can be useful for elementary level teachers and for students of non-science majors. Schedule: three hours of lectures per week. Pre-requisite: College Algebra, MATH0105/0106 is recommended.

BIOL-0141 Human Anatomy and Laboratory **4 cr.**
In a systematic study of the gross anatomical organizations of the human body, students examine the interrelationships of the structure of the human body and the general structure and functions of tissues, organs, and organ systems by means of models, skeletons, charts, and audio visual materials. Six hours lecture/integrated lab are required each week. This course is recommended for Life Science and Health Career majors only. Pre-requisites: None. BIOL-0143 Human Anatomy and Physiology 5 hours credit This introductory course examines the structure and function of the organ systems of the body. Particular attention is paid to the role of the organ systems in maintaining homeostasis. Students examine structures by means of small dissections, models, skeletons, charts, and audiovisual materials. Physiological data is 2020 – 2022 KCKCC Academic Catalog | 292 measured and collected. This course is not intended to satisfy requirements for anatomy and physiology for some allied health programs, especially pre-nursing and pre-physical therapy assistant.

Humanities or Social Science Elective (Must complete 3 credit hours in one area)

Program Outline

This is a single-track program with exit points at the technical certificate and associate degree levels.

Fall Semester Year 1 (incoming)	
Certificate A Requirements	
ENGR0108 Electronic Circuit Fundamentals	3
College Algebra (MATH0106) or higher	3
ELEC-0115 Digital Electronics I	4
CIST-0101 Computer Concepts (Required for CERT B)	3
Blue 101 Freshman Orientation (Required for AAS)	1
ENGL-0101 (Required for AAS)	3
Total Credits	17

Spring Semester Year 1	
Certificate A Requirements	

ELEC-0120 DC Circuits	4
ELEC-0215 Digital Electronics II	4
NASC-0103 or BIOL-0141 (Required for AAS)	3-4
ENGL-0102 Composition II (Required for AAS)	3
Total Credits	14-15

Exit Point for Electronics Engineering Technology Certificate A: 18

Fall Semester Year 2	
Cert B Requirements	
ELEC 0210 AC Circuits	4
ELEC-0212 Semiconductor Devices	4
CIST0120 Programming Fundamentals	4
SPCH-151 (Required for AAS)	3
Total Credits	15
Fall Semester Year 2	
Cert B Requirements	
ELEC-0220 Microcontrollers	4
ELEC-0225 Electronic Communication Systems (Required for AA)	4
Technical Elective (Required for AAS)	3-4
Humanities or Social Science Elective (Required for AAS)	3
Total Credits	14-15

Exit Point for Electronics Engineering Technology Certificate B: 33

AAS in Electronics Engineering Technology: 60-62 hours

Program Accreditation:

The program will not be seeking accreditation for the program. There is not an accreditation agency for this program. There are industry certifications, such as ISCET and ETA who do testing and will do some level of course endorsements, but not programs.

Faculty Requirements

- Trade Specific Certificates related to core courses of the Electronics Engineering Technology Program.
- Minimum of an associate degree in Electronics Technology (and 2 years industry experience) or a bachelor's degree in Electrical/Electronics Engineering or Electronics Technology.
- Demonstrable industry skills closely related to core courses.

Cost and Funding for Proposed Program

The Engineering program instructor will be re-tasked to teaching the Electronics Engineering Technology Courses. The instructor currently covers electronics courses in the department and a mixture of math and science courses. The majority of first year courses in the program have already been taught by existing faculty in some format at KCKCC, so equipment and supplies exist to sustain those courses. Additional funding is not necessary for these courses. The lab space, equipment and instructor in place are sufficient to cover those courses. The second-year courses are new and will require additional equipment as note in the CA-1a document. Adjunct instructors will be hired as needed to cover the full set of courses.

No additional facilities are requested as existing electronics lab space is sufficient for the program.

Equipment and instructional materials will be purchased through tuition dollars and course fees.

No grants or outside funding exists for this startup.

Program Review and Assessment

KCKCC has a comprehensive program review cycle and assessment process. Programs are placed on a program review schedule and will be reviewed in 4-year cycles. Each program completes a self-study with the help of a mentor, presents their findings to the program review committee, discussion of an action plan, and implementation of a final action plan to address challenges and maintain strengths of the program. Programs submit annual reports on the progress of the review with any changes, updates, and the new data results. The purpose of the committee is to make recommendations for improvement and/or sunset programs.

The college has adopted TaskStream as the online management tool for gathering, updating, and maintaining assessment items. The Assessment Team at KCKCC works with each program to assess program outcomes, create assessment plans, report assessment findings, and create action plans. The process of assessment occurs annually, at the course and program level, and is monitored by the academic deans and the Office of Assessment.

Program Approval at the Institution Level

- Provide copies of the minutes at which the new program was approved from the following groups:
  - Program Advisory Committee
    (including a list of the business and industry members)
  - Curriculum Committee
  - Governing Board
    (including a list of all Board members and indicate those in attendance at the approval meeting)

Submit the completed application and supporting documents to the following:

Director of Workforce Development
Kansas Board of Regents
1000 SW Jackson St., Suite 520
Topeka, Kansas 66612-1368

KBOR Fiscal Summary for Proposed Academic Programs

CA-1a Form (2020)

Institution: Kansas City Kansas Community College

Proposed Program: Electronics Technology

IMPLEMENTATION COSTS				
Part I. Anticipated Enrollment		Implementation Year		
Please state how many students/credit hours are expected during the initial year of the program?				
		Full-Time	Part-Time	
A. Headcount:		5	12	
Part II. Initial Budget		Implementation Year		
A. Faculty		Existing:	New:	Funding Source:
Full-time	#1	$73,373.42	$	Local, tuition
Part-time/Adjunct	#1	$	$10,000	Local, tuition
		Amount	Funding Source	
B. Equipment required for program Six RF Oscilloscopes and Six Function Generators		$12,000	Strategic Asks/General Fund/donations	
C. Tools and/or supplies required for the program		$		
D. Instructional Supplies and Materials		$2250	Course Fees	
E. Facility requirements, including facility modifications and/or classroom renovations		$		
F. Technology and/or Software		$		
G. Other *(Please identify; add lines as required)*				
Total for Implementation Year		$97623.42		

KBOR Fiscal Summary for Proposed Academic Programs

CA-1a Form (2020)

Please indicate any additional support and/or funding for the proposed program:

IMPLEMENTATION COSTS				
Part I. Anticipated Enrollment		Second and Third Years		
Please state how many students/credit hours are expected during the initial year of the program?				
		Full-Time	Part-Time	
A. Headcount:		8,10	16	
Part II. Initial Budget		Implementation Year		
A. Faculty		Existing:	New:	Funding Source:
Full-time	#1	$73,373.42	$	Local, tuition
Part-time/Adjunct	#1	$	$10,000	Local, tuition
		Amount	Funding Source	
B. Equipment required for program Six Additional RF Oscilloscopes and six additional RF Function Generators		$12,000	Tuition, Fees, General Fund, donations	
C. Tools and/or supplies required for the program		$1,000	Tuition/fees	
D. Instructional Supplies and Materials		$2250	Course Fees	
E. Facility requirements, including facility modifications and/or classroom renovations		$		
F. Technology and/or Software		$		
G. Other *(Please identify; add lines as required)*				
Total for Implementation Year		$98623.42		

Submit the completed application and supporting documents to the following:

Director of Workforce Development
Kansas Board of Regents
1000 SW Jackson St., Suite 520
Topeka, Kansas 66612-1368

Per statute (K.S.A. 72-3810), the Kansas Board of Regents shall establish general guidelines for tuition and fee schedules in career technical education courses and programs. The Excel in CTE tuition and fee schedule of every technical education program shall be subject to annual approval.
*Please include all costs charged to **high school students** for the proposed new program.*

Institution Name:	Kansas City Kansas Community Colelge
Program Title:	Electronics Engineering Technology
Program CIP Code:	15.0303

*Please list all fees associated with this **program**:*
*Only list costs the institution **is** charging students.*

Fee	Short Description	Amount
ELEC 0215	Graduation fee Cert A	$ 20.00
ELEC 0220	Graduation fee Cert B	$ 8.00
ELEC 0225	Graduation Fee AAS	$ 8.00

*Please list all courses within the program and any fees associated to those **courses**:*
*Only list costs the institution **is** charging students. Do not duplicate expenses.*

Course ID	Short Description	Amount
	NO Fees will be required of HS students in the program	

Please list items the student will need to purchase on their own for this program:
*Institution **is not** charging students these costs, rather students are expected to have these items for the program.*

Item	Short Description	Estimated Amount

There is a $20 graduation fee for the first certification, and $8 for each additional certification/d

MINUTES OF APPROVING CURRICULUM COMMITTEE AND KCKCC BOARD OF TRUSTEES

Academic Affairs Committee Minutes

November 30, 2021

Call to order at 2:07

Quorum established

October minutes: Frankie moved to approve, Antonio seconded, minutes approved

Old business:

1. Culinary CERT A: Antonio moved to approve the new certificate. Jonathan seconded. No one opposed, so motion passes.
2. Welding- Cert A and Cert B need to be re-aligned with the state program, which KBOR has already approved. Certificate C is a new certificate. Antonio moved to approve these changes, Jake seconded. No one opposed, so motion passes.
3. Electronics: New Course New Program Course Modification- New AAS program housed in the MSBT division. Jake said that he and his dean checked into employability, and that this shows a negative job growth rate in the near future. He is also concerned that this could negatively impact the electrical technology program at TEC. Ross said that there is very little overlap between the two programs. Jake asked about the exit points, whether they could receive a certificate at 33 hours. Ed said that they could, but would not necessarily be able to find a job as a technician, though they could possibly be hired as an assembler. He pointed out that this was a program that was considered after Garmin reached out to the school requesting students with this training. Honeywell and Advent are also in support of this program. Jake said that Advent is on the advisory board for the TEC electronics program, and asked whether the classes that do overlap at TEC could be used for the program. Ross said that the DC class in the program he is proposing goes into more depth and detail than the combined AC/DC class at TEC, so even though he wanted to use the TEC courses, he could not. Dagny moved that we accept the new courses and program. Jon seconded. Motion passed with one abstaining.
4. ADCN Addiction counseling- Switching from an AAS to an AS or an AGS. Deanne suggested that an AS would be best for transferability. Shay and Jerry agree that AS would be better than AGS. Antonio checked with Michael, who said it was it was ok to leave out the AGS part of the proposal. Shay moved to accept the changes so that Addiction counseling is an AS degree. Antonio seconded. Motion passed.
5. ESOL- Changing two 2-credit classes to 3-credit hours and one 4-credit class to a 3-credit class. Antonio moved to accept the changes, Ian seconded. Motion passed.
6. Legal Assistant- New certificate program, Cert B. Shay said that this seems very similar to paralegal. Dagney said that what was shared at the last meeting was that the next step would be the paralegal AAS. Ed said that the work was different enough from office assistant that it wouldn't be merged with that program. Kris said that the coordinator

for paralegal was ok with this. Jon moved that we accept this program. Frankie seconded. No one opposed. Motion passed.

7. CRJS – Corrections- internship course changed to capstone, and some courses changed to meet industry standards. Certificate programs reduced credit hours so that high school students could complete them. Not Perkins eligible. Antonio moved to accept these changes. Shay seconded. No one opposed. Motion passed.
8. Business Journalism – Bring back old course, Principles of Marketing. Antonio moved to accept the course. Ian seconded. No one opposed. Motion passed.
9. By laws revision- The revisions are uploaded into Teams. Antonio pointed out that, in article 4, it should be clear that each position is for one year. He also pointed out 3b should be 4. Frankie asked about article 4, number 7, there is a typo. With these changes, Antonio moved to accept the by laws. Frankie seconded. No one opposed, motion passed.

New Business:

1. Arts- New course proposed: Life Drawing and Screen Printing. Aaron said these are standard classes in most art programs and are also useful for the students and the campus. They would become elective options in Studio Arts and Digital Design programs. Deanne said that we need to see that they would be accepted as electives in these programs. Janice said she would sit down with Aaron to figure out where they would fit into degree programs.

Meeting adjourned at 3:01.

Members present: Deanne Yates, Dagney Velazquez, Sheldon Guenther, Jake Carmack, Antonio Cutolo-Ring, Theresa Holliday, Jonathan Taylor, Frankie Davis, Ian Corbett, Shay Dodson

Visitors: Janice Spillman, Ross Stites, Jerry Pope, Ed Kremer, Kris Ball, Aaron Margolis

Kansas City Kansas Community College

Mission Statement: Inspire individuals & enrich our community one student at a time.

Vision Statement: Be a national leader in academic excellence & partner of choice in the communities we serve.

KANSAS CITY KANSAS COMMUNITY COLLEGE
Board of Trustees Meeting Minutes
December 14, 2021 – 5:00 P.M.

Meeting Location: Hybrid – KCKCC-Main Campus, Upper Jewell Lounge and Zoom Meeting

CONSENT AGENDA – Item A
Meeting Minutes

1. **Call to Order & Pledge of Allegiance:** Chairman Ray Daniels called the meeting to order at 5:05 p.m. The Pledge of Allegiance was led by Trustee McIntyre.

2. **KCKCC Mission Statement:** Chair Daniels read the College mission statement.

3. **Roll Call:** Indicated the following trustees present – Ash, Brown, Brune, Criswell, Daniels, Hoskins Sutton and McIntyre. All members were present.

4. **Approval of Agenda**: Chair Daniels shared the following updates to the meeting agenda –
   - Climate Action KC Presentation will be postponed to a later date and
   - Policy 3.06 - Student Holds will be postponed and brought back at a later time for Board approval.

   Vice-Chair Criswell made the motion to approve the agenda with the amendments. Trustee Brown seconded the motion. **The Motion Carried**.

5. **Audience to Patrons and Petitioners:** Chair Daniels invited any patrons or petitioners, both virtual and in-person to address the Board and reminded all to be respective of the 5-minute time limit. Ms. Andrica Wilcoxen, 2807 N. 109th Street, Kansas City, Kansas, 66109, spoke to publicly thank Ms. Sheri Seeman and Nurse Sylvia Gillis for their tremendous contributions and "hearts of gold" in service to students and community of KCKCC. Ms. Wilcoxen shared about their many deeds and caring acts for the faculty, staff and students and expressed that they each will be greatly missed.

   The Board echoed their appreciation for the great service of Ms. Seeman and Ms. Gillis and wished each of them well in their respective ventures.

6. **Recognitions/Presentations:** Chair Daniels invited Dr. Mosier to lead the new trustees in the Oath of Office. Trustees Evelyn Criswell, Linda Hoskins Sutton and Brad Isnard (Elect) each stood and pledged the oath as led by Dr. Mosier.

   The Board thanked Dr. McIntyre for sharing her great knowledge of education and success in the classroom, passion, and care for the people at the college and community during her term as trustee. The Board and KCKCC community wished her well.

7. **Communications:** There were no communications scheduled.

8. **Board Committee Reports:**
   - On behalf of the Board Finance Committee, Vice Chair Criswell shared an overview of the Monthly Financial Report presented at the Board Finance Committee on Tuesday, December 7th. She extended kudos to the Finance department for the promotion of practices that support the healthy cash position of the College such as zero-based budgeting, questioning cost drivers and promoting a culture of financial accountability.
   - Trustee Ash shared feedback from the KACCT Quarterly meeting in December at Pratt Community College. He noted great training for new trustees was presented and all information received from the Director of KACCT was shared with all KCKCC Board members. The next KACCT Quarterly meeting will be in April 2022 for Phi Theta Kappa scholarships. Trustee Ash concluded that the Board plans to attend the 2022 ACCT National Legislative Summit in Washington, D.C. in February 2022.

9. **Consent Agenda**: Chair Daniels called for a motion to approve the Consent Agenda. Trustee Ash made the motion. Trustee McIntyre seconded the motion. **The Motion Carried.**

10. **Student Senate Report:** There was no report due to winter break.

11. **President's Report:** Chair Daniels called for the President's report. Dr. Mosier began by thanking Trustee McIntyre for her guidance during her term as trustee and welcoming Trustee Isnard. He also thanked the Board for their continued support in the advancement of the College. Dr. Mosier continued in expressing his gratitude to the faculty and staff who are on the front lines everyday with our students.

    In the monthly COVID Incidents Report, since the last Board meeting, Dr. Mosier shared for employees, there have been 10 COVID-related incidents with 5 employees testing COVID positive, 2 of those were vaccinated. For the students, there were 20 COVID-related incidents, with 11 students testing COVID positive. None of the students were living in student housing or were student athletes.

As a follow up from the SPARKS Executive Committee meeting on Thursday, November 18th, Dr. Mosier met with Kansas Senate president, Mr. Ty Masterson, who flew from Wichita for lunch, a tour of the downtown site and to talk about plans for downtown. He revisited the College plans to submit a $30 million request for SPARKS funding with the Health and Education Subcommittee to be used for the Downtown project. The award would possibly pass in March or June 2022. Additional discussions are in progress to submit to Sen. Moran's and Sen. Marshall's offices regarding Congressional Discretionary spending for 2022, which is similar to the $2 million request submitted by Rep. Davids on behalf of the College.

Dr. Mosier continued by sharing information regarding an additional federal funding opportunity the College is pursuing as part of a $10 million KC Civic Council consortium proposal for the EDA Good Jobs Challenge Grant. KCKCC plans to submit for $1.5 to $2-million for a High Voltage/Lineperson Program to be housed at KCKCC -TEC-1.

Dr. Mosier shared other federal grant opportunities the College is working on in partnership with Merchant McIntyre such as the NSF Scholarship Grant; National Humanities Grant (for infrastructure and capacity); Initiatives in Humanities at Community Colleges; Mental Health Awareness Grant; NSF Advanced Technology Grant.

Dr. Mosier was pleased to attend the inauguration of the Wyandotte County elected officials on Monday, December 13th, and mentioned that he looks forward to working with Mayor Garner, once Trustee Garner at KCKCC, who proved to be a strong advocate of education and the community college in his service as a board member.

The Board thanked Dr. Mosier, the administration, faculty and staff for their efforts around the COVID pandemic.

Chair Daniels mentioned that Dr. Bartunek would make her Board report next in order to attend another engagement later on behalf of the College.

12. **Vice President Strategic Initiatives & Outreach Report:** Chair Daniels called for the Vice President of Strategic Initiatives & Outreach report. Dr. Tami Bartunek began by reporting that the social media following remains strong. She offered kudos to Ms. Kris Green, the new Executive Director of Marketing and Institutional Image, who is off to a great start and working in the preparation of the KCKCC Strategic Plan Update for January 2022.

    Dr. Bartunek shared footage from the following events and broadcasts -
    - The "Make It Count" event broadcasted on KMBC 9 News with KCKCC in partnership with the Spencer C. Duncan Foundation. The event was recorded at the KCKCC-TEC location.
    - Mr. Jerry Pope, Vice President of Academic Affairs, who was featured on KC Spotlight with Lauren Scott sharing updates on the Student Housing Project,

programs and class offerings and the Downtown Community Education, Health and Wellness Center.

Dr. Bartunek concluded her report by sharing the College seeks to do one feature with KC Spotlight each semester.

Trustee Ash made the motion to accept the report. Vice Chair Criswell seconded the motion. **The Motion Carried.**

13. **Vice President Academic Affairs Report:** Chair Daniels called for the Vice President of Academic Affairs (VPAA) report. Mr. Jerry Pope highlighted the following items from the report:
    - The Art Department hosted a tour with USD 500 high school art instructors and discussed potential partnership and program collaboration.
    - The Drama Club presented two plays that were directed by students.
    - On November 18th, the Construction Technology program hosted a tour of a house that students have completed this semester; the students shared the processes of the work completed in each of the rooms.
    - Italian chef, Jasper Mirabile from Jasper's Italian Restaurant, visited for the Culinary Arts students for a demonstration class.
    - Kudos to the Automotive Collision Repair program students who were featured in a segment on KMBC 9 News for community services provided to a U.S. Marine veteran, Mr. Justin Murray, who needed autobody work after a car wreck.
    - Welding and GED classes have begun at Lansing Correctional Facility. Additionally, GED classes will be offered at Wyandotte High School in the spring 2022.
    - A grant was received to allow the College to offer Business English classes at a local plastic packaging company in January 2022.
    - Kudos to Dr. Ishfaq Ahmed who earned a Certificate in Inclusive Instruction for Equitable Learning from Association of College and University Educators (ACUE).
    - The Wellness and Fitness Center continues to collect coats, hats, gloves and scarves for charity. After meeting their initial goal to provide coats to Afghan refugees, the Center donates all items collected to local charities in need.
    - MSBT faculty and staff have come together to support Blue's Kitchen Cabinet Food Pantry by collecting 130 non-perishable food items as of December 3.
    - Congratulations to Dr. Ewa Unoke, Professor and Political Science Coordinator, who was an invited panelist to the 2021 Biafra Education Awareness Dissemination held on Thursday, November 18th. This event was hosted by Radio Biafra London.
    - Dean Cleon Wiggins, of Social and Behavioral Sciences & Public Services, and Dr. Hira Nair, Professor and Secondary Education Coordinator participated in a K-STEP Up presentation to bi-lingual paraprofessionals.

Trustee Hoskins Sutton, on behalf of the Board, expressed gratitude in seeing all the deans and faculty are doing.

Trustee Ash made the motion to accept the report. Trustee Brown seconded the motion. **The Motion Carried.**

14. **Vice President Student Affairs Report:** Chair Daniels called for the Vice President of Student Affairs (VPSA) report. Dr. Delfina Wilson highlighted the following items from the report:
    - Congratulations to Mr. Wade Abel, Director of Military and Veteran Student Services, who has been elected as the Regent VI Delegate for the National Association of Veterans' Program Administrators (NAVPA) Board of Directors. In this role he will serve as a contact for program administrators who are advocating for military and veterans.
    - Expressed many thanks to the Spencer C. Duncan Foundation from whom KCKCC received $10K in scholarships for veteran students.
    - Enrollment Management Department is working hard to promote enrollment and retention. Current strategies include working with academic departments to increase number of seats in classes, working with high schools for enrollments, keeping track of courses that students are requesting, the Financial Aid Department has been reaching out to students who have funding but who have not enrolled, added virtual placement testing, contact student athletes to ensure enrollment and have extended hours to support students.
    - The Student Affairs Division has begun a Student Loan Repayment Awareness Campaign to inform students that all student loan payments are set to resume on February 1, 2022.

    Chair Daniels, on behalf of the Board, thanked the Student Affairs division for supporting the students and congratulated them on the strategies for enrollment and retention.

    Trustee Hoskins Sutton inquired about student housing being open during winter break and whether there was an update on the mold issue in the dorms. Dr. Wilson answered that there would be students staying the dorms during winter break. She added that there were no issues with mold for the last 3 weeks. Dr. Wilson concluded her remarks by wishing Ms. Seeman and Nurse Gills well.

    Vice Chair Criswell made the motion to accept the report. Trustee Brown seconded the motion. **The Motion Carried.**

15. **Chief Financial Officer Report:** Chair Daniels called for the Chief Financial Officer report. Mr. Michael Beach highlighted the following from the report:
    - Echoed Ms. Wilcoxen's kind words for Ms. Seeman and shared she understood the students and provided generous services from the Blue Devil Deli. Ms. Seeman will be deeply missed.

- In spring 2022, food options will be available when students return to campus. The College is currently seeking a contract food services provider.
- The Student Housing project is on schedule. The roof is nearly 100% complete. Several stages of metal framing, electrical, plumbing and HVAC work are nearing completion. The sheet rock is being installed and the windows have all been installed.
- The annual audit for the KCKCC Foundation is complete. The College should have the final report soon. Other compliance filing is also in progress.
- The College's midyear budget process will begin in January 2022 for the fiscal year 2023 budget.
- The request for application for an extension in the use of HEERF Funds will be sent to us for completion. The application will be submitted by February 2022.
- The bookstore's revenues are $1K over what they were last year, and new products have been brought in.
- Facility Services working on projects. Kudos to the team for the completion of the upgrade project in the Flint and Math/Science building projects with new lighting, paint and carpeting.
- New furniture was provided via Learning Spaces for the new lab in Flint.
- Congratulations to D'Angelo Bushnell, a newly commissioned officer in College Police. New hire paperwork is being completed by 2 additional officers as well.

Vice-Chair Criswell made the motion to accept the report. Trustee Ash seconded the motion. **The Motion Carried.**

16. **Chief Human Resources Officer Report:** Chair Daniels called for the Chief Human Resources Officer report. Ms. Christina McGee highlighted the following from the report:
    - The final stages of updating HRIS system have been completed and is in compliance with Fair Labor Laws ahead of schedule, in December 2021!
    - Welcome to two new employees to the Human Resources Department, Ms. Sheila Joseph, Talent Development Manager, and Mr. Yoel Tekle, Human Resources Specialist.
    - Hosted Onboarding and Hiring Process Listening Session with employees on Friday, December 10th. There was a great turnout of 61 participants who provided really good feedback. There will be more sessions to come.
    - Currently working with the Center for Equity, Inclusion and Multicultural Engagement (CEIM) to develop plans and diversity and inclusion strategies around talent acquisition.

    Trustee McIntyre made the motion to accept the report. Vice-Chair Criswell seconded the motion. **The Motion Carried.**

17. **Chief Information Officer Report:** Chair Daniels called for the Chief Information Officer report. Mr. James Bennett, Director of Computing Services on behalf of Mr. Peter Gabriel, shared the following highlights from Mr. Gabriel's report:

- All services in WebAdvisor have now been redirected to the new Staff and Student Self-Service Center.
- Over 300 laptops had been checked out during fall 2021. IT is now receiving returns and reimaging in time for spring check outs. Spring 2022 semester check outs will begin January 8th.
- Thanked Media Services for their work this semester.
- Announced upgrade of the AccuTrak, Synoptic, and Perceptive Content system.
- All computers on campus, about 2,500 machines, will be updated during winter break. Many thanks to Computing Services!

Trustee Hoskins Sutton asked about the active administrator on each College-issued device. Mr. Gabriel shared the strategy and explained the technical best practices for the College system based on the assessment completed at the beginning of 2021.

Vice-Chair Criswell commended Mr. Gabriel on taking the necessary preventative steps to protect the College's virtual infrastructure.

Vice-Chair Criswell made the motion to accept the report. Trustee Brune seconded the motion. **The Motion Carried.**

18. **Unfinished Business:**
    - Chair Daniels invited Mr. Pope to present an HLC update. Mr. Pope shared the following details -
        - Provided feedback for Criteria 4 and 5 from consultant. The lock down date for submission is Jan. 31st, 2022.
        - An HLC Campus-wide Update meeting was held on Wednesday, December 1st.
        - The HLC Committee will host meetings in the spring semester to help inform about the College about HLC.
        - In February 2022, there will be HLC criteria specific meetings to discuss in detail each criterion.
        - In March 2022, there will be constituent meetings to ensure all involved with each criterion are aware of their respective sections of the argument and can speak to the KCKCC story.
        - The final HLC meeting for the College will be held on Wednesday, March 2nd.
        - The College will be creating a student survey regarding HLC.
        - Recently received an email sharing the members of the HLC Review Team who will be conducting our visit.

Chair Daniels asked about the criteria 1-3. Mr. Pope answered the focus has been on criteria 4 and 5 due to the concerns shared by HLC. The feedback is minimal on criteria 1 through 3. The work on criterion 4 is progressing and criterion 5 is in the works. The first 3 criteria were met without concerns.

- Chair Daniels invited Dr. Mosier to present regarding COVID-19 Safety Protocols and House Bill 2001.
  - Dr. Mosier recommended to the Board that KCKCC continue with masks being required at all locations until the first Board meeting in January 2022. The expectation is at that time more information about the Omicron variant will better inform safe practices for the College. He asked the Board to approve the recommendation.

Chair Daniels asked the Board for any discussion. Hearing none, he called for a motion to approve the COVID Protocol Update.

Trustee Brown made the motion. Vice Chair Criswell seconded the motion. **The Motion Carried**.

- Chair Daniels invited Dr. Mosier to present regarding House Bill 2001 (HB2001). Dr. Mosier shared that the bill was signed into law recently and it changes the way organizations can collect medical or religious exemption. Sincere requests regarding religious exemptions must be honored by employers. The process at KCKCC will change. For healthcare providers, if the provider receives Medicare and Medicaid, they can deny religious exemptions. If they do not receive Medicare or Medicaid, they must honor HB2001 in the state of Kansas. Dr. Mosier clarified, this means if a student does not get a COVID vaccination, they currently would not be able to complete their degree. The administration is currently working on the language with the College attorney and Dean Bohm for students in special situations. New students will be required to be vaccination.

19. **New Business:**
    - Chair Daniels invited Mr. Pope to present the Academic Calendar for 2024-2025 for approval. Mr. Pope shared that the section numbers have been updated to reference 1st and 2nd 8-week classes and the summer schedule has been adjusted.

Vice Chair Criswell made the motion to approve the academic calendar for 2024-2025. Trustee McIntyre seconded the motion. **The Motion Carried.**

- Chair Daniels invited Mr. Pope to present the New and Revised Academic Programs for approval. Mr. Pope pointed the Board to the document in the Board Packet and asked for any questions.
  - Culinary Arts – New Certificate
  - Welding – Program Realignment
  - Electronics Engineering Technology – New Program
  - Legal Administrative Assistant – New Program
  - Corrections (AAS) – Program Modification
  - Corrections (Certification) – Program Modification
  - Police Science (Certificate A) – Program Modification

- Homeland Security (Certificate A) – Program Modification

Hearing no questions, Chair Daniels called for a motion to approve the new and revised academic programs. Trustee Ash made the motion. Trustee Brown seconded the motion. **The Motion Carried.**

- Chair Daniels invited Trustee Hoskins Sutton to present for Approval the following College Policies. Trustee Hoskins Sutton pointed the Board to the document in the Board Packet and asked for any questions.
  - Faculty Qualifications (2.15)
  - Student Records Retention and Disposal (3.05)
  - Jury Duty (5.37)
  - Immigration Law Compliance (5.55)

Hearing no questions, Chair Daniels called for a motion to approve the college policies as listed. Vice Chair Criswell made the motion. Trustee McIntyre seconded the motion. **The Motion Carried.**

The Board congratulated former Sheriff Ash on a great career in law enforcement. They thanked Media Services for their technology support with the meeting.

20. **Executive Session(s):** Chair Daniels acknowledged that there were no actions to be taken from the executive sessions for the general meeting.

21. **Adjournment:** Chair Daniels invited Trustee McIntyre to make the motion to adjourn the meeting. Trustee McIntyre made the motion. Vice Chair Criswell seconded the motion. **The Motion Carried.**

The meeting of the Board of Trustees adjourned at 7:00 p.m.

ATTEST: Evelyn R. Criswell (Jan 20, 2022 18:30 CST)

Chairperson

Secretary, Dr. Greg Mosier

PERKINS ELIGIBILITY REQUEST FORM

Carl D. Perkins Funding
Eligibility Request Form

Strengthening Career and Technical Education for the 21st Century Act

CA-1c Form (2021)

Name of Institution	Kansas City Kansas Community College
Name, title, phone, and email of person submitting the Perkins Eligibility application *(contact person for the approval process)*	Dr. Edward Kremer Dean of Math, Science and Business Technology (913) 288-7111 ekremer@kckcc.edu
Name, title, phone, and email of the Perkins Coordinator	Donna Shawn Director, Technical Programs/Perkins Coordinator (913) 288-7805 dshawn@kckcc.edu
Program Name	Electronics Engineering Technology
Program CIP Code	15.0303
Educational award levels and credit hours for the proposed request	Certificate A: 18 Certificate B: 33 AAS: 60-62
Percentage of tiered credit hours for the educational level of this request	Certificate A: 83% Certificate B: 82% AAS: 63 %
Number of concentrators for the educational level	This is a new program The projected enrollment for year one is 5 fulltime and 12 part-time. In year two we project 8-10 fulltime and 16 part-time.
Does the program meet program alignment?	No Alignment for this program
Justification for conditional approval: *(this section must reference information found within the Local Needs Assessment)*	The Kansas Department of Labor 10 year job outlook for 2018-2028 shows an average of 92 annual openings in the field.

Signature of College Official _____ Date 1/19/22

Signature of KBOR Official _____ Date _____

Carl D. Perkins Funding
Eligibility Request Form

Strengthening Career and Technical Education for the 21st Century Act

CA-1c Form (2021)

For KBOR Staff use

Approval effective for Academic Year:

Approval effective for Perkins fund spending for Fiscal Year:

Perkins Grant reporting required beginning:

ADVISORY BOARD MEMBERS & MEETING MINUTES

Electronics Engineering Technology

Advisory Committee Members

Christopher Vogel – Advent Health; <christopher.vogel@adventhealth.com>

Ryan Kares – Advent Health;

Shanna McKracken – Honeywell Aerospace; <shanna.mccracken@honeywell.com>

Joseph Kelly – Garmin; <Joseph.Kelly@garmin.com>

Randy Randel – Honeywell Federal Manufacturing & Technologies; <rrandel@kcnsc.doe.gov>

Kansas City Kansas Community College
Division Math, Science and Business Technology
Department of Engineering Technology
Electronics Engineering Technology Committee Meeting
May 5, 2021

Attendance:

Joe Kelley – Garmin; Shanna McKracken – Honeywell Aerospace; Chris Vogel – Advent Health; Dr. Edward Kremer- KCKCC; Dr. Ross Stites – KCKCC

The meeting opened with a discussion of the needs of the electronics engineering technician community seen by KCKCC and previous research and work before forming this committee and looking to start a new program. All in attendance supported a new program, noting that those companies represented look to hire around 30 new electronics engineering technicians between them annually, confirming the need for such a program, and also speculating there is similar need in other local firms.

A discussion was had on the need for trained technicians in the medical equipment service and repair industry. It was noted that they need to know medical terminology, including basic anatomy, in order to communicate with medical staff and understand the electronic equipment. Additionally, a specific course or two geared toward biomedical equipment is needed, and there may be availability for donated equipment down the road for that part of the program. Discussion demonstrated that the core of the proposed electronics engineering technician program will fulfill the underlying needs for this field.

Discussion changed to the local aerospace industry and the need for trained electronics engineering technicians there and the specific skills needed for those technicians. Emphasis was placed on proficient soldering skill and it was noted how important developing soldering skills is for students. The J Standard Certification for the IPC-A-610 standard, noting that students who come equipped with that standard will be very desirable in industry as they will already have necessary underlying skills for success. It was agreed that the ability to get students to that standard and to test it will be examined, and that soldering will be a core component throughout the program. The discussion also mentioned bonding and crimping and understanding other mechanical connections for circuits, as well as 3VGA hot air rework machines, through hole, dense population boards, and other specific soldering techniques.

Discussion moved to digital electronics needs, specific the more advance courses in micro-controllers and microprocessors. The need for students to know some programming was stressed, and specifically to understand the underlying machine language and how it interfaces with the processors. This led to a discussion of technical electives which could include a C++ course as a more advanced course than normal for an AAS, and as such it will be an elective in the program.

Finally, the discussion was on how to transition students to industry led to establishing internship credit with some companies willing to do internships for students with certain credits and credentials. The suggestion of a Certification A to give students with 16-20 credits a first mark of achievement and to open some doors was had and approved. This was also noted to be something dual enrollment high school and college students could achieve before the high school graduation. An intermediary

Certification B was also suggested that captures most of the AAS program technical credits, but the consensus was that the completed AAS should be the goal of anyone wanting to end in a electronics engineering technician program.

The meeting adjourned with the promise that KCKCC would move forward to develop the programs discussed, while staying in touch with industry leaders. Those industry leaders also agreed to support that program as they can both with documentation and expertise and with future discussions of equipment necessary to develop specific coursework. The next meeting will be scheduled for winter of 2022, unless it is found necessary to do something intermediary.

LETTERS OF SUPPORT

PIPER HIGH SCHOOL
HOME OF THE PIRATES

John Nguyen, Principal
John Tylla, Assistant Principal
Tayler Mapp, Assistant Principal/Activities Director

Megan Mixon, Counselor (A-G)
Sarah Ita Coates, Counselor (H-O)
Elise Doran, Counselor (P-Z)
Polly Vader, Coordinator of Real World Learning

October 20, 2021

To Whom it May Concern:

The Piper School District continuously works to ensure that its graduates are "future ready" for whatever their post-secondary pursuits may be. It is our belief that our students should receive educational experiences that are based on content steeped in relevance with ample opportunities for application beyond the traditional classroom. A vitally important piece of increasing these opportunities for students is partnerships with our community, business, and post-secondary institutions. As we are building wall-to-wall academies that include career and technical education pathways and market value asset attainment, we have worked to increase and solidify these partnerships.

A significant partnership that we have been working to solidify is with the new Kansas City Kansas Community College Electronics Technician program and Garmin. We would like to work together through the Aviation Maintenance Career and Technical Education Pathway. Our students would complete the introductory and technical level courses at Piper High School and they would then lead to the ability to apply for the Electronics Technician program. In this program, students would complete concurrent enrollment coursework and Industry Recognized Credentials. Once the course and credentialing prerequisites needed for the Garmin Internship are complete, our students would be able to apply for and hopefully succeed in landing a semester internship via Garmin their Senior year of high school. Not only would this open up job opportunities in the future, but would also still allow time in their schedule to pursue the completion of their associate's degree at KCKCC if they desire.

We are hopeful this program is approved to allow for increased opportunities for our students interested in electronics technician careers.

Sincerely,

Polly Vader

Coordinator of Real World Learning and Career and Technical Education

pvader@piperschools.us

Phone: 913.721.2100

4400 N. 107th St.
Kansas City, KS 66109

Fax: 913.721.3867

GARMIN.

Dear Ross,

I would like to pledge our support to Kansas City Community College's Electronics program. Our company has had a long-standing need for electronics program graduates to support our manufacturing, customer repair, printed circuit board design, calibration, reliability, and engineering departments. We currently have various levels of skills available and will require about 20 graduates per year plus any additional for back filling for retiring technicians. This position is supported through a career path that has progressive promotions and annual performance-based wage increases, at a competitive entry wage that includes an outstanding benefits package. We look forward to working with Kansas City Kansas community college and pledge support of the program through serving on the advisory board, offering internships opportunities to students, offering apprenticeships to students, and exploring extern internships to faculty.

Thank You,

Joe Kelly

Shanna McCracken
Honeywell Aerospace

October 14, 2021

Dr. Ross Stites
7250 State Avenue
Kansas City, KS 66112

Dear Dr. Stites,

This letter is in support of the proposed Kansas City Community College's Electronics Engineering Technology Certificate and AAS program. Graduates from the certificate or the degree will have skillsets that prepare them for entry level positions at Honeywell.

We are committed to serving on the advisory board for the program to help KCKCC identify skillsets necessary for program graduates. As we identify these skillsets, we will aid instructors in developing hands-on real-world projects to better train students in the program. It is our intention to develop a talent pool we can hire from for the region. There is a critical shortage of qualified candidates in electronics in the region. Currently we have over 35 open requisitions for qualified candidates. We are struggling to find employees who are trained in electronics especially with component level trouble shooting skills.

In the next five years Honeywell Aerospace predicts a need for more than 200 trained technicians.

Please feel free to contact me for further ways we can partner.

Sincerely,

Shanna McCracken
ISC Supervisor

Honeywell Aerospace

AdventHealth

Ryan Kares
Advent Health
Manager, Biomedical Services

October 14, 2021

Professor Ross Stites
7250 State Avenue
Kansas City, KS 66112

Dear Professor Stites,

This letter is in support of Kansas City Community College's proposed Electronics program. Over the past year, we have discussed this program and partnership to meet our talent needs best. This program is much needed for the Kansas City region and will aid AdventHealth in filling our talent needs. The Biomed field is experiencing an ever-growing shortage of qualified individuals to meet increased demand and attrition rate due to retirements. The Biomed field developed during the late 1970s. Excellent pay and overall job satisfaction have led many technicians to remain since those early days. As we continue to expand our services throughout the region, the Electronics Engineering Technology program will develop a sustainable talent pool.

Our intention at AdventHealth is to continue serving on the industry advisory board for this program, hire interns from students in the electronics pathway, and interview successful program graduates. As the degree develops, we will continue to review the curriculum for the program and help identify real-world projects to develop the fundamental skills we seek in our employees.

Sincerely,

Ryan Kares

SYLLABI

COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	Electronic Circuit Fundamentals
COURSE NUMBER	ENGR-0108
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Pre-Engineering
CIP CODE	11.0801
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 2 Lab: 2
PREREQUISITES	None
COREQUISITES	None
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION

This introductory course in electronics technology provides an overview of electronic principles and theory. It is designed to introduce students to standard laboratory equipment, components, and the fabrication of select electronic circuits. This course is appropriate both for electronics technology majors and non-majors.

TEXTBOOKS

http://kckccbookstore.com/

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Foundational Concepts of Electricity and Electronics
II. Laws and Relationships in Electronics
III. Electronic Devices
IV. Operation of Lab Equipment
V. Electrical Measurements
VI. Circuit Construction

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Be able define essential electronic terms.
B. Be able to describe basic electronic theories and principles.
C. Be able to identify common electronic devices and their values.
D. Demonstrate basic understanding of standard electronics lab equipment.
E. Be able to assemble elementary electronic kits.
F. Be able demonstrate fundamental soldering techniques.
G. Be able to perform and interpret measurements in the lab.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

COLLEGE POLICIES AND PROCEDURES

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	Digital Electronics I
COURSE NUMBER	ELEC-0115
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Engineering Technology
CIP CODE	15.0303
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 3 Lab: 2
PREREQUISITES	None
COREQUISITES	ENGR-0108
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION

This course covers the operation, application, and troubleshooting of electronic logic devices, the design and construction of combination and sequential logic circuits, and the interface between digital and analogy devices. Topics include number systems, Boolean logic, digital arithmetic, logic gates, flip-flops, counters, and registers.

TEXTBOOKS

http://kckccbookstore.com/

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Digital Number Systems
II. Logic Gates and Boolean Logic
III. Sequential Logic and Circuits
IV. Combination Logic and Circuits
V. Counters and Registers

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Be able to convert between the binary, decimal, twos complement, hexadecimal, and BCD number systems.
B. Be able to perform arithmetic in the binary, hexadecimal, 2's complement and BCD number system.
C. Be able to determine the outputs of gate logic circuits.
D. Be able to create truth tables for Boolean expressions.
E. Be able to determine the Boolean expression for the output of a logic circuit.
F. Be able to determine the outputs of flip-flop circuits.
G. Be able to analyze the operation of counters and registers.
H. Be able to troubleshoot and find faults in gate circuits.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	DC Circuits
COURSE NUMBER	ELEC-0120
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Engineering Technology
CIP CODE	15.0303
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 3 Lab: 2
PREREQUISITES	ENGR-0108 Circuit Fundamentals
COREQUISITES	None
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION

This course covers the fundamentals of direct current (DC) as applied to resistive circuits. Emphasis is placed on the study and application of network theorems interrelating voltage, current, and resistance. Laboratory work will emphasize practical application of the mathematical principles developed in class. Pre-requisites: ENGR-0108 Electronic Circuit Fundamentals.

TEXTBOOKS

http://kckccbookstore.com/

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Review of Basic Electronic Principles
II. Voltage, Current, Resistance
III. Ohm's Law
IV. Power and Energy
V. Series Resistive Circuits
VI. Parallel Resistive Circuits
VII. Series-Parallel Resistive Circuits
VIII. Circuit Theorem's and Conversions

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Solve electrical problems using metric prefixes and scientific notation.
B. Define the electrical concepts of voltage, current, and resistance.
C. Utilize Ohm's law in the analysis of electrical circuits.
D. Compute the power and energy used in electrical circuits.
E. Compute current, voltage and resistance in series circuits.
F. Compute current, voltage and resistance in parallel circuits.
G. Compute current, voltage and resistance in a series-parallel circuit.
H. Use circuit network theorems to solve electrical circuits.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	Digital Electronics II
COURSE NUMBER	ELEC-0215
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Engineering Technology
CIP CODE	15.0303
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 3 Lab: 2
PREREQUISITES	ENGR-0115 Digital Electronics I
COREQUISITES	None
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION

This course is a continuation of Digital Electronics I. More complex digital logic circuits constructed from integrated circuits. Basic concepts of computer architecture and organization are covered. Emphasis is places on logic circuit design and construction, fault-testing, and repair.

TEXTBOOKS

http://kckccbookstore.com/

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Integrated Circuit Logic Families
II. Memory Devices
III. Computer Mathematics
IV. Digital Computer Organization
V. Data Handling Logic Circuits
VI. Interfacing with the Analog World
VII. System Analysis and Troubleshooting

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Construct and troubleshoot digital systems containing TTL and CMOS integrated circuits.

A. Analyze and use decoders, encoders, multiplexers and demultilplexers.

B. Analyze and use digital-to-analog and analog-to-digital converters.

C. Identify the characteristics of various memory devices.

D. Draw the block diagram of a basic computer.

E. Write and assemble programs for a basic computer.

F. State the cycle-by-cycle operation of a simple computer.

G. Troubleshoot and find faults in digital circuits and systems.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	AC Circuits
COURSE NUMBER	ELEC-0210
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Engineering Technology
CIP CODE 15.0303	
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 3 Lab: 2
PREREQUISITES	ELEC120 DC Circuits
COREQUISITES	None
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION
This course applies circuit analysis to Alternating Current (AC) circuits. The response of circuits that have resistance, capacitive and inductive reactance, and impedance in series, parallel, and series-parallel circuits will be analyzed. Topics will also include filters, resonance, and transformers.

TEXTBOOKS
http://kckccbookstore.com/

METHODS OF INSTRUCTION
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Periodic Waveforms and Pulses
II. Phasors, Complex Numbers, and Applications
III. Capacitors, Inductors, Reactance, and Impedance
IV. Circuit Analysis
V. Transformers
VI. Common Circuit Applications
VII. Pulse Response of Reactive Circuits.

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Describe sine and non-sinusoidal waveforms.
B. Use phasors and complex numbers in analyzing sinusoidal waveforms.
C. Describe the capacitor and define its properties in an electrical circuit using sine waveform sources (AC).
D. Describe the inductor and define its properties in an electrical circuit using sine waveform sources (AC).
E. Describe the transformer and describe its properties in an electrical circuit using sine waveform sources (AC).
F. Explain the operation of resistor-capacitor (RC) circuits having AC sources applied.
G. Explain the operation of resistor-inductor (RL) circuits having AC sources applied.
H. Explain the operation of resistor-inductor-capacitor (RLC) circuits having AC sources applied.
I. Describe the operation of filters made from RLC component combinations with AC sources applied.
J. Describe the operation of RLC component combinations with pulsed sources applied.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	Semiconductor Devices
COURSE NUMBER	ELEC-0212
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Engineering Technology
CIP CODE	15.0303
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 3 Lab: 2
PREREQUISITES	
COREQUISITES	ENGR-0210 AC Circuits
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION

This course is an introduction to semiconductor materials, the concept of junction and biasing, diodes, transistors, and some integrated circuits. Topics will include special purpose diodes, bipolar junction transistors (NJT), field effect transistors (FET), operational amplifiers (Op-Amps), voltage regulators, and four-layer semiconductors. Both circuit analysis and understanding, and circuit construction and trouble shooting will be emphasized.

TEXTBOOKS

http://kckccbookstore.com/

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Semiconductor Materials, Construction, and Background
II. Diodes and Diode Applications
III. Special Purpose Diodes
IV. Bipolar Junction Transistors
V. Small-signal Bipolar Amplifiers
VI. Power Amplifiers
VII. Field-Effect Transistors (FETs)
VIII. Small-signal FET Amplifiers
IX. Amplifier Frequency Response
X. Operational Amplifiers (Op-amp)
XI. Op-amp Frequency Response, Stability and Compensation
XII. Op-amp Applications
XIII. Active Filters
XIV. Oscillators and Phase-Locked Loops
XV. Voltage Regulators
XVI. Four and More Layer Semiconductor Devices

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Be able to describe the characteristics of semiconductor, insulator and conductor materials.
B. Be able to describe the characteristics of PN junctions.
C. Be able to explain, analyze and troubleshoot common diode applications.
D. Be able to explain, analyze and troubleshoot special purpose diode applications.
E. Be able to describe the characteristics of bipolar junction transistors (BJTs).
F. Be able to analyze bipolar junction transistor (BJT) biasing circuits.
G. Be able to analyze bipolar junction transistor (BJT) small signal amplifiers.
H. Be able to explain and analyze the operation of power amplifiers.
I. Be able to describe the characteristics and analyze the biasing of field-effect transistors (FETs).
J. Be able to explain and analyze the operation of small-signal FET amplifiers.
K. Be able to analyze the frequency response characteristics of amplifiers.
L. Be able to describe op-amp characteristics.
M. Be able to discuss op-amp frequency characteristics.
N. Be able to describe op-amp amplifier applications.
O. Be able to analyze active filter circuits.
P. Be able to analyze op-amp oscillator circuits.
Q. Be able to apply IC voltage regulators.
R. Be able to explain how multi-layer semiconductor devices operate.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	Microcontrollers
COURSE NUMBER	ELEC-0220
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Technology
CIP CODE	15.0303
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 3 Lab: 2
PREREQUISITES	ELEC-0215 Digital Electronics II, CIST-0120 Programming Fundamentals
COREQUISITES	
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION

This course is an introduction to the basic principles and fundamental concepts of microprocessor systems. This course is a continuation of topics introduced in Digital Electronics I and II. Included are hardware and software topics in operating systems, peripherals, displays, processors, storage media, maintenance, diagnostics and troubleshooting. Analog and digital data acquisition and processing will also be covered.

TEXTBOOKS

http://kckccbookstore.com/

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Introduction to Embedded Systems
II. Operation and Architecture
III. Programming Development and Data Flow
IV. Memory Interfacing
V. Analog I/O Interfacing
VI. Serial Interfacing
VII. Peripherals Interface
VIII. Applications

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Describe the internal structure of a typical microprocessor.
B. Develop a program flowchart to define a problem.
C. Program a representative microprocessor with a typical language.
D. Describe the operating principles of applicable types of RAM (Random Access Memory) and ROM (Read Only Memory).
E. Interface a representative microprocessor with representative RAM and/or ROM.
F. Input and output data through appropriate ports.
G. Interface a representative microprocessor with typical peripherals.
H. Describe the operating principles of digital-to-analog and analog-to-digital converters.
I. List several applications of digital-to-analog and analog-to-digital converters.
J. Interface digital-to-analog and analog-to-digital converters to a microcomputer system.
K. Interface and program a programmable ROM.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	Electronic Communication Systems
COURSE NUMBER	ELEC0225
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Engineering Technology
CIP CODE 15.0303	
CREDIT HOURS	4
CONTACT HOURS/WEEK	Class: 3 Lab: 2
PREREQUISITES	ELEC-0210 AC Circuits, ELEC-0212 Semiconductor Devices
COREQUISITES	
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION
This course explorers how information signal is transmitted and received in communication systems. The emphasis throughout the course is on developing the ability to describe and analyze the various aspects of communication systems.

TEXTBOOKS
http://kckccbookstore.com/

METHODS OF INSTRUCTION
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

I. Introduction to Basic Analog and Digital Communication Systems
II. The Electromagnetic Spectrum and Spectrum Analysis
III. Wavelength, Frequency and Propagation Velocities
IV. Low and High Frequency Transmitters
V. Basic AM Radio Receivers
VI. The Super-Heterodyne AM and FM Radio
VII. Frequency Generation Methods
VIII. Basic Analog and Digital Television
IX. Transmission Lines
X. Antenna Types and Characteristics
XI. Communication Networks
XII. Global Positioning Systems (GPS)

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Be able to describe broad issues in communication systems.
B. Be able to explain the electromagnetic spectrum and frequency allocations in modern communications.
C. Be able to calculate wavelength, frequency and propagation velocity.
D. Be able to analyze low and high level transmitters.
E. Be able to demonstrate sections of a basic AM and FM radio system.
F. Be able to demonstrate the functions of the major sections of a super-heterodyne radio.
G. Be able to state the need for systems used for frequency generation.
H. Be able to describe the evolution of television from analog to digital.
I. Be able to identify by physical appearance the various wires and cables used in the transmission of electronic signals.
J. Be able to describe how an antenna radiates or captures electromagnetic energy.
K. Be able to describe the basics of telephony, cellular and data communications.
L. Be able to define essential Global Positioning System (GPS) terminology and describe basic operation.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

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COURSE SYLLABUS

LAST REVIEW	Fall 2021
COURSE TITLE	Electronics Internship
COURSE NUMBER	ELEC-0250
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Electronics Engineering Technology
CIP CODE	15.0303
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 0 Lab: 3
PREREQUISITES	**ELEC 0215 Digital Electronics II**
COREQUISITES	
COURSE PLACEMENT	Students must meet the correct placement measure for this course. Information may be found at: https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html

COURSE DESCRIPTION
This course affords the student the opportunity to gain practical professional experience in concordance with academic experience. The student is responsible for organizing the internship opportunity, which must be approved in advance to receive credit.

TEXTBOOKS
http://kckccbookstore.com/

METHODS OF INSTRUCTION
A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, and panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

Content Outline and Competencies:

The specific nature and degree of emphasis of job-related activities performed by each student will vary from one employer to another. However, in general, it is expected that the student will perform many of the following functions.

I. Operate Electronic Equipment

II. Troubleshoot and Repair Electronic Equipment

III. Test and Check Electronic Equipment

IV. Perform Equipment Calibration

V. Perform Preventative Maintenance

VI. Maintain Records and Other Data

VII. Refer to Equipment Service Manuals and Other Documents

VIII. Use Interpersonal and Communication Skills Through Interaction With Other Professionals

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

A. Describe the work activities accomplished on-the-job to the internship coordinator.

B. Explain the activities of the company, its products and services.

C. Perform basic technical electronic tasks in the accomplishment of assigned work assignments.

D. Demonstrate an increased understanding of the application of the classroom experience to the workplace environment.

E. Demonstrate a greater preparedness, personally and professionally, for a career position.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Assessment methods may include, but are not limited to, the following: Homework, Assignments, Quizzes, Class Participation, Chapter Tests, and Final Exam. The grading scale and the process for calculating the course grades are to be determined by the individual instructors. This information will be included in each instructor's syllabus.

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