



ELECTRONICS ENGINEERING TECHNOLOGY
2022 – 2023
PROGRAM SYLLABUS

PROGRAM INFORMATION

- **Number of High School Credits - 3.0 CTE/Occupational Education/Elective**
 - **Equivalency credit: Algebra 2**
 - **Prerequisite: Algebra 1**
- **CTE Dual Credit – Application and enrollment information and instructions will be provided in December when the enrollment date is posted by the colleges. Enrollment in your desired college is required and is your responsibility to complete. Assistance is provided by the PNW Consortium.**
 - **Edmonds Community College – Minimum grade of B at SISC**
 - **SISC First Year Course**
 - **ETEC 150 – Applied Technical Math – 5 Cr**
 - **ETEC 161 – DC Electronics – 5 Cr**
 - **SISC Second Year Course**
 - **ETEC 162 – AC & Linear Electronics – 5 Cr**
 - **ETEC 163 – Digital & Microprocessor Electronics – 6 Cr**
 - **Everett Community College – Minimum grade of B at SISC**
 - **SISC First Year Course**
 - **MECH 120 – 5 Cr**
 - **Lake Washington Technical College – Minimum grade of B at SISC**
 - **SISC First Year Course**
 - **ELEC 110 – 6 Cr**
 - **North Seattle College – Negotiations are ongoing on course articulation**

CLASS HOURS

- **AM Session – 7:55 to 10:25**
- **PM Session – 11:10 to 1:40**

INSTRUCTOR INFORMATION

- **Instructor: Ted Rodriquez, CET**
- **Office Hours: 10:25 to 11:10**
- **Office Location: Bldg 3, Room 359**
- **Phone: 425.348.2234**
- **Email: rodriqueztn@mukilteo.wednet.edu**

Best Way to Contact Me: Email works best in the EET department. I will reply as soon as practical. I do not answer phone calls, except for emergencies, while I am in class and/or engaged with you.

PROGRAM DESCRIPTION

This program introduces the four electrical fundamental topics of Voltage, Current, Resistance and Power. This is accomplished through a combination of academic and hands-on experiences. Each assignment is typically one to two weeks long with a capstone project assigned during the 4th quarter.

As first year students, you will work on circuit configurations which illustrate the relationship between Voltage, Current, Resistance, and Power. Electrical equipment and tools which facilitate the learning process are covered as part of the study sequence.

Second year students will begin the school year with digital system concepts and fundamentals. You will combine your knowledge of Analog circuits and systems from the first year and develop STEM applications in Mechatronics, Robotics, Biometrics, and Alternative Energy. You will learn about and use unique sensors as you apply them to your analog, digital and industrial control designs in your STEM applications. By adding the Arduino microcontrollers to your systems design, programming, and interfacing, you will gain a valuable insight into industrial, commercial, and custom system applications. All necessary math is covered in the design and implementation of these applications.

The National Science Foundation (NSF) STEM guitar building Capstone project is available to all students in the EET department. The guitar building project is totally student based and in compliance with the NSF Guitar Building Institute requirements. If you visit Sinclair Community College NSF STEM guitar project site in Akron, Ohio at <http://www.guitarbuilding.org>, you can get an idea of the different models and available options for your guitars. Once on the Sinclair College website, select *Storefront* and then *Products*.

We will begin ordering your guitars during the second week of Quarter One, Semester One. Delivery times from Sinclair CC vary from three to six weeks due to heavy demand at this time of the year.

Once you commit to this project and your order is placed by the Administrative Bookkeeper for your NSF STEM guitar, a refund from Sno-Isle TECH is NOT possible.

PROGRAM MATERIALS

• COMPONENTS AND TEXTS

- All electronic components and data specification sheets will be provided by the department.
- Lessons in Electricity, Volumes: 1 through 6, Tony R. Kuphaldt; Copyright (C) 2000-2020, Tony R. Kuphaldt, is available as an eBook at no cost to you. Your eBooks can be loaded into a 4 or 8 GB flash drive from the main computer at the front of the classroom. If you wish to download your eBooks directly to your computer from the Internet, use the address shown here: <http://www.ibiblio.org/kuphaldt/electricCircuits/>. A copy of the Design Science License is included at the end of each book volume. For more information about the License, visit <https://www.gnu.org/licenses/dsl.html>. There will be additional eBooks added to the computer located at the front of the classroom. I will make reference to these files occasionally and you may download them at your discretion.

- **If you experience difficulty reading from a computer screen, there are textbooks in the department which are also available to you. You may check these out if you are more comfortable reading from a textbook than from a computer screen.**

LEARNING TARGETS/OBJECTIVES

Below is a partial list of the activities you will be able to perform upon completion of this program sequence with a grade of B (3.00 GPA) or better. You will be able to:

- 1. Determine and identify unsafe safety practices and immediately apply corrective action.**
- 2. Communicate safety concerns to your peers, class leaders and teacher.**
- 3. Obtain your First Aid and CPR certification.**
- 4. Apply mathematic principles (Algebra) to AC and DC resistive circuit analysis.**
- 5. Apply mathematic principles (Trigonometry) to AC reactive circuit analysis.**
- 6. Apply the Integration and Differentiation Calculus functions in the design and development of wave shaping circuitry.**
- 7. Use your Digital Multimeter (DMM), oscilloscope, function generator and power supply system in analyzing your electronic circuits.**
- 8. Use Ohm's Law to analyze resistance, voltage and current in AC and DC circuits.**
- 9. Identify the Color Code used in the electrical and electronics fields.**
- 10. Determine the electrical value, power capacity, and tolerance of a resistor from its color code and physical size.**
- 11. Locate and identify components and their function in a schematic diagram.**
- 12. Prepare a circuit layout based on a schematic diagram of that circuit.**
- 13. Identify solid state components by their electrical or electronic schematic symbol.**
- 14. Apply mathematic equations to predict the performance of an audio amplifier.**
- 15. Utilize your test instrumentation to verify proper circuit operation.**
- 16. Use manufacturer's datasheets and information notices to obtain device specifications.**
- 17. Apply Mechatronics principles to analog and digital circuit design.**
- 18. Use analog to digital (ADC) and digital to analog (DAC) conversion techniques in system computer interfacing.**
- 19. Incorporate environmental, narrow and wide spectrum sensors in circuit applications.**
- 20. Use electronics and mechatronics principles in designing motor control circuits.**
- 21. Understand the concept of positive and negative feedback in automatic control systems.**
- 22. Compare free-air laser and fiber optic light communication systems.**
- 23. Use C or C-variant language for programming applications.**
- 24. Investigate the current types of Biometric sensors used in industry.**
- 25. Identify the STEM principles used in electronic circuit designs.**

26. Apply STEM principles to your projects.

CERTIFICATION OPPORTUNITIES

This course assesses student achievement of these outcomes and offers an opportunity for students to earn a Sno-Isle TECH Skills Center certificate of achievement. Career skills certification is awarded upon successful attainment of proficiency in Electronics Technology. A subject matter pretest is administered by “You Science” during the first week of the first Quarter. The “You Science” Precision Exam certification assessment is administered during the 4th quarter. The 21st Century Success Skills (soft skills) Exam will also be administered during the 4th quarter of the school year. The “You Science” Precision Exam Career skills certification documents are endorsed by the Superintendent of Public Instruction of the State of Washington and the Director of the Sno-Isle TECH Skills Center.

PROGRAM POLICIES AND PROCEDURES

EXPECTATIONS

You are expected to conduct yourself in a Responsible, Reliable and Respectful manner while you are a student in this program. You will receive two copies of the Industry Standards – “3 R’s” of Professional Level of Expectations, included in this Program Syllabus. You will read, discuss, and provide your signature attesting receipt of this document. One copy of this document will be returned to your instructor before the end of the first session of your school year. You will retain one copy.

ASSESSMENTS

The grading in this program will be based on the following criteria:

- 1. Laboratory Assignments50%
 - Assignments turned in by Due Date will be graded based on 100 %
 - Assignments turned in one week after due date will be graded based on ...80 %
 - Assignments turned in two weeks after due date will be graded based on .70%
- 2. Lab examinations (may be written, oral or computer administered)25%
- 3. Professional work ethics (the 3 R’s)25%

Grades will be calculated automatically by *Qmlative* and *Schoology*.

- All assignments and due dates for each quarter are posted on Schoology by the end of the first week of every quarter.
- Assignment due dates may be adjusted to accommodate your needs.
- Grades are posted as assignments are turned in. You and your parents can view your grades and progress by accessing the online SMS system. Parents can use *Parent Square* to contact teacher.
- If you are turning in assignments through electronic means and experience connection issues, let the teacher know and resubmit your assignment manually.

Sno-Isle TECH Skills Center can support accommodations for learning and health needs. The same as

your sending school, we need updated paperwork that states what accommodations are needed. Please turn in any updates to your learning and accommodation plans to me or to the Study Center staff.

ATTENDANCE

You are expected to be in class on time and ready to begin your assignments. You are provided with a class arrival and dismissal time and will be marked tardy if you are late. Your arrival and dismissal times are found on the class sign-in sheet. Your signature affirms your awareness of these times and your presence in class. You will sign-in daily. Sno-Isle's attendance office number is: 425.348.2222.

CELL PHONES

Cell phones distract the conduct of a class presentation. The use of cell phones for anything other than accessing technical reference material available on Industrial company internet websites is not allowed. You can use your cell to access your certification Examinations if computer technical issues occur. If you have medical related issues that require your access to your cell phone a written permission will be required from your home school or guardian.

ACADEMIC HONESTY AND INTEGRITY

Academic honesty and integrity include, but are not limited to:

- Plagiarizing, copying, or submitting any part of another person's work (written, visual, or auditory) as representing one's own work.**
- Distribution/Sharing/Receiving of class assignment or test information in written, electronics, or verbal form to/from another student without teacher permission. Student in physical or electronic possession of unauthorized academic materials, whether requested/used or not, may be subject to disciplinary action.**
- Using "crib notes". Any use of unauthorized notes on tests/assignments (written notes or electronic devices of any kind).**
- Altering of Accessing Official School Documents: A student shall not alter official school documents, either paper or electronic, or open school documents not specifically addressed to the student.**

Suspected and confirmed instances of academic dishonesty will be referred to administration for documentation.

DRIVING TO SNO-ISLE

Sno-Isle TECH is designed to be a non-student driver school. The sending school districts provide busing to and from student home high schools. Bus arrival/departure times at Sno-Isle are coordinated to ensure students make connection with their bus to and from their home.

That being said, we realize there are extenuating circumstances where students may not be able to make utilization of those services. We have VERY limited student parking on our campus and have created

strict guidelines to help us determine who may apply for a permit. Eligible students are:

- * Homeschool students
- * Running Start students
- * Students who are participating in school-related internships or apprenticeships and whose schedule does not mesh with school transportation schedules
- * Students with medical issues that make it impossible to ride the bus
- * NOTE: If you do not meet one of these criteria but feel you have a valid reason to self-transport, you may submit a written explanation/request to our Assistant Director, Kim Brown, who MAY grant one for you based upon validity of need.

If you DO meet any of these criteria, please bring your driver's license and current proof of insurance card to the main office when you arrive on your first day. Deb Cesarini is the person who processes student parking permits. She will start by taking a copy of your license and insurance and then giving you an application to complete. (The application requires signatures from your parent/guardian, sending school administrator, Sno-Isle teacher, Sno-Isle administrator and you.) She will provide you with a temporary parking pass until the paperwork is completed. If you are permitted to drive:

Your class arrival time will be: AM session - **7:55 AM** PM session - **11:55 AM**
Your class dismissal time will be: AM session - **10:25 AM** PM session - **1:40 PM**

Individual and Team-Related Application Areas In Your Second Year Advanced Electronics

As you progress in your course of study in the department, you will be involved in more and more direct application projects. You will be able to select an area of application. Robotics and control systems applications are one choice. Analog and digital audio applications are another. Computer controlled systems and programming is yet another. If you have a project or specific direction you have always wanted to pursue, you will have that opportunity.

“Sno-Isle Tech Skills Center is administered by Mukilteo School District and follows MSD School Board Policies and Procedures.”

Mukilteo School District does not discriminate in any programs or activities on the basis of sex, race, creed, religion, color, national origin, age, veteran or military status, sexual orientation, gender expression or identity, disability, or the use of trained dog guide or service animal and provides equal access to the Boy Scouts and other designated youth groups. The following employees have been designated to handle questions and complaints of alleged discrimination: Civil Rights Coordinator and Title IX Coordinator Simone Neal (425-356-1319), NealSR@mukilteo.wednet.edu, Section 504 Coordinator Lisa Pitsch (425-356-1277), PitschLA@mukilteo.wednet.edu, and the ADA/Access Coordinator Karen Mooseker (425-356-1330), MoosekerKW@mukilteo.wednet.edu. Address: 9401 Sharon Drive in Everett, WA. Inquiries regarding ADA/Access issues at Sno-Isle TECH Skills Center should be directed to Wes Allen, Director (425-348-2220) AllenWR@mukilteo.wednet.edu. Address: 9001 Airport Road in Everett, WA 98204.