

General Information

The Associate in Science Degree in Electronics, Robotics and Drones Technology (ERD) provides education and training in some of the most robust, emerging fields of the 21st Century. The use of robots and drones will drive structural changes in our economy and everyday life in areas ranging from driverless cars and medical procedures to automated manufacturing processes and aerial product delivery. Beginning with electronic foundation core courses and culminating in drone, robotics and automation systems, the curriculum provides the knowledge required to succeed in these modern high-tech fields. Technical elective courses provide the opportunity for in-depth study in areas including drone engineering, renewable energy systems, computer networking, CAD and manufacturing quality.

Laboratory projects highlighted in ERD courses include active hands-on experiences with robotic control systems and drone applications, data acquisition/control/communication, digital electronics, microprocessor control, and programmable automation controllers (PACs). Lab projects have been developed to simulate actual job conditions. Drone-specific courses prepare students to sit for the Federal Aviation Administration's (FAA) Section 107 Commercial Small Unmanned Aircraft System (SUAS) exam for pilot certification.

Graduates of this program are qualified to seek entry-level employment in several emerging areas such as drone mission programming, research and development, new product design, product testing, field service, controls engineering, manufacturing of complex electronic assemblies and systems, installation, marketing, and customer service. Associate degree graduates can also continue in the NEIT Bachelor of Science in Electrical Engineering Technology program.

Program Mission, Goals and Outcomes

Program Mission

The mission of the Electronics, Robotics and Drones Technology (ERDA) program is to prepare students for entry-level employment as a technician, designer, or operator in the fields of electronics, robotics, drones technology and automation. Students are engaged in educational experiences combining theory and practical application in the basic knowledge, skills, techniques, practices, and concepts employed in their profession. The program endeavors to develop the student's ability to think critically, to communicate effectively and to solve problems independently. An important objective is to instill in students the necessity for continued professional development.

Program Goals

The following program goals have been established for the ERDA program:

1. Develop skills in logical thinking, problem solving, and troubleshooting.
2. Develop professionalism and quality workmanship.
3. Develop oral and written communication skills.
4. Develop ability to work productively with others.
5. Develop skill in analyzing electronic circuits.
6. Develop skill in applying math in problem solving, analysis, and design.
7. Develop skills in computer analysis and programming.

Program Outcomes

Students will develop:

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline;
2. an ability to design solutions for well-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline;
3. an ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature
4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results; and
5. an ability to function effectively as a member of a technical team.

Student Skills Developed

Objective:

The ERDA program at NEIT has the primary focus of developing practical electronic technician skills starting from basic component and circuit theory, instruments and software; to industrial electronics, industrial automation, UAVs (Unmanned Aerial Vehicles), robotics, and system applications. Objectives also include identifying the basic tools and test equipment used to construct, troubleshoot, and maintain standard electronic circuits and systems. Included is the study of the general operating principles of multiple electronic components and electrical devices such as capacitors, resistors, inductors, semiconductors, integrated circuits (ICs), generators, motors, and transformers. Software is learned by applying C programming to microprocessors for robots and drones and to analyze applied electronics principles to develop circuitry and systems used for controls, communication systems, and microprocessor devices.

Skills:

1. **Circuit Theory:** Fundamentals of DC and AC circuit theory and electronic components.
2. **Instrumentation:** Introduction to use of the oscilloscope, meters, signal generator, and DC power supplies.
3. **Soldering & Cable Fabrication:** Techniques in soldering Through-hole and Surface Mount components on printed circuit boards as well as cable fabrication.
4. **Robotic Systems:** Design, build, program, debug and demonstrate a robotic system.
5. **Circuit Simulation:** Simulation of DC and AC circuits with MultiSim™.
6. **Digital Systems:** Fundamentals of digital electronics theory, circuit construction, test and simulation.
7. **Analog Electronics:** Fundamentals of power supplies, amplifiers and filters.
8. **Microcontroller Systems:** Fundamentals of microcontrollers and programming in C language utilizing a computer program (Keil µvision) as well as controlling systems.
9. **Programmable Automation Controllers (PACs):** Fundamentals of PACs and programming with Ladder Logic and system applications.
10. **Data Communications Systems:** Fundamentals of data communications using Ethernet, modern wireless technologies and others.
11. **Industrial Systems:** Fundamentals industrial control components, motors, motor controllers and industrial sensing technologies.
12. **Drones / UAVs:** Fundamentals of drone technology including safety, design and applications.
13. **Teamwork** through lab team assignments and projects.
14. **Troubleshooting** techniques in all courses.
15. **Computer literacy:**
 - **C Language coding** – of an 8051 microcontroller
 - **Arduino™** – for robotic systems
 - **LabVIEW™** – for data acquisition and analysis
 - **MultiSim™** – for computer simulation of digital and analog circuits
 - **RSLogix5000™** – for ladder logic programming of PACs
 - **Microsoft Office Suite** – Word, Excel, Power Point
16. Additional skills can be obtained from technical electives in Renewable Energy, CAD, Drone Engineering, Manufacturing Quality and Creative Prototyping.

Curriculum

| Term I | | | | | |
|---|-----|--|----|-----|-------|
| Course No. | | Course Title | C | L | T |
| ERD | 110 | Fundamentals of Electronics | 4 | 2 | 5 |
| ENG | 118 | Introduction to Engineering Technology and Lab | 2 | 2 | 3 |
| EN | 100 | Introduction to College Writing (COM Core) | 4 | 0 | 4 |
| CHOOSE ONE (depending upon Math placement) | | | | | |
| MA | 105 | Basic College Math with Lab (MA/SCI Core) | 4 | 2 | 5 |
| MA | 110 | Introduction to College Math (MA/SCI Core) | 4 | 0 | 4 |
| MA | 125 | Technical Math I (MA/SCI Core) | 4 | 0 | 4 |
| | | | 14 | 4/6 | 16/17 |

| Term II | | | | | |
|--|-----|--|----|---|----|
| Course No. | | Course Title | C | L | T |
| ERD | 111 | Electronic Circuit Construction | 3 | 2 | 4 |
| ERD | 115 | Computer and Networking Fundamentals for Engineering | 3 | 2 | 4 |
| ERD | 122 | Introduction to Robotic Control Systems | 3 | 2 | 4 |
| CHOOSE ONE (depending upon Q1 MA selection) | | | | | |
| MA | 125 | Technical Math I (MA/SCI Core) | 4 | 0 | 4 |
| MA | 210 | Technical Math II (MA/SCI Core) | 4 | 0 | 4 |
| | | | 13 | 6 | 16 |

| Term III | | | | | |
|-------------------|-----|--|----|---|----|
| Course No. | | Course Title | C | L | T |
| ERD | 120 | Digital Concepts | 4 | 2 | 5 |
| ERD | 131 | Advanced Circuits and Semiconductors | 4 | 2 | 5 |
| EN | 200 | Workplace Communications (COM Core) | 4 | 0 | 4 |
| CHOOSE ONE | | | | | |
| MA | 210 | Technical Math II (MA/SCI Core) | 4 | 0 | 4 |
| ELECTIVE | | 100-200 Level Humanities (or Arts/Foreign Language) Core | 4 | 0 | 4 |
| | | | 16 | 4 | 18 |

| Term IV | | | | | |
|------------|-----|--|----|----|----|
| Course No. | | Course Title | C | L | T |
| ERD | 210 | Introduction to Drone / UAV Technology | 1 | 2 | 2 |
| ERD | 212 | Microprocessor Control Systems | 3 | 2 | 4 |
| ERD | 242 | Electro-Mechanical Systems & Industrial Controls | 3 | 2 | 4 |
| ERD | 246 | Data Acquisition Systems | 3 | 2 | 4 |
| PHY | 200 | Physics I & Lab (MA/SCI Core) | 3 | 2 | 4 |
| | | | 13 | 10 | 18 |

| Term V | | | | |
|-----------------|---|----|---|----|
| Course No. | Course Title | C | L | T |
| ERD 250 | Data Communications & The Internet of Things (IoT) | 3 | 2 | 4 |
| ENG 259 | Commercial Drone / UAV Certification | 2 | 2 | 3 |
| MCT 235 | Industrial Robotic Automation | 3 | 2 | 4 |
| PS 210 | <i>Human Relations in the Workplace (SS Core)</i> | 4 | 0 | 4 |
| ELECTIVE | <i>100-200 Level Humanities (or Arts/Foreign Language) Core</i> | 4 | 0 | 4 |
| | | 16 | 6 | 19 |

| Term VI | | | | |
|--|---|------|-----------|-----------|
| Course No. | Course Title | C | L | T |
| ENG 210 | Introduction to Programmable Automation Controllers | 3 | 4 | 5 |
| ENG 263 | Commercial Utilization of Drones / UAVs | 3 | 2 | 4 |
| ELY 217 | AutoCAD Electrical | 1 | 2 | 2 |
| CHOOSE ONE | | | | |
| ENG 281 | Engineering Internship | 0 | 20 | 4 |
| ENG 283 | Capstone Project | 3 | 2 | 4 |
| ELECTIVE | Technical Elective (see list below) | 2/3 | 2 | 3/4 |
| | | 7-10 | 10/ 28 | 14/ 15 |
| <i>Total Quarter Credit Hours =101-103</i> | | | | |

| Technical Electives (Term VI) | | | | |
|-------------------------------|-------------------------------------|---|---|---|
| Course No. | Course Title | C | L | T |
| ENG 100 | Imagineering: Creative Prototyping | 3 | 2 | 4 |
| ENG 289 | Drone/UAV Engineering | 3 | 2 | 4 |
| ERD 255 | Renewable Energy Systems | 2 | 2 | 3 |
| MCT 115 | Computer Aided Design I | 3 | 2 | 4 |
| MCT 239 | Quality | 3 | 2 | 4 |
| SE 116 | Programming Essentials Using Python | 2 | 4 | 4 |

Legend

C = Number of lecture hours per week

L = Number of laboratory hours per week

T = Total Quarter Credit Hours where each lecture hour per week is one credit, every 2-4 laboratory hours are one credit depending on the expected amount of pre- or post-lab work.

PLEASE NOTE: All liberal arts core courses are listed in italics.

All associate degree students are required to take 32 credits of liberal arts and math/science courses as selected from the liberal arts core. See the course descriptions section of this catalog for a list of the core area courses. Students who place out of MA 105/110 must still take 32 credits of core courses.

Subject to change.

Liberal Arts Core Electives

All programs must meet certain minimum requirements in both the major and in the liberal arts. Course requirements for each program are listed in each curriculum along with liberal arts selections. Courses listed as “Core Electives” in a curriculum can be chosen by students from one of the several core areas listed below. Each core area provides a variety of courses for student choice. Students must take a minimum of 32 credits in core electives for the associate degree and an additional minimum of 28 credits for the bachelor’s degree. Individual majors have specific requirements and may require more than the minimum number of liberal arts credits or may specify certain courses in a particular core area. All liberal arts core elective courses are 4 credits. Please refer to the curriculum of the major for specific requirements.

Associate Degree Course Core Elective Areas¹

To obtain a minimum of 8 courses (32 credits), students may choose from the following course selections:

- 2 courses (minimum) from the Communications Core**
- 2 courses (minimum) from the Math/Science Core**
- 1-2 courses from the Humanities Core OR**
 - 1 course from the Humanities Core AND/OR**
 - 1 course from the Arts/Foreign Language Core**
- 1-2 courses from the Social Sciences Core**

Associate Degree Courses by Core¹

Communications Core Electives (Minimum 8 Credits)

EN 100 Introduction to College Writing
EN 106 Service Industry Communications
EN 110 Healthcare Communications
EN 200 Workplace Communications
EN 211 Oral Communications
HU 208 Rap/Rock and Poetry

Math/Science Core Electives (Minimum 8 Credits)

CHM 101 Life Science Chemistry
MA 100/110 Introduction to College Math
MA 109 Math for Life Science
MA 121 Business Math
MA 125 Technical Math I
MA 200 Applied Math for Business
MA 210 Technical Math II
PHY 126 Applied Physics & Lab
PHY 200 Physics I and Lab
SCI 110 Environmental Science

Arts/Foreign Language Core Electives (Maximum of 4 Credits in Place of a Humanities Course)

AR 203 Introduction to Drawing
AR 204 Introduction to Theater
AR 206 3D Sculpture: An Adventure in the Third Dimension
AR 207 Introduction to Applied Music
AR 209 The Art of Collage
JP 201 Introduction to Japanese
SP 201 Introduction to Spanish
SP 203 Spanish for Healthcare Workers



Humanities Core Electives (Minimum 4 Credits)

HU 208 Rap/Rock and Poetry
HU 211 Introduction to Film
HU 212 Documentary Film
HU 215 Popular Culture
HU 216 Music and the Media
HU 240 Graphic Design in the 20th Century
HU 242 The Automobile and American Culture
HU 243 The American Dream (literature course)
HU 244 Science Fiction
HU 291 Critical Thinking and Chess

Social Sciences Core Electives (Minimum 4 Credits)

BU 236 Small Business and the Law
EC 203 Principles of Economics
HI 231 Contemporary History
HI 235 Architectural History
HI 280 The Holocaust
PS 140 Life-Span Development
PS 201 Introduction to Psychology
PS 202 Psychology of Healthcare
PS 203 Psychology of Happiness
PS 210 Human Relations in the Workplace
SO 203 Social Problems
SO 220 Internet and Society
SO 231 Crime and Deviance
SS 140 Criminal Investigations
SS 201 American Government in Action
SS 203 Terrorism & National Security
SS 204 Juvenile Justice System in America
SS 206 Constitutional Values in the 21st Century
SS 221 Technology and American Life
SS 222 Mindful Living

1. Subject to Change

Degree Progress Checklist

Check off each completed course.

Program Requirements

| | | | | |
|----|--------------------------------|-----|-------|--|
| Q1 | ERD | 110 | _____ | |
| | ENG | 118 | _____ | |
| Q2 | ERD | 111 | _____ | |
| | ERD | 115 | _____ | |
| | ERD | 122 | _____ | |
| Q3 | ERD | 120 | _____ | |
| | ERD | 131 | _____ | |
| Q4 | ERD | 210 | _____ | |
| | ERD | 212 | _____ | |
| | ERD | 242 | _____ | |
| | ERD | 246 | _____ | |
| Q5 | ERD | 250 | _____ | |
| | ENG | 259 | _____ | |
| | MCT | 235 | _____ | |
| Q6 | ENG | 210 | _____ | |
| | ENG | 263 | _____ | |
| | ELY | 217 | _____ | |
| | Choose One | | | |
| | ENG | 281 | _____ | |
| | ENG | 283 | _____ | |
| | Tech Elective (see list below) | | _____ | |

Tech Elective Choices:

ENG 100 Imagineering: Creative Prototyping
ENG 289 Drone Engineering
ERD 255 Renewable Energy Systems
MCT 115 Computer Aided Design I
MCT 239 Quality
SE 116 Programming Essentials Using Python

Liberal Arts Core Requirements

8 Required Courses

Each course=4 credits (total of 32 credits)

| Communications Core | | | |
|---------------------|--------|----|-------|
| #1 | EN 100 | Q1 | _____ |
| #2 | EN 200 | Q3 | _____ |

| Math/Science Core | | | |
|-------------------|------------------------------------|----|-------|
| #3 | MA 105 or MA 110* | Q1 | _____ |
| #4 | MA 125 | Q2 | _____ |
| #5 | MA 210 | Q3 | _____ |
| #6 | PHY 200 | Q4 | _____ |
| | or | | |
| | If you placed into MA 125 take: | | |
| #3 | MA 125 | Q1 | _____ |
| #4 | MA 210 | Q2 | _____ |
| #5 | 100-200 level HU or AR/FL elective | Q3 | _____ |
| #6 | PHY 200 | Q4 | _____ |

*If you placed into MA 044, take MA 105 instead of MA 110.

| Humanities Core* | | | |
|------------------|---------------------------|----|-------|
| #7 | 100-200 level HU elective | Q5 | _____ |

*You may use one Arts/Foreign Language Core Elective to fulfill your Humanities Core.

| Social Sciences Core | | | |
|----------------------|--------|----|-------|
| #8 | PS 210 | Q5 | _____ |

Subject to change.

Please see your advisor for any questions.

Students are advised to take courses in the order and in the term in which they appear on this checklist. Any deviation may result in an extended time required to complete your degree as well as additional tuition and fees. Please contact your Student Advisor prior to making any changes to the course sequence.

Course Descriptions

ERD 110 Fundamentals of Electronics

4 Class Hours 2 Lab Hours 5 Quarter Credit Hours

An investigation of the operation of basic electrical circuits. Students will learn the makeup of the fundamental building blocks that comprise all electronic circuits, how to analyze, measure and troubleshoot these integral system concepts. The course material will be facilitated by utilizing Computer Circuit Simulation Software. Topics covered include: electron theory; conductors and insulators; Ohm's law (the relationship of current, resistance, and voltage), power; the principles of series, parallel, capacitive, and inductive circuits. Relays and Solenoids will be introduced. In the lab portion of the course, students will learn to use the necessary test equipment, used in industry, for circuit analysis.

ERD 111 Electronic Circuit Construction

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: ERD 110

This course is an introduction to the use of the basic electronic test equipment used in industry, including power supplies, digital multimeters, function generators, and oscilloscopes. Students will learn how to solder using proper techniques and methods and soldering will include PC board through-hole soldering and surface mount devices (SMD). Other topics include AC sources, safety, basic electronic circuit construction on breadboards, fabrication of electronic connection cables, and troubleshooting concepts. Students will fabricate and test a PC board-based project. Computer-aided circuit simulation is introduced.

ERD 115 Computer and Networking Fundamentals for Engineering

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

This course provides a technical overview of computers and computer networking used in business and engineering. Hands on exercises are provided to give students experience with basic computer and network activities. The content serves as a technical foundation for later courses in the ERDA and ELTB programs. Upon completion of this course, students should be able to demonstrate the following computer concepts; fundamental functions and operations of the computer, identification of hardware components, basic computer operations, security issues, use of software applications, network terminology and protocols, local-area networks, wide-area networks, OSI model, cabling and topologies, router basics, Ethernet, IP addressing, and network standards.

ERD 120 Digital Concepts

4 Class Hours 2 Lab Hours 5 Quarter Credit Hours

Prerequisites: ERD 110, MA 110 (or MA 105)

Students begin with the four fundamental number/character formatting and manipulating schemes used in digital technology: Binary, Hex, BCD, ASCII. Digital Gates along with other digital building blocks such as Tri-State Buffers, MUXes/DeMUXes, Mono, Bi, A-stable devices, and Shift-registers will be covered. Basic transistor theory and interfacing of digital devices via BJT, MOSFET, JFET, IGBT transistors will bridge logic devices to real-world systems. Logic-Levels, and Digital Wave-forms as they pertain to digital systems will be examined. Schematic Capture and Simulation software (NI MultiSim) will be used to draw and simulate digital circuits of varying levels of complexity. Logic Truth-Table expressions will be examined for potential simplification via Boolean Algebra. Throughout the course, students will have the opportunity to hone their digital knowledge skills by building, testing and troubleshooting digital circuitry as well as by performing computer-based circuit simulations.

ERD 122 Introduction to Robotic Control Systems

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: ERD 110

Students will be introduced to a range of robotic concepts including autonomy, biomimicry, and human-sense electronic-counterparts. Both Rotary and Linear Motion will be examined via DC, Servo, and Stepper motor basics along with Absolute and Incremental position feedback encoding. Mechanical drive fundamentals will accompany the topics on motion. An emphasis in C-based programming will allow students to develop their critical-thinking and planning skills as they create solution strategies to achieve a variety of robotic control objectives.

ERD 131 Advanced Circuits and Semiconductors

4 Class Hours 2 Lab Hours 5 Quarter Credit Hours

Prerequisite: MA 125, ERD, 110, ERD 111

In this course, students will be exposed to the advanced circuits that are common to almost all and every electronic system. Students will learn the makeup of these circuits, how to analyze, measure and troubleshoot these integral system concepts. The course material will be enhanced by filter design, utilizing Computer Circuit Simulation Software and by the constructing, soldering and testing of a power supply kit. Topics will include: decibels, high, low and band pass filters, semiconductor theory, rectifiers and regulators.

ERD 210 Introduction to Drone/UAV Technology

1 Class Hour 2 Lab Hours 2 Quarter Credit Hours

This course is an introduction to the evolving field of unmanned aerial vehicles (UAVs), commonly known as drones, and referred to as a remotely piloted aircraft (RPA). Topics will include drone aerodynamics, mechanical and electrical/electronic systems. This course will discuss and demonstrate GPS integrated (autonomous and remote controlled) videography, still photography, data collection and racing utilizing FPV (First Person Video). The most current FAA rules will be conveyed.

ERD 212 Microprocessor Control Systems

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

The concepts of how a microprocessor processes and stores data will be studied. The interfacing and control are presented from a hardware and software view. Computer to peripheral interfacing and troubleshooting is emphasized. Students will study C language programming of the 8051 Core Processor to control several systems.

ERD 242 Electro-Mechanical Systems & Industrial Controls

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: MA 125, ERD 110

Industrial concepts of motor control and sensing are the focus of this course. Students will explore the necessary requirements for understanding and implementing Industrial Control Systems. Topics will include three phase AC power, AC / DC motors and their motor controllers including Variable Frequency AC Drives. The concepts of relay control systems and their methods of control will be examined. The course will also include industrial sensing devices such as inductive, capacitive, photoelectric and ultrasonic proximity sensing technologies and how they are installed and implemented in industrial control applications. Motor control sensors such as digital encoders will also be reinforced an applied in industrial applications.

ERD 246 Data Acquisition Systems

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: MA 125

This course is designed to introduce students to the transducers, sensors and circuits used in industry for controlling a manufacturing process. Topics of study will include Amplifier configurations, (Op-Amps), Analog and Digital Conversion (ADC/DAC), Sensors and Computer Data Acquisition (DAQ) Modules. Sensors to be studied will include: Thermal, proximity, position, pressure and motion. The course will utilize a DAQ Module for interfacing sensors to a computer for display and analysis. LabView, an industry standard software, will be introduced. The lab portion of the course is designed to give students the experience of working with and implementing the sensors, circuits and DAQ module studied.

ERD 250 Data Communications and the Internet of Things (IoT)

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: ERD 115

This course will introduce students to data communications, computer networking and the Internet of Things. Students will learn the concepts and requirements of computer networking and how the Internet of Things can provide an enormous amount of data in our connected world that can be used in a myriad of ways. Other topics include network hardware, issues in data communication, multiplexing, modulation techniques and error detection. Students will use the Raspberry Pi micro-computer with Linux and various programming languages like Python to collect data and use services such as SMS Texting, Dropbox, Gmail and Thing Speak for data notifications and visualizations.

ELY 217 AutoCAD Electrical

1 Class Hour 2 Lab Hours 2 Quarter Credit Hours

The AutoCAD Electrical course will give students the necessary AutoCAD instruction so they can implement AutoCAD fundamentals into the AutoCAD Electrical software package. Students will be using the latest version of AutoCAD Electrical for the design of control system schematics and connections, control panel layout, PLC systems and electrical distribution systems.

ENG 118 Introduction to Engineering Technology and Lab

2 Class Hours 2 Lab Hours 3 Quarter Credit Hours

This course is an introduction to engineering technology that gives an overview of the profession and explores typical duties and workplace environments for technicians, technologists, and engineers today and in the future. Students use mathematics and critical thinking skills related to various fields of engineering. The Microsoft Office Suite of products is used for solving problems and generating reports and presentations.

ENG 210 Introduction to Programmable Automation Controllers

3 Class Hours 4 Lab Hours 5 Quarter Credit Hours

Prerequisites: ELY 212 & ELY 213 or ERD 242 or MCT 226

This course is an introduction to the programmable automation controller (PAC) and automation systems. Using the Allen-Bradley CompactLogix PAC and RS Logix 5000 software, students learn the tag-based structure common in today's PACs, ladder logic fundamentals and programming techniques using series and parallel elements. Relay instructions, timers, counters, comparisons, and subroutines are introduced. Students will practice advanced analog programming, such as temperature control using thermocouples. Creating and writing programs for the mechatronics systems and the Allen-Bradley CompactLogix programmable logic controller constitutes the major portion of the lab. Students then download their programs into the CompactLogix training unit, debug the programs, and verify the correct operation. Students will also practice the practical wiring and installation of PLCs using sinking and sourcing sensors as well as thermocouples.

ENG 259 Commercial Drone / UAV Certification

2 Class Hours 2 Lab Hours 3 Quarter Credit Hours

This course covers the commercial use of and the training required to become a commercial drone pilot. The course will also include the following: completion of flying a mission on a simulator; completion of flying a mission on a real drone; and assessing, compiling and presenting the data obtained from the real drone mission. Upon completion of this course, students who meet FAA standards, are eligible to sit for the Federal Aviation Administration (FAA) Section 107 Commercial Small Unmanned Aerial System (sUAS) exam for pilot certification.

ENG 263 Commercial Utilization of Drones / UAVs

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

This course covers the commercial use of drones to collect information. Drones have become very popular in the space of videography to economically gain a point of view previously only available with very expensive equipment. In addition, due to the cost decrease in obtaining this aerial data, numerous technical fields are adapting these tools to gather information in ways never before possible. Some of these uses of drone data include; GIS mapping, mining data acquisition (volume calculations), search and rescue, agriculture crop management and many more. In this course, students will explore several of these uses by developing missions in each of the categories and flying them in a commercial manner.

ENG 281 Engineering Internship

20 Hours per week 4 Quarter Credit Hours

Prerequisites: 2.5 Overall GPA, Q5 standing, approval from Internship Coordinator

Students will have the opportunity to integrate career-related experience into the undergraduate A.S. program by participating in planned, supervised employment in a related field. This will contribute to the student's personal and professional growth in an Electrical/Mechanical Engineering Technology field and provide invaluable career awareness for students. The internship will also complement what has been learned in the classroom. The internship will include a reflection or evaluation by students at the completion of the internship. This internship requires a minimum of 20 hours per week.

ENG 283 Capstone Project

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Students will utilize all their previous electronic knowledge to develop, test, document and present an electronic project. The process will mimic the procedure of a technician working as part of a team in a company's Research and Design department. Based around the learning of the concepts of Printed Circuit Board (PCB) layout, students will select or be given an electronic project. They will then layout the PCB, have it created by a PCB maker, create the necessary project documentation, cost analysis, and finally the fabricating and testing of the electronic PCB project. The course will culminate in a PowerPoint presentation of the work to the NEIT Faculty, their family and/or friends.

MCT 235 Industrial Robotic Automation

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: MA 210

This course covers the utilization of robotics and automated controls for assembly processes in the manufacturing environment. Levels of automation, flexible and hard automation, open and closed loop control, adaptive control and material handling will also be discussed.

Technical Electives

ENG 100 Imagineering Creative Prototyping

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Imagineering is the implementation of creative ideas into practical form using Design Think methodologies. The “maker movement” has spawned a revolution of low-cost, desktop-sized, digital manufacturing technologies that bridge the gaps between creative ideas and tangible objects. Some of these “maker” devices produce artifacts by removing material from a medium; tools like CNC routers, laser etchers, and vinyl cutters. Other devices, 3D printers for example, fabricate by adding material. Whether additive or subtractive, success with these technologies requires creative practice, agile critical thinking, and fearless iteration. These skills are valued across the university and throughout technology-based industries.

ENG 289 Drone/UAV Engineering

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisites: ERD 111, MA 210

This course covers the engineering that goes into a drone/UAV. The students will select a path to design and build a commercial use (Videography, Autonomous or Data Acquisition) or a hobbyist racing class drone. Topics will include drone aerodynamics, brushless motors, electronic speed controllers, transmitters, telemetry, gimbals, flight controllers, RF downlinks, FPV, ground stations and GPS. The final exam for the course will consist of a successful flight of the student’s designed and built aircraft.

ERD 255 Renewable Energy Systems

2 Class Hours 2 Lab Hours 3 Credit Hours

Prerequisites: ERD 110, ERD 111, ERD 120, MA 125

In this course, students will explore the concepts of renewable energy and the components that comprise various renewable energy systems. The focus is primarily on smaller residential systems of less than 10KW. Students will explore different system configurations such as PV (photovoltaic) Direct, Grid Direct, and Stand-Alone configurations. Various components to these systems will be investigated such as PV modules, charge controllers, batteries and inverters and how they are interconnected to form these systems. Students will also gain an appreciation for how a system can be expanded by adding a wind turbine to construct a hybrid system.

MCT 115 Computer-Aided Design I

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

An introduction to computer design that utilizes a three-dimensional solid modeling software package that allows students to immediately create “solid” objects in virtual reality. Emphasis will be placed on design intent. Topics include 3D features, revolve, sweep, and lofted features, shell and coil features, orthographic drawing production, and assembly drawing.

MCT 239 Quality

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Co-/Prerequisite: MA 125

This course includes the organization, methodology and responsibility of quality assurance programs in manufacturing industries. Topics included are statistical analysis, control charts, process capability, cost of quality and other quality related topics.



NEW ENGLAND TECH

**Electronics, Robotics & Drones Technology
Associate in Science Degree**

*(For students entering their program
October 2019 – 202010 or later)*

SE 116 Programming Essentials Using Python

2 Class Hours 4 Lab Hours 4 Quarter Credit Hours

A study of the Python programming language will be used as the vehicle to introduce flowcharting, control structures, calculations, interactive programming techniques, and editing. Students will be introduced to a distributed version control system using git. Students will learn to write high-quality Python programs solving a variety of applications. Laboratory projects will grow in complexity as the student gains hands-on experience. Both software engineering and networking engineering applications will be provided.

Liberal Arts Associate Degree Courses

Art (Arts/Foreign Language Core)

AR 203 Introduction to Drawing

4 Class Hours 4 Quarter Credit Hours

This course introduces students to key concepts and techniques integral to developing basic drawing skills. Class time will be spent discussing, demonstrating and practicing these skills in order to produce a comprehensive body of work specific to the course objectives. Course performance will be evaluated on effort and growth as opposed to artistic talent.

AR 204 Introduction to Theater

4 Class Hours 4 Quarter Credit Hours

This course will provide students with both a theoretical and practical understanding of acting and the theatrical process as evidenced by theatrical scenes, performed by students as a final project. Theater exercises will guide students toward self-discovery in order to explore character development and the interpretation of the content/themes of various plays. Students will write character analysis essays as a method for understanding the specific elements of acting necessary to accurately portray a given character. Students will also explore the ways in which a play is translated into a production with an emphasis on differentiating the functions of the playwright, the actor, the director, set designer and other members of a production team.

AR 206 3D Sculpture: An Adventure in the Third Dimension

4 Class Hours 4 Quarter Credit Hours

This course will teach students to think, see and function in 3-dimensional space. They will explore the differences and similarities between 2-dimensional and 3-dimensional representation in composition and design. Students will use a broad range of materials to create sculptures that will help them explore different aspects of 3-dimensional functioning. Class time will be spent in a combination of sculpture design and a discussion of slides of work reflecting the history of three-dimensional works of art from Greek times to the present. No prior experience with art courses is required.

AR 207 Introduction to Applied Music

4 Class Hours 4 Quarter Credit Hours

This course will afford students the opportunity to experience a "hands-on" approach to piano keyboard and composition. Each section of the course will focus on one musical concept through listening, playing and finally application. Because of the computer-assisted nature of the program, all levels of musical and keyboard comprehension can be accommodated and the course can be geared to the individual interests and needs of each student in the class.

AR 209 The Art of Collage

4 Class Hours 4 Quarter Credit Hours

Powerful imagery is a combination of technical skill and imagination. Students will exercise their ability to manipulate composition and color as well as cultivate the power of imagination in this studio class with a focus on collage, a technique where compositions are crafted by adhering various materials to a backing surface. Creativity and the development of ideas will be explored while acquiring a working knowledge of the elements and principles of art. The assemblage process of collage will be the design tool used to investigate, generate and express ideas. Students will research collage as an art form and examine the creative processes of various artistic disciplines. No prior experience is necessary. Students will be evaluated on their effort and creative growth as opposed to artistic talent.



Business (Social Sciences Core)

BU 236 Small Business and the Law

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course is designed for those students who intend to start and operate their own small business. This course will focus on the various elements associated with the start-up, acquisition and operation of a small business from the entrepreneurial point of view. Topics to be covered will include business formation, contract negotiations and drafting, financing, employee discrimination issues, customer relations issues, licensing, permits and tax basics. Additionally, students will be asked to complete a legal research assignment and prepare and present a business plan in their particular technological field of study.

Chemistry (Math/Science Core)

CHM 101 Life Science Chemistry

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: MA 100/110 or MA 105 or MA 109

This course provides an introduction to inorganic chemistry and organic chemistry with a focus on Life Science applications as reflected in the selection of the text. Topics include measurement, units of concentration, the nature of atoms, states of matter, periodicity, bonding, stoichiometry, chemical reactions, thermodynamics and kinetics.

Community Enrichment

CE 101 Community Enrichment

1 Class Hour 1 Quarter Credit Hour

In this course, which is part of the Feinstein Enriching America Program, each student will explore ways of enhancing the community through performing a project which provides a service to the community. The project, which may be performed over one term, will be documented in a reflection paper in which the student will reflect on the significance of the experience.

Economics (Social Sciences Core)

EC 203 Principles of Economics

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

Introduces the fundamental principles of microeconomics and macroeconomics, such as scarcity, supply and demand, growth, fiscal and monetary policies, and the public and the private sectors.

English (Communications Core)

EN 100 Introduction to College Writing

4 Class Hours 4 Quarter Credit Hours

Placement: Based on an evaluation of a writing sample or successful completion of EN 030.

EN 100 is an introductory writing course designed to immerse students in the writing process and sharpen their critical thinking skills. In this course, students will practice using writing as a tool for learning by responding to readings, composing essays, and reflecting on the writing process itself. Through drafting, revising, and writing to learn, students will strengthen their ability to interpret, analyze, and evaluate the ideas presented in the course readings, lectures, and discussions. Conducting, evaluating,

and integrating research (through summarization, quotations, and paraphrasing) is a major component of this course. Additionally, students will be introduced to APA citation style, and will improve essential writing skills such as grammar, punctuation, and standard usage.

EN 106 Service Industry Communications

5 Class Hours 5 Quarter Credit Hours

In today's competitive service industry technicians must possess a mastery of both technical and nontechnical skills. EN 106 will introduce and equip students with the nontechnical or "soft skills" needed to succeed and advance in their field. Topics will include: written and verbal communication, professionalism, team collaboration, critical thinking, and problem-solving skills. Because learning to write and communicate effectively requires practice, the course provides numerous opportunities; including writing workshops, role play, and group activities, for students to apply the fundamentals of written and oral communication.

EN 110 Healthcare Communication Skills

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

EN 110 builds off the foundation established in EN 100 and focuses on the necessity of clear written and oral communication in the allied health arena. Through role play, small group work, and presentations students will develop the communication and critical thinking skills they will need daily when communicating with other health care providers, clients, and their families. Additionally, by continuing in the writing process (researching, drafting, and revising) students will further their ability to write clear, concise, error free prose with attention given to audience and message.

EN 200 Workplace Communications

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100 or EN 110 or placement based on evaluation of a writing sample.

EN 200 builds off the foundation established in EN 100 and focuses on the necessity of clear written and oral communication in professional settings. Students will be exposed to a variety of business writing genres including memos, emails, business letters, and proposals. By continuing their engagement in the writing process (researching, drafting, and revising), students will compose several professional documents, reinforcing students' attention to audience and their aptitude to develop an effective workplace document. Additionally, this course strengthens students' ability to document in APA citation style, and hone essential writing skills such as grammar, punctuation, and standard usage.

EN 211 Oral Communications

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100 or EN 110 or placement

This is an introductory course with an emphasis on oral communication theory and practice, providing a basic understanding of the significance of oral communication as well as instruction and practice in the basic skills of public speaking. The course is intended to help students develop skills in speaking, organizing thoughts, and critical analysis. Major emphasis is placed on the preparation and presentation of formal speeches.

History (Social Sciences Core)

HI 231 Contemporary History

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course encourages students to explore economic, political, social and cultural developments throughout the world since World War II, particularly in developing nations including spiritual, scientific and intellectual developments.



NEW ENGLAND TECH

**Electronics, Robotics & Drones Technology
Associate in Science Degree**

*(For students entering their program
October 2019 – 202010 or later)*



HI 235 Architectural History

4 Class Hours 4 Quarter Credit Hours

This course is a study of the major periods and styles of architecture from Egyptian through postmodern. Styles studied will include Egyptian, Greek, Roman, early Christian, Byzantine, Romanesque, Gothic, Renaissance, Baroque, 18th, 19th and 20th century. Through a series of lectures, discussions, and readings, students will gain a fundamental understanding of the history of architecture including the historical and social context of each period respectively.

HI 280 The Holocaust

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

In this course, students will study genocide and mass murder in modern history. The focus of this course is the Jewish Holocaust of 1933-1945. Through film, photographs, and readings, the course will provide students with a basic understanding of the establishment of the Nazi Party and its attitudes, beliefs, and laws that were put into action during this time period. Students will compare the Holocaust to current genocidal acts in the world today, including the effects of genocide on society.

Humanities (Humanities Core)

HU 208 Rap/Rock and Poetry

4 Class Hours 4 Quarter Credit Hours

Core Fulfillment: Both Communications Core and Humanities Core

Prerequisite: EN 100

What do Eminem, Tupac, Bob Marley, Bob Dylan and WB Yeats have in common? All five wordsmiths are poets who use rhyme, rhythm, figurative language and poetic structure to craft language. In this course, students will explore poetic devices and important global themes through examination of poetry, written by Nobel Prize and Grammy Award winning writers. Focusing on aspects of poetic form will build students' understanding of and appreciation for the power of language.

HU 211 Introduction to Film

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

The focus of the course will be on what goes into the reading and analysis of a film. Film is comprised of several arts – and the objective of this course is to learn to appreciate films and to see them as important social documents that tell us much about ourselves and our world.

HU 212 Documentary Film

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course will expose students to the techniques and artistry of making interesting non-fiction films. Students will view and analyze significant documentary films and become familiar with the work of important filmmakers.

HU 215 Popular Culture

4 Class Hours 4 Quarter Credit Hours

This course will analyze cultural expressions of intellectual and social trends since 1950. Students will investigate literature, comics, movies, television, music, advertising, painting, computer games, and the Internet to probe the forces that shape our world. In this course, students will identify and evaluate the popular entertainment we consume and ask how our choices define us and shape our values. Understanding our values and culture enables us to understand why we buy what we buy, why we do what we do, and why we think the way we do.

HU 216 Music and the Media

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course will trace the long relationship between visual media and music. Students will study the movie industry from silent movies to the sound tracks that are an integral part of the movies of today. They will also study the importance of music in television, radio and the recording industry, particularly its role in commercials and the "selling" of products, people and programming. In addition, a substantial portion of the course will be devoted to the technology that has led to today's sophisticated performances and recording techniques.

HU 240 Graphic Design in the 20th Century

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

Throughout history, artists and designers have created visual works that help to define historical eras. In this course, students will examine and analyze the most prominent design styles of the past one hundred years. They will learn the defining features and major proponents of each style as well as how each style fits within its historical context. They will then use the knowledge gained to produce designs that respond to past styles in an engaged, knowledgeable way. Course performance will be evaluated on student effort and growth as opposed to artistic talent.

HU 242 The Automobile and American Culture

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

Undeniably, the automobile has had an enormous impact on American culture. A majority of Americans rely on individual transportation daily, but the car is more than a means of heading to work. Automobiles impact our personal independence, our choice of employment, the country and world economies, the environment, and our social culture. The Automobile and American Culture is a course designed to study the broad impact that the automobile has and continues to have on our nation and the world. Students will examine the automobile through historical documents, films, photographs, and music.

HU 244 Science Fiction

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

Isaac Asimov called science fiction "the literature of change." The course will analyze films, short stories, and a classic science fiction novel to understand the ways this popular genre entertains us and gives us insight into the impact science and technology has had on us.

HU 289 Racing Through Film

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100 or EN 106

Racing Through Film is a course dedicated to examining how the sport of motor racing has been explored through film. Through reading, discussion and viewing films we will consider such issues as the history of racing, questions of masculinity and the often countercultural and rebellious nature of racing, with particular interest in the anti-hero figure.

HU 291 Critical Thinking and Chess

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course teaches critical thinking and problem-solving skills by using the game of chess as an empirical model for evaluating situations, calculating risks, predicting the consequences of possible actions, solving problems efficiently, and investigating the benefits and limits of reasoning and creative play. Students will demonstrate those skills by solving a wide variety of tactical and strategic problems in chess, by writing a thoughtful analysis of the qualities necessary for a successful thinker/problem solver,

and by applying those qualities to situations in one's personal life and career. Chess will be used as a model for critical thinking skills and life skills.

Japanese (Arts/Foreign Language Core)

JP 201 Introduction to Japanese

4 Class Hours 4 Quarter Credit Hours

Students will be introduced to the basics of Japanese, (speaking, listening, reading, and writing) with an emphasis on comprehension and speaking. Vocabulary used in everyday communication in the workplace, school, and common social situations will be covered. Contemporary Japanese society will be addressed in class discussions and video presentations including, but not limited to art, education, film (in particular animé), food, literature, music, sports, and technology. Japanese technological invention and know-how, as well as the unique challenges of doing business with the Japanese will be studied. Japanese guest speakers will be invited to share their expertise and experiences.

Mathematics (Math/Science Core)

MA 100 Introduction to College Math with Lab

2 Class Hours 4 Lab Hours 4 Quarter Credit Hours

Prerequisite: Placement exam

Topics to be covered in this lab-based introductory algebra course include operations with signed numbers, rules for exponents, polynomial operations, solutions to linear equations in one variable, and several applications important to various technical areas.

MA 105 Basic College Math with Lab

4 Class Hours 2 Lab Hours 5 Quarter Credit Hours

Prerequisite: Placement exam

Topics to be covered in this lab-based introductory algebra course include operations with signed numbers, rules for exponents, polynomial operations, solutions to linear equations in one variable, and several applications important to various technical areas.

MA 109 Math for Life Science

4 Class Hours 4 Quarter Credit Hours

This course is designed to assist in the understanding of the proper techniques needed to perform accurate dosage calculations; vital signs in order to ensure patient safety. This course will focus on developing the mathematical skills, critical thinking and quantitative reasoning methods needed to apply medical language and systems of measurement to solve problems in a variety of healthcare settings.

MA 110 Introduction to College Math

4 Class Hours 4 Quarter Credit Hours

Prerequisite: Placement exam

Topics to be covered in this introductory algebra course include operations with signed numbers, rules for exponents, polynomial operations, solutions to linear equations in one variable, and several applications important to various technical areas.

MA 121 Business Math

4 Class Hours 4 Quarter Credit Hours

Prerequisite: MA 100/110 or MA 105 or MA 106 or MA 109

This is an elementary applied course studying such business topics as interest rates, discounts, payrolls, markups, depreciation, insurance, mortgages, and basic statistics.



MA 125 Technical Math I

4 Class Hours 4 Quarter Credit Hours

Prerequisite: MA 105 or MA 100/110

Topics to be studied include the analytic geometry of a straight line, systems of linear equations, trigonometry, vectors and their applications, and quadratic equations.

MA 200 Applied Math for Business

4 Class Hours 4 Quarter Credit Hours

Prerequisite: MA 105 or MA 100/110

MA 200 is designed to help with the transition from basic algebra to more advanced business-related courses, such as statistics and finance. Applications will be stressed throughout the course. Specific topics include linear functions, quadratic functions, descriptive statistics, exponential functions, and annuities.

MA 210 Technical Math II

4 Class Hours 4 Quarter Credit Hours

Prerequisite: MA 125

The following four major topics and their applications will be studied: Cramer's Rule, exponential and logarithmic functions, trigonometry, and complex numbers.

Physics Courses (Math/Science Core)

PHY 126 Applied Physics & Lab

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: MA 100/110 or MA 109

This course studies the applications of fundamental concepts of physics. The topics covered include: the motion of objects, the forces that cause motion, velocity, acceleration, Newton's Laws, torques, work, power, and energy. The laboratory component is designed to give students the opportunity to have hands-on experience with the fundamental concepts of physics studied in the theory portion of the course.

PHY 200 Physics I & Lab

3 Class Hours 2 Lab Hours 4 Quarter Credit Hours

Prerequisite: MA 125

This course is a non-calculus approach to the study of fundamental physics and includes kinematics and dynamics of bodies, velocity, acceleration, and Newton's laws of motion, forces in equilibrium, concurrent and non-concurrent forces, work, power, energy, and torque. Labs are performed within the course to reinforce concepts.

Psychology (Social Sciences Core)

PS 140 Life-Span Development

4 Class Hours 4 Quarter Credit Hours

The purpose of Life-Span Development is to introduce students to the broad concepts of human growth and development from conception to death. Students will be introduced to human development from the prenatal stage to death with particular emphasis placed on early childhood, adolescence and old age. The course is especially designed for students entering the healthcare professions as the slant is toward practical application of all stages. Upon completion of the course, students should be able to demonstrate a basic knowledge of the developmental stages of life.



PS 201 Introduction to Psychology

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This introductory course in psychology is a survey of the multiple aspects of human behavior. It includes, but is not limited to, such topics as the history of psychology, the biological foundations of behavior, memory, learning, personality, psychological disorders and treatment and social behavior. Importantly, this course will be geared to stress those areas of more practical significance for those in medical service fields.

PS 202 Psychology of Healthcare

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course addresses the human element of clinical competence in providing health care. Students will explore the psychodynamics of interactions between health care workers and patients, the psychological influences of illness and pain, the psychosocial factors that impact one's effectiveness as a health care team member, the impact of families on a patient's treatment plan, the role of body image in patient responsiveness to treatment, and a variety of other psychosocial factors that influence health care delivery.

PS 203 Psychology of Happiness

4 Class Hours 4 Quarter Credit Hours

This course will explore the psychological principles associated with the experience, feelings and thoughts of happiness. Students will be exposed to a variety of research investigations that have studied different variables that impact happiness. Some of the subtopics discussed in this course include ways to define and measure happiness, differences and similarities in happiness across cultures, happiness and money, and ways to increase happiness.

PS 210 Human Relations in the Workplace

4 Class Hours 4 Quarter Credit Hours

Major skill areas covered in the course include making a good impression with your employer, managing conflict with difficult coworkers, working on a team with diverse groups of people, providing exceptional customer service, and managing on-the-job stressors. This course provides a set of practical human relations techniques that will help students increase the likelihood of job security and career advancement in any current or future job.

Science (Math/Science Core)

SCI 110 Environmental Science

4 Class Hours 4 Quarter Credit Hours

This course will focus on man's interaction with his environment. It will cover current issues like global warming, human population growth, and pollution.

Sociology (Social Sciences Core)

SO 203 Social Problems

4 Class Hours 4 Quarter Credit Hours

This course will examine contemporary social issues from multiple perspectives. Attempts to see the ethics, the arguments and the policy outcomes involved in problems such as drug abuse, crime, poverty and the global environment.



SO 220 Internet and Society

4 Class Hours 4 Quarter Credit Hours

Prerequisite: B- or better in EN 100

Internet and Society is an online course that focuses on the impact of the Internet on our lives. The goal of this course is to encourage students to think deeply and critically about the reality of living in a technology-driven society and how technological change influences work, families, social lives, education, and privacy.

SO 231 Crime and Deviance

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course traces the historical development of crime and deviance. A review of the social, physiological, and psychological theories of crime are examined. Topics such as the history of policing and the history of corrections are also reviewed.

Spanish (Arts/Foreign Language Core)

These courses are designed for students with no prior knowledge of Spanish.

SP 201 Introduction to Spanish

4 Class Hours 4 Quarter Credit Hours

This course will introduce students to the Spanish language with an emphasis on the use of Spanish in the workplace. Students will learn to communicate with customers and other employees in Spanish with a focus on basic vocabulary words used in everyday interactions at the workplace. Topics covered include: conversational skills as well as key principles of Spanish grammar and cultural traditions in Spanish-speaking countries.

SP 203 Spanish for Healthcare Workers

4 Class Hours 4 Quarter Credit Hours

This course will introduce students to the Spanish language with an emphasis on the use of Spanish in the workplace. Students will learn to communicate with Spanish speaking patient and family and other employees in Spanish with a focus on basic vocabulary words used in everyday interactions at the workplace. While each class will emphasize conversational skills, the course will also cover some key principles of Spanish grammar and provide some exposure to a variety of cultural traditions in Spanish-speaking countries.

Social Sciences (Social Sciences Core)

SS 140 Criminal Investigations

4 Class Hours 4 Quarter Credit Hours

In this course, students will get exposure to a wide range of interpersonal and scientific factors that are explored by criminal investigators in their efforts to support hypotheses developed to solve a variety of crimes. Some of the course topics will include the appropriate collection of evidence at a crime scene, techniques for interviewing witnesses and suspects, the role of the crime lab, the science of fingerprinting, forensic medicine, and the preparation of testimony that leads to the conviction of criminals.

SS 201 American Government in Action

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This is an introductory course that will help students understand how the pieces of American government fit together, and how politics continuously affects their lives. Students will examine the roles of interest groups, the media, political parties and the three branches of government. Class discussions about relevant and current political issues will be encouraged.

SS 203 Terrorism and National Security

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course examines the challenge contemporary terrorism presents for U.S. national security. It investigates the causes of terrorism and inquiries into the motives, objectives, methods, and effectiveness of contemporary terrorist groups with an emphasis on al Qaeda. Analysis of the determinants of American counter-terrorism policies and evaluation of the effectiveness of these initiatives are central themes of the course. As such, evaluation of the roles the invasion of Afghanistan, the Iraq War, covert operations, domestic and foreign internal security initiatives, and global law enforcement operations have played in addressing the terrorist threat are major points of emphasis.

SS 204 Juvenile Justice System in America

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

The course is designed to explore the components of the juvenile justice system in America. The various features, characteristics, policies and concerns about the juvenile justice system are carefully examined. As part of the review, adolescent behavior and influence of the family dynamic will be discussed. The detention of juveniles, the various programs focused on the diversion of youths from the juvenile justice system, rehabilitation programs and prevention programs will also be reviewed.

SS 206 Constitutional Values in the 21st Century

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

This course is an introduction to constitutional law and will utilize a historical examination of major United States Supreme Court decisions to better understand contemporary federal and state judicial interpretations of constitutional theory and individual freedoms. It will focus on government powers, the federal court system and judicial review. It will also closely examine those individual freedoms guaranteed under the Bill of Rights and will critically analyze the controversial issues of gun control and the death penalty. Students will also understand how the interpretation of the Constitution involves the application of individual and societal values. These topics will be reinforced through case briefs, persuasive essays, current event worksheets, group activities, debates and media presentations.

SS 221 Technology and American Life

4 Class Hours 4 Quarter Credit Hours

Prerequisite: EN 100

The course, based on abstract thinking and analysis, examines the interactive relationship between technology and society over historic time and across geographic space. The course will address basic questions about technology and its place in society. Students will be able to evaluate the impact of social change on their lives, and the impact of their technology on changing the social system.

SS 222 Mindful Living

4 Class Hours 4 Quarter Credit Hours

On a single day, how often do you find yourself pulled in multiple directions? In a world inundated with information, and increasingly demanding of our time and attention, it can be overwhelming to know how to even begin prioritizing what is important. What if there were something you could do to increase your productivity, reduce anxiety and stress, and be more fully present in your daily experiences? Welcome to the practice of mindfulness –sustained, purposeful, moment-to-moment attention without judgement. Research studies have shown that a regular mindfulness practice yields concrete physical and emotional benefits, including reduced stress, decreased physical pain, increased concentration, and a happier mindset. In this course, you will learn different ways to practice mindful living.

Questions & Answers

1. When do my classes meet?

Day Classes: Technical classes normally meet for at least three hours a day for up to five days a week. Classes normally begin in the early morning (7:45 a.m.), late morning (usually 11:25 a.m.), or mid-afternoon. The time slot for your program may vary from term to term.

Evening Classes: technical classes meet on the average of three nights a week, although there may be times when they will meet four nights a week. Classes normally begin at 5:45 p.m.

IN ADDITION, to achieve your associate degree, you will take a total of approximately eight liberal arts courses, which will be scheduled around your technical schedule over the course of your entire program. Each liberal arts course meets approximately four hours per week. Liberal arts courses are offered days, evenings, and Saturdays.

At the beginning of each term you will receive a detailed schedule giving the exact time and location of all your classes. The College requires that all students be prepared to take classes and receive services at any of NEIT's locations where the appropriate classes and services are offered.

When a regularly scheduled class falls on a day which is an NEIT observed holiday (Columbus Day, Veterans Day, Martin Luther King, Jr. Day, and Memorial Day), an alternate class will be scheduled as a make up for that class. The make up class may fall on a Friday. It is the student's responsibility to take note of when and where classes are offered.

2. How large will my classes be?

The average size for a class is about 20 to 25 students; however, larger and smaller classes occur from time to time.

3. How much time will I spend in lab?

Almost half of your technical courses consist of laboratory work. In order for you to get the most out of your laboratory experiences, you will first receive a thorough explanation of the theory behind your lab work.

4. Where do my classes meet?

Students should be prepared to attend classes at any of NEIT's classroom facilities: either at the Post Road, Access Road, or East Greenwich campuses.

5. I have not earned my high school diploma or GED: can I enroll in an Associate Degree Program?

A candidate for admission to an associate degree program must have a high school diploma, have earned a recognized equivalency diploma (GED), or meet the federal home school requirements.

6. How long should it take me to complete my program?

To complete your degree requirements in the shortest possible time, you should take the courses outlined in the prescribed curriculum. For a typical six-term curriculum, a student may complete the requirements in as little as 18 months.

To complete all your degree requirements in the shortest time, you should take at least one liberal arts course each term. Students who need more time to complete their curriculum may postpone some of the liberal arts courses until after the completion of the technical requirements. Students are provided up to two additional terms of study to complete the liberal arts requirements without any additional tuition assessment fee. During these additional terms of study, students are required to pay all applicable fees.

Students may also elect to complete some of their liberal arts requirements during Intersession, a five-week term scheduled between spring and summer Quarters. Students will not be assessed any additional tuition for liberal arts courses taken during the Intersession but may be assessed applicable fees.

Students wishing to extend the number of terms needed to complete the required technical courses in their curriculum will be assessed additional tuition and fees.

7. Is NEIT accredited?

NEIT is accredited by the New England Commission of Higher Education (formerly the Commission on Institutions of Higher Education of the New England Association of Schools and Colleges, Inc.). Accreditation by NECHE is recognized by the federal government and entitles NEIT to participate in federal financial aid programs. Some academic departments have specialized professional accreditations in addition to accreditation by NECHE. For more information on accreditation, see NEIT's catalog.

8. Can I transfer the credits that I earn at NEIT to another college?

The transferability of a course is always up to the institution to which the student is transferring. Students interested in the transferability of their credits should contact the Office of Teaching and Learning for further information.

9. Can I transfer credits earned at another college to NEIT?

Transfer credit for appropriate courses taken at an accredited institution will be considered for courses in which the student has earned a "C" or above. An official transcript from the other institution must be received before the end of the first week of the term for transfer credit to be granted for courses to be taken during that term. Students will receive a tuition reduction for the approved technical courses based on the program rate and will be applied against the final technical term of the curriculum's tuition amount. No tuition credit is provided for courses which are not a part of the technical curriculum.

10. What is the "Feinstein Enriching America" Program?

New England Institute of Technology is the proud recipient of a grant from the Feinstein Foundation. To satisfy the terms of the grant, the College has developed a one-credit community enrichment course which includes hands-on community enrichment projects. The course can be taken for a few hours per term, spread over several terms. Students who are already engaged in community enrichment on their own may be able to count that service towards course credit.

11. How many credits do I need to acquire my Financial Aid?

In order to be eligible for the maximum financial aid award, you need to maintain at least 12 credits per academic term.

12. What does my program cost?

The cost of your program will be as outlined in your enrollment agreement, along with your cost for books and other course materials. Students who decide to take more terms than the enrollment agreement describes to complete the technical courses in their curriculum will be subject to additional fees and possible additional tuition costs. Students who elect to take the technical portion of the degree requirements at a rate faster than the rate prescribed in the curriculum and the enrollment agreement will be assessed additional tuition.

Students who require prerequisite courses will incur additional tuition and fees above those outlined in their enrollment agreement.

If a student elects to take a course(s) outside of the prescribed curriculum, additional tuition and fees will be assessed.

Remember, students who withdraw and re-enter, one time only, pay the tuition rate that was in effect for them at the time of their last day of attendance for up to one year from their last day of attendance.

Second re-entries and beyond pay the tuition rate in effect at the time they re-enter. The most economical way for you to complete your college degree is to begin your program now and continue your studies straight through for the six terms necessary to complete your degree requirements.

13. What kind of employment assistance does NEIT offer?

The Career Services Office assists NEIT students and graduates in all aspects of the job search, including resume writing, interviewing skills, and developing a job search strategy. Upon completion of their programs, graduates may submit a resume to the Career Services Office to be circulated to employers for employment opportunities in their fields. Employers regularly contact us about our graduates. In addition, our Career Services Office contacts employers to develop job leads. A strong relationship with employers exists as a result of our training students to meet the needs of industry for over fifty years. No school can, and NEIT does not, guarantee to its graduates employment or a specific starting salary.

14. Where will job opportunities exist?

Graduates have obtained employment in the local area. However, one of the most exciting aspects of this program is the ability to look nationally for employment opportunities.

15. Is there any state or federal licensing required in my field?

No license is required for any of the careers which you will be preparing to enter.

16. What kind of jobs will I be qualified to look for?

Generally, jobs will exist in research and design and manufacturing firms.

17. Will I be able to continue toward a bachelor's degree?

Yes. Students who earn an associate degree in Electronics, Robotics and Drones Technology with the Bachelor's Degree concentration curriculum can earn a baccalaureate degree in Electrical Engineering Technology with approximately 6 additional terms of study.

18. Are there any special certifications available?

Yes. The International Society of Certified Electronics Technicians, (ISCET), 3608 Pershing Ave., Fort Worth, TX 76107 (800-946-0201 <http://www.iscet.org>) certification. As a convenience to our students, ISCET certification tests can be taken in our Academic Skills Center (ASC) for a fee which is paid directly to the ISCET with a credit card online on the afternoon before the test or on the day of the test. Please note that ISCET certification is voluntary and not a graduation requirement.

Graduates are eligible to sit for the Federal Aviation Administration (FAA) Section 107 Commercial Small Unmanned Aerial System (sUAS) exam for pilot certification (<http://www.faa.gov>). The FAA Section 107 sUAS exam is voluntary and not a graduation requirement. Note: A conviction for the violation of any Federal or State statute relating to the growing, processing, manufacture, sale, disposition, possession, transportation, or importation of narcotic drugs, marijuana, or depressant or stimulant drugs or substances is grounds for denial of an application for a remote pilot certificate with a small UAS rating for a period of up to 1 year after the date of final conviction.



Sample List of Employers Who Have Hired Electronic Systems Engineering
Technology **AS graduates** from New England Institute of Technology

Company Name

American Power Conversion
Amtrak
Composite Modules
EMC
Federal Aviation Administration
Federal Electronics
General Dynamics
Gillette
GTECH
Hanna Instruments
Invensys Thermal Systems
KVH Industries
Linc-Health/Technology in Medicine
Lockheed Martin
McLaughlin Research
Raytheon
SAIC
Satcon Power Systems
Teradyne, Boston
Sensata (Texas Instruments)
Wind River

Typical Job Titles of ERDA Graduates

Test Engineering Tech
Technician
Electronics Technician
Technician/Field Service Tech
Engineering tech/Electronic Systems Tech/Air Traffic Systems Specialist
Electronics Engineer/Technician
Systems Technician
Test Technician/Technical Writer
Design Engineer Tech/ Technician
Bio-Med Technician
Technical Specialist
Electronics Engineer
Engineering Technician
Equipment Technician
Technician
Engineering Technician
QA Technician

Technical Standards

These technical standards set forth by the Electronic Systems Engineering Technology Department, establish the essential qualities considered necessary for students admitted to these programs to achieve the knowledge, skills and competencies to enter these fields. The successful student must possess the following skills and abilities or be able to demonstrate that they can complete the requirements of the program with or without reasonable accommodation, using some other combination of skills and abilities.

Cognitive Ability:

- Ability to concentrate for long periods of time and retain information on intricate details of component theory and analysis/operation of electronics circuits.
- Ability to learn, remember and recall detailed information and to use it for problem solving.
- Ability to deal with materials and problems such as organizing or reorganizing information.
- Ability to use abstractions in specific concrete situations.
- Ability to break information into its component parts.
- Ability to understand spatial relationships.
- Ability to perform tasks by observing demonstrations.
- Ability to perform tasks by following written instructions.
- Ability to perform tasks following verbal instructions.

Communications Skills:

- Ability to communicate effectively with faculty and students.
- Ability to read English sufficiently to read college level text books, electronics manuals, directions, technical service bulletins, wiring diagrams and safety directions and anger signals.
- Ability to demonstrate and use the knowledge acquired during the classroom training process and in the lab setting.

Adaptive Ability:

- Ability to maintain emotional stability and the maturity necessary to interact with other members of the faculty and students in a responsible manner.

Physical Ability:

- Ability to move test equipment from point to point and to manipulate controls on electronic test equipment.
- Ability to perform learned skills, independently, with accuracy and completeness within reasonable time frames in accordance with procedures.

Manual Ability:

- Ability to wire, build, or protoboard electronic circuits using small components and hand tools.
- Ability to solder connections, and fabricate cables and test leads.
- Ability to manipulate, screwdrivers, and other tools.
- Sufficient motor function and sensory abilities to participate effectively in the classroom laboratory.
- Sufficient manual dexterity and motor coordination to coordinate hands, eyes and fingers in the operation of tools and other equipment.



Sensory Ability:

Visual

- Acute enough to identify and differentiate component leads, values of codes written on components, as well as color coding on components and wire cables.
- Acute enough to make circuit connections, solder connections, find circuit test points.
- Acute enough to read dials, and position of control settings of electronics testing equipment and operational controls.
- Acute enough to read small numbers on precision measuring instruments.



Student Acknowledgement of Receipt of Documents

Electronics, Robotics & Drones Technology

I acknowledge that I have received copies of the following documents for the above program:

- 1) Program Description
- 2) Curriculum
- 3) Course Descriptions
- 4) Q&A
- 5) Technical Standards

I understand that it is my responsibility to read these documents. I have been advised that should I have any questions related to the content of any of these documents, I may contact my admissions officer who will review the material with me.

I further understand that NEIT reserves the right, in response to industry demands, to change the contents of these documents without prior notice. Copies of the most recent versions of these documents may be obtained in the Admissions Office.

Printed Name of Student _____

Signature _____ **Date** _____