

## General Description

The Bachelor of Science Degree in Electrical Engineering Technology (ELT) is designed primarily for those students who already possess an associate degree in fields related to Electronics or Electrical Technology. The ELT program at NEIT emphasizes the hands-on, practical approach to the mastery of Electrical Engineering Technology. This approach is supplemented in the ELT program with increasing levels of electronics and electrical theory, industrial controls, mathematics, and physics. In addition to the normal laboratory performance and theory testing, participants in the ELT program are also expected to demonstrate competence in using both oral and written skills. This program is designed both to educate and to provide the personal skills for self-directed learning throughout the student's professional life.

The ELT program is a unique combination of two traditional electronic and electrical topics. The study of electronic components, electronic subsystems and programming of microprocessor systems is combined with that of automation systems or advanced industrial controls, energy management and process control. ELT students are presented with applications of complex automation controllers, network communications, data acquisition, process manufacturing and microcontroller systems in order to develop an increased level of understanding which enhances their professional value to prospective employers. At the conclusion of the ELT program, the students are expected to develop and synthesize their own design project demonstrating the applied skills acquired throughout the program or find an internship in a related field. The "hybrid" approach of the ELT program that combines traditional electronic and electrical skill sets provides students with a unique knowledge base that will allow them to pursue careers under the direction of an engineering staff but above that of the traditional electrical worker.

Graduates of this program are qualified for positions in product development, operations, or technical service. The engineering technologist works with a professional engineer or scientist in converting scientific knowledge and craftsmanship into products and techniques. Upon completion of this program, students may also choose to continue into the NEIT Master of Science in Engineering Management degree program.

## ACCREDITATION STATUS

The Bachelor of Science Degree program in Electrical Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET, <http://www.abet.org>.



## **Program Mission, Objectives and Outcomes**

### **Program Mission:**

The mission of the Electrical Engineering Technology (ELT) program is to prepare students for immediate and productive employment in their field upon graduation. This is accomplished through 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 independently solve problems. An important objective is to instill in students the necessity for continued professional development.

### **ELT Program Educational Objectives:**

1. Graduates will assume responsibilities for training through involvement in professional organizations, formal educational opportunities, employer-based training programs, or other training that enhances their ability to be productive in their place of employment.
2. Graduates will solve problems using the modern tools of the discipline.
3. Graduates will be effective communicators capable of working as professionals in cross-functional teams.
4. Graduates respect professional, ethical, and social issues as well as a commitment to quality and dependability in their profession.

### **Student Outcomes:**

Students will develop:

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems appropriate to the discipline;
2. an ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems appropriate to the discipline;
3. an ability to apply written, oral, and graphical communication in broadly 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 to improve processes; and
5. an ability to function effectively as a member as well as a leader on technical teams.

## Student Skills Developed

### Objective:

The ELT program at NEIT has a primary focus of developing practical design and implementation skills of electrical / electronic systems. Each course in the curriculum is designed to teach these skills to the students.

### Skills:

1. **Circuit Design / Analysis** - Design and analysis of DC, Transient and AC steady state circuits including power supplies, filters and switching circuits.
2. **Digital and Analog signal conditioning**: Design of analog and digital circuits for sensor input and actuator control.
3. **Microcontroller control of I/O** - Design of programs using the Arduino Microcontroller and hardware interface with analog and digital I/O.
4. **PLD Design**: Custom logic design of combinatorial and sequential circuits in PLDs.
5. **Programmable Automation Controllers (PACs)** - Design of programs with Ladder Logic and other languages for control of discrete and analog I/O using the Allen Bradley Compact and Control Logix Controllers.
6. **Supervisory Control and Data Acquisition** – Design of SCADA systems for the use of system control and data collection in today's industrial world.
7. **Industrial Networking** – Using Ethernet IP, ControlNet and DeviceNet, students will understand network strategies, topologies, configuration and interaction with other control devices.
8. **PID Design** - Design and analysis of open loop/closed loop control systems and sequential process control. The control of DC, AC, Servo and Stepper motors, tank level and flow control, discrete state process control.
9. **Sensors, Hydraulics, Pneumatics** – Gives the student an understanding of how these devices interact with the control system.
10. Technical writing and presentation (reports and presentations)
11. Project planning through Senior Capstone.
12. Employment search and interviewing through Internship option.
13. Teamwork through lab team assignments.
14. Applications of Math, Physics and Chemistry toward solving engineering problems.
15. Problem-solving and troubleshooting (Homework and lab experience)
16. Computer literacy
  - **C++ coding** - of a microcontroller.
  - **AHDL** - PLD design and simulation using Altera Hardware Description Language or Xilinx Verilog.
  - **MultiSim** - for circuit design and analysis.
  - **RSLogix5000** - Ladder logic, Function Block, Sequential Function Chart and StructuredText programming PACs.
  - **C++ - for general programming applications and I/O interfacing.**
  - **Rockwell Software's Factory Talk SE** for SCADA/HMI
  - **LabVIEW** – for data acquisition and control.
  - **Microsoft Office.**
17. **Technical Electives** - Students may choose technical electives to develop skills in Information Technology, Mechanical Engineering Technology, and Electrical Engineering Technology.

**Curriculum**

Term VII					
Course No.		Course Title	C	L	T
ELT	310	Programmable Automation Controllers and Lab	3	2	4
ELT	314	C++ Programming	3	2	4
EN	322	Argumentative Research Writing (COM Core)	4	0	4
MA	310	Calculus I (MA/SCI Core)	4	0	4
			14	4	16

Term VIII					
Course No.		Course Title	C	L	T
ELT	320	SCADA and Communication Systems and Lab	3	2	4
ELT	364	Digital Circuit Design	3	2	4
MA	320	Calculus II (MA/SCI Core)	4	0	4
EN	421	Technical Communications (COM Core)	4	0	4
			13	6	16

Term IX					
Course No.		Course Title	C	L	T
ELT	360	Embedded Microcontrollers	4	0	4
ELT	362	Embedded Microcontrollers Lab	0	4	2
ELT	374	Circuit Analysis I	3	2	4
PHY	300	Physics II (MA/SCI Core)	3	2	4
			10	8	14

Term X					
Course No.		Course Title	C	L	T
ELT	384	Circuit Analysis II	3	2	4
ELT	410	Electrical Design and Energy Management & Lab	3	2	4
ELT	463	Sensors and Signal Conditioning	3	2	4
CHM	300	Chemistry I & Lab (MA/SCI Core)	3	2	4
			12	8	16

Term XI					
Course No.		Course Title	C	L	T
ELT	475	Automation and Process Control & Lab	3	2	4
ELT	486	LabVIEW Programming	3	2	4
ENG	489	Introduction to Senior Capstone	2	0	2
EC	301	The Global Economy (SS Core)	4	0	4
			12	4	14

Term XII					
Course No.	Course Title		C	L	T
ENG 499	Senior Capstone		4	2	5
<i>HU 331</i>	<i>Ethics and Technology (HU Core)</i>		4	0	4
CHOOSE ONE					
ENG 481	Senior Engineering Internship		0	20	4
ELECTIVE	Technical Elective (see chart below)		2-4	0-2	3/4
			8-12	2-22	12/13
<i>Total Quarter Credit Hours (56-57 Technical Credits 32 Credits Liberal Arts) = 88-89</i>					

Technical Elective Choices for Term XII					
Course No.	Course Title		C	L	T
ENG 300	Imagineering: Human Centered Design		3	2	4
ENG 450	Special Topics in Engineering		0	10	4
IT 374	IT Project Management		3	0	3
MCT 115	Computer-Aided Design I		3	2	4
MCT 235	Industrial Robotic Automation		3	2	4
MCT 239	Quality		3	2	4
MCT 322	Fluid Power		3	2	4
MCT 416	Operations Management		4	0	4
SE 126	Intermediate Programming Using Python		2	4	4
Business Management Courses (as space is available)					
MGM 310	Product and Service Marketing		3	2	4
MGM 313	Human Resource Management		3	2	4
MGM 320	Business Presentations		3	2	4
MGM 332	Customer Relations and Sales		3	2	4
MGM 333	Organizational Behavior		3	2	4
MGM 336	Data Analysis with Spreadsheets		3	2	4
MGM 346	Project Management		3	2	4
MGM 375	Information Systems Management		3	2	4
MGM 445	Negotiation		2	2	3
MGM 450	Career Leadership		3	2	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 bachelor's degree students are required to take 28 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.

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.

Please refer to the curriculum for each program for specific requirements as some curricula require more than the minimum number of liberal arts core courses. Only the associate-level core electives in the list below can be used to satisfy bachelor’s degree core requirements.

### **Bachelor’s Degree Core Elective Areas<sup>1</sup>**

**To obtain a minimum of 7 courses (28 credits), students may choose from the following course selections:**

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

### **Bachelor’s Degree Courses by Core<sup>1</sup>**

#### **Communications Core Electives (Minimum 8 Credits)**

EN 322 Argumentative Research Writing  
EN 331 Research Writing in the Social Sciences  
EN 421 Technical Communications  
EN 422 Writing in the Health Sciences  
SS 303 Communication in the Global Workplace

#### **Math/Science Core Electives (Minimum 8 Credits)**

CHM 300 Chemistry I and Lab  
MA 300 Statistics  
MA 301 Math for Management Studies  
MA 310 Calculus I  
MA 315 Math for Game Developers  
MA 320 Calculus II  
PHY 300 Physics II & Lab  
SCI 304 Development of Western Science  
SCI 307 Understanding Science Through Photography  
SCI 300 Public Health by Numbers  
SCI 320 Understanding Flight  
SCI 330 Our History and Future in Space

SCI 333 Sports Performance Metrics  
SCI 350 Introduction to Genetics and Evolution  
SCI 351 Sustainable Technology  
SCI 360 Wellness for Life

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

JP 201 Introduction to Japanese  
SP 201 Introduction to Spanish  
SP 203 Spanish for Healthcare Workers

**Humanities Core Electives (Minimum 4 Credits)**

HU 311 The Art of Film  
HU 315 Cultural Competence in the Workplace  
HU 320 Multicultural Voices  
HU 321 Representations of Gender  
HU 331 Ethics and Technology  
HU 341 World Religions  
HU 350 Literature and Health  
HU 352 History of Rock and Roll  
HU 432 History of Western Art  
HU 433 Encountering 20<sup>th</sup> Century Art  
HU 441 World Literature

**Social Sciences Core Electives (Minimum 4 Credits)**

EC 301 The Global Economy  
PS 330 Marriage and the Family  
PS 350 Forensic Psychology  
PS 410 Applied Research Statistics  
SCI 360 Wellness for Life  
SO 461 Language and Society  
SS 303 Communication in the Global Workplace  
SS 304 Digital Media & the Law  
SS 330 Contemporary Social Issues  
SS 350 Everything is a Negotiation

1. Subject to Change

**Degree Progress Checklist**

Check off each completed course.

**Program Requirements**

T7	ELT	314	_____
	ELT	310	_____
T8	ELT	320	_____
	ELT	364	_____
T9	ELT	374	_____
	ELT	360	_____
	ELT	362	_____
T10	ELT	384	_____
	ELT	463	_____
	ELT	410	_____
T11	ELT	475	_____
	ELT	486	_____
	ENG	489	_____
T12	ENG	499	_____
	Choose One		
	ENG	481	_____
	or		
Technical Elective (see list below)			_____

**Technical Elective Choices for T12**

IT	374	MGM	313*
ENG	300	MGM	320
ENG	450	MGM	332
MCT	115	MGM	333
MCT	235	MGM	336
MCT	239	MGM	346
MCT	322	MGM	375*
MCT	416	MGM	445*
SE	126	MGM	450*
MGM	310*		

\* Business Management Courses (as space is available)

**Liberal Arts Core Requirements**  
**8 Required Courses**

Each course = 4 credits (total of 32 credits)

<b>Communications Core</b>			
<b>#1</b>	EN 322	T7	_____
<b>#2</b>	EN 421	T8	_____
<b>Math/Science Core</b>			
<b>#3</b>	MA 310	T7	_____
<b>#4</b>	MA 320	T8	_____
<b>#5</b>	PHY 300	T9	_____
<b>#6</b>	CHM 300	T10	_____
<b>Humanities Core</b>			
<b>#7</b>	HU 331	T12	_____
<b>Social Sciences Core</b>			
<b>#8</b>	EC 301	T11	_____

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**

### **ELT 310 Programmable Automation Controllers and Lab**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: ENG 210*

This course will cover advanced PLC programming using the Allen Bradley *Control Logix* PAC and *RSLogix 5000* software. Students will use several PLC languages including Ladder Logic, Sequential Function Chart, Function Block Diagram and Structured Text. Students will also be introduced to Ethernet IP I/O control and VFD network control. Students will develop working automation systems using the Allen Bradley Control Logix PAC. Students will develop these programs in several different PAC programming languages. Labs will also consist of "Remote I/O" systems over Ethernet IP.

### **ELT 314 C++ Programming**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: ERD 212*

This course will focus on variables, input and output objects, if-else structures, switch statements, while and do looping structures, functions and scope of variables, one- and two-dimensional arrays, pointers, and character strings. The flowcharts will be used as a visual aid in solving problems.

### **ELT 320 Supervisory Control and Data Acquisition (SCADA) and Communication Systems and Lab**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: ELT 310*

This course will show students the use of SCADA software in various industries. Students will investigate the uses of SCADA systems and how they are used in today's industrial world for system control and data collection. Topics will include system communications such as system alarming, wireless systems, radio telemetry, Ethernet Networks; and data communication systems for computers and industrial network protocol standards. The lab will show students how to develop SCADA software systems for interaction with specific industrial/commercial systems such as water/wastewater. Rockwell Software's *Factory Talk SE* software will be used for these systems. Data networks, such as Ethernet IP, will be implemented as part of the SCADA programming.

### **ELT 360 Embedded Microcontrollers**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: ELT 314*

*Co-requisite: ELT 362*

The concepts of how a microprocessor/microcontroller processes data will be studied. Arithmetic, logic, control functions and structures will be studied using C/C++ language instructions. Serial communications to a PC and serial LCDs along with interrupts will be included. The controlling of external hardware such as ultrasonic devices, servo motors, DC motors, and stepper motors will be studied. The concepts of flowcharting will also be presented throughout the course. Arduino and RFF flowcharting software will be utilized throughout the term.

### **ELT 362 Embedded Microcontrollers Lab**

*4 Lab Hours 2 Quarter Credit Hours*

*Prerequisite: ELT 314*

*Co-requisite: ELT 360*

This course will focus on the Arduino Microprocessor and instruction set. Students will write C++ code for labs that require the use of timers, serial communication, and interrupts. Control of sensors and electronic devices will also be covered.

**ELT 364 Digital Circuit Design**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

This course covers digital circuit functions, the synthesis of logic functions with PLDs and simulation of PLD designs.

**ELT 374 Circuit Analysis I**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: MA 320*

This course covers nodal and mesh analysis of circuits, applications of Kirchhoff's current and voltage laws, superposition, Norton and Thevenin equivalent circuits. These theorems are used to solve passive and active circuits, which contain both dependent and independent sources. Basic AC circuit analysis is introduced as well as complex numbers. PSpice analysis techniques are used to model both DC and AC circuits.

**ELT 384 Circuit Analysis II**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: ELT 374*

This second course in electrical circuit analysis extends the principles developed in Circuit Analysis I to circuits which are stimulated by transient and periodic voltage and current sources. This calculus-based course will continue the use of PSpice programming to examine passive and active filters, op-amp circuits, transfer functions, frequency response and the characteristics of periodic waveforms.

**ELT 410 Electrical Design and Energy Management & Lab**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

This course will demonstrate the process of designing the electrical distribution systems for commercial and industrial buildings. Students will identify all distribution components, understand specialized electrical needs, design switchboard and panelboard layouts, design and draw a complete electrical plan showing general purpose, specialized and lighting loads as well as the raceways that feed them. Students will use AutoCAD MEP for all system design and layouts. Students will be required to design their systems by applying all necessary National Electrical Codes (NEC). The course will also explore the causes of arc flash faults and calculate arc flash potential and common power quality issues and how to apply common mitigation strategies.

**ELT 463 Sensors and Signal Conditioning**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisites: MA 310, ELT 374*

This course will cover the elements of a control system which will include sensors, transducers and actuators used in process control systems. The analog and digital signal conditioning and instrument calibration with these I/O devices will also be covered. Laboratory assignments will be on sensor signal conditioning, instrumentation calibration and networking of these devices.

**ELT 475 Automation and Process Control & Lab**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisites: ELT 310, ELT 320, ELT 463, ELT 384, MA 310*

This course includes the study of closed-loop process control techniques as applied to automation and systems control. Topics include linear systems analysis, proportional, integral, and derivative control analysis, temperature controllers, composite controller analysis including PID control, transient response analysis, and digital systems design techniques. The lab will use PID controllers and Programmable Automation Controllers (PAC), driven automation control to demonstrate the closed loop control of automated systems.

**ELT 486 LabVIEW Programming**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: ELT 314 or MCT 314*

This course will use LabVIEW, a graphical programming language, for data acquisition and control of I/O and instruments. Students will learn to apply standard VIs (virtual instruments) and design applications. Interface to external devices and instruments will also be covered.

**ENG 300 Imagineering: Human Centered Design**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

In this course, students will implement creative ideas into practical form using Human Centered Design. Human Centered Design (HCD) is the umbrella for concepts like design thinking, and the principles of universal design. The emphasis in this course will be on innovating for the end user. The art of listening and storytelling along with the crafts of rapid desktop “maker” technologies is the primary practice of this course. When done well, a human-centered approach fuels the creation of new products and services that resonate more deeply with clients.

**ENG 450 Special Topics in Engineering**

*10 Lab Hours 4 Quarter Credit Hours*

This elective course provides an opportunity for independent study, research, or industry applications based on the background and interests of the student and/or industry needs. The course may incorporate content from a range of courses within the engineering technology curricula or allow for an intensive exploration of a single topic. An outline of the proposed work should be developed with the instructor and submitted for approval by the department chair prior to the start of the academic term. Project work may be executed by one student or a team of students. All proposed work requesting a tangible product as an outcome require a memo of understanding to define the scope and protect the student and university from unreasonable expectations. Presentation of the results of the work is required.

**ENG 481 Senior Engineering Internship**

*20 Hours per week 4 Quarter Credit Hours*

Students will have the opportunity to integrate career-related experience into the undergraduate 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 489 Introduction to Senior Capstone**

*2 Class Hours 2 Quarter Credit Hours*

*Prerequisite: ELT 463 or MCT 424*

This course results in the definition of the Senior Project. The senior project proposal is written and presented at this time. The proposal completely describes the technical content of the senior project, including theory of operation, what is being delivered, a schedule, specification, parts list, system block diagram, schematics, graphs and flow charts.

**ENG 499 Senior Capstone**

*4 Class Hours 2 Lab Hours 5 Quarter Credit Hours*

*Prerequisite: ELT 489*

This course gives each student the opportunity to design, fabricate, test troubleshoot, and document a project of their choice. This is primarily a lab course where students are expected to use all their skills to demonstrate their technical abilities learned in the bachelor’s program. Students will have the opportunity to communicate progress on the senior project in both oral and written reports. This experience simulates the work environment by requiring students to follow a plan, meet the technical specification for their

deliverable, and produce a working system on time. In a final session, all projects are presented and demonstrated to the class and faculty.

## ***Mechanical Engineering***

### **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 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, as well as flexible and hard automation, open and closed loop control, adaptive control and material handling will also be discussed.

### **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.

### **MCT 322 Fluid Power**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

This course covers the theory and practical use of fluid power and pneumatics. Topics include circuit diagrams, valves, cylinders, actuators, pumps, system losses, fluid logic and standards.

### **MCT 416 Operations Management**

*4 Class Hours 4 Quarter Credit Hours*

A management course specifically tailored for mechanical engineers that includes the principles of project management (CPM PERT, Gantt Charts), traditional management principles, total quality management (TQM), and materials management (Independent Demand vs. Dependent Demand).

## ***Information Technology***

### **IT 374 IT Project Management**

*3 Class Hours 3 Quarter Credit Hours*

Students will learn what is involved in becoming a successful project manager. The course covers the foundations of IT project management: project integration, scope, time, cost, quality, human resources, communications, risk and procurement and will include case studies of multiple projects, both successful and failed.

### **SE 126 Intermediate Programming Using Python**

*2 Class Hours 4 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: SE 116*

A study of the Python programming language will be used as the vehicle to introduce advanced programming concepts. At the end of the course, students should be able to analyze problems and

develop their solutions by applying advanced flowcharting, coding and programming techniques. Students should be able to design, develop, test and implement programs that involve nested conditional control structures, file handling, interactive processing, data editing, array processing, and sort and search algorithms.

### ***Business Management (as space is available)***

#### **MGM 310 Product and Service Marketing**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Students learn the marketing management cycle, product and service marketing, and customer relationship management. The course also provides an understanding of traditional/outbound and e-/internet/inbound marketing approaches and the seller/customer relationship. Students draft a marketing plan.

#### **MGM 313 Human Resource Management**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Students examine the many roles of human resource management in an organization and how managers can and should interact effectively with HR. Although theory is an important aspect of overall human resource application, management practices will be covered in depth. Students will practice a variety of human resource management skills through lab exercises and case studies. Students also review important laws and regulations and examine current issues in human resource management.

#### **MGM 320 Business Presentations**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Students practice developing clear, concise ideas for presentations, with a logical flow and language appropriate for a professional audience. They will develop and practice skills for informal and formal presentations. Topics include running a meeting, giving sales presentations, and teaching a training session. Students practice with current presentation technology.

#### **MGM 332 Customer Relations and Sales**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Students examine best practices in customer service, business to business sales, and retail sales management in order to strengthen customer relationships and generate organic growth. Students learn theory and practice strategies, tactics, and soft skills that build customer loyalty through experiential learning activities such as case studies and role playing. Students evaluate and exercise their communication skills and emotional intelligence to foster personal service and selling proficiency.

#### **MGM 333 Organizational Behavior**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Students examine individual behavior and group dynamics in organizations. Specific focus is given to the psychosocial, interpersonal, and behavioral dynamics in organizations. The study of these dynamics is further defined by the evaluation of variables such as job type, design of work, communication, performance appraisal, organizational design, and organizational structure. The study of organizational behavior focuses on experiential learning and is framed with the objective of developing rational decision-making skills, strong individual leadership skills, and, simultaneously, effective collaboration skills in a team environment.

**MGM 336 Data Analysis with Spreadsheets**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisite: MA 121 or MA 125 or MA 200 or MA 301*

Using spreadsheets effectively to support managerial decision-making is a critical skill for managers. Students learn to evaluate common business scenarios, then organize, analyze, and present data using Excel. Students will create charts, troubleshoot existing worksheets, and use templates to create common business forms for a company. Pivot tables and charts will be used to create dashboards for managerial decision-making.

**MGM 346 Project Management**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Managing a project requires a different set of skills and practices than managing normal operations of an organization. Students will explore the project management knowledge areas - project integration, scope, time, cost, quality, human resources, communications, risk, procurement, and stakeholder management – in the Project Management Body of Knowledge and develop their understanding of what is involved in becoming a successful project manager. Small groups will examine case studies of successful and unsuccessful projects, as well as the variety of applications available to manage projects. Students will apply what they learn by researching a project of their own, using project management software to plan and communicate information about the project.

**MGM 375 Information Systems Management**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Managers need to understand the role of Information Technology in their organizations, no matter the size. Students with an entrepreneurial spirit can find out what foundational IT elements are needed to make a new venture run successfully. This course focuses on developing an IT strategic plan, and answers the questions: What do IT people really do, and how can managers leverage these resources to grow the business? What enterprise-wide systems do I need to get started? What are cloud services and how can they be leveraged? How do I work with IT professionals to digitize and modernize my business and customers?

**MGM 445 Negotiation**

*2 Class Hours 2 Lab Hours 3 Quarter Credit Hours*

Students learn and practice negotiations through the principled negotiation method. They will learn to identify interests, create options for mutual gain; and propose fair standards for deciding among possible options. Students practice negotiating in both individual and team scenarios. In addition, students will learn the basics of contract law to aid in their negotiations.

**MGM 450 Career Leadership**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

Students will examine how new managers can become effective leaders and execute the organizational mission. Through study of current and emerging leadership theories and comprehensive case studies, students will explore multiple perspectives on leadership, analyze decision-making, and consider the impact of ethical versus unethical leadership on stakeholders. Students will complete self-assessments and other career-related projects to help clarify their own goals and career aspirations and continue to develop their own leadership styles.

**Liberal Arts, Math and Science Courses**  
**Bachelor's Degree**

**Community Enrichment (Social Science Core)**

**CE 301 Community Enrichment**

*1 Quarter Credit Hour*

This online course is offered through the Feinstein Enriching America Program. Weekly assignments include topics such as B Corporations, civic and social responsibility, and Non-Governmental Organizations. A 15-hour community enrichment project is also required. Community engagement six months prior to taking the course may be accepted with proper documentation. Current or prior military service and concurrent clinical experiences are accepted in lieu of the community enrichment project. After successful completion of the course, students are eligible to apply for a Feinstein Scholarship, which is awarded each term.

**Chemistry (Math/Science Core)**

**CHM 300 Chemistry I and Lab**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisites: MA 125*

Topics covered include atomic structure, the periodic law, and nature of the chemical bond, chemical reactivity, stoichiometry, and acid base reactions.

**Economics (Social Sciences Core)**

**EC 301 The Global Economy**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 322 or EN 331*

This course is an exploration of the increasingly complex global economy with particular attention to the competing political economies of Europe, the United States, and the Pacific Rim.

**English (Communications Core)**

**EN 322 Argumentative Research Writing**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

In EN 322, "Argumentative Research Writing," students engage in critical thinking, credible research, and persuasive writing. Beginning with the idea that academic and professional arguments result in a collegial exchange of ideas to pursue knowledge, this course prompts students to examine various viewpoints of a debate. The central goal for students is to produce an argument essay based on meaningful dialogue and thoughtful reflection. Students are introduced to different models of argument, persuasive appeals, logical reasoning, and visual rhetoric. The course breaks the writing process down into a series of comprehensible habits of mind and investigative skills: inquiry, active reading, critical analysis, research, communication, and documentation of sources.

**EN 331 Research Writing in the Social Sciences**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

In this advanced research writing course, students will read, research and evaluate social science articles and other materials in order to understand their claims, credibility and conclusions. They will conduct an extensive literature review on a topic of their choice resulting in an APA-formatted research paper

including an abstract and reference section. Utilizing writing workshops, students will write coherent and unified texts, including effective introductions, clear thesis statements, supporting details, transitions, and strong conclusions.

**EN 421 Technical Communications**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 322 or EN 331*

EN 421 is an advanced writing course designed to help students achieve mastery in presenting complex content. This course encompasses writing for a broad range of technical and general audiences in virtually all media. Students will reinforce their ability to analyze audience, purpose, and content. Additionally, students will learn how to plan and organize content to meet goals, use graphics effectively, and deliver an oral presentation.

**EN 422 Writing in the Health Sciences**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 322 or EN 331*

EN 422 is an advanced writing course focusing on written communication common in the health science professions. To better prepare students for the challenges of successful professional communication, Writing in the Health Sciences targets the three main audiences of the health provider: other professionals, patients and clients, and the public. For each of these audiences, students will master writing techniques and practices to ensure that their message is being understood and that their professional voices are being heard at all levels of the health care organization.

**Humanities (Humanities Core)**

**HU 311 The Art of Film**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

This course is a survey of films that have significantly contributed to the development of film as an art and as an industry. Topics of discussion include filmmaking techniques and theories of criticism.

**HU 315 Cultural Competence in the Workplace**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

Students of all disciplines must be ready to engage in a globally connected world requiring an understanding of cultural norms, differences, and beliefs which effect the workplace. This course will examine the students' understanding of what culture is and what each citizen of a global world will need to provide knowledge, skills, and an attitude inherent in a culturally responsive manner.

**HU 320 Multicultural Voices**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

This course will examine literary works that cross the boundaries of national lines and cultures and reflect the experiences that occur in the diverse United States. How do we learn to understand our own and different cultural identities and practices through interactions with others? What role does the experience of immigrants play in how we decide what is American culture? The purpose of this course is for all of us to gain an understanding and appreciation of culture, cultural values, and perspectives by reading various works, in different genres, written by authors of a variety of racial, ethnic, and national backgrounds.

**HU 321 Representations of Gender**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

HU 321 is an advanced course that analyzes portrayals of gender in both written and visual text including literature, film, and television to find patterns of meaning that illuminate human nature and society. Additionally, it will explore how gender intersects with other social constructs like race, ethnicity, and sexual orientation.

**HU 331 Ethics and Technology**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

This course will explore the basic concepts of ethical theories and ethical values and apply these to technologically based dilemmas through case studies. These dilemmas will be considered in terms of their implications both for individuals, and for professionals involved in creating and maintaining technology, and mechanisms will be developed to guide ethical discussions and decision-making.

**HU 341 World Religions**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

In this course, students will examine religious practices surrounding life passages (birth, marriage, death), and the food, clothing, sacred calendars, sacred texts, and ethics of several major world religions.

**HU 350 Literature and Health**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100 or its equivalent*

Through the study of fiction and poetry, students broaden their understanding of two important perspectives in healthcare – that of patient and caregiver. With the ultimate goal of engendering empathy for both parties, this course requires students to read a variety of literary texts that address the social, cultural, psychological, familial, institutional, and professional dimensions of healthcare. Course requirements include close reading, lively class discussion, short oral presentations, original research, and thoughtful writing.

**HU 352 History of Rock and Roll**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

This course will trace the various musical forms and technological advances that have led to the American popular music of today. Particular emphasis will be given to blues and jazz and their influence on early rock and roll. In addition, a substantial portion of the course will be devoted to the technology that has led to today's sophisticated performance and recording techniques. Students will also experience some hands-on musical activities with instruments such as the guitar and keyboard that are vital components of today's music.

**HU 432 History of Western Art**

*4 Class Hours 4 Quarter Credit Hours*

This course offers students the opportunity to explore the visual arts throughout Western history. Students will develop knowledge of artists and artistic development and increase their ability to critically appreciate a wide range of art across media, styles, and time periods. The course will emphasize painting, and will additionally examine sculpture, architecture and photography, as time permits.

**HU 433 Encountering 20th Century Art**

*4 Class Hours 4 Quarter Credit Hours*

Students will examine art produced in the 20th Century by exploring a variety of factors including: the differences in this art from what had come before; the role of the machine and technology in subject

matter, technique and production; the major social movements and political events of the 20th Century and how they were represented in art; and the major movements in art in this century. Important works by major artists of this period will be studied, so that students can recognize these and similar works, and appreciate their place in popular culture. Students will learn to be comfortable with art and be able to “read” art for their own enjoyment. They will come to appreciate the notion that art, in the final analysis, is a creative expression of their world, their lives, what they see and feel and experience every day.

#### **HU 441 World Literature**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

As a result of globalization, we are interacting more often with people from other cultures. This course uses fiction, poetry, and drama from around the world to learn about other cultures.

#### **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 300 Statistics**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: MA 125 or MA 200 or MA 301*

This introductory course stresses the use of statistics as a management tool for decision-making. The focus is on descriptive statistics, communicating statistical data, concepts of probability distribution, estimation, and hypothesis testing.

##### **MA 301 Math for Management Studies**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: MA 100/110 or MA 105 or above*

MA 301 is designed to transition students from basic algebra to more advanced business applications. Specific topics include percent increase and decrease problems; linear and quadratic functions with cost, revenue, profit, supply and demand function applications; descriptive statistics; exponential and logarithmic functions with exponential growth and decay applications; compound interest and annuities. There are video examples of how to do some problems in Excel as an introduction to that program.

##### **MA 310 Calculus I**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: MA 210*

Limits will be introduced, and the derivatives and integrals of algebraic functions will be studied at length. Applications include rectilinear motion, curve sketching, maxima and minima problems, related rates, and area under a curve.

**MA 315 Math for Game Developers**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: MA 310*

Students will study the essential math necessary to become a successful game developer. Topics include vectors, matrices, transformations, collision detection, random numbers, rendering techniques and optimizations.

**MA 320 Calculus II**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: MA 310*

This continuation of Calculus I begins with derivatives of transcendental functions and proceeds with their integration. Additional topics include integration by parts, partial fractions, and numerical methods. Applications of the integral to area, volume, motion, and work will be stressed.

**Physics Courses (Math/Science Core)**

**PHY 300 Physics II & Lab**

*3 Class Hours 2 Lab Hours 4 Quarter Credit Hours*

*Prerequisites: MA 125 and PHY 200 (or PHY 126)*

This is an algebraic approach to a second course in physics. The topics include: centripetal force, temperature, heat energy, mechanical waves, sound, electrostatics, and basic circuit elements. 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. Laboratory experiments will be performed to reinforce these concepts.

**Psychology (Social Science Core)**

**PS 330 Marriage and the Family**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100 or its equivalent*

This course is a review of psychological concepts relevant to understanding marital and family functioning. Topics will include mate selection, marital communication, intimacy, conflict resolution, transitioning to parenthood, managing crises, family violence, divorce, and balancing work, leisure and family.

**PS 350 Forensic Psychology**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

This course addresses the psychological issues of human behavior that surround law enforcement and the legal system. It supplements information provided by physical evidence forensics courses and offers hands-on practice by utilizing psychological techniques implemented in the field. It familiarizes students with new technologies and available databases used in investigations. The course goes beyond criminal profiling popular in today's media and explores the findings of psychological research behind such issues as eyewitness identification (memory retrieval) and interviewing (conformity and obedience). Forensic Psychology also covers newer areas of concern such as psychological assistance in all career aspects of policing from personnel selection to dealing with the demands of the job.

**PS 410 Applied Research Statistics**

*4 Class Hours 4 Quarter Credit Hours*

PS 410 is an intermediate-level course designed to develop in students an expertise in identifying statistical approaches to research problems. Students will examine statistics and the rationale behind them. They will comprehend and interpret statistical results as they apply to their programs. Students will

master the APA style of writing by dissecting the results and discussion sections of journal articles in their programs and by writing those sections using statistics learned in the course.

**Science (Math/Science Core)**

**SCI 304 Development of Western Science**

*4 Class Hours 4 Quarter Credit Hours*

This course centers on the interaction of science, scientists, technology and society over the past five hundred years, primarily focusing on the development of Western science. The scientific method will be examined utilizing selected case studies. Underlying principles and methodologies of science will be illustrated by comparing and contrasting both the successes and failures of science. Factors affecting the acceptance and use of science and related technologies will be examined.

**SCI 307 Understanding Science Through Photography**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 322 or EN 331*

This course integrates photography and science. Students will demonstrate their understanding of science concepts through photography and written artifacts. A key to understanding concepts in science is the ability to recognize their applications in everyday use. Problem solving and evaluating discussion board postings are also part of this course. Science concepts such as motion and forces are combined with physical elements of photography such as shutter speed, focal length, and aperture. Students will design and complete a capstone project that focuses on their area of study as it relates to science. Students are expected to have basic knowledge of digital images and have the ability to upload photos. Cameras are not provided by NEIT.

**SCI 300 Public Health by Numbers**

*4 Class Hours 4 Quarter Credit Hours*

In this course, students will use multiple data sources to quantify public health problems and learn about the concepts, topics and institutions that shape the health system. In this journey students will explore topics such as environmental health, the determinants of health, preparedness, national and international health systems and institutions, and will interpret the magnitude of population health issues based on data.

**SCI 320 Understanding Flight**

*4 Class Hours 4 Quarter Credit Hours*

This course explores a variety of real-world examples of objects moving through the air. While not an applied math course, the concepts that help understand the flight of objects are explored. Freefall, gliding, ballistics, and powered flight will be explained and studied. Both the historical development of manned flight as well as examples of flight in nature as exemplified by both birds and seeds will be investigated.

**SCI 330 Our History and Future in Space**

*4 Class Hours 4 Quarter Credit Hours*

A course investigating the history, current programs, and future of space exploration. Topics will focus on our solar system, the current search for water on Mars, and evidence of life on other planets and moons. Current events related to space exploration and Near-Earth Objects will be incorporated whenever possible. Weekly writing assignments pertaining to weekly reading assignments will be required.

**SCI 333 Sports Performance Metrics**

*4 Class Hours 4 Quarter Credit Hours*

This introductory course is intended for any student with an interest in physical fitness, exercise or wellbeing. The course will focus on the foundations of exercise testing and training while exploring the various elements of an individual's fitness profile including strength, flexibility, power, balance, speed,

agility, aerobic capacity, body composition and anthropometrics. The course will also help explain how each of those fitness parameters relates to a student's ability to play a sport or participate in a hobby such as hiking, running or gardening. Finally, the course will explore various exercise program variables and designs to maintain and improve health and human performance.

**SCI 350 Introduction to Genetics and Evolution**

*4 Class Hours 4 Quarter Credit Hours*

No prior coursework in the subject is assumed. This course begins by looking at cells and what they are. Concepts such as mitosis and meiosis will be explored. What a gene is, how it functions, and how it may be mutated will be covered. The basic principles of genetics, including patterns of inheritance (Mendelian genetics) will be studied. Additional topics include the genetic basis of genotype and phenotype, natural selection, evolution, and speciation. Students will explore recombinant DNA and genetic engineering (genetically modified foods and livestock) and the future of genetics.

**SCI 351 Sustainable Technology**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

What do climate changes and carbon emissions have in common? The carbon cycle. In this course students will engage in critical analysis of science components of economic and environmental sustainability. Students will analyze case study scenarios from current events and other sources and propose comprehensive steps for sustainable technology development in the context of their subject specialty. Through various projects, student will apply the knowledge gained in this course to technology development strategy, career planning and personal reflection on sustainable living.

**SCI 360 Wellness for Life**

*4 Class Hours 4 Quarter Credit Hours*

*Core Fulfillment: Both Math/Science Core and Social Sciences Core*

Lifestyle-related diseases are at epidemic proportions in this country. There is scientific evidence that links physical activity and positive habits to improved quality of life. This course will explore topics of health promotion, wellness, risk screening, and behavior change. Students will evaluate how lifestyle-related health problems can be impacted by positive lifestyle choices. Since optimal wellness goes beyond physical fitness and the absence of disease, students will examine the eight dimensions of wellness and design a personal wellness program to attain their health goals.

**Sociology (Social Sciences Core)**

**SO 461 Language and Society**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

This course provides students with knowledge about the role that language plays in our cognitive and social development in order to give us greater power over our interactions with others at home, at work, and elsewhere. Topics covered include how we speak and why; is language biological or cultural; do men and women speak differently; and what is the connection between language and thought.

**Spanish (Arts/Foreign Language Core)**

**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. 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. The course is designed for students with no prior knowledge of Spanish. **Students who speak Spanish fluently or who grew up in a home where Spanish was the primary language spoken will not be eligible to take the course.**

### **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. **The course is designed for students with no prior knowledge of Spanish.**

### **Social Sciences (Social Sciences Core)**

#### **SS 303 Communication in the Global Workplace**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

*Core Fulfillment: Both Communications Core and Social Sciences Core*

This course is designed to acquaint students with intercultural communication issues that arise in the workplace, culminating in a final project: making a business/occupational presentation to an audience from another culture.

#### **SS 304 Digital Media & The Law**

*4 Class Hours 4 Quarter Credit Hours*

In this course, students will examine how the existing legal structure within digital and social media operates and understand how the global shift to digital media has profoundly affected the production and control of information from a global and domestic perspective. The course is designed to introduce students to legal issues that are most relevant to careers in digital media and to individuals using digital and social media for personal interests. These topics include information access and protection, intellectual property, defamation, invasion of privacy, commercial speech, jurisdiction, internet regulations, and, of course, freedom of expression.

#### **SS 330 Contemporary Social Issues**

*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.

#### **SS 350 Everything is a Negotiation**

*4 Class Hours 4 Quarter Credit Hours*

*Prerequisite: EN 100*

**Program Restriction: This course not open to students in the Business Management program.**

This course is intended to help students develop the skills they need to successfully negotiate their way through their work situations. Students will practice both face-to-face negotiations and negotiations carried on electronically.

## **ELECTRICAL ENGINEERING TECHNOLOGY (ELT BS)**

- Need for technicians with skill set between traditional electrical workers and professional electrical engineers.
- Hybrid Curriculum of Traditional Electronics and Electrical
- Emphasis on Automation and Programming
- Energy Management and “Smart” building design and systems
- Allows ELY-AS students and EST-AS students to continue education with current technologies WITHOUT PREREQUISITE QUARTERS!
- Potential for Internship option
- Less Math & Physics than traditional EE program allows for more courses in core theme
- Students entering from EST or ELY will be required to have a 2.5 GPA.

### **Industries/Careers for ELT graduates include:**

- Bio Tech/Life Sciences/ Pharmaceutical
- Energy Management/Renewable Energy
- Water/Waste Water
- Food & Beverage
- Discrete Manufacturing
- Building Automation
- Process Control
- Field Service Technician
- Defense Industry
- Sales Engineer

## **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 campus.

### **5. 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.

### **6. Is NEIT accredited?**

NEIT is accredited by the New England Commission of Higher Education. 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.

**7. 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.

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

Transfer credit for appropriate courses taken at an accredited institution will be considered upon receipt of an official transcript for any program, biology, science, and mathematics courses in which the student has earned a "C" or above within the past three years and for English or humanities courses in which the student has earned a "C" or above within the last ten years. 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.

**9. 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.

**10. 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.

**11. 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.

**12. 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 program, 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.

**13. Where will job opportunities exist?**

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

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

Under existing (1996) Rhode Island law no license is required for any of the careers which you will be preparing to enter.

Because of the complex nature of licensing requirements and because these requirements change periodically, we cannot list all the requirements for all the types of licenses available in all the states. NEIT IS NOT RESPONSIBLE FOR ANY CHANGES IN LICENSING REQUIREMENTS THAT ANY STATE LEGISLATURE, INCLUDING, RI'S, MAY IMPLEMENT AT ANY TIME. Each student should take personal responsibility for determining the licensing requirements in the specific trade and state in which he or she plans to work. Your instructor or department chair can give you help as needed.

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

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

**16. What are the Entrance Requirements for the BSELT Program?**

The minimum requirement for admission to the BSELT Program is the completion of an Associate degree in Electronics with a 2.0 GPA **OR** the completion of an associate degree in an equivalent program (such as Electrical Technology) with a 2.5 GPA.

**17. Is this degree program accredited?**

The Bachelor of Science degree program in Electrical Engineering Technology is accredited by the Engineering Technology Accreditation Commission of ABET, [www.abet.org](http://www.abet.org).

## Technical Standards

These technical standards set forth by the Electrical 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 electronic 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 and find circuit test points.
- Acute enough to read dials, and position of control settings of electronics testing equipment.
- Acute enough to read small numbers on precision measuring instruments.