

Hancock College AS Degree Programs

A.S. in Electronics Technology

Option 1: Electronics Technology

<u>Course</u>	<u>Units</u>
EL 110 Electronic Projects and Computer Applications	2
EL 118 Fundamentals of Circuit Analysis	3
EL 119 Fundamentals of Circuit Analysis Lab	2
EL 122 Electronic Devices and Circuits	3
EL 123 Electronic Devices and Circuits Lab	2
EL 125 Digital Devices and Circuits	3
EL 126 Digital Devices and Circuits Lab	2
EL 130 Electronic Troubleshooting	4
EL 135 Electronic Measurement and Instrumentation	3
EL 136 Electronic Measurement and Instrumentation Lab	2
EL 137 Microcomputer Architecture and Software Design	4
EL 146 Electronic Drafting and Fabrication	2
Total Units in Major	32
General Education Units	21
Additional Units	7
Total Units for AS Degree	60

A.S. in Electronics Technology

Option 2: Electronics Technology with Emphasis in Digital Systems

<u>Course</u>	<u>Units</u>
EL 110 Electronic Projects and Computer Applications	2
EL 118 Fundamentals of Circuit Analysis	3
EL 119 Fundamentals of Circuit Analysis Lab	2
EL 122 Electronic Devices and Circuits	3
EL 123 Electronic Devices and Circuits Lab	2
EL 125 Digital Devices and Circuits	3
EL 126 Digital Devices and Circuits Lab	2
EL 130 Electronic Troubleshooting	4
EL 135 Electronic Measurement and Instrumentation	3
EL 136 Electronic Measurement and Instrumentation Lab	2
EL 137 Microcomputer Architecture and Software Design	4
EL 138 Personal Computer Service and Networking	3
EL 146 Electronic Drafting and Fabrication	2
EL 148 Microcomputer Systems (Design and Implementation)	4
Com Sc 121 Programming for Technical Applications	3

Com Sc 141 Digital Computer Fundamentals	3
Total Units in Major	45
General Education Units	21
Total Units for AS Degree	66

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Option 4: Electronics Technology with Emphasis in Communications Systems

<u>Course</u>	<u>Units</u>
EL 110 Electronic Projects and Computer Applications	2
EL 118 Fundamentals of Circuit Analysis	3
EL 119 Fundamentals of Circuit Analysis Lab	2
EL 122 Electronic Devices and Circuits	3
EL 123 Electronic Devices and Circuits Lab	2
EL 125 Digital Devices and Circuits	3
EL 126 Digital Devices and Circuits Lab	2
EL 130 Electronic Troubleshooting	4
EL 135 Electronic Measurement and Instrumentation	3
EL 136 Electronic Measurement and Instrumentation Lab	2
EL 137 Microcomputer Architecture and Software Design	4
EL 142 Telecommunication Systems	5
EL 143 Telecommunication Systems Lab	2
EL 146 Electronic Drafting and Fabrication	2
Total Units in Major	39
General Education Units	21
Total Units for AS Degree	60

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Option 6: Electronic Engineering Technology

<u>Course</u>	<u>Units</u>
EL 110 Electronic Projects and Computer Applications	2
EL 118 Fundamentals of Circuit Analysis	3
EL 119 Fundamentals of Circuit Analysis Lab	2
EL 122 Electronic Devices and Circuits	3
EL 123 Electronic Devices and Circuits Lab	2
EL 125 Digital Devices and Circuits	3
EL 126 Digital Devices and Circuits Lab	2
EL 135 Electronic Measurement and Instrumentation	3
EL 136 Electronic Measurement and Instrumentation Lab	2
EL 146 Electronic Drafting and Fabrication	2
Chem 100 Introductory Chemistry	4
Math 181 Calculus 1	5
Phys 141 General Physics 1	4
Phys 142 General Physics 2	4
Com Sc Any 3 unit programming course	3
Total Units in Major	44
General Education Units	21
Total Units for AS Degree	65

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Option 7: Electronics Technology with Emphasis in Network Maintenance and Digital Technologies

<u>Course</u>	<u>Units</u>
EL 105 PC Preventive Maintenance and Upgrading	3
EL 106 Networking Essentials 1	3
EL 107 Networking Essentials 2	3
EL 108 Networking Essentials 3	2
EL 109 Networking Essentials 4	2
EL 118 Fundamentals of Circuit Analysis	3
EL 119 Fundamentals of Circuit Analysis Lab	2
EL 137 Microcomputer Architecture and Software Design	4
EL 138 Personal Computer Service and Networking	3
EL 310 Introduction to Network Platforms, NOSs, Security and Maintenance	4

Plus a minimum of 3 units selected from the following:

Bus 101 Introduction to Business	3
CBIS 101 Computer Concepts and Applications	3
Com Sc 102 Introduction to Computing with HTML and JavaScript	3
Plus a minimum of 5 units selected from the following	
Electronics option or Computer Science option:	
EL 125 Digital Devices and Circuits	3
EL 126 Digital Devices and Circuits Lab	2
or	
Com Sc 141 Digital Computer Fundamentals	3
Com Sc 142 Digital Logic and Switching Circuits Lab	2
Plus a minimum of 3 units selected from the following:	
Com Sc 121 Programming for Technical Applications	3
Com Sc 151 Fundamentals of Programming	3
Com Sc 152 Advanced Programming Techniques	3
Com Sc 161 Discrete Structures	3
Com Sc 171 FORTRAN	3
Com Sc 173 Java Programming	3
Com Sc 175 Object Oriented Programming	3
Com Sc 373 Introduction to Java Programming	3
Com Sc 375 Introduction to Object Oriented Programming	3
Total Units in Major	40
General Education Units	21
Total Units for AS Degree	61

Electronics Courses (EL)

105 PC Preventive Maintenance and Upgrading (3)

Two hours lecture, three hours lab weekly.

Acceptable for credit: CSU

Necessary skills and information needed to make an informed purchase, maintain, upgrade, and evaluate personal computer systems. Students will receive hands-on instruction for performing basic preventive maintenance and the installation of simple upgrades such as adding RAM, installing hard drives, sound cards, etc. Included is the study of soldering techniques, electronic part identification, and safety and system operation. Emphasis will be placed on the student's ability to keep personal computers running at their best performance levels. This course is not open to students who are enrolled in or have received credit for Computer Science 105. (GR/CR) (F,S)

106 Network Essentials 1 (3)

Two hours lecture, three hours lab weekly. Advisory: Electronics 105 and either Electronics 125 or Computer Science 141.

Acceptable for credit: CSU

First course in a series designed to provide students with knowledge of and laboratory experiences with current and emerging computer networking technology. Focus will be on LANs, WANs, OSI models, IP addressing, cabling, CompTIA Network+, and network standards; the theory behind the various kinds of network architectures and data transmission methods, and the use of decision-making and problem-solving techniques in applying science, mathematics, and communication concepts to solve networking problems. Instruction and training are provided in the proper care, maintenance, and use of networking software, tools, and equipment. Emphasis will be placed on the Cisco System Certification. This course is not open to students who are enrolled in or have received credit for Electronics 301. (GR/CR) (F,S)

107 Network Essentials 2 (3)

Two hours lecture, three hours lab weekly. Prerequisite: Electronics/Computer Science 106.

Acceptable for credit: CSU

Second course in a series designed to provide students with knowledge of and laboratory experiences with current and emerging computer networking technology. Focus will be on LANs, WANs, OSI models, IP addressing and router programming; and the theory behind the various kinds of network architectures and data transmission methods including network troubleshooting. Emphasis will be placed on the Cisco System Certification. This course is not open to students who are enrolled in or have received credit for Electronics 107. (GR/CR) (F,S)

108 Network Essentials 3 (2)

Three hours lecture, three hours lab weekly for eight weeks.

Prerequisite: Electronics/Computer Science 107.

Acceptable for credit: CSU

Third course in a series designed to provide students with knowledge of and laboratory

experiences with current and emerging computer networking technology. Focus will be on LANs, WANs, OSI models, IP addressing and router programming; and the theory behind the various kinds of network architectures and data transmission methods. Emphasis will be placed on the Cisco System Certification. This course is not open to students who are enrolled in or have received credit for Electronics 108. (GR/CR) (F,S)

109 Network Essentials 4 (2)

Three hours lecture, three hours lab weekly for eight weeks.

Prerequisite: Electronics/Computer Science 108.

Acceptable for credit: CSU

The final course in a series designed to provide students with knowledge of and laboratory experiences with current and emerging computer networking technology. Focus will be on LANs, WANs, OSI models, IP addressing and router programming; and the theory behind the various kinds of network architectures and data transmission methods. Emphasis will be placed on the Cisco System Certification. This course is not open to students who are enrolled in or have received credit for Electronics 109. (GR/CR) (F,S)

110 Electronic Projects and Computer Applications (2)

One hour lecture, three hours lab weekly.

Acceptable for credit: CSU

Offers the student experience in the design of electronic projects as well as building confidence in their ability to construct electronic hardware. CADD equipment will be used in the development of project designs. Safety, design processes, computer modeling, hand tools, prototyping techniques, soldering, desoldering, and PC board repair are stressed. (GR/CR) (F,S)

118 Fundamentals of Circuit Analysis (3)

Three hours weekly. Prerequisite: Math 331 or concurrent enrollment in Electronics 315.

Advisory: Concurrent enrollment in Electronics 110 and 119 is recommended.

Acceptable for credit: CSU

An introductory study of the nature of electricity, the processes employed in the analysis and documentation of electric circuits and the use of basic electronic testing instruments. Topics include voltage, current, resistance, inductance, capacitance, reactance, impedance, analysis of waveforms and time- frequency relationships. (GR) (F,S)

119 Fundamentals of Circuit Analysis Lab (2)

Six hours lab weekly. Corequisite: Electronics 118.

Acceptable for credit: CSU

Practical experience for the comprehension of DC and AC electrical concepts introduced in Electronics 118 and also presents the proper use of electronic test instrumentation for the measurement of circuit parameters. (GR) (F,S)

122 Electronic Devices and Circuits (3)

Three hours weekly. Prerequisite: Electronics 118 and 119.

Advisory: Concurrent enrollment in Electronics 123.

Acceptable for credit: CSU

Introductory study of semiconductor devices and systems. Includes detailed analysis of Diodes, BJT's and FET's, thyristors and optoelectronic components, and linear integrated circuits. (GR) (F)

123 Electronic Devices and Circuits Lab (2)

Six lab hours weekly. Prerequisite: Electronics 118 and 119 and completion of or concurrent enrollment in Electronics 122.

Acceptable for credit: CSU

Provides the opportunity for students to apply theoretical semiconductor concepts in a laboratory environment with an emphasis on Diodes, BJT's, FET's, thyristors, optoelectronic devices, and linear integrated circuits. (GR) (F)

125 Digital Devices and Circuits (3)

Three hours weekly. Prerequisite: Electronics 118 and 119.

Acceptable for credit: CSU

Study of modern logic devices, circuits, and design techniques emphasizing logic families, implementation of devices, combinational and sequential logic circuits, number systems and codes, A/D and D/A conversion, ALU's, digital computer math techniques, memories, and system design practices and troubleshooting. (GR) (F,S)

126 Digital Devices and Circuits Lab (2)

Six hours weekly. Prerequisite: Electronics 118 and 119. Advisory: Concurrent enrollment in Electronics 125 is strongly recommended.

Acceptable for credit: CSU

Digital electronics laboratory designed to parallel Digital Devices and Circuits (Electronics 125). Emphasizes device operation in circuits and networks, and the proper use of standard digital logic test instruments used in the process of troubleshooting and verifying proper circuit operation. (GR) (F,S)

130 Electronic Troubleshooting (4)

Three hours lecture, three hours lab weekly. Prerequisite: Electronics 122, 123, 125, and 126.

Acceptable for credit: CSU

Emphasizes systematic methods of troubleshooting electronic systems. The methodology of fault location and restoration of the defective systems will be emphasized. (GR) (F)

135 Electronic Measurement and Instrumentation (3)

Three hours weekly. Prerequisite: Electronics 122, 123, 125, and 126. Advisory: Concurrent enrollment in Electronics 136 is recommended.

Acceptable for credit: CSU

Designed to familiarize students with operating principles and characteristics of basic electronic testing equipment as well as advanced specialized measuring instruments.

Methods of operation and calibration of these devices are covered including an overview of Automated Test Equipment (ATE) systems. (GR) (F)

136 Electronic Measurement and Instrumentation Lab (2)

Six hours lab weekly. Prerequisite: Electronics 122, 123, 125, 126. Corequisite: Electronics 135.

Acceptable for credit: CSU

Provides hand-on laboratory experience for the study and construction of electronic testing instruments. The student is introduced to many different types of testing equipment currently used by the electronics industry. (GR) (F)

137 Microcomputer Architecture and Software Design (4)

Three hours lecture, three hours lab weekly. Prerequisite:

Computer Science 141 or Electronics 125 and Electronics 126. Advisory: Any computer programming course is recommended.

Acceptable for credit: CSU

Introduction to microcomputer system development. Emphasis is upon assembly language programming, computer/microprocessor architectures, addressing modes, and machine language formats. Assemblers, disassemblers, cross-assembly techniques, simulators, and hardware development systems will be studied and used for the development, debugging and testing of software. Problem solution, programming style, and techniques will be stressed throughout this course. This course is not open to students who are enrolled in or have received credit for Computer Science 137. (GR) (F,S)

138 Personal Computer Service and Networking (3)

Two hours lecture, three hours lab weekly. Prerequisite: Electronics 125 or Computer Science 141.

Acceptable for credit: CSU

Provides the necessary information and skills needed to perform preventive maintenance, troubleshoot malfunctioning PC systems, install LAN's, and perform data communications. Included is the study of the internal operation and architecture of computer systems, how to disassemble and assemble a PC system, how to modify and upgrade existing systems, including multimedia, identify and correct hardware and software-related problems. This course is not open to students who are enrolled in or have received credit for Computer Science 138. (GR/CR) (F)

142 Telecommunication Systems (5)

Five hours weekly. Prerequisite: Electronics 130. Advisory: Concurrent enrollment in Electronics 143 is recommended.

Acceptable for credit: CSU

Provides communication information with respect to resonance circuits, receivers, transmitters, transmission lines, antennas, television, telephone, digital/data communication, fiber optic, and satellite systems. (GR) (S)

143 Telecommunication Systems Lab (2)

Six hours lab weekly. Prerequisite: Electronics 130 and completion of or concurrent

enrollment in EL 142.

Acceptable for credit: CSU

Provides hands-on experiences reinforcing concepts presented in Electronics 142 through the construction and testing of communication systems. Students will be exposed to the analog and digital communication fields using current technology integrated circuit components and test equipment. (GR) (S)

146 Electronic Drafting and Fabrication (2)

One hour lecture, three hours lab weekly. Prerequisite: Any drafting or CAD course and Electronics 110 and 122 or 125.

Acceptable for credit: CSU

Drafting of modern electronic circuits, and the fabrication techniques involved in design of Printed Circuit boards. Techniques of drafting, PC board layout and fabrication, board population techniques, soldering and desoldering, and final testing are covered. The use of industry quality computer aided drafting equipment will be used in all phases of documentation to camera ready artwork in this course. (GR/CR) (S)

148 Microcontroller Systems (Design and Implementation) (4)

Three hours lecture, three hours lab weekly. Prerequisite: Computer Science 137 or Electronics 137.

Acceptable for credit: CSU

Microprocessor based control system design. Emphasis is placed on programmable peripheral support devices, programming and diagnostic analysis techniques. Interfacing to inductive and non-inductive control devices will be studied. Single and multiple chip, 8-bit and 16-bit microcontroller designs will be implemented. This course is not open to students who are enrolled in or have received credit for Computer Science 148. (GR/CR) (F,S)

179, 379 Workshops in Electronics (.5-10)

179 - Acceptable for credit: CSU, UC-Determined after admission

For course description see "Workshops."

189, 389 ABCD Independent Projects in Electronics (1-3)

189 - Acceptable for credit: CSU, UC-Determined after admission

For course description see "Independent Projects."

310 Introduction to Network Platforms, NOSs, Security, and Maintenance (4)

Three hours lecture, three hours lab weekly. Advisory: Electronics/Computer Science 107 and Electronics/Computer Science 105.

Study of hardware and software platforms related to network installation, maintenance, upgrade, and repair. Major study areas will include server and workstation hardware requirements; WAN upgrading; network operating systems (Novell NetWare, Microsoft Windows NT, and UNIX) including client software (16-bit and 32-bit); backup and disaster planning for networks; network preventive maintenance; adding network services (network printing, network CD-ROMs, network modems, internet access); troubleshooting hardware and software problems. This course is not open to

students who are enrolled in or have received credit for Computer Science 310. (GR/CR) (F,S)

315 Applied Technical Mathematics (4)

Four hours lecture, one hour lab weekly. Prerequisite: Math 311 or Math 313 and 314 or Math 316, 317, 318, and 319.

Study of measurement systems, exponents and radicals and linear and quadratic equations, inequalities, variations, applications of sine, cosine, and logarithmic functions, complex numbers, and polar coordinates. Word problems will emphasize technical applications. This course is not open to students who are enrolled in or have received credit for Mathematics 315 or Mathematics 331. (GR/CR) (F,S)

320 A+ Certification (2)

Two hours lecture, two hours lab weekly. Advisory: Electronics/Computer Science 105. Computer repair and maintenance with a focus on preparations required for achieving the industry standard CompTIA A+ Certification. The “hands-on” study includes the A+ Core Test Domains and the Windows/DOS Test Domains. This course is not open to students who are enrolled in or have received credit for Computer Science 320. (GR/CR) (F,S)