

Electronics

66-credit Associate of Applied Science Degree

About the Program

Take advantage of state-of-the-art laboratories and highly qualified instructors to learn the skills essential to specialized electronics fields in areas such as industrial controls and automation, research and development, production and field service. Studies will focus on setting-up, troubleshooting, repairing and programming electronic devices and systems. This program prepares students for a broad range of high-tech occupations with strong potential for future growth.

Potential Job Titles

- Electronics Technician
- Electronics Repair Technician
- Field Services Coordinator
- Senior Technician
- Technical Support Person
- Technical Sales Person

Credit Transfer

Credits earned in the Electronics program may be transferable to institutions offering baccalaureate degrees. Visit www.wctc.edu/transfer for specific information. Since the details of credit transfers change from time to time, be sure to contact the intended college or university to verify credit transferability.

Admission Process

- Fill out a WCTC application
- Send \$30 non-refundable application fee
- Send high school transcript or GED/HSED
- Send any previous college transcripts
- Complete Skills Assessment test (COMPASS)
- Begin pursuing Financial Aid options
- Transcribed credit agreements are in effect with several Waukesha County high schools
- A minimum of two years of high school math is recommended

For more information, call 262.691.5200.

Required Courses	Credits
First Semester	
605-113 DC Electronics	3
605-118 Digital Electronics	3
801-195 Written Communication	3+
804-115 College Technical Math I	5+
809-196 Introduction to Sociology	3+
Total semester credits	17
Second Semester	
605-114 AC Electronics	2
605-127 Electronic Fabrication Techniques	2
605-176 Electronic Devices I	3
804-116 College Technical Math 2	4
806-143 College Physics I	3+
809-195 Economics	3+
Total semester credits	17
Third Semester	
605-126 Industrial Systems	4
605-177 Electronic Devices II	3
605-182 Microprocessors	3
806-144 College Physics 2	3
Elective	3
Total semester credits	16
Fourth Semester	
605-148 Data Acquisition	3
605-187 Electronic Data Communications	3
606-153 Co-op Education I-Industrial	1
801-196 Oral/Interpersonal Communication	3+
809-199 Psychology of Human Relations	3
Elective	3
Total semester credits	16
+ Proficiency exam available	
<i>Curriculum is current as of catalog printing. The most current curriculum requirements for graduation will be provided upon admission to program, or review at www.wctc.edu.</i>	

Electronics Required Courses

605-113 DC Electronics 3
 Study the principles and applications of Ohm's and Kirchoff's laws, series and parallel circuits, voltage and current dividers, and magnetism while building a foundation in electronics technology. Develop troubleshooting skills, and use computer simulation software to reinforce theory.

605-114 AC Electronics 2
 Explore the principles, concepts, and basic applications of capacitance, inductance, transformers, RC and RL circuits, resonance, and filters. Study troubleshooting practices, and use computer simulation software and lab exercises to reinforce theoretical concepts.
 Prerequisites: 605-113 DC Electronics and 804-151 Technical Math I (or concurrent) or 804-115 College Technical Math I (or concurrent)

605-118 Digital Electronics 3
 Study practical digital electronics including basic logic components such as gates and inverters and the more complex logic devices such as multiplexers, demultiplexers, and analog/digital and digital/analog converters. Explore the basic concepts of microprocessors.

605-126 Industrial Systems 4
 Gain hands-on experience using automated control devices and systems, including thyristor characteristics and applications in phase control, concluding with DC motor control, using a commercial DC drive, programmable controller operation and programming, interfacing PLCs with material handling equipment, developing a controlling program per written specifications, and the programming and documentation of PLC programs using computers and various software packages.
 Prerequisites: 605-176 Electronic Devices I or 662-190 Electronic Circuits I

605-127 Elect Fabrication Techniques 2
 Build some of the electronic fabrication and repair knowledge and skills a technician is expected to possess. Study the areas of wire preparation and termination, soldering and desoldering, wire bundling and routing, and printed circuit board inspection, cleaning, and repair.
 Prerequisites: 662-102 DC Circuit Analysis or 605-113 DC Electronics or 605-102 Introduction to Electronics

605-148 Data Acquisition 3
 Explore the use of a broad family of measurement applications in verifying design work and characterizing a process or a product. Study measurement systems for the sensing of a physical phenomenon and for tracking or recording data over a time interval or operating cycle. Learn how to plot, chart, display, and report measurements.
 Prerequisites: 605-182 Microprocessors (or concurrent)

605-176 Electronic Devices I 3
 Build a knowledge base that includes the principles, concepts, and basic applications of semiconductors, diodes, Bipolar Junction Transistors (BJTs), BJT amplifiers, Field Effect Transistors (FETs), and FET amplifiers. Become familiar with troubleshooting practices, and use computer simulation software.
 Prerequisites: 605-114 AC Electronics (or concurrent)

605-177 Electronic Devices II 3
 Study the principles and basic applications of power amplifiers, amplifier frequency response, operational amplifiers, active filters, and oscillators. Become familiar with troubleshooting practices and use computer simulation software.
 Prerequisites: 605-176 Electronic Devices I

605-182 Microprocessors 3
 Study the programming and design of microcontroller-based systems. Learn how to program using assembly language programming. Use a computer to develop software that is cross-assembled and downloaded to the target system. Interface the microcontroller to the outside world, and explore topics such as serial/parallel communication and interrupts. Complete a project entailing both hardware and software.
 Prerequisites: 605-118 Digital Electronics

605-187 Electronic Data Communications 3
 Explore the fundamental principles of voice and data communications and the key terminology used in the communications environment. Examine networking concepts used in local and wide area networks from the telecommunication network perspective. Study the concepts of modulation and demodulation in terms of amplitude modulation, frequency modulation, and single-side band.
 Prerequisites: 605-118 Digital Electronics and 605-114 AC Electronics or 662-104 AC Circuit Analysis

606-153 Co-op Educ I-Ind 1
 Gain a meaningful occupational experience. Hone technical competencies and interpersonal relationships that are stressed in seminars.
 Prerequisites: Approval of Co-op Ed Office

801-195 Written Communication 3
 Study and practice the transfer of information, ideas, and experiences in written form through reports, letters, memoranda, and other documents. Gain proficiency in the areas of organization, clarity, accuracy, and directness.
 Prerequisites: COMPASS-Writing Skills or ACT-English or ASSET-Writing Skills or Accuplacer Sentence Skills or TABE Advanced Language or 831-103 Intro to College Writing or 851-771 Writing-Program Readiness

801-196 Oral/Interpersonal Comm 3
 Practice the necessary skills for effective speech delivery, listening, assertiveness, conflict resolution, teamwork, and general interpersonal communication.

804-115 College Technical Math 1 5
 Topics include: solving linear, quadratic, and rational equations; graphing; formula rearrangement; solving systems of equations; percent; proportions; measurement systems; computational geometry; right and oblique triangle trigonometry; trigonometric functions on the unit circle; and operations on polynomials. Emphasis will be on the application of skills to technical problems. This course is the equivalent of successful completion of College Technical Mathematics 1A and College Technical Mathematics 1B.

804-116 College Technical Math 2 4
 Topics include: vectors; trigonometric functions and their graphs; identities; exponential and logarithmic functions and equations; radical equations; equations with rational exponents; dimension of a circle; velocity; sine and cosine graphs; complex numbers in polar and rectangular form; trigonometric equations; conic sections; and analysis of statistical data. Emphasis will be on the application of skills to technical problems.
 Prerequisites: 804-115 College Technical Math 1 or 804-151 Technical Math I or Associate Dean approval

806-143 College Physics 1 3
 Learn the applications and theory of basic physics principles. Emphasis is on problem solving, laboratory investigation and applications. Topics include laboratory safety, unit conversions and analysis, kinematics, dynamics, work, energy, power, temperature and heat.
 Prerequisites: 804-115 College Technical Math 1 (or concurrent) or 804-151 Technical Math I or 804-153 Unified Algebra & Trigonometry or 804-154 Technical Calculus I or 804-198 Calculus 1 (or concurrent)

806-144 College Physics 2 3
 Learn the applications and theory of basic physics principles. Emphasis is on problem solving, laboratory investigation and applications. Topics include: periodic motion, wave motion, optics, magnetism, static electricity, DC electricity, AC electricity and electromagnetism.
 Prerequisites: 806-143 College Physics 1 or 806-180 Technical Physics I

809-195 Economics 3
 Discuss the major institutions and principles that underlie the contemporary American economic system, and consider topics such as the free enterprise system, supply and demand, circular flow, government involvement, the Federal Reserve System, economic growth and development, the effects of international trade, comparative economic systems, and global economics.
 Prerequisites: COMPASS-Reading Skills or 858-775 Reading - Program Readiness or 838-105 Intro Reading & Study Skills or TABE Advanced Reading or Accuplacer Reading Comprehension or College Proficiency - Reading or Grandfathered Rdg Requirement or ACT-Reading

809-196 Introduction to Sociology 3
 Learn the basic concepts of sociology: culture, socialization, social stratification, multiculturalism, and the five institutions, including family, government, economics, religion, and education. Other topics include demography, deviance, technology, environment, social issues, social change, social organization, and workplace issues.
 Prerequisites: COMPASS-Reading Skills or 858-775 Reading - Program Readiness or 838-105 Intro Reading & Study Skills or TABE Advanced Reading or Accuplacer Reading Comprehension or College Proficiency - Reading or Grandfathered Rdg Requirement or ACT-Reading

809-199 Psychology of Human Relations 3
 Examine the principles of interaction as applied to human relations at home and on the job. Explore topics such, as self concept personality development, learning, motivation, emotions, stress, human relations processes, and special relationships.
 Prerequisites: COMPASS-Reading Skills or 858-775 Reading - Program Readiness or 838-105 Intro Reading & Study Skills or TABE Advanced Reading or Accuplacer Reading Comprehension or College Proficiency - Reading or Grandfathered Rdg Requirement or ACT-Reading

Elective Options
 605-140 Telecommunication Fundamentals
 605-149 Electronic Systems
 631-183 Comp Hdwe Diagnostics
 808-104 Indiv Reading Workshop I
 808-105 Indiv Reading Workshop II

Any course at the associate degree level will meet the elective requirement.