

MCC Electronics

High Tech. Hands On.

Get started in Electronics!



Our Electronics degrees prepare you for a career as an Electronics Technician (“ET”). ET’s build, program, configure, calibrate, repair, and maintain complex scientific and industrial electronic systems. They work in almost all industries, including the medical, defense, robotics, communications, power, and semiconductor industries. We offer you three ways to get started ...

Electronics Technology Certificate of Completion CCL ET

The *FASTEST* way to earn an Electronics credential. If you want to get started in your career as quickly as possible, this certificate will help you to get your foot in the door.

And if you later decide to pursue a full Associates Degree in Electronics, all the courses in this degree will apply to that degree also.

FIRST SEMESTER (Fall)

ELE111 Circuit Analysis I

ELE131 Digital Logic & Circuits

ELE181 Computer Programming for Tech

SECOND SEMESTER (Spring)

ELE112 Circuit Analysis II

ELE121 Solid-State Devices & Ckts I

ELE241 Microprocessor Concepts

GTC106 Industrial Safety



CHILD CARE
MCC
ON CAMPUS!

These requirements are unofficial and subject to change.

See our class schedule and up-to-date curriculum & official degree requirements here:

Electronics Technology Associate of Applied Science AAS ET

Get the most comprehensive set of marketable and industry-valued Electronics skills possible. This degree includes as much hands-on Electronics as we could fit into a two-year degree. With this degree, you will be well prepared for a career as an Electronics Technician in a wide variety of industries.

FIRST SEMESTER (Fall)

MAT12+ Intermediate Algebra

ELE111 Circuit Analysis I

ELE131 Digital Logic & Circuits

ELE181 Computer Programming for Tech

SECOND SEMESTER (Spring)

ELE112 Circuit Analysis II

ELE121 Solid-State Devices & Ckts I

ELE241 Microprocessor Concepts

GTC106 Industrial Safety

SUMMER

ENG101 First Year Composition

SB Social-Behavioral Sciences

HU Humanities, Fine Arts, & Design

THIRD SEMESTER (Fall)

COM100 Intro to Human Communication

ELE222 Solid-State Devices & Ckts II

ELE243 Microprocessor Applications

ELE261 Communication Systems I

AIT123 J-STD Soldering Certification

FOURTH SEMESTER (Spring)

ENG102 First Year Composition

ELE251 Electronic Measurements

ELE263 Communication Systems I

CRE101 Critical & Evaluative Reading I

Electronics Engineering Technology Associate of Applied Science AAS EET

Thinking you may eventually want to pursue a 4-year bachelor’s degree in Electrical Engineering? If so, this is the degree for you. This degree contains additional math & science to help prepare you for your B.S.E.E., while also providing you with the Electronics background needed to become an Electronics Technician.

FIRST SEMESTER (Fall)

MAT15+ College Algebra/Functions

ELE111 Circuit Analysis I

ELE131 Digital Logic & Circuits

ELE181 Computer Programming for Tech

SECOND SEMESTER (Spring)

ELE112 Circuit Analysis II

ELE121 Solid-State Devices & Ckts I

ELE241 Microprocessor Concepts

MAT182 Plane Trigonometry

SUMMER

ENG101 First Year Composition

SB Social-Behavioral Sciences

HU Humanities, Fine Arts, & Design

THIRD SEMESTER (Fall)

COM100 Intro to Human Communication

ELE222 Solid-State Devices & Ckts II

ECE102 Engineering Analysis Tools

MAT220 Analytic Geometry & Calculus I

PHY111 General Physics I

FOURTH SEMESTER (Spring)

ENG102 First Year Composition

ECE103 Engineering Problem Solving

MAT231 Calculus with Analytic Geom. II

PHY112 General Physics II

CRE101 Critical & Evaluative Reading I

www.mesacc.edu/e/e

DEGREE INFORMATION

The sequence of the courses in the above degrees are suggestions only. You can take the courses in any order as long as the prerequisites for each course are met. However, if you are pursuing an Electronics degree, it is very important that you:

- Take ELE111 as early as possible; this course is a prerequisite to several other ELE courses in the degree.
- Take the ELE classes *first* whenever possible. There is a four-semester sequence of ELE classes in the ET degree, and many of the second-year classes are offered in the Fall or Spring only, so it is important to complete the prerequisite classes early in your program.

These degrees all share a common core of electronics courses. The core courses that are in all three Electronics programs are: ELE111, ELE131, ELE181, ELE112, ELE121, ELE241. These courses are shown in **bold type** in the list on Page 1 above. If you are unsure which Electronics degree or certificate to pursue, you can take any or all of these courses and be confident that they will count towards any of our Electronics degrees.

HOW TO REGISTER FOR ELECTRONICS

Enroll

If you have not taken courses at MCC before, point your browser to www.mesacc.edu/ele and click the **Become a Student** button. A detailed list of enrollment steps will come up. At some point during the process, you may be asked to select a “degree code” or an “academic plan code”. If so, here are the codes for the Electronics degrees:

CCL ET:	5591
AAS ET:	3220
AAS EET:	3224

If you have completed an algebra class at another school, or if you are an experienced professional, you do not need to take any placement exams.

If you run into any difficulties, do not hesitate to email or telephone any of the Electronics staff listed on this page. We are here to help you through this (sometimes) challenging process.

Transfer Credit

If you are transferring here from another school, have your official transcript sent as well -- the Admissions Office can evaluate it to determine which courses transfer to MCC. The evaluation process can sometimes take months, so do this as soon as possible.

Prior Electronics classes or work experience?

If you have taken Electronics classes at another school, or if you already have significant work experience in the Electronics industry, you may be able to skip one or more Electronics classes. If this applies to you, email the Electronics Program Director (listed below). He will be able to waive prerequisites and/or give special enrollment permission.

Our Class Schedule

Our class schedule for next semester is online at:

mesacc.edu/ele

Note that in addition to our online and our in-person classes, we also offer several classes in a hybrid format. These hybrid classes are primarily online, but which are supplemented with in-person scheduled lab sessions at which you can obtain help and use our lab facilities. These classes have “N/A” listed rather than specific days and times. This is because you have a choice of several different lab sessions to choose from. Look at the “Class Notes” beneath each class to see the available lab sessions for that class.

Advising

If you would like to speak to an Advisor for any reason, they are available in the MCC Advisement Office (Building 38) as well as in the Applied Sciences Department (Building TC-50). Any advisor or Electronics professor can help you with course selection. Electronics advisors and professors are listed below. If you need help locating anyone on this list, the Department office will be able to help you.

Joe Neglia, PE, MBA, Program Director
TC-420, (480) 461-7385,

jd.neglia@mesacc.edu

Rino Mazzucco, Electronics Instructor
TC-114, (480) 461-7307,

palmerino.mazzucco@mesacc.edu

James Traicoff, Electronics Lab Technician and
Adjunct Instructor: TC-415, (480) 461-7357,

james.traicoff@mesacc.edu

John Bramwell, Electronics Adjunct Instructor

john.bramwell@mesacc.edu

Richard Rice, Electronics Adjunct Instructor

richard.rice@mesacc.edu

Michael Childers, Electronics Adjunct Instructor

mike.childers@mesacc.edu

Jeffrey Ronay, Electronics Adjunct Instructor

jeffrey.ronay@mesacc.edu

In addition to the above listed Electronics faculty, an advisor/career navigator is also available to assist you:

Room TC-201, (480) 461-7216.

Department Office: Room TC-203, (480) 461- 7144.

COURSE DESCRIPTIONS

The technical courses required for the Electronics degrees are shown below. For general education and science courses, see the MCCC CD web site at <https://curriculum.maricopa.edu>

ELE100 Concepts of Electricity and Electronics

Principles of electric circuits, magnetism, and electromagnetism including basic motors and generators. Use of basic measuring instruments. Includes an overview of electronics in the modern world. (3 cr, 4 per)

ELE111 Circuit Analysis I

Direct current (DC) and alternating current (AC) electric circuits. Ohm's law, Kirchoff's laws, series, parallel and series-parallel circuits, fundamentals of inductance and capacitance, and the transient behavior of circuits containing resistance and capacitance or resistance and inductance. Coreq: MAT122, or equiv. (4 cr, 6 per)

ELE112 Circuit Analysis II (Spring only)

Alternating and direct current circuits containing resistance and reactance. Detailed coverage of AC/DC circuit parameters, including theorems, impedance matching, and resonance. Prereq: ELE111. (4 cr, 6 per)

ELE121 Solid-State Devices & Circuits I

Theory of operation of semiconductor diodes and transistors. Bipolar junction transistor biasing and load-line analysis. AC equivalent circuits applied to small signal amplifiers. Characteristics of large signal and power amplifiers. Prereq: ELE111 (4 cr, 6 per)

ELE131 Digital Logic & Circuits

Number systems, binary arithmetic, and Boolean algebra, combinatorial and sequential logic circuits, and memory elements. (3 cr, 6 per)

ELE181 Computer Programming for Technology

Elementary computer programming techniques. Hands-on computer usage. (3 cr, 5 per)

ELE222 Solid-State Devices & Circuits II (Fall only)

Theory and application of differential and operational amplifiers. Power supplies and regulators; special devices and circuits. Prereq: ELE121. (4 cr, 6 per)

ELE241 Microprocessor Concepts

Architecture of selected microprocessors. Presentation of machine and assembly language programming. Prereq: ELE131. (4 cr, 6 per)

ELE243 Microprocessor Applications (Fall only)

Presents the microprocessor in computing and control applications. System hardware and software used to control the microprocessor system to perform input/output operations. Prereq: ELE241. (3 cr, 5 per)

ELE245 Advanced Microprocessors & Systems

Microprocessors and systems, in the expanding Internet of Things. Legacy, current, and future wired and wireless interfaces and protocols. Connecting modern software environments to real-world electronic hardware. Prereq: A grade of C or better in (ELE131 and ELE181), or ELE241, or permission of instructor. (3 cr, 3 per)

ELE251 Electronic Measurements (Spring only)

Application and operation of common electronic and electrical test instruments including: oscilloscopes, analog and digital multimeters, digital counters and signal sources. Transducers, amplifiers, and filters, as they apply to instrumentation systems. Laboratory reports and documentation are emphasized. Prereq: ELE121. (3 cr, 5 per)

ELE261 Communication Systems (Fall only)

Communication systems. Amplitude modulation (AM), frequency modulation (FM), single-sideband (SSB), radio receivers, pulse systems, radiation, antennas and wave propagation. Prereq: ELE121 and ELE131. Coreq: ELE222 (4 cr, 6 per)



This course is taught in collaboration with the local Amateur Radio community and the MCC Amateur Radio Club station KM7CC.

ELE263 Digital Data Communications (Spring only)

Overview of modern telephone system. Telephone switching and modulation techniques. Familiarization with AM and FM circuits. Operation of asynchronous and synchronous modems. Prereq: ELE121 and ELE241. (4 cr, 6 per)

GTC106 Industrial Safety

Safety, health management, and accident prevention in industrial work environment. Role of OSHA act, materials handling, electrical safety, machine safety, first response to fire and medical emergencies, safety signs and color codes, recognition of safety and health hazards, accident prevention, and management's responsibilities. (2 cr, 3 per)

MAT12+ Intermediate Algebra

Analysis of rational, radical, quadratic and exponential equations, functions and applications; graphs of radical, quadratic and exponential functions; operations on polynomial, rational, and radical expressions. Note: you may take MAT120 (5 cr), 121 (4 cr.), or 122 (3 cr.). If you need a math review, you may take MAT126 (6 cr.) to fulfill this requirement.

MAT15+ College Algebra/Functions

Analysis and interpretation of the behavior and nature of functions including polynomial, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, using multiple methods including matrices, modeling and solving real world problems, and defining and illustrating sequences and series.

AIT123 J-STD Soldering Certification

This course will prepare the successful student to receive the "Certified IPC Specialist" (CIS) certification from The Institute for Interconnecting and Packaging Electronic Circuits (IPC) in "Requirements for Soldered Electrical and Electronic Assemblies" (IPC J-STD-001). Topics covered and skills to be demonstrated are: soldered wires and terminals, through hole connections, surface mount components, and inspection. Certification is verified by a certified IPC trainer (CIT). Prerequisites: Permission of Instructor.

FREQUENTLY ASKED QUESTIONS

What industry certifications can I earn? Aside from the ET and EET degrees, the most widely recognized industry credential is an amateur radio (“ham”) license. Most leaders in the electronics industry are hams. Placing a call sign on your resume will get you noticed, especially in smaller companies. Satellite communications occur regularly in our state-of-the-art ham radio station!



Our Electronics Technology AAS has been certified by the Federal Aviation Administration. This is the only two-year Electronics program in Arizona that has earned this certification. Electronics Technicians hired by the FAA support airport radars and landing systems at Sky Harbor airport in Phoenix and all around the country and the world.

Additionally, industry partnerships are occasionally set up. In past years, the MCC Electronics programs has part-

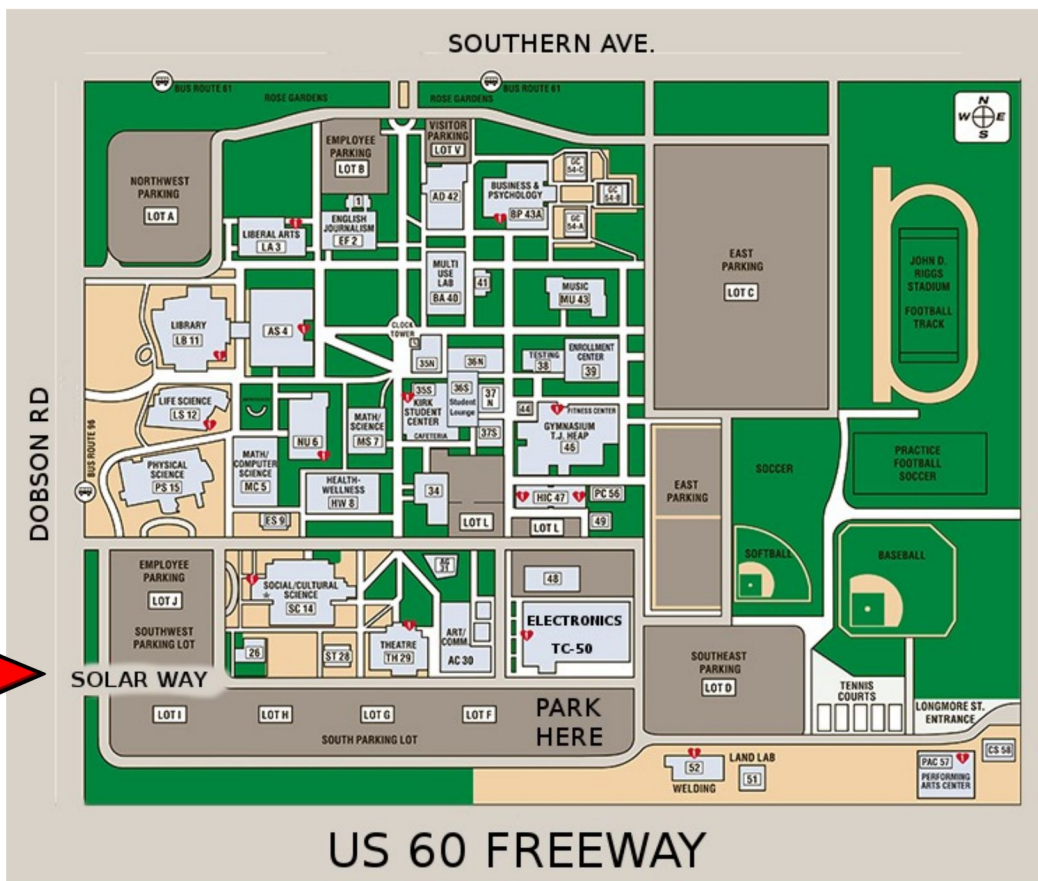
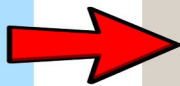
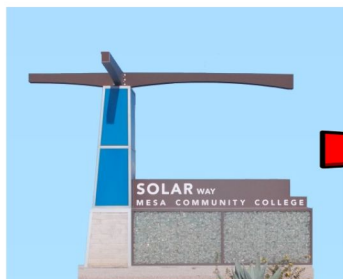
nered with the City of Scottsdale, SRP, Microchip Technology, and Arizona State University.

I'm working full-time! Can I still earn a degree? Some of our students can take only one course per semester, others take two courses per semester. There is no time limit on completing your degree; simply apply for graduation whenever you are close to completing all the required courses.

I haven't been in school in a long time. You are in good company. The vast majority of our students are working adults, with ages ranging from 18 to 75. The average age is 32.

How much does it cost? Tuition for Maricopa County residents is currently \$97 per credit hour, and most electronics courses are 4 credit hours. Additionally, there is a lab fee (about \$35 or so) in most electronics courses.

Where are you located? Just north of the U.S. 60 on Dobson Road in Mesa. From Dobson Rd, take the Solar Way entrance into campus, and proceed a few hundred yards, passing the Theatre and the large solar panel arrays. The electronics program is in building TC-50 which will be on your left. Park in the lot on the right.



MESA COMMUNITY COLLEGE

A MARICOPA COMMUNITY COLLEGE

The Maricopa County Community College District (MCCCD) is an EEO/AA institution and an equal opportunity employer of protected veterans and individuals with disabilities. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, age, or national origin. A lack of English language skills will not be a barrier to admission and participation in the career and technical education programs of the District. MCCCD does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs or activities. For Title IX/504 concerns, call the following number to reach the appointed coordinator: (480) 731-8499. For additional information, as well as a listing of all coordinators within the Maricopa College system, visit <http://www.maricopa.edu/non-discrimination>.



MARICOPA COMMUNITY COLLEGES