

Electronics Department Programs

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DISCOVER



SEATTLE COLLEGES
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Today's Agenda

- ✓ Credentials at North – snapshot view
- ✓ Electronics Department programs at North
- ✓ Describe “applied” instruction
- ✓ Length of programs
- ✓ Job Market – employers, job titles & wages



Snapshot – NSC Degrees & Certificates

➤ Bachelor's Degrees

Prepare for employment

- 5 Bachelor of Applied Science (BAS) degrees
- 1 Bachelor of Science (BS) degree

➤ Transfer Degrees

Prepare for transfer to a four-year school

- Associate of Arts (AA)
- Associate of Business (AB)
- Associate of Computer Science (AS)
- Associate of Science (AS) – 3 options based on your area of interest
- Associate of Fine Arts (AFA)

➤ Career Training Degrees & Certificates

Prepare for employment, some transfer options

- Associate of Applied Science (AAS)
- Associate of Applied Science – transfer (AAS-T)
- Certificate programs (short-term, 1 quarter to 1 year)

“College Credential”

Evidence of qualifications or specific skill competencies; degree and/or certificate.

70% of jobs in WA require specialized training beyond high school

Electronics Programs

Electronics in Society

Is electronics training relevant?

- Basic Needs: food, clothing, housing
- Communication
- Education
- Entertainment
- Health & Wellness
- Manufacturing
- Safety & Security
- Transportation & Logistics

Electronic components & devices play a core role in our daily lives, in many ways

Keep in mind...

- Changing technology impacts how we live, how we work and the tasks we perform in existing and emergent occupations.
- Robots, artificial intelligence and related technologies are capable of doing some of the work traditionally done by humans with lower cost and greater ease, safety and efficiency.
- Interesting quiz on automation in the workplace: <https://features.marketplace.org/robotproof/>

Electronics Program Options

Five (5) degree pathways + certificates “embedded” in degrees

| AAS & AAS-T Degrees | Certificates |
|---|--|
| Electronics Technology AAS | Electronics Technology Aviation Electronics I: Wire Assembly Aviation Electronics II: Electronics Technician |
| Electronics Engineering Technology AAS-T | |
| Healthcare Technology Management/ Biomedical Equipment Technology AAS | |
| Industrial Power & Control AAS | Industrial Power & Control |
| Mechatronics AAS | Industrial Automation & Electronic Controls |
| IT Controlled Electronics AAS* | IT Controlled Electronic Systems* |
| * = IT Department programs requiring several electronics courses | |

Key Program Features

1. “Applied” technician training programs

- Lecture + Lab (hands-on application of learning)
- Theoretical foundation + technical skills practiced with a variety of equipment.
- Math contextualized for electronics.
- Students hired as teaching assistants.

2. Workforce focus with industry connection

- Programs designed to prepare you for the workplace, built in cooperation with industry
- Instructors with practical work experience.
- Internship opportunity:
 - Work-based learning for academic credit
 - Required for one degree, optional for others

3. Opportunity to pivot – between academic programs and industries

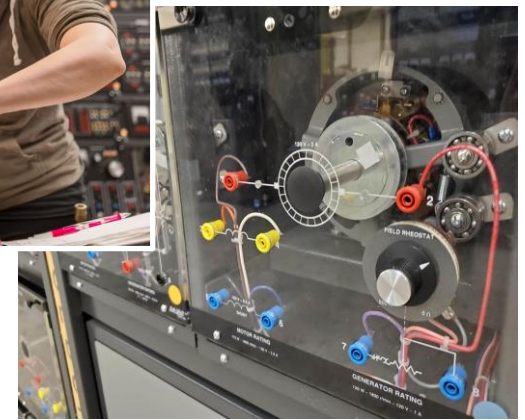
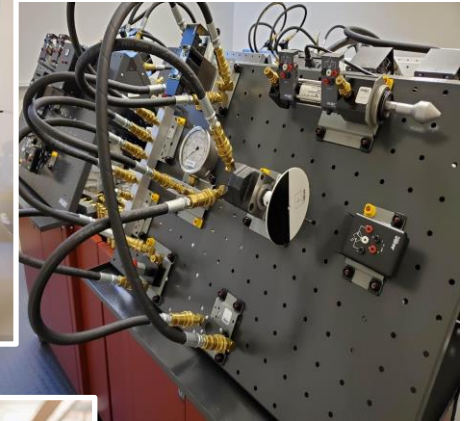
- Able to switch between degree options as you refine your interests.
- Same core electronics courses for multiple degrees
- Skills relevant across multiple industries.

4. Diverse learning community

- Excellent peer-learning opportunity.

Photos – Electronics Labs

- Electronics courses take place in the ED building on the NSC campus.
- Typically, classes begin with lecture, then students move into one of 4 electronics laboratory spaces to apply their learning.
- A new 5th lab space, in the same building, is currently being outfitted.



Program Length/Schedule

➤ **How long to complete with fulltime attendance?**

- AAS degrees: 7-8 quarters
- Certificates: 3-5 quarters
- Attend fulltime or parttime; start any quarter
- If a foundational math course is needed, this may add a quarter

➤ **How do credits work?**

- Most courses are 5 credits. Typical fulltime students take 15 credits (fall, winter & spring)
- Students often take fewer classes in summer, as it is a short 8-week quarter
- AAS degrees range from 97-111 credits; certificates range from 30-68 credits

➤ **When do classes meet?**

- Most common class meeting schedule is twice a week on Mon/Wed or Tues/Thurs
- A few “hybrid” courses meet only once a week
- No Friday classes, with one exception: 1-credit soldering (EET 106) has only 4 class meetings
- Hours vary from quarter to quarter; typical course hours: 11am-2:20pm, 2:30-5:20pm, and 6-9:20pm

Entry Requirements

➤ English

- Placement into **ENGL 098** or above is required to get started with electronics courses.
- All electronics programs will require completion of ENGL& 101 in order to graduate.

➤ ESL

- Placement into **ESL 5A** as assessed by the ESL Department at North.
- ESL leveling systems are not the same from one college to the next.

➤ MATH

- Placement into **MATH 084 Algebra I** or above.
- See the college's Testing webpage for instructions to take the ALEKS math placement test.
- Electronics students may, instead, take a pre-test designed for electronics course placement (see Navigator, Julie)
- Students who do not meet math placement requirement are encouraged to take MATH 081. After completing MATH 081, they can enroll in the common beginning electronics courses (EET 109 & EET 161).

Keep in mind...

- All students should have basic comfort with computers. Students needing foundational support with computer use are encouraged to take BUS 169 to learn basics of Office for Windows.
- The purpose of placement requirements is to make sure we are setting students up for success.

Electronics Department Courses

- ✓ DC & AC electronics
- ✓ math (contextualized for electronics)
- ✓ robotics
- ✓ basic soldering
- ✓ fiber optics
- ✓ programmable logic controllers (PLCs)
- ✓ hydraulics & pneumatics
- ✓ aviation electronics (avionics)
- ✓ IT essentials
- ✓ semiconductors/solid state
- ✓ digital electronics
- ✓ energy generation & conversion
- ✓ motor controls & drives
- ✓ biomedical equipment

Keep in mind...

- Heavy emphasis is placed on applying what you are learning in our electronics labs
- All AAS degrees and long certificates include general education course requirements, such as English 101 and an approved Human Relations elective

Internships

An internship for academic credit is built into two of our degrees:

- **Healthcare Technology Management/Biomedical Equipment Technology AAS**
 - Hospital, medical facility or medical equipment manufacturer internship is required for this degree.
 - Completed in the student's final program quarter.

- **Mechatronics AAS**
 - Optional, students may choose to complete two approved electronics courses in place of an internship.
 - Boeing internship is a highly regarded, popular internship target for Mechatronics students

Keep in mind...

- Any student may choose to complete an internship, even if it is not a requirement of their degree program.
- Students apply for their own internships; support is available.
- To receive credit for an internship, students must enroll in an electronics internship course.
- Student completing a degree with a technical elective requirement may complete an internship to fulfill that requirement.

Employers & Job Titles

Electronics program students & graduates go to work in many sectors of the workplace.

- Amazon
- Boeing
- Blue Origin
- BD Science
- Crane Aerospace & Electronics
- Collins Aerospace
- Directed Machines
- Fred Hutchinson Cancer Research Center
- Helion Energy
- Honeywell
- JLL
- Korry Electronics
- Outdoor Research
- Pacific Science Center
- Providence Regional Medical Center
- Stryker
- Synrad
- Systima Technologies
- UW Medical Center
- Seattle Children's Hospital
- Seattle Surgical Repair
- Swedish Medical Center
- Taylor Farms
- Thermetrics

*Job titles commonly include the term “**technician**”*

Job Titles

- Automation Technician
- Avionics Technician
- Biomedical Equipment (Biomed) Technician
- Calibration Technician
- Control Systems Technician
- Electronics Assembler
- Electronics Technician
- Electronics Engineering Technician
- Electro-Mechanical Technician
- Field Service Technician
- Final Test Technician
- Industrial Maintenance Technician
- Instrumentation Technician
- Mechatronics Technician
- Robotics Technician

Electronics Technology AAS

Overview

Provides opportunities for students interested in the operation, maintenance and repair of a wide array of electronics-based equipment. Emphasizes a hands-on approach, use of test equipment and solid base of information concerning computer hardware and software for technical applications as well as avionics.

What differentiates this degree pathway from other Electronics Department options?

- Aviation Electronics course
- Advanced Digital Electronics course
- Technical Electives – two courses (8-10 credits)

Program Options

Aviation Electronics I: Wire Assembly Certificate (30 credits)

[2 or 3 quarters w/full-time attendance]

Aviation Electronics II: Electronics Technician Certificate (63 credits)

[5 quarters w/full-time attendance]

Electronics Technology Certificate (53 credits)

[4 quarters w/full-time attendance]

Electronics Technology AAS (111 credits)

[8 quarters w/full-time attendance]

Electronics Engineering Technology AAS - T

Overview

Program combines practical applied electronics courses with calculus-based math and physics. This is a transfer program intended for students who wish to apply to Central Washington University's Electronics Engineering Technology Bachelor of Science (BS) program. It's also an option for students who want hands-on learning paired with transferrable math and physics courses.

What differentiates this degree pathway from other Electronics Department options?

- Engineering Physics courses
- Calculus courses
- Option to apply to CWU as transfer student to complete bachelor's degree or enter workforce

Program Options

Electronics Engineering Technology AAS-T (103-107 credits)

[8 quarters w/full-time attendance]

Although several of the required courses for this degree are transferrable to other colleges and universities, this program is specifically designed for transfer to **CWU's Electronics Engineering Technology BS** program only.

Healthcare Technology Management/ Biomedical Equipment Technology AAS

Overview

Provides specialized training needed to install, calibrate, service, repair, and modify patient monitoring and diagnostic equipment. Commonly referred to as our “biomed” degree. Graduates often work in medical facilities in the *Biomedical Equipment Technician (BMET)* role.

What differentiates this degree pathway from other Electronics Department options?

- Chemistry course
- Medical Terminology course
- Project Management course
- Internship requirement

Program Options

Healthcare Technology Management/
Biomedical Equipment Technology AAS (97 credits)

[7 quarters w/full-time attendance]

Final quarter internship in a hospital clinical engineering department or with a medical equipment manufacturer provides high-value experience in the workplace.

Mechatronics AAS

Overview

A unique program offered in partnership between two colleges – [North Seattle College & Shoreline Community College](#). Certificates completed at both colleges combine to form the Mechatronics degree. Students apply for their degree from only one of the two colleges. This program capitalizes on strengths at both colleges to provide interdisciplinary training in electronics, machine-maintenance, control systems, robotics and more.

What differentiates this degree pathway from other Electronics Department options?

- Requires attendance at two colleges (not generally in the same quarter), minimum of 29 credits must be completed at Shoreline.
- Internship option – may select two approved electronics courses (10 credits) as an alternative to completing an internship

Program Options

Industrial Automation & Electronic Controls Certificate (58-61 credits)

[4 quarters w/full-time attendance]

Industrial Maintenance Robotics & Manufacturing Certificate (45-48 credits)

[3-4 quarters w/full-time attendance]

This certificate is awarded by Shoreline CC

Mechatronics AAS (96-105 credits)

[7-8 quarters w/full-time attendance]

Industrial Power & Control AAS

Overview

Prepares students for employment with organizations that manufacture, service, sell, design and support electrical and electronic systems that control machinery, automation and processes. Emphasizes the control of large electrical currents and electromechanical systems through solid state, digital and microprocessor devices. Covers principles of machines used in electrical generation and conversion to mechanical energy as well as control and drive devices.

What differentiates this degree pathway from other Electronics Department options?

- Industrial Motor Controls & Drives course
- Energy Generation & Conversion course

Program Options

Industrial Power & Control Certificate (68 credits)

[5 quarters w/full-time attendance]

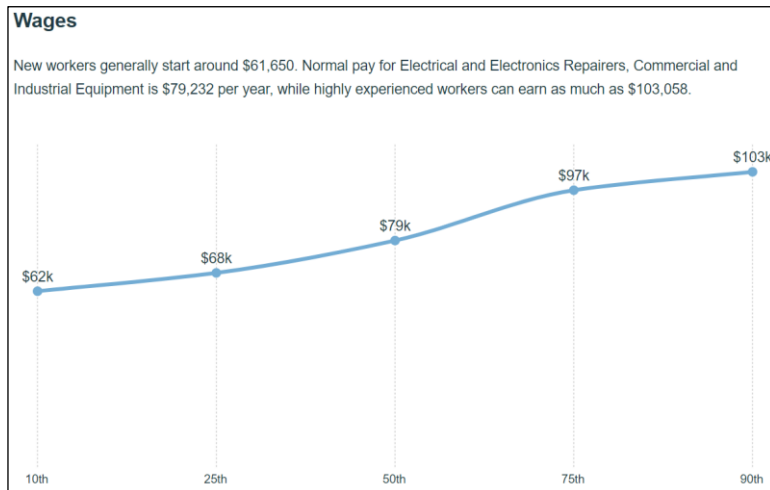
Industrial Power & Control AAS (101 credits)

[7 quarters w/full-time attendance]

Employment Outlook

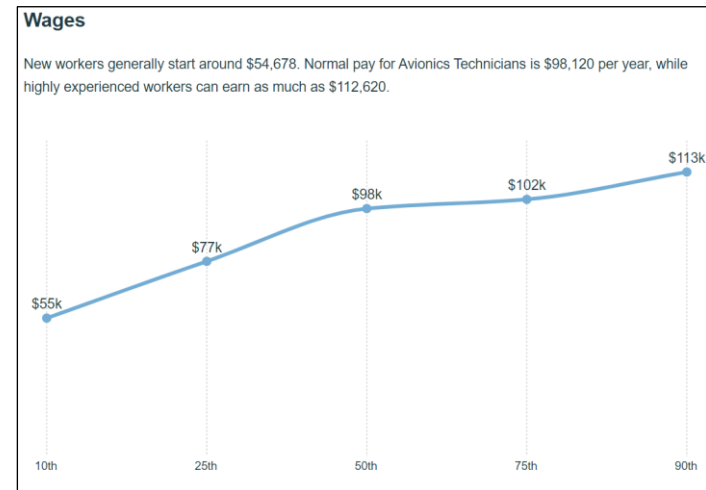
Electrical and Electronics Repairers, Commercial and Industrial Equipment

Mean salary: \$38.09/hour = \$79,232/year



Avionics Technician

Mean salary: \$47.17/hour = \$98,120/year



Starting Wages for North Electronics Graduates

- AAS graduates → \$29/hour (approx. \$60,000/yr)
- 1-yr certificate graduates → \$24/hr (approx. \$50,000/yr)

Students must be able to talk about their skills.

Workforce Development Council wage data for Seattle-King County:

<https://seakingwdc.lightcastcc.com/browse-careers?region=Seattle,%20WA&radius=5%20miles> -

“Browse Careers” to search by Job Title

Frequently Asked Questions

Question: Is there a class I can take to figure out if an Electronics program is right for me?

Answer: *EET 105 Intro to Technology* is a 2-credit course offered fall & spring each year. Students explore electronics-related occupations and learn from faculty and industry guests about various electronics fields of specialization. *EET 161 DC Principles of Electronics* will provide practical hands-on, lab exposure to help you gauge your level of interest in the field of electronics.

Question: Can I change my mind and shift to a different electronics program?

Answer: Yes, due to the overlap in curriculum required between programs, it's fairly easy for students to make a change, sometimes without any time loss in completing their degree.

Question: How will I know which classes to take and when?

Answer: The Electronics Navigator (or an Academic Advisor) will help you build an academic plan to complete required courses based on when courses are offered and required course sequence. Your academic plan is an important tool to help you avoid surprises and ensure efficient program completion. An approved plan is required by most funding sources as it identifies which courses will be funded.

Question: Do students often also balance work with school?

Answer: Most students work while attending school. Potential to adapt your work schedule, on a quarterly basis, is ideal.

Question: How many classes or credits is Fulltime? Parttime?

Answer: Fulltime is 12-20 credits for all workforce programs. Parttime means fewer than 12 credits. More than 20 credits in a quarter is considered a credit overload and requires approval from the Advising Department.

Question: Will my degree transfer to another college or university?

Answer: Our Electronics Dept. programs are specifically designed as workforce preparation. They are not transfer programs. The exception is the **Electronics Engineering Technology AAS-T** (details on previous slide). General education courses with the "&" (ex: ENGL& 101) are transferable are also transferrable.

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