Electronics Pathways at North Seattle College

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DISCOVER

SEATTLE COLLEGES
North · Central · South

Today's Agenda

1. Overview of NSC credentials (brief)
2. Electronics Department program options
3. "Applied" instruction explained
4. Length of programs - certificates & degrees
5. Job Market - skill demand, employers & pay
6. Contact to learn more

NORTH SEATTLE COLLEGE
PACIFIC TREE FROGS

College Credentials

"Credential": Official documented verification of qualifications or specific skill competencies.

Bachelor of Applied Science (BAS) degrees:

- Application Development
- Early Childhood Education
- Accounting, with International Accounting
- International Business
- Residential and Commercial Property Management

70 % of jobs in WA requiring specialized training beyond high school?

Transfer degrees: prepare for a program at a four-year school

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

Associate of Applied Science (AAS) degrees: prepare for employment

Professional certificates: short-term programs, typically 6 month-1 yr

Electronics programs

Data sources: (1) Georgetown University Center on Education and the Workforce; and (2) *Washington's Skilled and Educated Workforce* – a report, published every two years to examine postsecondary workforce education programs and labor need projections

Prof-Tech Programs @ North

Workforce Instruction Division: Professional-Technical Programs

AAS & AAS-T Degrees:

- Accounting
- Business
- Early Childhood Education
- **Electronics**
- Engineering Graphics & Design
- Fire Science – EMT
- Information Technology
- Pharmacy Technician
- Real Estate
- Watch Technology

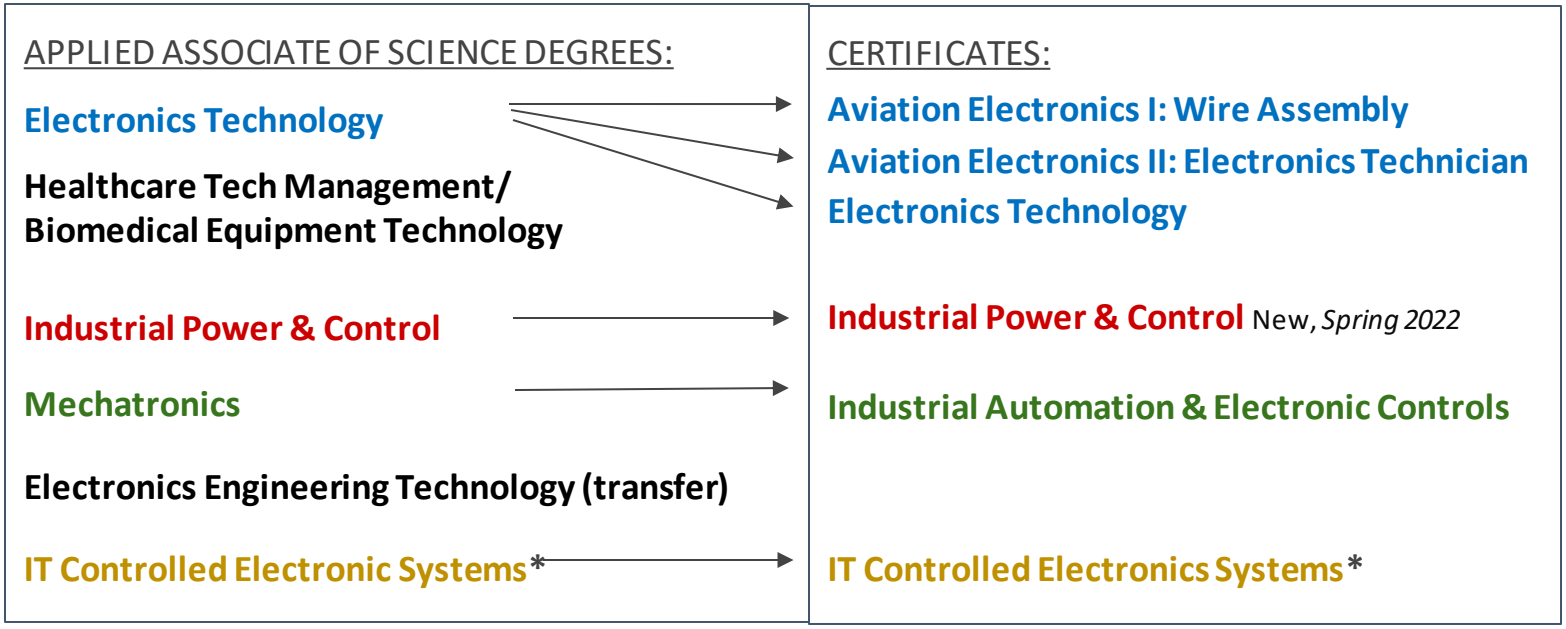
BAS Degrees:

- Application Development
- Early Childhood Education
- Accounting, with International Accounting
- International Business
- Residential and Commercial Property Management

Electronics Programs

Degrees & Certificates

Five (5) Electronics Degree Pathways + Certificates "embedded" in degrees



Like the rungs of a ladder...

Embedded certificates mean that students can complete a short-term certificate (1st rung of the ladder). Then, continue on to complete a longer-term certificate (2nd rung) and an associate degree (3rd rung).

* = *An IT Dept program requiring several electronics courses*

Electronics in our lives

Is electronics training relevant?

- **Daily Routines** - switch on/off light, wake up at desired time
- **Communication & Entertainment** – smartphones, cameras, gaming consoles, screens
- **Food** – grow, harvest, prepare, store
- **Clothing** – materials processing, fabrication, cleaning
- **Housing** – raw materials, construction equipment, tools, design
- **Medicine** – biomedical equipment, pharmaceuticals, robotic surgery assist
- **Transportation** – of people & products ("logistics"), space travel, drone technology

Electronic devices are an important part of our day-to-day life.

+

We use electronics and technologies where robots and artificial intelligence are capable of doing human work with more ease and efficiency.

Program Features

"Applied" technician training programs

- Combine lecture & hands-on application of learning to launch or advance careers
- Gain practical knowledge of theory as well as technical skills practiced with a variety of equipment in labs.
- Math contextualized for electronics.

Workforce focus with industry connection

- Programs designed to prepare you for the workplace, developed in cooperation with industry
- Instructors with practical work experience.

Opportunity to pivot – between academic programs and industries

- Move between electronics pathways as you refine your interests with little loss of time.
- Program options share many of same core electronics course requirements.
- Skills relevant across multiple industries.

Internship opportunity

- Work-based learning for academic credit is required with for some degrees, optional for others.
- Frequently hire our students as teaching and lab assistants. This is employment experience!

Diverse learning community

- Excellent peer-learning opportunity. Student population includes Running Start participants, first job seekers, new career/"retraining" students, incumbent workers "skilling up", hobbyists, engineers, students from around the globe.

Internships

Is there opportunity to complete an internship?

A "for-credit" internship is built into two of our degree pathways:

- **Healthcare Technology Management/Biomedical Equipment Technology AAS**
  A hospital, medical facility or medical equipment manufacturer internship is required, completed in the students final program quarter .

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

Students 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.

Program Length/Scheduling

How long does it take to complete a degree?

Credits:

- Most courses are 5 credits. Full-time students take 3 classes (15 credits) - Fall, Winter & Spring.
- Many students take fewer classes Summer Quarter, as this is a shorter, 8-week quarter.

Program Completion Pace w/full-time attendance**:**

- 7-8 quarters for AAS degrees
- 2-5 quarters for certificates

What's a typical schedule?

Class meeting schedule:

- Twice a week on Mon & Wed or Tues & Thurs is most common.
- Some "hybrid" classes meet once a week with expectation of work outside of class that is equivalent to another class meeting.
- No classes on Fridays. *A 1-credit soldering class is the only exception*

Hours:

- Typical electronics class hours: 11am-2:20pm, 2:30pm-5:20pm, and 6pm-9:20pm

Will my degree transfer to another college or university?

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

What do you learn?

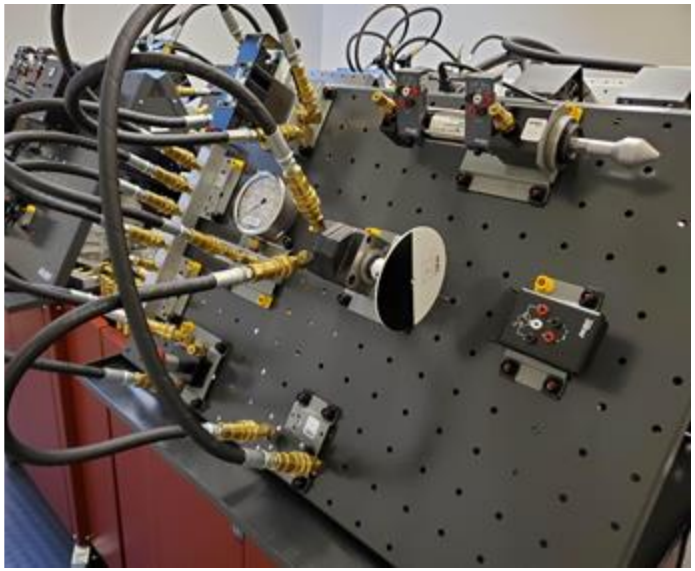
Electronics Department (EET) Courses

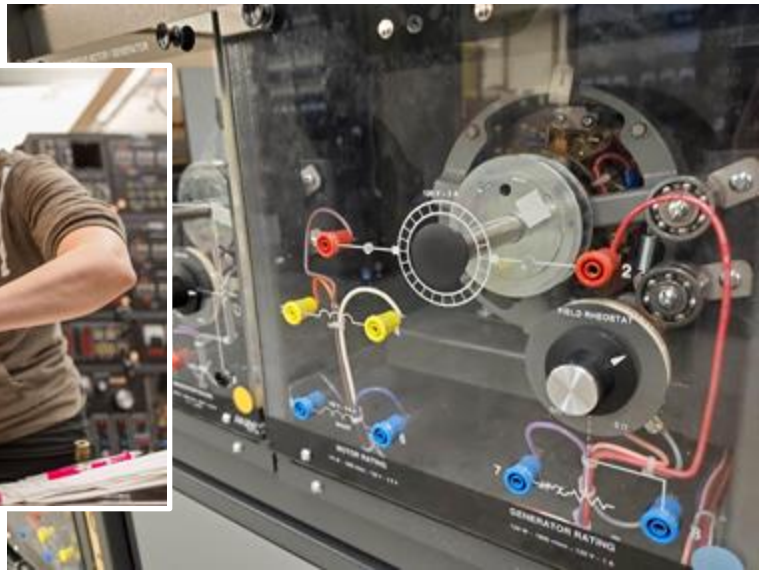
- DC & AC Electronics
- Math (contextualized for electronics)
- Robotics
- Physics (practical knowledge for tech field)
- Basic Soldering
- Fiber Optics
- Programmable Logic Controllers (PLCs)
- Hydraulics & Pneumatics
- Aviation Electronics
- IT Essentials
- Semiconductors/Solid State
- Digital Electronics
- Energy Generation & Conversion
- Motor Controls & Drives
- Metrology
- Biomedical Equipment

Practical lecture-lab model of instruction

Our programs place heavy emphasis on applying what you are learning in our electronics labs

Photos – Labs at North





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.

Program Options

Short-term Certificate

Aviation Electronics I (30 credits) - ***2 or 3 quarters***

Long-term Certificates

Aviation Electronics II (63 credits) - ***5 quarters***

Electronics Technology (53 credits) - ***4 quarters***

Shortened 53-credit Electronics Certificate effective Summer 2022

Associate Degree

Electronics Technology AAS (111 credits) - ***8 quarters***

What differentiates this degree pathway from other Electronics Department options?

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

Electronics Engineering Technology AAS-T

Overview

Program emphasizes calculus-based math and physics. This is a transfer program intended for those wishing to transfer to the Electronics Engineering Technology Bachelor of Applied Science (BAS) program offered at Central Washington University.

Program Options

Associate degree

Electronics Engineering Technology AAS-T (103-107 credits) – *8 quarters*

Students intending to enter the workforce and potentially continue their education toward an Electronics Engineering Technology bachelor's degree may consider this option.

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 BAS degree or enter workforce

Healthcare Technology Management/ Biomedical Equipment Technology AAS

Overview

Provides specialized training needed to install, calibrate, service, repair, and modify patient monitoring and diagnostic equipment. Degree completers most commonly move into "biomed" positions.

Program Options

Associate degree

Healthcare Technology Management/Biomedical Equipment Technology AAS (97 credits) – ***7 quarters***

A final quarter internship in a hospital clinical engineering department or with a medical equipment manufacturer provides highly valued experience in the workplace.

What differentiates this degree pathway from other Electronics Department options?

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

HTM/Biomed AAS Video link: https://bit.ly/3mMTgr3

Mechatronics AAS

Overview

A "shared-degree" program offered in partnership between two colleges – **North Seattle College & Shoreline Community College**. Students complete certificates at both colleges which "stack" to form the Mechatronics degree. A unique arrangement that capitalizes on the strengths of programs at both colleges to provide this interdisciplinary program.

Program Options

Long-term Certificate

Industrial Automation & Electronic Controls Certificate (58-61 credits) - ***4 quarters***
Industrial Maintenance Robotics & Manufacturing Certificate *(48 credits)* - ***3 quarters***

Complete this certificate @ Shoreline

Associate Degree

Mechatronics AAS (96-105 credits) - ***7 quarters***

What differentiates this degree pathway from other Electronics Department options?

- Requires attendance at two colleges (not generally in the same quarter)
- "Cross-training", **electronics-focus at North** & **machine maintenance-focus at Shoreline**
- Internship option – may select two approved electronics courses (10 credits) as an alternative to completing an internship

Mechatronics Video Link: https://www.youtube.com/watch?v=Ziql5VbYojg

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.

Program Options

Long-term Certificate
Industrial Power & Control Certificate (68 credits) - ***5 quarters***

Associate Degree
Industrial Power & Control AAS (101 credits) - ***7 quarters***

What differentiates this degree pathway from other Electronics Department options?

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

We do not offer an "electrician" training program. This program tends to be of particular interest to students pursuing electrical apprenticeship.

Employment Outlook

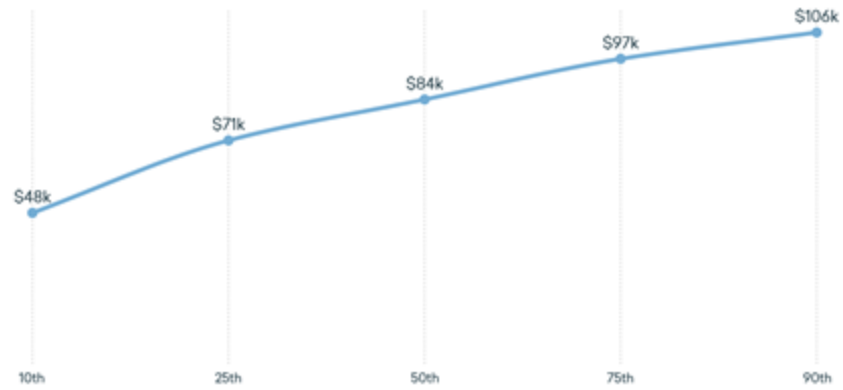
Wages in the Seattle-King County area

Electronics Department AAS graduates *starting* pay range:
$24-28/hour = approximately $50,000-58,000+/year

Electrical and Electronics Repairers, Commercial and Industrial Equipment
Mean salary: $40.60/hour = $84,439/year

Wages

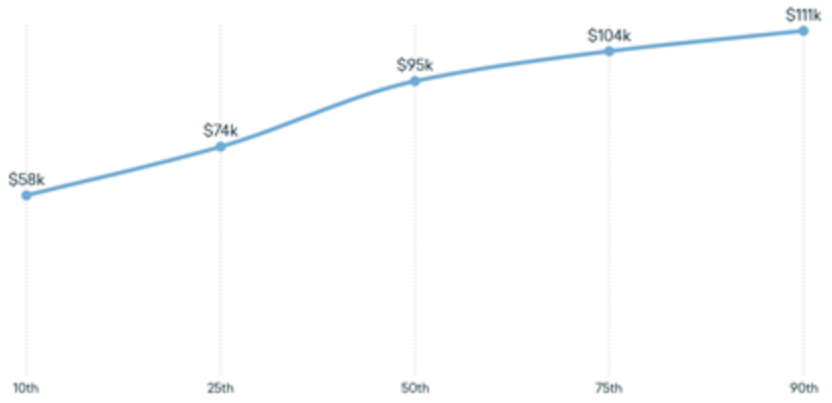
New workers generally start around $48,495. Normal pay for Electrical and Electronics Repairers, Commercial and Industrial Equipment is $84,439 per year, while highly experienced workers can earn as much as $105,682.



Avionics Technician
Mean salary: $45.46/hour = $94,553/year

Wages

New workers generally start around $57,928. Normal pay for Avionics Technicians is $94,553 per year, while highly experienced workers can earn as much as $110,672.



Local wages data: https://seakingwdc.emsicc.com/?radius=5%20miles&region=Seattle%2C%20WA
"Browse career" to search by job title

Employers

Where do our students & graduates work?

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

Paying for College

Seattle Promise

What is it?

Tuition-free attendance – for 2 years (or up to 90 credits), whichever comes first, as well as individualized guidance and support for SPS high school graduates.

Who is eligible?

SPS graduates who apply during their senior year, regardless of income, GPA, country of birth.

When do I apply?

Deadline: A specific deadline in Feb or Mar is set each year for current SPS seniors.

Which college campus can I attend?

Choose from three campuses - North, Central or South

Why should I apply?

Small class size, access to instructors, specialized training, save money while building solid foundation for the workplace or for continued education.

Who do I talk with to learn more?

Contact your Seattle Promise Outreach Specialist: https://www.seattlecolleges.edu/promise/contact

The Future of Work

A fascinating study –

Description

Analysis of more than **800 occupations** broken down into more the **2,000 work activities** to estimate the automation potential for occupations across the workforce based on existing technology at that time.

Those 2,000+ work activities were then sorted into **required capabilities** categories.

Findings

- 49% of activities people are paid to do have the potential to be automated by adapting current demonstrated technology
- Only a small fraction of jobs are either entirely automatable or entirely robot-proof.
- About 60% of occupations had at least 30% of activities that can be automated.

Think about how changing technology will impact daily life, jobs needed, and how we spend our time doing work.

Sources

McKinsey Global Institute. (2017). A Future That Works: Automation, Employment, and Productivity
Short Quiz on jobs most susceptible to automation: https://features.marketplace.org/robotproof/

Q & A

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 employment opportunities and fields of specialization. **EET 161 DC Principles of Electronics** will provide practical hands-on 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 that includes required courses and the sequencing in which course might need to be completed. 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.

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

Answer: Fulltime is 12-18 credits. Parttime is fewer than 12 credits. More than 18 credits in a quarter is considered a credit overload and requires approval from the Advising Department.

Contact

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Requests for Zoom or phone appointments are welcome!

Additional Exploration:

https://www.seattlecolleges.edu/areas-study/discover-seattle-colleges
https://resources.seattlecolleges.edu/collegetocareer/
https://northseattle.edu/electronics