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*Teri Gardner 12-6-2021*

November 21, 2021

**Washington State Apprenticeship and Training Council**  
Washington State Department of Labor & Industries  
Apprenticeship Section  
PO Box 44530  
Olympia WA 98504-4530

Sno-Isle TECH Skills Center  
9001 Airport Road  
Everett, WA 98204

Re: Application for Apprenticeship Preparation Program Recognition

Dear Washington State Apprenticeship and Training Councilmembers,

On behalf of Sno-Isle TECH Skills Center Staff and students we are pleased to offer this package for your consideration in the recognition of our Aerospace Apprenticeship Preparation program in collaboration with Aviation Technical Services.

Sno-Isle TECH Skills Center is a public school in Everett Washington providing preparatory training, certification, and post-secondary credit to students, who can then choose to continue their education, go straight to work, or both. Sno-Isle TECH opened in 1977 and is the second largest Skills Center in Washington. The school, located near Paine Field in Everett, is a cooperative effort of fourteen local school districts. Occupations are organized into broad clusters or “pathways” based on characteristics of the job. The twenty-two programs offered at Sno-Isle TECH represent these five pathways: 1)Business Marketing & Management, 2)Human Services, 3)Information Technology, 4)Science & Health, and 5)Trade & Industry.

The **mission** of Sno-Isle TECH Skills Center is to empower students with focused, relevant instruction that is tangible, concrete and allows them to engage in applied learning in a professional setting within a diverse learning community.

Students from Forty-Four schools come together in one location at Sno-Isle TECH Skills Center to learn in state-of-the-art classroom environments that are too expensive to offer at every high school in Snohomish and Island Counties. Sno-Isle TECH seeks all opportunities to foster the students desire for career focused learning.

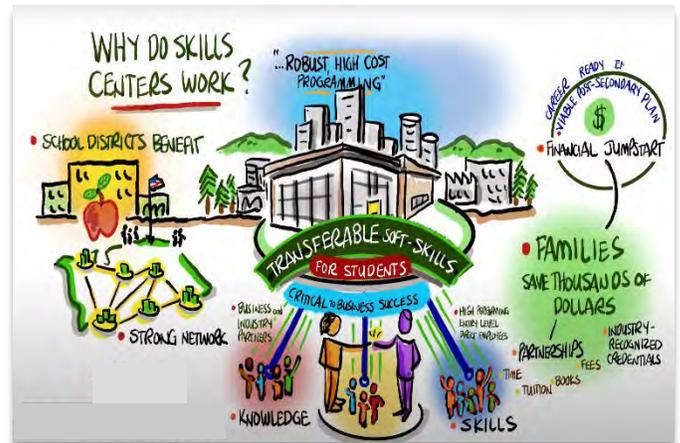
Sno-Isle TECH Skills Center holds as a core value serving the needs of students and families.



Through **collaboration with local industry** Sno-Isle TECH endeavors to engage in community-based initiatives aimed at meeting the growing workforce needs of Snohomish and Island Counties.

The public-school model requires a **commitment to equity** ensuring that The Sno-Isle TECH Skills Center Administration, Faculty and Staff are engaged in meeting the needs of a diverse population of students.

The faculty of Sno-Isle TECH Skills Center has been selected from a group of highly trained experts in their fields and additionally who reflect diverse populations, as well as non-gender traditional roles.



At SISC one-hundred students each year enroll in the Aerospace Manufacturing and Maintenance and the Advanced Manufacturing programs. Students in both programs spend the 9-month school year engaged in learning and skill development around:

- Materials Science, Tools and Safety
- Standard Operating Procedures, Precision Measurement, & Fasteners
- Drilling, Cutting & Grinding, Riveting
- Print Reading, Physics, Math for Industry
- Rigging, Hydraulics & Pneumatics, Electrical, Soldering
- Troubleshooting & Critical Thinking, Lean Manufacturing, Theory of Constraints

Upon High School graduation and at age 18, students may apply to enter the apprenticeship training program at Aviation Technical Services with credit for skills attained while at Sno-Isle TECH Skills Center in either year one or year two, in either the Aerospace or Advanced Manufacturing programs.

We appreciate your consideration to recognize our plan to offer students a more structured, supportive entry into a career in the Aerospace industry.

Best Regards,

Wes Allen  
Director  
Sno-Isle TECH Skills Center  
9001 Airport Road  
Everett, WA 98204

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30 November 2021

Subj: Aviation Technical Services/Sno Isle Skills Tech Center Pre-Apprenticeship Letter of Support

The following outlines the scope and sequence of the pre-apprenticeship agreement between Aviation Technical Services, Everett, and Sno-Isle TECH Skills Center.

### **Scope**

Students in their senior year in good standing for on-time graduation and who are currently age 18 will be supported in their aspiration to join the apprenticeship program at Aviation Technical Services. The support will be provided by both Sno-Isle TECH Skills Center (SISC) and Aviation Technical Services (ATS) in the following capacities: ATS apprenticeship training program will make an onsite visit early in the school year to inform students about the option to continue their studies in the aerospace industry by applying to the apprenticeship training program for immediate entrance post high school graduation. ATS will offer credit hours toward apprenticeship to SISC students, and in addition offer commensurate wages during their time in the ATS apprenticeship program.

### **Sequence**

September – ATS representatives, along with SISC faculty in the Aerospace and Advanced Manufacturing programs will inform students of the opportunity to continue in the pathway to a career in aerospace manufacturing and maintenance through the pre-apprenticeship program at SISC.

April – Senior students in good standing who are interested in pursuing a pathway in the aerospace manufacturing and maintenance industry are encouraged to create and/or gather documents to begin the application process for entrance into the ATS apprenticeship program upon graduation from high school.

May – in the second week of May, for all students aged 18(or within 45 days of their 18<sup>th</sup> birthday) interested in pursuing the ATS Apprenticeship pathway are encouraged and given class time to complete the on-line application process for the ATS Apprenticeship program.

June – ATS will review, and conduct interviews of possible candidates associated with SISC Aerospace and Advanced Manufacturing programs for intake into the ATS Apprenticeship program.

Students may enter the apprenticeship program at ATS with at least 540 hours of prior training under the following conditions:

- Student is 18+ years old
- Student has a high school diploma
- Student has successfully completed at least one year in the Aerospace or Advanced Manufacturing programs at SISC.

A handwritten signature in black ink that reads "David Bowen". The signature is written in a cursive, flowing style.

David Bowen  
Sr. Dir. Technical Training  
Aviation Technical Services  
Everett, WA



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# SISC Pre-Apprenticeship Program Outcomes

## Scope, Sequence and Curriculum

### Scope

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April – Senior students in good standing who are interested in pursuing a pathway in the aerospace manufacturing and maintenance industry are encouraged to create and/or gather documents to begin the application process for entrance into the ATS apprenticeship program upon graduation from high school.

May – in the second week of May, for all students aged 18(or within 45 days of their 18<sup>th</sup> birthday) interested in pursuing the ATS Apprenticeship pathway are encouraged and given class time to fill out initial paperwork for the aviation industry background check, as well as undergo a drug test.

June – In mid-June when results of the background check and drug tests are returned, ATS will have the opportunity to conduct interviews of possible candidates for intake into the ATS Apprenticeship.

Students may enter the apprenticeship program at ATS with at least 540 hours of prior training under the following conditions:

- Student is 18+ years old
- Student has a high school diploma
- Student has successfully completed at least one year in the Aerospace or Advanced Manufacturing programs at SISC.



The SISC instructional hours may be credited toward ATS Apprenticeship Program

<b>ATS</b>	<b>Hours</b>	<b>SISC</b>	<b>Hours</b>
Fluid Lines and Fittings	200	U2 Shop Tools, U5 Semi-Precision and Precision Measurement	40/40
Ground Operation and Servicing	300	U6 Fasteners, U7 Drilling, U10 Print Reading	50/50
Cleaning and Corrosion Control	300	U8 Cutting and Grinding	20/20
Maintenance Forms and Records	125	U4 Standard Operating Procedures, U18 Lean/Manufacturing Processes	55/55
Aircraft Finishes	275	U9 Riveting, U11 Applied Physics, U12 Math for Industry	70/70
Sheet Metal and Non-Metallic Structures	275	U1 Materials Science	140/140
Assembly and Rigging	250	U13 Rigging	30/30
Airframe Inspection	175	U3 Safety	20/20
Aircraft Landing Gear Systems	300		
Hydraulic and Pneumatic Systems	250	U14 Hydraulics and Pneumatics	30/30
Cabin Atmosphere Control Systems	100		
Aircraft Instrument Systems	175	U16 Soldering, U17 Trouble Shooting and Critical Thinking	50/50
Communication and Navigation Systems	200		
Aircraft Fuel Systems	200		
Aircraft Electrical Systems	150	U15 Electrical	35/35
Position and Warning Systems	150		
Ice and Rain Control Systems	150		
Fire Protection Systems	150		
Aviation Safety/Human Factors	150		
<b>ATS Total Hours</b>	<b>3875</b>	<b>SISC Total Hours Year 1 &amp; Year 2</b>	<b>540/540</b>



## Core Plus

**Total Curriculum = 540 Hours per year**

### DESCRIPTIONS:

#### **UNIT 1: Materials Science (140 hours)**

After discussing safe approaches to materials and unit activities, and using demonstrations, experiments, and projects, the students will develop necessary critical thinking skills to evaluate and apply appropriate material choice to manufacturing technologies.

#### **UNIT 2: Shop Tools (20 hours)**

Introduced to a variety of hand tools and portable power tools, students will become familiar with safety considerations for their use, features, distinguishing characteristics, normal operating techniques, and the applications for which they are commonly applied.

#### **UNIT 3: Safety (20 hours)**

##### **Unit Description**

This course provides a general overview of safety and also in-depth specific environment, health, and safety issues, policies, procedures, and regulations that are relevant to local industry and the workplace.

#### **UNIT 4: Standard Operating Procedures (20 hours)**

##### **Unit Description**

In this unit, students will learn about the enterprise level of QMS and how this leads to a company-wide adaptation of Standard Operating Procedures to promote efficiency, quality, safety, and customer satisfaction.

#### **UNIT 5: Semi Precision and Precision Measurement (20 hours)**

##### **Unit Description**

The lesson includes hands-on practice with precision measurement tools, and includes the review of geometric dimensioning and tolerances, and the use, care and calibration of precision measurement tools.

#### **UNIT 6: Fasteners (10 hours)**

##### **Unit Description**

Following all safety and handling procedures, and considering installation factors and requirements, students will install bolts and nuts and other fastening systems using hex-drive fasteners (Hi-Lites and Hi-Loks).

#### **UNIT 7: Drilling (10 hours)**

##### **Unit Description**

In the drilling unit, students will practice safety precautions, selecting and operating proper drilling tools and accessories, and how to avoid common defects to meet standards.

## **UNIT 8: Cutting & Grinding (20 hours)**

### **Unit Description**

This unit requires students to adhere to shop safety practices, calculate feeds and speeds, and correctly practice using metal cutting saws, lathes, milling machines, and surface grinders.

## **UNIT 9: Riveting (10 hours)**

### **Unit Description**

This unit provides students with safety considerations while riveting and information needed to prepare for and carry out a hands-on skill practice for measurement, lay-up, drilling for quality, sheet metal bending, assembly, and riveting.

## **UNIT 10: Print Reading (30 hours)**

### **Unit Description**

In this unit, students are introduced to basic blueprint reading and how to interpret engineer drawings; students will get hands-on experience drawing isometric and orthographic views, and constructing a project based on a drawing.

## **UNIT 11: Applied Physics (30 hours)**

Students will gain the knowledge of the primary laws of physics and how they apply to manufacturing, including safety considerations involving the workplace use of force and power.

## **UNIT 12: Math for Industry (30 hours)**

### **Unit Description**

Math for Industry is project-based and requires students to work together practicing Winning Together elements in the designing, building, and testing of a model footbridge, applying Common Core Standards: Number and Quantity, Algebra, Function, Modeling, and Geometry.

## **UNIT 13: Rigging (30 hours)**

### **Unit Description**

The Rigging unit is designed to prepare students to carry out a hands-on skill practice for rigging a load, lifting it and moving it, which includes determining lifting task and job-site requirements, characterization of the load, selection of rigging equipment, safety precautions, and techniques and procedures for lifting, maneuvering, and moving the load.

## **UNIT 14: Hydraulics & Pneumatics (30 hours)**

### **Unit Description**

In this unit, using team concepts as outlined in the Winning Together program, students will receive an essential foundation in the physics, calculations, processes, terminology, and safety practices related to hydraulic and pneumatic systems.

## **UNIT 15: Electrical (35 hours)**

**Course Description:** Upon completion of this unit, the student will be able to discuss the fundamentals of electricity, voltage, current, resistance, inductance, capacitance, electromagnetism, symbols used in schematics, electrical safety and first aid for electric shock victims.

## **UNIT 16: Soldering (25 hours)**

### **Unit Description**

The Soldering Unit is designed to provide students with information needed to prepare for and carry out a hands-on skill, including terminology, safety precautions, capillary action, base metal, solder



alloys, the soldering joint, differences between welding, brazing, and soldering, forms of soldering, applications of soldering, required soldering conditions, types of flux, eutectic solder, and the basic soldering process.

### **UNIT 17: Troubleshooting and Critical Thinking (25 hours)**

#### **Unit Description**

Using team approaches as exemplified in the Winning Together concepts, students will learn how to apply troubleshooting steps, safety considerations, and concepts such as reproducible symptoms, intermittent symptoms, root cause analysis, and distinguish between degraded operability versus total operational failure.

### **UNIT 18: Lean/Manufacturing Processes and Principles (35 hours)**

#### **Unit Description:**

In this unit, students learn about different 7 major manufacturing processes, their safety guidelines, and how to manage the processes efficiently, diving into the concepts, terminology and principles of Lean, Six Sigma, and the Theory of Constraints. Winning Together concepts are practiced.



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## SISC Aerospace Pre-Apprenticeship Program

### Collaboration and Communication

SISC is expanding on a current collaboration with Aviation Technical Services to create an articulated pathway for the aerospace and advanced manufacturing students taking them through either one or two years of instruction on-site at SISC. The on-site pre-apprenticeship at SISC culminates in the student's senior year and would put them in-place to interview for entrance into the apprenticeship program at ATS. Seth Jacobsen, ATS Apprenticeship program manager, sits on the SISC Aerospace Program Advisory council providing regular consultation with program faculty.

### Safety Training

The Core Plus Aerospace Safety curriculum is embedded in each of the units, however unit three is focused solely on safety covering the following topics: Intro to OSHA, EH&S, HazCom, Ergonomics, Regulations, Human Factors, PPE, Lockout/Tagout, Industrial Housekeeping, Environmental Safety.

### Future Employability

The occupations of aircraft mechanic and service technician are expected to grow rapidly in the next several years and will have large numbers of job openings or will see new and emerging related occupations.

This occupation matches at least one of the following criteria (source, [O\\*NetOnline.org](https://www.onetonline.org/)):

- Projected to **grow faster than average** (employment increase of 10% or more) over the period 2020-2030 for the US nationwide
- Projected to **have 100,000 or more job openings** over the period 2020-2030 for the US nationwide

Additionally, students engaged in Career and Technical Education receive instruction in what are called 21<sup>st</sup> Century Skills. Among the 21<sup>st</sup> Century Skills taught are; using creativity in problem solving, collaborating and managing goals and time, and to be responsible to others. The 21<sup>st</sup> Century Skills are often referred to as the soft-skills students will need to be successful in employment.

### Physical Fitness

Students in both aerospace and advanced manufacturing courses are taught to move materials and machinery in a manner that is safe as well as sustainable. In addition to skill building in rigging and hauling safety, students are required to develop fine motor skills and manual dexterity.

### Math for Industry



Algebra 1 and II, physics and geometry are suggested as precursory to enrollment in the aerospace and advanced manufacturing courses. Successful completion of the previously mentioned courses will support continued learning of the following concepts: Common Core: Number and Quantity Principles and Operations, Algebra Principles and Operations, Functions, Modeling, Geometry principles as well as, Strength to Weight Ratio and units of measure.

### Recruit and Retain

In an effort to reach every student with the opportunity to attend Sno-Isle TECH, a team of outreach coordinators conducts site visits and virtual visits to all of the forty-four sending high schools, as well as hosting liaisons and counselors on-site to share. The application process is open to all students in the 10<sup>th</sup> and 11<sup>th</sup> grades, with no bias for race, gender, or IEP or 504 statuses. In addition, the administration actively recruits candidates for teaching positions that are BIPOC or gender non-traditional. Resulting in a teaching faculty that closely represents the Sno-Isle student demographics.

Sno-Isle TECH will continue this commitment to recruiting BIPOC students and women into both the Aerospace and Advanced Manufacturing programs. An example of this commitment is reflected in having a highly qualified female Latinx instructor who is well respected in their field, for students to see and learn from on a daily basis.

Once students arrive on campus at Sno-Isle TECH, their progress is monitored and supports are put in place where needed, by a certificated Intervention Specialist. The Aerospace and Advanced manufacturing programs show the following demographic data: Aerospace student total: 54, with 12.9% female students. In Advanced Manufacturing the student total is 26 with 19.1% female students. The rest of the demographics are as follows based on the school as a whole: 39.5% minority status, 25.9% IEP/504 and 3.5% English Language Learners.