



Advanced Manufacturing: Mechatronics/Pre-Engineering

Instructor: Dr. Nisa Maksim
Room#: Olympic 121 & 123
Office Hours: 7:25-7:45 and 1:45-2:55

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Course Overview

The Advanced Manufacturing-Mechatronics/Pre-Engineering program is designed to train students in CAD, CNC, and programmable logic controller (PLCs) programming and troubleshooting. Students will also learn to install, diagnose, maintain, modify, test, and calibrate electronic, electrical, and mechanical systems used in manufacturing support equipment and production machinery, including industrial robots. This program is designed as year one of a two-year program. Second year option - Advanced Manufacturing - Composites or Advanced Manufacturing - Machining or Year 2 program with instructor permission.

Course Objectives and Units

- Electrical Safety
- Hand Tools & Power Tools & Shop Tools Safety
- Mathematic and logic for Engineering (Energy conversion and Mechanical Advantage)
- Mechanical Design, CNC and Technical Drafting and CAD
- Electronics, DC circuit, AC circuits, Electromagnetic and fiber optics sensors
- Motors and Stepper motor control
- Pneumatics, Electro Pneumatics, Fluid Power control
- Gears and drivetrain control
- Industrial robotics and automations
- Employability & Life Skills
- Lean Manufacturing
- PLCs (Programmable Logic Controllers) diagnostic and Programming.

Course Supplies

- 1/2" binder – required for notes and project reports
- Pens/pencils for class notes and engineering drawing
- Combination lock for locker
- Black sharpies - replace as needed

Course Fees *(fees are subject to change based on vendor adjustments)*

- SkillsUSA Leadership \$20.00
- PCSC T-shirt Short Sleeve \$9.00 S-XL \$11.00 XXL
Long Sleeve \$14.00 S-XL \$15.00 XXL

Certification

- SMSCP-Level 1 Certificate (The Siemens Mechatronic Systems Certification Program)
- OSHA 10 Electrical Safety Certificate
- First Aid/CPR Certificate
- Autodesk CAD for mechanical design associate certificate

*Certificates will not be issued until all fines and/or fees are paid in full Course Supplies

Grading Policy

Students are primarily assessed based on their mastery of course content and technical skill. The majority of a student's grade (70%) is based on summative assessments and (30%) is based on formative assessments.

Grading Breakdown

70% - summative assessments (tests, projects, labs, presentations, etc.)

30% - formative assessments (classwork, practice, quizzes, homework, leadership, employability, etc.)

Grade Scale

Percent	Letter Grade	Percent	Letter Grade
100-93	A	82-80	B-
92-90	A-	79-77	C+
89-87	B+	76-73	C
86-83	B	72-70	C-
69 and below = F			

Homework Policy

Although the majority of PCSC work is done during the class period, occasionally homework is assigned or classwork will need to be completed outside the school day. All assignments are expected to be turned in on time. Missing homework will be entered in the gradebook with a score of "0" until completed. Work submitted after the due date will receive a reduction in points. Teachers will set final dates, after which a late assignment will no longer be accepted. Teachers may also identify work that will not be accepted late. If a student knows they will be absent, it is their responsibility to make arrangements ahead of time to obtain class or homework that will be missed. Students with excused absences will have two days for every day absent to turn in missing work.

Redo Policy

Redo opportunities are available to students who are working hard towards content mastery but need an additional testing opportunity to demonstrate proficiency. Students who are given a redo opportunity will be required to show effort and progress not only on the first assessment, but will also be required to complete work outside of class as directed by the teacher. **Redo opportunities may not be given to students who choose not to study or prepare for an assessment, who refuse to take an assessment, or who abuse the redo opportunity. Certain projects and assessments are not eligible for a redo opportunity, including final exams.**

Internet and Computer Access

The Pierce County Skills Center uses the platform, Canvas, to manage digital classroom content. In many cases assignments will be distributed and turned in through this system. This means that students should have access to the internet and a device outside of school. If your student does not have access to these, please contact the main office (253.800.4800) for assistance. Hot spots and devices are available through students' home districts.

ParentVUE/StudentVUE

Students and their parents/guardians are strongly encouraged to use ParentVUE/StudentVUE to monitor grades and attendance. [ParentVUE](#) is an online link provided through the school district website for you to access your student's course information, including grades, assignments, and attendance. If you do not already have an ID and Password contact the main office (253.800.4800) for your login information.

Dual Credit & College Credit

Students have the opportunity to earn college credits at local community and technical colleges. Students must earn a C or better and have met all course competencies. Dual credit opportunities are subject to change based on course offerings and approval at the community and technical colleges. Visit the [Dual Credit](#) page on the PCSC website for the most current information.

Leadership & SkillsUSA

Leadership is a vital component of all career and technical education classes. Every day you will be required to demonstrate strong leadership and workplace skills: prompt attendance, professional and respectful behavior, problem solving, working with diverse groups, and strong communication.

Students have the opportunity to join SkillsUSA, a student leadership organization that includes teachers, high school and college students, and industry partners who are working together to ensure America has a skilled workforce. Participation in SkillsUSA provides students with the opportunity to further develop the personal, technical, and workplace skills to better prepare them for career success. SkillsUSA activities culminate in regional career and technical competition events. Students who qualify may advance to state and national competitions.

Policies and Course Requirements

Aerospace Machining is a program designed to prepare the student for entry into the modern workforce and as such, it will be expected that student behavior is appropriate for the modern manufacturing environment.

PCSC Expectations & Policies – [Student Handbook](#)

Students are expected to review and follow the school rules, procedures, and processes outlined in the PCSC student handbook and the district's [Student Rights and Responsibilities](#). Students will be held accountable for the rules outlined; claiming to not know about a rule does not excuse a student from the consequence.

Cheating/Plagiarism

Cheating is by definition, an action done by a student to supply work for another student, or turn in work, use work, or rely on work that is not their own, other than in circumstances clearly understood to involve collaborative or group learning. The judgment of the teacher or staff

member who discovers cheating is final. The first offense of cheating will be an F on the assignment/assessment. A second offense of cheating may result in an F in the program and removal from PCSC.

Electronic Equipment

Personal electronic devices, including but not limited to, cell phones, can be a disruption to the educational process and are not permitted at school. The only exception to the following policy is if a teacher specifically grants permission for usage for educational purposes. Electronic devices are to be turned off and put away before entering the building. Students who continue to violate the electronic equipment policy can expect their device to be confiscated, a parent/administrative conference, and additional disciplinary action. Insubordination or argumentative behavior regarding device confiscation will result in further disciplinary action.

Food & Drink

Food and beverages, with the exception of water, are not permitted in classroom areas. No water should be near laptop or desktop computers. A bottle refill station is located in the Rainier Building.

Hall Passes/Vests

Students must have instructor permission to leave class and only one student is permitted out of class at one time. Passes are not to be requested during lectures or presentations. Any student out of class should have a hall pass with time and destination. Any student who needs to go to the parking lot during class must WEAR a classroom-provided safety vest.

Safety Policy

Students are expected to use all tools and equipment safely and only in the manner in which the tool is intended to be used. Horseplay or unsafe behavior will not be tolerated and is grounds for dismissal from the program. Students must pass both a written and performance test at 100% before using shop equipment. All equipment is to be used with proper safety precautions and supervision during class hours only. All accidents or injuries must be reported to the instructor immediately.

Dress Code

This is a shop environment and clothing must be shop appropriate. The following requirements are in addition to the PCSC dress code outlined in the student handbook.

Mechatronics Dress Code

This is a shop environment and clothing must be shop appropriate. The following requirements are in addition to the PCSC dress code outlined in the student handbook.

- Long pants (no pajamas)
- Long sleeve shirts
- No loose clothing
- Closed-toe shoes are required; no open toe shoes, sandals or slippers
- Jewelry and/or watches must be removed
- Long hair tied back
- ANSI approved safety glasses will be worn at all times in shop and other safety equipment and gear as directed

Tools/Equipment/Technology

All tools/equipment/technology are the property of PCSC, and although students will check out items for use during class, items are not to be removed from the classroom/shop area. Students are responsible for all items assigned to them until checked back in by the instructor. Any item removed from PCSC will be considered stolen property and the student will be subject to disciplinary action and reported to the Pierce County Sheriff's department.

Sensitive Issues

Mechatronics program uses various demonstration videos, industry documentaries, movies and news that could broaden students' engineering design creativity and innovation technology as a part of curriculum. However any opinions expressed in this content belong to those who created it and don't reflect the views of the school, class or instructor. Students are encouraged to discuss both the opinion of the content and creator but also opposing view to gain greater understanding and appreciation of the issues being discussed. Please understand that while all the efforts are made to screen the content, it is unavoidable that some media may contain coarse language or images. Parents are encouraged to discuss any concerns with the instructor.

2nd Year Program - Enrollment Requirements

Several PCSC programs have both a first and second year, however automatic enrollment in the second year is not guaranteed. PCSC 2nd year students are considered the leaders of the center. They are students who during their first year, earned no lower than a B grade, had excellent attendance (less than 10 per year excused or unexcused), and demonstrate responsible, respectful, and professional behavior. Most importantly, students must be able to self-manage and successfully work independently without teacher interventions. Instructor approval is required for 2nd year applications.

Academic Calendar



PCSC STUDENT CALENDAR 2024-2025

PIERCE COUNTY SKILLS CENTER

AUGUST		FEBRUARY									
M	T	W	T	F	M	T	W	T	F		
20-21 – PCSC Professional Learning Days				1 2	3 4 5 6 7						
22 – State Professional Learning Day #1										10 – Late Arrival	
26 – State Professional Learning Day #2	5 6 7 8 9				10 11 12 13 14						14 – Snow Make-Up Day or No School
★ 26 – PCSC Back to School Night 5 – 6:30 pm	12 13 14 15 16				17 18 19 20 21						17 – President’s Day – No School
27 – Back to School Prep / Staff	19 20 21 22 23				24 25 26 27 28						18 – Waiver Day #2 – No Students
28 – First Day of School	★ 26 27 ★ 28 29 30										
30 – No School											
SEPTEMBER		MARCH									
M	T	W	T	F	M	T	W	T	F		
2 – Labor Day – No School	2 3 4 5 6				3 4 5 6 7						3, 17 – Late Arrival
16 – Late Arrival	9 10 11 12 13				10 11 12 13 14						12 – End of 2nd Tri/Grade Prep Early Dismissal
27 – State Professional Learning Day #3 No Students	16 17 18 19 20				17 18 19 20 21						
	23 24 25 26 27				24 25 26 27 28						
	30				31						
OCTOBER		APRIL									
M	T	W	T	F	M	T	W	T	F		
7 – Late Arrival	1 2 3 4				1 2 3 4						7-11 – Spring Break – No School
18 – Waiver Day #1 – No Students	7 8 9 10 11				7 8 9 10 11						21 – Late Arrival
	14 15 16 17 18				14 15 16 17 18						
	21 22 23 24 25				21 22 23 24 25						
	28 29 30 31				28 29 30						
NOVEMBER		MAY									
M	T	W	T	F	M	T	W	T	F		
18 – Late Arrival				1				1 2			12 – Late Arrival
11 – Veterans Day – No School	4 5 6 7 8				5 6 7 8 9						23 – Snow Make-Up Day or No School
26 – End of 1st Tri/Grade Prep Early Dismissal	11 12 13 14 15				12 13 14 15 16						26 – Memorial Day – No School
27-29 – Thanksgiving Break – No School	18 19 20 21 22				19 20 21 22 23						
	25 26 27 28 29				26 27 28 29 30						
DECEMBER		JUNE									
M	T	W	T	F	M	T	W	T	F		
9 – Late Arrival	2 3 4 5 6				2 3 4 5 6						9 – End of 3rd Tri/Grade Prep Early Dismissal
Dec 23-Jan 3 – Winter Break – No School	9 10 11 12 13				9 10 11 12 13						12 – Last Day of School Early Dismissal
	16 17 18 19 20				16 17 18 19 20						19 – Juneteenth
	23 24 25 26 27				23 24 25 26 27						June 23-July 11 – Summer School, Session 1
	30 31				30						July 14-31 – Summer School, Session 2
JANUARY		JULY									
M	T	W	T	F	M	T	W	T	F		
13 – Late Arrival		1 2 3			1 2 3 4						
20 – Martin Luther King, Jr. Day No School	6 7 8 9 10				7 8 9 10 11						
	13 14 15 16 17				14 15 16 17 18						
	20 21 22 23 24				21 22 23 24 25						
	27 28 29 30 31				28 29 30 31						

– KEY –

- 🌙 Late Arrival (No AM Session)
- 🕒 Early Dismissal (No PM Session)
- 🚫 No School for Students
- 🏠 Non School Days
- 📅 Summer School, Session 1
- 📅 Summer School, Session 2

Student Calendar = 178 school days for students and 2 waiver days for teachers.