

# MECHATRONICS (MET)

See Electronics Technology (ET) or Electronics Engineering Technology (EET) for information on related programs. Each program utilizes a similar first-year course sequence.

## Program Description

Mechatronics (MET) is defined as the integration of electronics, computer control and electromechanical devices and is part of the Electronics Technology (ET) program. The curriculum is designed to prepare students for entry-level positions in the areas of robotics, industrial manufacturing instrumentation, process control automation and mechanical analysis.

Through mechanical analysis a technician may perform predictive and preventive maintenance on mechanical and electromechanical devices and systems. Problems associated with vibration, balance and bearing wear can be predicted and addressed before catastrophic failure occurs.

Also covered in this program option are the areas of Robotics, Biometrics, Telematics and Informatics. Biometrics is the technology which automates the use of physiological or behavioral characteristics to determine or verify identity. Biometric security technology like speech recognition, fingerprint and retina scanning are currently used to access sensitive areas in computer systems or facilities. Informatics is the use of information technology to gather and process data from mechanical systems while Telematics is the combination of telecommunications and computer systems servicing that data. Robotic systems using electric, hydraulic and pneumatic actuators are integrated into microcontroller and computer distributed control systems (DCS).

Graduates may find employment as failure analysis technicians, field service technicians, robotics and automation technicians, engineering process technicians or electromechanical technicians. Employment positions as technicians and specialists in the areas of computer security systems and automotive electronic control systems are also possible.

## Entry into the Program

Please apply to the Admissions Office. Students entering the program should have one year of high school algebra before starting the course sequence. Students who lack this preparation should take additional review classes offered at the college. Students

usually enter the program at the beginning of Fall Quarter. However, persons with prior experience or training in electronics may apply for advanced standing and start the program in Winter or Spring Quarter. Advanced standing is awarded to individuals who pass departmental qualifying exams.

For more information, contact the Department Chair or the Admissions Office.

## Tech Prep

Skagit Valley College will grant credits toward a Professional/Technical degree based on competencies gained in high school. The competencies must be agreed upon by the appropriate teachers from the high school and the college. Credit will be transcribed after verification of successful completion of the agreed upon competencies. If you are interested in taking steps to begin work in the professional/technical workplace of the future, please contact your high school counselor.

## Work-Based Learning

Students will integrate classroom learning with work-based learning experience in Cooperative Education (ET 199) at a supervised work site. Department Chair approval is required. Credits and grades are based on job-hours worked, work performance and completion of the learning objectives specified in the learning contract. Concurrent enrollment in a Cooperative Education Seminar or equivalent is required.

## Associate in Technical Arts Degree

An Associate in Technical Arts degree (ATA) is awarded upon completion of a minimum of 90 credits of specified technical and related education coursework above 100 level with both an overall 2.0 grade point average and a 2.0 grade point average in the technical major.

## SUGGESTED SCHEDULE

### MECHATRONICS

Includes required ATA courses. Student schedule may vary based on entry point, credit load, and prerequisites. Consult with department chair or SVC counselor for scheduling options.

#### FIRST YEAR

Fall	Winter	Spring
ET 111.....5	ET 112.....5	ET 113.....5
ET 135.....5	ET 136.....5	ET 137.....5
ET 141.....5	ET 142.....5	ET 145.....5
CMST 125.....3	PE 200.....2	SOSC 125.....2
	SOSC 113.....1	
<b>Total.....18</b>	<b>Total.....18</b>	<b>Total.....17</b>

#### SECOND YEAR

Fall	Winter	Spring
MET 290.....5	MET 292.....5	MET 294.....5
MET 291.....5	MET 293.....5	MET 295.....5
ET 267.....5	ET 268.....5	ET 269.....5
†ET 199.....1-15		LC/GE.....5
†ENGL 170.....3		
<b>Total.....19+</b>	<b>Total.....15</b>	<b>Total.....20</b>

† Students who do not receive an appropriate test score will require additional coursework to develop necessary skills for entry into class.

‡ ET 199 may be taken at any time during the two-year program with Department Chair approval.

## Program Certificates

### INDIVIDUAL TECHNICAL CERTIFICATE

A certificate in mechatronics, biometrics, telematics or other specialized areas may be tailored and customized in conjunction with other programs to meet specific goals and objectives of the prospective graduate with Department Chair approval.

## Course Descriptions

### MET 290 Sensors and Instrumentation Transducers (5)

Visual, infrared, ultrasonic, temperature, distance and proximity and other instrumentation related sensors and transducers.

### MET 291 Principles of Mechatronics (5)

Interaction of electronics with mechanical systems. Applying computer controls to electromechanical systems.

### MET 292 Biometric Sensors (5)

Introduction to physiological sensor systems. Finger and retinal scanners, speech synthesis and recognition.

### MET 293 Telematics and Informatics (5)

Computer data management in electromechanical systems. Telecommunication systems for remote data acquisition.

### MET 294 Microcontrollers & Computer Interfacing (5)

Introduction to programmable interface controllers and programmable logic controllers. Covers the PIC, PLC, and other microcontrollers used in computer interfacing applications. Industrial control systems are designed to integrate digital controls in the processing of data.

### MET 295 Robotics (5)

Introduction to robotics. Covers robotic vision systems, collision avoidance, and motor and servo control systems.