

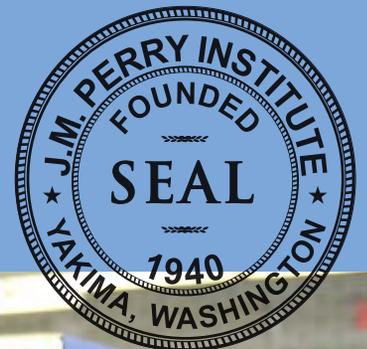


PERRY  
TECHNICAL  
INSTITUTE



# 2010-11 Catalog

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TECHNICAL  
INSTITUTE

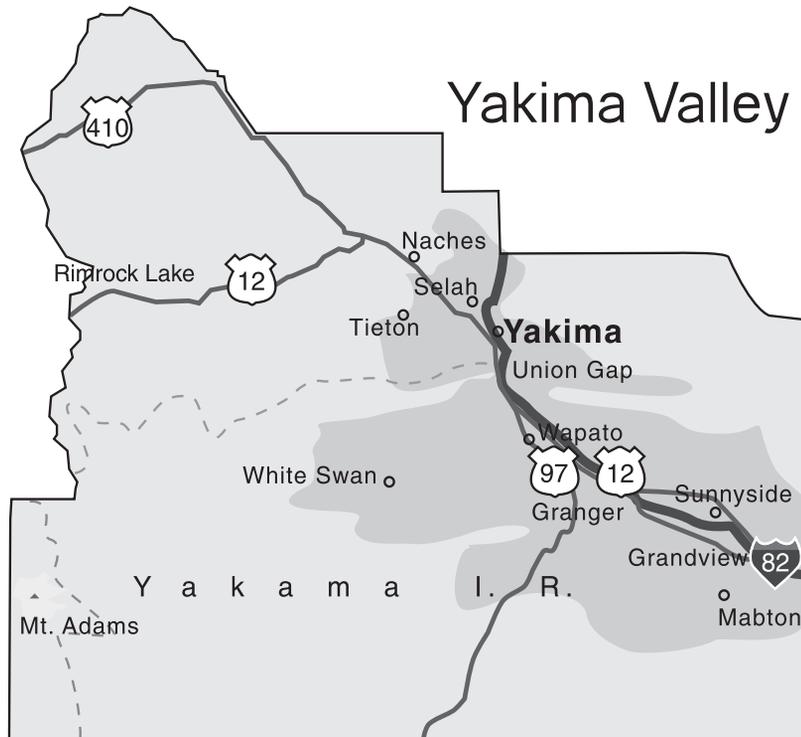
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# ACCSC

Accrediting Commission of Career Schools and Colleges

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(ACCSC)

Date of Publication  
June 2010



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## ❖ message from the president

Welcome to Perry Technical Institute. As you begin your education at Perry, you are joining a proud tradition that was established more than 70 years ago when Harriet I. Perry founded the school as a memorial to her husband, John M. Perry.

At Perry Technical Institute, we focus on equipping our students with the skills that industry demands and the work habits and attitudes that employers seek in their employees. We are proud of our placement rates and of the success achieved by our graduates.

As you begin your training, I encourage you to make the most of your education by committing yourself to positive lifestyle choices, good study habits, regular attendance and punctuality. Your efforts will be rewarded when you graduate and are qualified for a job which pays a living wage and offers benefits and opportunities for advancement.

The administration, faculty and staff at Perry are here to serve you. We are committed to helping you succeed in the classroom and beyond. When you graduate, we will follow your success and take pride in all of your accomplishments.



Christine Coté  
President  
Perry Technical Institute



Christine Coté

Catalog certified as true and correct in content and policy.  
June 2010

## ❖ mission statement

Perry Technical Institute will provide industry with well-trained people who are motivated to work as team members to meet the needs of industry in our rapidly evolving technological world.

## ❖ vision statement

Perry Technical Institute will provide the resources and guidance required to allow students to acquire the knowledge, attitudes and skills to achieve employment and success in their chosen career field.

## ❖ purpose of the harriet i. perry trust

"The purpose of this trust is the creation, establishment, erection, equipment, maintenance, and endowment of an educational institution to be located on or near the vicinity of Yakima, Washington, to be known as THE J.M. PERRY INSTITUTE OF TRADE, INDUSTRIES AND AGRICULTURE, to provide courses of instruction and training of a practical nature and confined to the technical area of such trades, industries, and branches of agriculture as shall qualify and prepare the students to enter a gainful occupation and fill working positions in respective fields of trade, industry, and agriculture in which courses of instruction and training shall be given by the Institute. All applicants for admission to the Institute shall be not less than sixteen (16) years of age, and shall possess a high school education or the equivalent thereof, and shall be admitted upon such terms or payment, not to be prescribed with a view to profit, as may be determined by the trustees in the case of each applicant for admission, depending on the merits, fitness, and qualifications to benefit by the courses of instruction given by the Institute, PROVIDED, HOWEVER, that said Institute shall be open to all persons upon equal terms who possess the qualifications established for admission thereto." (Trust Deed dated December 20, 1939)

# J. M. PERRY INSTITUTE OF TRADES

## ❖ history of perry technical institute

Harriet I. Perry founded Perry Technical Institute in 1939 as a lasting memorial to her husband, the late John M. Perry, a noted pioneer business leader in the Yakima Valley. Although his interests were varied, Mr. Perry's main enterprise was J.M. Perry and Company, a commission house dealing in fruit packing, shipping, cold storage and ice manufacturing. The first warehouse was constructed in 1911 and enlarged in the following years. The Northern Pacific and Union Pacific railroads were among the company's largest ice contracts.

In an unfortunate turn of events in 1938, Mr. Perry suddenly became seriously ill while on a business trip to Fairbanks, Alaska. He needed immediate surgery and was flown to Seattle. The flight was delayed by bad weather and Mr. Perry died at Maynard Hospital in Seattle on October 1, 1938. He was 77 years old.

One year later, Mrs. Perry announced that she was creating a trust fund for the establishment of the J.M. Perry Institute of Trades, Industries and Agriculture. She named three community members to the Board of Trustees: Arthur S. Coffin, Roy A. Matson and Harcourt M. Taylor. Mrs. Perry outlined plans to create a technical school that would train ambitious people in skilled occupations. Curriculum would be streamlined to eliminate non-essentials and enrollment would be open to beginners as well as those students with previous training or experience.

The trustees researched technical schools throughout the United States, gathering information about curriculum, shop construction and equipment. The trustees also searched for a suitable site to build the school. They selected a 54-acre parcel of land adjacent to the airport. Four small farms and houses were located on the property, which was purchased for \$23,000, or approximately \$440 per acre.

Construction of the school's main building began in 1939 and was completed the following year. The total cost of constructing and equipping the building was approximately \$650,000. This modern building included shops, classrooms, administration offices and an auditorium. The school opened its doors to 211 students on January 2, 1941. The original course offerings were: Aircraft Mechanic; Aircraft Engine Mechanic; Aircraft Radio Mechanic; Automotive Mechanic; Automotive, Body and Fender Mechanic; Carpentry; Inside Electrical Wiring; Machine Shop Practice; Machine Shop Practice-Tool Making; Painting, Paper Hanging and Decorating; Plumbing and Heating Sheet Metal; Welding-Electric AC and DC; Welding-Oxyacetylene; and General Shop.

In 1969, Perry Technical Institute became the first private technical school in Washington to be accredited by the Accrediting Commission of Career Schools and Colleges of Technology. The Arlington, Virginia-based organization is a private, non-profit, independent accrediting agency which is recognized by the United States Department of Education as an organization which works to ensure quality education for more than 220,000 students at more than 820 accredited institutions across the United States.

Unprecedented growth in the late 1970s and early 1980s created the need to build and equip three additional buildings on campus – Bond Instrumentation Laboratory, Harvey L. Smith Electrical Technology Building and Burnham Prince Agriculture Mechanics Building. In 1996, the main building was remodeled, adding new classrooms for the Telecommunications Program. A women's restroom was added in the main shop area to accommodate the growing number of women enrolling at the school.

In 1998, crews began constructing a 14,160 square foot building to house the Instrumentation & Industrial Automation Technology Program. The Bond Building, which had housed the program since 1945, continued to be used for two classes. The new Instrumentation Building was dedicated on October 16, 1999, and the first students trained in the building in January 2000.

In July 2004, a fire severely damaged the Bond Building. A new building was constructed to replace the fire-damaged Bond Building. The new building housed a portion of the Instrumentation Program and allowed the Machine Technology Program to relocate to the new building and move out of its outdated shop on the west end of campus. The 17,100 square foot building was dedicated on June 23, 2006.

The hangar building on the west end of campus was recently completely renovated. The building houses the Heating, Ventilation, Air Conditioning & Refrigeration Technology Program, the Visual Communication & Graphic Technology Program and the Office Administration Programs. The state-of-the-art facility was dedicated as the Eugene Shields Technical Training Center in July 2009.

Over the years, Perry Technical Institute has grown and adapted its curriculum to meet the changing needs of industry. The school's mission, however, has remained unchanged. We serve industry by equipping workers with both technical skills and positive work habits. We serve students of all ages and walks of life by equipping them with the knowledge and skills they need for careers that offer family-supportable wages, job security, benefits and opportunities for advancement.

## ❖ facilities

The Perry Technical Institute campus is located at 2011 West Washington Avenue on approximately 40 acres of land on the southwest edge of Yakima, Washington, across the street from the Yakima Air Terminal.

The school's facilities include the main building, which houses the Administration Office; the Information Technology & Communication Systems Program; the Legal Assistant/Paralegal Program; Student Services; a 700-seat auditorium; and the Deli. The Eugene Shields Technical Training Center on the west end of campus houses the Heating, Ventilation, Air Conditioning & Refrigeration Technology Program; the Visual Communication & Graphic Technology Program; and the Office Administration Programs. The Instrumentation Building, located east of the main building, houses the Instrumentation & Industrial Automation Technology Program and the Machine Technology Program. The Smith Electrical Technology building is located behind the main building and the Burnham Prince Automotive/Agriculture Building is on the northwest end of campus.

## ❖ academic calendar 2010-2011

### AUTOMOTIVE, BUSINESS TECHNOLOGY & ACCOUNTING, HVAC/R, ITCS, MACHINE, MEDICAL OFFICE ADMINISTRATION & CODING, LEGAL ASSISTANT/PARALEGAL AND VCG.

SUMMER QUARTER 2010	June 28 July 5 August 2-13 September 6 September 24 September 24	Summer Quarter Begins Independence Day, No Classes Summer Break Labor Day, No Classes Graduation Summer Quarter Ends
FALL QUARTER 2010	September 28 November 11 November 25-26 December 17 December 17 Dec. 20-31	Fall Quarter Begins Veteran's Day, No Classes Thanksgiving Holiday, No Classes Graduation Fall Quarter Ends Winter Break
WINTER QUARTER 2011	January 3 January 17 February 21 March 24 March 24 March 28-April 1	Winter Quarter Begins Martin Luther King, Jr. Day, No Classes President's Day, No Classes Graduation Winter Quarter Ends Spring Break
SPRING QUARTER 2011	April 4 May 30 June 17 June 17	Spring Quarter Begins Memorial Day, No Classes Graduation Spring Quarter Ends

### ELECTRICAL AND INSTRUMENTATION

SUMMER TRIMESTER 2010	June 28 July 5 August 2-13 September 6 October 21 October 21	Summer Trimester Begins Independence Day, No Classes Summer Break Labor Day, No Classes Graduation Summer Trimester Ends
FALL TRIMESTER 2010/2011	October 25 November 11 November 25-26 Dec. 20-31 January 3, 2011 January 17 February 21 February 24 February 24	Fall Trimester Begins Veteran's Day, No Classes Thanksgiving Holiday, No Classes Winter Break Return to Class Martin Luther King, Jr. Day, No Classes President's Day, No Classes Graduation Fall Trimester Ends
SPRING TRIMESTER 2011	February 28 March 28-April 1 May 30 June 17 June 17	Spring Trimester Begins Spring Break Memorial Day, No Classes Graduation Spring Trimester Ends

## ❖ admissions

Perry Technical Institute welcomes prospective applicants who are seeking education in one of the 10 training programs offered. Perry Technical Institute admits students of any race/color, sex, creed, marital status, national origin, age and disability to all rights, privileges, programs and activities generally accorded or made available to students at the school. The school does not discriminate on the basis of race/color, sex, sexual orientation, creed, marital status, national origin, age or disability in administration of its educational policies, admissions policies, scholarship and loan programs, and other school administered activities. All applicants must be high school graduates or have earned a General Education Development Certificate (GED), and be at least 16 years of age.

### ADMISSIONS PROCEDURES

To apply for admission, applicants should contact an Admissions Representative at Perry Technical Institute to request program information and take a tour of the school facilities. Once the applicant has made a decision to apply for admission to Perry Technical Institute, the applicant must complete an application for admission; provide proof of satisfactory completion of high school or equivalent education; and pay a \$35 registration fee. Candidates will confirm they have already received a catalog or will receive one at the time of acceptance to Perry Technical Institute. The Admissions Office will review the application for admission and notify the applicant in writing the status of admission to the school.

### ADMISSIONS REQUIREMENTS

- 1) Proof of satisfactory completion of high school or equivalent education and valid state-issued photo ID or driver's license.
- 2) Completed application for admission to Perry Technical Institute with \$35 registration fee.
- 3) Successful completion of the entrance exam for the appropriate program.
- 4) Payment of \$500 tuition deposit to ensure a starting date.
- 5) Sign enrollment contract and attend mandatory student orientation.

Additional documentation may be required depending on the individual program requirements.

We enroll students based on the date on which their admissions requirements are complete. When classes reach capacity, students are automatically enrolled in the next available start date. Students requesting to be placed on the waiting list will also be automatically enrolled for the next available start date. Students who request a change in enrollment date will be charged a \$35 registration fee at the time of the third request.

## ❖ academic information

**ATTENDANCE POLICY** Attendance is mandatory. The scheduled start time for all departments is 8:00 a.m. and the scheduled end time is 3:30 p.m., Monday through Friday with the following exceptions: The Electrical Department starts at 7:47 a.m. and the HVAC/R Department ends at 3:43 p.m., which

is in compliance with the Department of Labor and Industries to complete extended hours.

**INSTRUCTOR NOTIFICATION** Students are required to notify the instructor before 8:00 a.m. each day they are absent or late. Students must also notify instructors when leaving early or arriving tardy from a scheduled break or lunch. Failure to do so will result in immediate probation.

**CLOCKING-IN** Students are required to clock in when arriving and clock out when leaving, at any given time of the day, other than stated break periods. Student attendance is solely recorded by using an electronic time management system. The time displayed on the time clock is the time that will be accounted for. Students are provided with an ID scan card and are required to scan in and out each day. The cost to replace the ID scan card is \$5. Note: If the scanner does not read a card, the student is required to manually punch in his/her assigned student ID number.

Students leaving campus for an externship are also required to scan their cards at the time they leave or return.

**ABSENCE** is defined as failure to clock in by the scheduled start time and failure to clock out at the scheduled end time (missing an entire school day). Students will be placed on probation until the end of the school term when they have accumulated three (3) days of absences during the term.

**TARDINESS** is defined as clocking in after the scheduled start time as defined in paragraph one above.

**LEAVE EARLY** is defined as clocking out before the scheduled end time as defined in paragraph one above. This includes leaving in the middle of the day at other than stated break periods for any given amount of time.

A student who is tardy and/or leaves early, as defined above, three (3) times in a 20-school-day period will be placed on probation for 20 school-days, or until the end of the term, whichever comes first.

**CLASS CUT** is defined as an absence on an unauthorized basis from a class at other than stated break periods, or leaving a class prior to the end of the scheduled instruction period without instructor permission. This will result in immediate probation.

**DISMISSAL** Students may be dismissed when they have accumulated five (5) days of absences during the term. Following three consecutive days of absences without notification, students will be dismissed.

A student scanning or keying another student's card/ID number will be dismissed. Grades, financial aid and Department of Veteran's Affairs agencies sponsoring students are dependent on accurate records of attendance.

**LEAVE OF ABSENCE** A leave of absence is granted only to students who wish temporarily to interrupt their education for the following reasons: medical emergency, military leave, or other approved family crisis. A leave of absence will not be granted for failure to make satisfactory academic progress. The

leave request must be for a minimum of three (3) consecutive days in length.

A request for leave must be made to the Dean of Education, in writing prior to absence, excluding emergencies, or time away from school will be considered an absence. The written request to the Dean of Education must include a third-party verification of the reason for the leave of absence. Upon approval by the Dean of Education, a Leave of Absence Form must be completed and submitted to the Registrar's Office. The Department of Veterans Affairs and the Financial Aid Office will be notified immediately when the student is granted a leave of absence. A leave of absence will be a maximum of 30 days. Failure to return to class following the leave of absence will result in dismissal. In the event of an emergency situation, leave requests must be submitted within five days of returning to class.

### **SATISFACTORY ACADEMIC PROGRESS POLICY**

**DEFINITION** The student must be making satisfactory academic progress in order to remain eligible for continuous enrollment under regular student status. Students not making satisfactory academic progress will be placed on probation. A student is graded not only on test scores but also on participation in class, attendance, performance in lab and conduct.

Students must: Complete each quarter or trimester with a minimum GPA of 2.0, and the minimum grades established for each subject within the department.

### **PROBATION**

If a student has not met the criteria of satisfactory progress at any point during the term the student will be placed on probation. A student is encouraged to meet regularly with his or her instructor while on probation. A copy of the signed document will be given to the student, the program counselor (if applicable) and the Financial Aid Office and the original is filed in the student's file. While on probation, a student remains eligible to receive Title IV funding. If the student has not achieved satisfactory academic progress by the end of the probation term, he/she may be dismissed.

Exceeding three probations: The school reserves the right to dismiss students who have exceeded three probations.

Repeated terms: Financial aid programs do not typically pay for repeated terms.

### **REPEATING QUARTERS/TRIMESTERS**

A student failing to maintain satisfactory progress or withdrawing from a class in the middle of a term may petition to repeat the quarter or trimester. Upon successful completion of the repeated quarter or trimester, the student will be granted the grade for the quarter or trimester successfully completed in lieu of the previous grade.

No student will be allowed to repeat quarters or trimesters that result in a total time of enrollment exceeding 1.5 times the specified time for the program. Repeating quarters/trimesters may affect financial aid eligibility.

All failures requiring the retake of courses will be charged the current academic year quarterly or trimester rate.

## **TERMINATION OF ENROLLMENT**

### **Withdrawal**

Students who voluntarily withdraw from school must complete a Withdrawal Form and have it signed by specified school officials in order to officially close their records.

### **Dismissal**

The school reserves the right to dismiss any student for any of the following reasons:

- 1) Violation of probation
- 2) Exceeding three probations
- 3) Three consecutive days of unexcused absences
- 4) Scanning or keying another student's card/ID number for attendance
- 5) Students who exceed five combined absences (unexcused and/or excused)
- 6) Aggressive, harassing or discriminatory acts against other students or employees
- 7) Failure to pay tuition
- 8) Failure to meet Satisfactory Academic Progress (SAP)
- 9) Failure to follow school procedures and policies
- 10) Acts of theft or dishonesty
- 11) Failure to comply with safety regulations
- 12) Malicious damage to school property
- 13) Insubordinate acts against staff or other Perry Technical Institute employees
- 14) Illegal drug/alcohol abuse
- 15) Disruption of the learning environment

The Dean of Education will conduct a full hearing of the facts and make a recommendation to the President. The authority to dismiss a student is vested only in the President and the President's decision following a review of the facts is final.

### **APPEAL PROCEDURE**

A student who has been dismissed and wishes to appeal that decision must submit a letter to the school President. The letter must describe any and all circumstances deserving of further consideration. The President will convene an appeal committee consisting of the department head, instructor and a designated representative of the school in order to review the appeal. The student will be notified within one week of the official appeal decision.

### **CLASS/PROGRAM CANCELLATIONS**

Perry Technical Institute makes every effort to meet the needs and desires of its students; however, special circumstances may require the school to cancel classes or programs due to insufficient enrollment or funding. The school reserves the right to make such decisions, as warranted.

For more information regarding admission requirements and policies, please contact our Admissions Office in writing, by telephone, or through the website: Perry Technical Institute, 2011 W. Washington Ave., Yakima, WA 98903, (509) 453-0374, toll-free (888) 528-8586, or [www.perrytech.edu](http://www.perrytech.edu).

## **CLOCK HOUR/CREDIT HOUR CONVERSION SYSTEM**

### **Quarters**

10 Hours of Lecture = 1 Credit

20 Hours of Lab = 1 Credit

30 Hours of Externship = 1 Credit

### **Trimesters**

15 Hours of Lecture = 1 Credit  
 30 Hours of Lab = 1 Credit  
 45 Hours of Externship = 1 Credit

For Financial Aid and Veterans Affairs purposes, the above conversion factors do not apply.

### COURSE IDENTIFICATION SYSTEM

Courses have titles represented by letters and numbers. The first few letters refer to the program, and the first number of the following three numbers represents the term. Note: Course crossover may occur in some programs.

Example 1: EL – Electrical Technology  
 104 – 1st trimester

Example 2: VCG – Visual Communication & Graphic Technology  
 307 – 3rd quarter

### LETTERING SYSTEM

AU Automotive Technology  
 BTA Business Technology & Accounting Program  
 CE Continuing Education  
 EL Electrical Technology  
 IN Instrumentation & Industrial Automation Technology  
 ITC Information Technology & Communication Systems  
 LAP Legal Assistant/Paralegal  
 MA Machine Technology  
 MOA Medical Office Administration & Coding  
 RE Heating, Ventilation, Air Conditioning & Refrigeration Technology  
 VCG Visual Communication & Graphic Technology

### GRADING

The progress or grading system by which a student will be evaluated is as follows:

Grade	GPA	Grade	GPA
A	4.0	C	2.0
A-	3.7	C-	1.7
B+	3.3	D+	1.3
B	3.0	D	1.0
B-	2.7	D-	.7
C+	2.3	F	0

P/F Pass/Fail  
 I Incomplete  
 W Withdraw  
 WP Withdraw/Pass  
 WF Withdraw/Fail  
 CT Challenge test

An incomplete grade will revert to a failing grade if it is not completed by the end of the term. Only in the case of a leave of absence will an incomplete be carried into the next term.

Students are given a grade (progress report) upon completion of each term. A copy is sent to the student's counselor (if applicable) and the documentation is maintained in the school's database.

### MAKE-UP WORK

Make-up work will be available to the student at the discretion of the program instructor.

### GRADUATION REQUIREMENTS

- 1) Completion of:  
 86.5 credit hours for Automotive Technology  
 90 credit hours for Business Technology & Accounting Program  
 136 credit hours for Electrical Technology  
 210.5 credit hours for HVAC/R Technology  
 193 credit hours for ITCS  
 132 credit hours for Instrumentation & Industrial Automation Technology  
 90 credit hours for Legal Assistant/Paralegal  
 171 credit hours for Machine Technology  
 139 credit hours for Medical Office Administration & Coding  
 170 credit hours for Visual Communication & Graphic Technology
- 2) Maintain satisfactory progress with a minimum grade point average of 2.0
- 3) Maintain satisfactory attendance record
- 4) Maintain proper student conduct
- 5) Full payment or satisfactory arrangement to fulfill all financial obligations

### CERTIFICATE OF COMPLETION

Each student satisfactorily completing a course of training is granted a Certificate of Completion.

### ENROLLMENT CAPACITY

Automotive Technology • 32  
 Business Technology & Accounting • 48  
 Electrical Technology • 132  
 HVAC/R Technology • 88  
 ITCS • 96  
 Instrumentation Technology • 132  
 Legal Assistant/Paralegal • 24  
 Machine Technology • 40  
 Medical Office Administration & Coding • 24  
 Visual Communication & Graphics • 72

### RE-ENROLLMENT TO PERRY TECHNICAL INSTITUTE

Students intending to re-enroll after withdrawing or being dismissed from Perry Technical Institute are required to complete a Re-Enrollment Form that may be obtained from the Registrar.

The form will be reviewed by the specified school officials, their responses noted and signed.

The student must write a letter addressed to the Dean of Education which clearly states the following:

- 1) The reason for termination
- 2) The actions taken during the termination period to resolve the problem
- 3) His/her plan to successfully complete the program

### TRANSCRIPTS

Upon graduation, a graduate will receive an official transcript. Fees are assessed for additional transcripts. Official transcripts are \$10 and unofficial transcripts are \$3.

## ❖ student services

### FIRST AID/CPR TRAINING

Students are required to have a two-year first aid/CPR certification. Perry Technical Institute offers first aid/CPR classes on campus. The company providing the certification charges the student a fee for this service.

### HOUSING

The school does not provide housing for students. Subject to availability, dorm accommodations are available on the Yakima Valley Community College campus for eligible students. Information on rental units and dorm accommodations may be obtained from Perry's Admissions Office or through the Perry website, [www.perrytech.edu](http://www.perrytech.edu).

### JOB PLACEMENT

The school does not guarantee placement upon completion of a training program. However, Perry Technical Institute offers continuous career services to its graduates and current students to provide assistance with:

- 1) Job search planning and implementation
- 2) Resume and cover letter preparation
- 3) Mock interviews
- 4) Locating job advertisements
- 5) Coordination of company interviews on campus

The Career Services Office may be contacted for more information or to schedule an appointment to receive assistance.

### STUDENT ACCIDENT INSURANCE

Perry Technical Institute requires each enrolled student to participate in the school's Student Accident Insurance. The Student Accident Insurance is mandatory and will be applied to the student's account each term for a fee. Information about Student Accident Insurance and claim forms are available through the Registrar.

### TUTORING

The school provides academic tutoring at the discretion of the instructor in order to ensure the student's satisfactory progress through the program. Students on academic probation may be required to attend mandatory tutoring.

The Davis High School Media Center, located at 212 South Sixth Avenue, is available to Perry Technical Institute students (with student ID) from 3-8 p.m. Monday through Thursday. Free resources available to PTI students include the following: unlimited computer-access time, book checkout, Internet access, proofreading and tutoring in all subjects. For one-on-one tutoring assistance, please call to (509) 573-2507 or (509) 573-2577 to arrange an appointment.

## ❖ financial aid

Perry Technical Institute offers a variety of financial assistance to eligible students. Aid in the form of grants, loans, jobs and scholarships help offset the cost of educational expenses. Financial aid is administered in accordance with established state and federal policies and philosophies. The basis of these

policies is the belief that financing a student's education is the responsibility of the student and family.

### ELIGIBILITY

A student's financial aid award is based on a demonstrated financial need. Need is determined from analysis of the Free Application for Federal Student Aid Form (FAFSA) and the Perry Technical Institute Data Sheet. These forms are analyzed to determine the expected contribution from the student and the student's family toward the educational expenses. Financial need is the difference between total educational expenses for an academic year and the student/family contribution. Financial aid should be viewed as a supplement only after the full resources of the student and family are committed.

### SATISFACTORY ACADEMIC PROGRESS REQUIREMENTS FOR FINANCIAL AID RECIPIENTS

**DEFINITION** Students must be making Satisfactory Academic Progress in order to remain eligible for financial aid. Students must complete each quarter or trimester with a minimum GPA of 2.0.

If at the end of the enrollment period, the student is not making satisfactory academic progress, financial aid funds will be terminated. The student will be responsible for funding the next enrollment period and if upon completion of that period the student has the minimum GPA of 2.0 he/she may regain financial aid eligibility.

No student will be allowed to repeat quarters or trimesters that result in a total time of enrollment exceeding 1.5 times the specified time for the program.

If, due to extenuating circumstances, the student fails to meet academic progress requirements, he or she may appeal the termination of his or her financial aid. Appeals are completed on the Financial Aid General Appeal Form. Based upon its own review of a student's circumstances, the Financial Services Office may make allowable exceptions to the stated satisfactory progress requirements. All such waivers will be reviewed on an individual basis and will take into consideration special circumstances and improved academic performance.

**Reinstatement of Aid:** Students' financial aid may be reinstated in one of two ways:

- 1) By having the Financial Aid General Appeal Form approved.
- 2) By remaining in school and re-establishing compliance with the minimum cumulative GPA and attendance standards.

**State Need Grant (SNG) Requirements:**

- 1) A student who has been on probation who fails to make satisfactory academic progress at the end of the term will have his/her SNG terminated. If a student wishes to appeal this decision, see Reinstatement of Aid.
- 2) Eligibility for SNG will be monitored every term.
- 3) If less than 50% of credits are completed the SNG will be denied as per the Higher Education Coordinating Board.

### WITHDRAWALS (REFUNDS)

Up through the 60% point in each payment period or period of enrollment, a pro-rata schedule is used to determine how much FSA Program funds the student has earned at the time of withdrawal. After the 60% point in the payment period or period of enrollment, a student has earned 100% of the FSA Program funds.

The amount of financial aid earned is the percentage of aid earned multiplied by the total amount of aid that was disbursed for the payment period or period of enrollment as of the day the student withdrew.

- 1) If the day the student withdrew occurs on or before the student completed 60 % of the payment period or period of enrollment for which the assistance was awarded, the percentage earned is equal to the percentage of the payment period for which assistance was awarded that was completed.
- 2) If the day the student withdrew occurs after the student has completed greater than 60 percent of the payment period or period of enrollment, the percentage earned is 100%.

The percentage of the payment period or period of enrollment completed is determined by calculating the total number of calendar days in the payment period divided into the number of calendar days completed in that period as of the day the student withdrew.

Funds will be returned in the following order:

1. Unsubsidized Federal Stafford Loans
2. Subsidized Federal Stafford Loans
3. Perkins Loans
4. Federal/Direct Plus Loans
5. Federal Pell Grants
6. FSEOG
7. WA State Opportunity Grant

### REFUNDING STATE NEED GRANTS

If a student withdraws and his/her last date of attendance is prior to or at 50% of the term, the SNG repayment will be based on the percent of the term not completed, according to the SNG repayment policy.

### ❖ veteran education benefits

Perry Technical Institute is approved for training for the following veteran's programs:

- Chapter 30** - (Montgomery GI Bill – Active Duty Education Assistance Program)
- Chapter 31** - (Disabled – Vocational Rehabilitation)
- Chapter 35** - (Survivors and Dependents Education Assistance Program)
- Chapter 1606** - (Montgomery GI Bill – Selected Reserve Education Assistance Program)
- Chapter 1607** - (Montgomery GI Bill – Reserve Education Assistance Program)

To apply for benefits, you may obtain an application at Perry Technical Institute or your local VA office. Return the completed application to PTI along with a certified copy of your DD214

form. You must also provide copies of transcripts from any other colleges that you have attended. The Veterans Certifying Official will forward applications to the Department of Veterans Affairs.

### MILITARY ACTIVE DUTY POLICY

- 1) A student leaving for active duty during an academic term will receive an Incomplete.
- 2) The student should request to resume academic work within six months of returning from active duty.
- 3) The school will place the student in the earliest possible enrollment period.
- 4) Upon returning and finishing the academic work for the class section, the Incomplete will be removed and a final grade for that section will be given.

### REFUND POLICY FOR ACTIVE DUTY

- 1) Refunds will be processed in accordance with the Title IV refund policy when applicable.
- 2) Upon returning, Military Active Duty students will receive a waiver equal to the amount of prior tuition unless Financial Aid funds were used to pay for that portion.

### ❖ perry technical foundation scholarships

In 1992, a group of community volunteers pledged their commitment to Perry Technical Institute by forming Perry Technical Foundation. The foundation's mission is to raise funds for student scholarships, loans, instructional equipment and capital improvements which enrich learning on the Perry campus.

The demand for technical training is rising, but so are the costs. The average total cost of completing a two-year training program at Perry is more than \$25,000 and approximately 85% of our students receive some form of financial aid. While some students qualify for state and federal assistance, Perry receives no direct funding from government agencies or from community campaigns such as United Way.

Perry Technical Foundation helps Perry Tech students by seeking support from alumni, community members, foundations and corporations. These gifts enable the foundation to offer scholarships to deserving students working toward their career goals. We believe our partnership with the community is essential to fulfilling our mission of providing technical training within the community to provide the nation with a qualified workforce.



## ❖ trimester tuition schedule

### ELECTRICAL AND INSTRUMENTATION

Summer Trimester – June 28, 2010	\$3,702.00
Fall Trimester – October 25, 2010	\$3,702.00

Spring Trimester – February 28, 2011	\$3,702.00
Summer Trimester – June 21, 2011	\$3,962.00
Fall Trimester – October 24, 2011	\$3,962.00

Additional Costs (estimates):	Electrical	Instrumentation
Books and Tools	\$3,500.00	\$3,500.00
Field Trips	650.00	750.00
First Aid/CPR Class	22.00	22.00
Student Accident Insurance (per term)	26.00	26.00
Technology Fee (per term)	20.00	20.00
Lab Fee (per term)	60.00	
Electrical Training Certificate	39.00	
ISA Student Membership Dues		20.00
Field Training Fee (per term)	100.00	
Graduation Fee (per term)	7.00	7.00

## ❖ quarter tuition schedule

### AUTOMOTIVE, BUSINESS TECHNOLOGY & ACCOUNTING, MEDICAL OFFICE ADMINISTRATION & CODING, HVAC/R, ITCS, LAP, MACHINE AND VCG

Summer Quarter – June 28, 2010	\$2,776.50
Fall Quarter – September 28, 2010	\$2,776.50
Winter Quarter – January 3, 2011	\$2,776.50
Spring Quarter – April 4, 2011	\$2,776.50
Summer Quarter – June 21, 2011	\$2,971.50
Fall Quarter – September 26, 2011	\$2,971.50

Additional Costs (estimates):	Auto	LAP	MOAC	BTA	VCG	HVAC/R	ITCS	Machine
Books and Tools	\$3,680.00	\$2,620.00	\$3,135.00	\$2,620.00	\$4,500.00	\$2,400.00	\$3,900.00	\$3,575.00
Field Trips	150.00	100.00	100.00	100.00	100.00		750.00	300.00
First Aid/CPR Class	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00
Student Accident Insurance (per term)	22.00	22.00	22.00	22.00	22.00	22.00	22.00	22.00
Technology Fee (per term)	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Lab Fee (per term)		30.00	30.00	30.00	45.00	50.00	35.00	45.00
Graduation Fee (per term)	10.50	10.50	7.00	10.50	5.25	5.25	5.25	5.25
Protective Clothing Rental (per term)	35.00							
Electrical Training Certificate						39.00	39.00	
TSA Membership Dues							25.00	
FCC License Exam								70.00
Access Certification Exam			81.44	81.44	81.44			
Excel Certification Exam			81.44	81.44	81.44			
Powerpoint Certification Exam			81.44	81.44	81.44			
Word Certification Exam			81.44	81.44	81.44			
Industry Certifications			575.00					100.00

\*The State of Washington does not allow for tax-exemption of items purchased for use in the State of Washington such as books and tools for instruction received in the State of Washington.

## ❖ tuition and fees

### TUITION PAYMENT REQUIREMENTS

Students pay tuition on a quarterly or trimester basis. Tuition is due at the start of each program quarter or trimester. Students with a balance owing will not be allowed to continue into the next enrollment period. There is an optional Tuition Payment Plan (TPP) available which may be subject to a fee and late charges.

### DELINQUENT ACCOUNTS

In the event a student's account is delinquent, the student may be required to pay late fees and all reasonable collection costs, including attorney fees and collection agency fees in accordance with Washington State law.

### RETURNED CHECK PROCESSING FEE

A charge of \$32 is assessed each time a student's check is returned by a bank withholding payment.

### REFUND POLICY

In accordance with federal and state regulations, Perry Technical Institute provides fair and equitable adjustment to all students. If the student is entitled to a refund, the refund must be paid within 30 calendar days of the student's official date of termination.

- 1) An applicant to the school who is rejected will receive a full refund.
- 2) An applicant whose class is cancelled will receive a full refund.
- 3) All monies paid by an applicant will be refunded if the applicant cancels within five business days (except Sundays and holidays) following the date the contract is signed or an initial payment is made, as long as the applicant has not begun training.
- 4) If the applicant cancels after the fifth business day after signing the contract or making initial payment, but prior to attending class, the school will retain the \$35 registration fee and refund any other monies paid by the applicant.
- 5) A student who has not visited the school facility prior to enrollment will have the opportunity to withdraw within three days following either attendance at a regularly scheduled orientation or following a tour of the school facilities and inspection of equipment with a full refund.
- 6) The school reserves the right to cancel a class start date due to insufficient enrollment. If this occurs, the student may request a full refund of all monies paid or apply all monies paid to the next scheduled class start date.

When calculating refunds, the official date of a student's termination is the last date of recorded attendance:

- 1) When notification of withdrawal or cancellation is received in writing on an official Perry Technical Institute Termination of Enrollment Form.
- 2) When the student is dismissed for a violation of a published school policy.
- 3) When a student, without notice, fails to attend class for three consecutive days.

The term "period of enrollment for which the student has been charged" is determined by dividing the total number of days that make up the period of enrollment for which the student has been charged into the number of days remaining in that period. Termination date for adjustment computation is the last recorded date of student attendance.

The following schedule is used to calculate refunds:

If the student completes this amount of training:	School refunds to student:
Through the first 10%	90%
10% through 25%	75%
25% through 60%	50%
More than 60%	0%

Any student receiving federal or state financial aid who officially or unofficially withdraws from Perry Technical Institute will have funds returned to the appropriate financial aid program based on the regulations governing the program.

There is no refund for books purchased.

## ❖ general information

### PROGRAM ADVISORY COMMITTEES

Each program at Perry Technical Institute maintains an independent Advisory Committee that meets two times per year to review the established curriculum and comment as to the appropriateness and adequacy of the program objectives, program length, curriculum content, learning resources, facilities and equipment, student graduation, and graduate employment. The majority of the members of each Program Advisory Committee are employers representing the major occupations for which training is provided. Departments with student associations may also include student members as well as instructional staff.

### ARTICULATION AGREEMENT WITH YAKIMA VALLEY COMMUNITY COLLEGE

A collaborated program between Perry Technical Institute and Yakima Valley Community College provides students with the opportunity to earn an Associate of Applied Science in four technical areas\*. Upon acceptance into a designated Perry Technical Institute program, students may begin taking required classes at Yakima Valley Community College. This can be done while waiting for entrance into the technical portion of their degree, while they complete the technical portion or after they completed their technical portion.

An Associate of Applied Science along with the technical program allows students to work more effectively in their chosen field and to help them compete for advanced opportunities. An official referral from Perry Technical Institute is required for students enrolling under the terms of this agreement.

In addition to completing their technical program at Perry Technical Institute, students complete credits at Yakima Valley Community College. Credits are designated as core requirements and are required for all programs. For additional information, please contact the Workforce Education Division at Yakima Valley Community College at (509) 574-4744 or

(509) 574-4796 ([www.yvcc.edu](http://www.yvcc.edu)) or Perry Technical Institute at (509) 453-0374.

\*The Automotive Technology, Business Technology & Accounting, Legal Office Assistant/Paralegal, Medical Office Administration & Coding, Information Technology & Communication Systems and Visual Communication & Graphic Technology Programs do not have articulation agreements with Yakima Valley Community College.

### COMPARABLE PROGRAMS

Information about comparable programs, tuition, and length of programs may be obtained by contacting:

Accrediting Commission of Career Schools  
and Colleges of Technology  
2101 Wilson Blvd., Suite 302  
Arlington, VA 22201  
Telephone: (703) 247-4212  
[www.accsc.org](http://www.accsc.org)

### STUDENT COMPLAINT/GRIEVANCE PROCEDURE

Perry Technical Institute utilizes policies and procedures for handling student complaints and informs the students in writing of them. When a student has a complaint, he/she is encouraged to follow the chain of command and communicate informally first with the instructor, then the department head and then the Dean of Education. If the student is still unsatisfied, he/she is asked to file a PTI Complaint Form at the Registrar's Office and then encouraged to make an appointment with the President for further discussion and action.

A student may consider contacting the Workforce Training and Education Coordinating Board. Contact information for the Workforce Training and Education Coordinating Board is as follows:

Workforce Training and Education Coordinating Board  
128 Tenth Ave. SW  
Olympia, WA 98504-3105  
Telephone (360) 753-5673.

More information can be obtained by referencing RCW's Title 28C > Chapter 28C.10 or 28C.10.084(10) and 28C.10.120 or WACs > Title 490 > Chapter 490-105 > Section 490-105-180

If a student does not feel that the school has adequately addressed a complaint or concern, the student may consider contacting the Accrediting Commission of Career Schools and Colleges. All complaints considered by the commission must be in written form, with permission from the complainant(s) for the Commission to forward a copy of the complaint to the school for a response. The complainant(s) will be kept informed as to the status of the complaint as well as the final resolution by the commission. Please direct all inquiries to:

Accrediting Commission of Career Schools and Colleges  
2101 Wilson Blvd., Suite 302  
Arlington, VA 22201  
Telephone: (703) 247-4212

A copy of the Commission's Complaint Form is available by contacting Perry's Registrar.

### CONDUCT STANDARDS

Admission to Perry Technical Institute carries with it the expectation that students will conduct themselves as responsible members of the school community, that they will comply with the rules and regulations of the institution, maintain high standards of integrity and honesty, respect the rights, privileges, and property of other members of the school community, and will not interfere with legitimate Perry Technical Institute affairs.

Perry Technical Institute maintains the right to make and enforce rules for conduct. This includes the right to dismiss at any time a student whose conduct, academic standing or health is such that the Administration believes it undesirable for that student to continue at Perry Technical Institute.

A student policy handbook is provided to all new students the first day of class. The booklet provides a complete statement of the policies and procedures and describes student rights and responsibilities which govern students attending Perry Technical Institute, including any disputes involving the school, its faculty or staff and the student.

### DRUG-FREE ENVIRONMENT POLICY

Perry Technical Institute prohibits the unlawful manufacture, possession, use, sale, dispensation, or distribution of controlled substances and the possession or use of alcohol by students and employees on its property and at any school-related activity. Further information on Perry Technical Institute's policies can be found in the Student Handbook. Any violation of these policies will result in appropriate disciplinary actions up to and including dismissal, even for a first offense. Students with "Reasonable Suspicion" may be required to be tested for illegal drug or alcohol abuse. Refusal to do so may result in dismissal from the school.

Violations of the law will also be referred to the appropriate law enforcement authorities. Students may be referred to abuse help centers. If such a referral is made, a leave of absence may be required, and re-enrollment will be subject to successful completion of any prescribed counseling or treatment program.

### UNLAWFUL HARASSMENT POLICY

All members of Perry Technical Institute's community, including, the faculty, students, and staff, have the right to be free from sexual harassment by any other member of Perry Technical Institute's community. Should a student feel that he/she has been harassed, the student should immediately inform the Dean of Education and/or the President.

Sexual harassment refers to, among other things, sexual conduct that is unwelcome, offensive, or undesirable to the recipient, including unwanted sexual advances.

All students and employees must be allowed to work and study in an environment free from unsolicited and unwelcome sexual overtures and advances. Unlawful sexual harassment will not be tolerated.

### LIABILITY

Perry Technical Institute is not responsible for loss or damage to personal property or for personal injury occurring while on the school grounds or on field trips.

## **PARKING PERMIT POLICY**

All vehicles parked regularly on the Perry Technical Institute campus must have a parking permit visibly displayed on the rearview mirror at all times. If a student forgets his/her parking permit or it is lost or stolen, he/she should report to the Main Office immediately to obtain a temporary permit or to purchase a new permit. Each student is allowed two temporary parking permits per term and after two temporary permits must purchase a new parking permit for \$3. If a vehicle is found without a parking permit or in violation of the parking lot regulations, Security will put a parking ticket on the vehicle's windshield describing what action needs to be taken. If the issue is not resolved by the end of the school day, the vehicle may be towed or disciplinary action may be taken. Students who drive multiple vehicles may switch their parking permit between vehicles or purchase another parking permit for \$3. All drivers must fill out a Vehicle Registration Form to give the school a record of all vehicles on campus. Students must notify the Main Office if their vehicle information changes

## **NON-DISCRIMINATION POLICY**

Perry Technical Institute does not discriminate on the basis of race, color, national origin, sex, sexual orientation, disability, or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies:

Registrar  
Perry Technical Institute  
2011 W. Washington Ave.  
Yakima, WA 98903  
(509) 453-0374 or (888) 528-8586

Seattle Office  
Office for Civil Rights  
U.S. Department of Education  
915 Second Ave., Room 3310  
Seattle, WA 98174-1099  
Telephone: (206) 220-7900  
Fax: (206) 220-7887; TDD: (877) 521-2172  
Email: OCR.Seattle@ed.gov

## **STUDENT RECORDS**

Students have the right to review, inspect or release their confidential education records. A student requesting to review their education records shall make the request in writing to the PTI Registrar. The Registrar must be presented with proper identification which may include the student's identification card or a driver's license containing a picture of the student.

Perry Technical Institute maintains a permanent educational record for all currently enrolled students that consists of all admissions, academic and information upon which a student's enrollment is based. These records (physical or electronic) must be securely maintained and protected against damage or loss (e.g., fire, water, theft, tampering, etc.).

Perry Technical Institute maintains an official transcript for all formerly enrolled students (i.e., graduates and terminated or withdrawn students). The transcript includes, at a minimum, the program of study; the date of program entry; the date of graduation, termination or withdrawal; and the clock or credit hours and grades earned. An official transcript is available to

students upon request and in accordance with the school's policies. The transcripts (physical or electronic) are securely maintained indefinitely and protected against damage or loss (e.g., fire, water, theft, tampering, etc.).

Perry Technical Institute maintains student financial records related to financial aid, tuition and fee payments, and tuition refunds for a minimum of five years. (State or federal regulation or law may require these records to be maintained for a longer period of time.)

## **CHANGES**

This catalog is current as of the date of publication. Perry Technical Institute reserves the right to make changes at any time to any provision of this catalog, including the amount of tuition and fees; academic programs and courses; Perry Technical Institute policies and procedures; faculty and administrative staff; academic calendar; and other dates and provisions. Perry Technical Institute also reserves the right to make changes in equipment and instructional materials, to modify curriculum and, when size and curriculum permit, to combine classes.

From time to time, it may be necessary or desirable for Perry Technical Institute to make changes to this catalog due to the requirements and standards of Perry Technical Institute's accrediting body, state authorization agency or the United States Department of Education, or due to the market conditions, employer needs or for other reasons.

To see the most current version of the catalog, please visit our website at [www.perrytech.edu](http://www.perrytech.edu).

## ❖ automotive technology

The Automotive Technology Program is designed to help students achieve the necessary understanding of automotive principles through a variety of experiences including classroom learning, lab activities, working on customer vehicles, writing repair orders and ordering parts. The objective of this program is to provide students with a broad base of knowledge and the skills necessary for employment in the automotive industry.

The Automotive Technology Program is certified by the National Automotive Technicians Education Foundation (NATEF) and the course reflects the national automotive training standards established by the National Institute for Automotive Service Excellence (ASE). The eight recognized areas of automotive repair are addressed in this program. The eight areas include engine performance; engine repair; automatic transmission and transaxle; manual drive train and axles; suspension and steering; brakes; electrical/electronic; and heating and air conditioning systems.

Section 609 of the U.S. Clean Air Act of 1990 requires that all mobile service technicians opening the refrigeration circuit in automotive air conditioning systems be certified in refrigerant recovery and recycling procedures. The automotive department offers the opportunity to obtain Section 609 Certification.

In the Automotive Technology Program, a student must achieve a minimum quarterly GPA of 2.0 in the academic subject material and a 2.0 GPA in lab to maintain satisfactory progress.

Rewarding employment opportunities in the automotive field are numerous and varied throughout the Northwest. The goal for students who successfully complete the course is employment as entry-level technicians in the automotive industry. The Automotive Technology Program is 12 months in length. The student will earn 86.5 credit hours which are 1,344 clock hours. Tuition is payable on a quarterly basis. There are four quarters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Quarter 1	AU 101	Intro Automotive Technology	48	4.5
	AU 101L	Intro Automotive Technology Lab	60	3.0
	AU 102	Automotive Engine Repair	50	5.0
	AU 102L	Automotive Engine Repair Lab	70	3.5
	AU 103	Basic Automotive Electrical Systems	48	4.5
	AU 103L	Basic Automotive Electrical Systems Lab	<u>60</u>	<u>3.0</u>
			336	23.5
Quarter 2	AU 201	Automotive Chassis Systems	70	7.0
	AU 201L	Automotive Chassis Systems Lab	130	6.5
	AU 202	Advanced Automotive Electrical Systems	50	5.0
	AU 202L	Advanced Automotive Electrical Systems Lab	<u>86</u>	<u>4.0</u>
			336	22.5
Quarter 3	AU 301	Automotive Engine Performance & Drivability	80	8.0
	AU 301L	Automotive Engine Performance & Drivability Lab	140	7.0
	AU 302	Automotive Climate Control Systems	35	3.5
	AU 302L	Automotive Climate Control Systems Lab	60	3.0
	AU 303	Customer Service	7	0.5
	AU 303L	Customer Service Lab	<u>14</u>	<u>0.5</u>
			336	22.5
Quarter 4	AU 401	Automotive Drive Train Systems	70	7.0
	AU 401L	Automotive Drive Train Systems Lab	145	7.0
	AU 402	Externship	<u>121</u>	<u>4.0</u>
			336	18.0
	Program Totals		1344	86.5

### AUTOMOTIVE TECHNOLOGY COURSE DESCRIPTIONS

#### AU 101 Intro to Automotive Technology

This course covers workplace safety, hazardous materials and environmental regulations, use of hand tools, service information resources, basic concepts, systems, and terms of automotive technology. Topics include familiarization with vehicle systems along with identification and proper use of various automotive hand and power tools. Upon completion,

students will be able to describe safety and environmental procedures, terms associated with automobiles, and know how to use basic tools and shop equipment.

#### AU 101L Intro to Automotive Technology Lab

Apply technical knowledge acquired in classroom to lab assignments.

**AU 102 Automotive Engine Repair**

This course covers the theory, construction, inspection, diagnosis, and repair of internal combustion engines and related systems. Topics include fundamental operating principles of engines and diagnosis, inspection, adjustment, and repair of automotive engines using appropriate service information. Upon completion, students will be able to perform basic diagnosis, measurement and repair of automotive engines using appropriate tools, equipment, procedures, and service information.

**AU 102L Automotive Engine Repair Lab**

Apply technical knowledge acquired in classroom to lab assignments

**AU 103 Basic Automotive Electrical Systems**

This course covers basic electrical theory, wiring diagrams, test equipment, diagnosis, repair, and replacement of batteries, starters, and alternators. Topics include Ohm's Law, circuit construction, wiring diagrams, circuit testing, and basic troubleshooting. Upon completion, students will be able to properly use wiring diagrams, diagnose, test, and repair basic wiring, battery, starting, charging, and electrical concerns.

**AU 103L Basic Automotive Electrical Systems Lab**

Apply technical knowledge acquired in classroom to lab assignments

**AU 201 Automotive Chassis Systems**

This course covers principles of operation and diagnosis/repair of manually and electronically controlled suspension and steering systems. Also included are the diagnosis and repair of hydraulic brake, drum brake, disc brake and anti-lock brake systems. Upon completion, students will be able to service and repair steering and suspension components, check and adjust alignment angles, repair tires and balance wheels and demonstrate skills in hydraulic brake, drum brake, disc brake and anti-lock brake systems.

**AU 201L Automotive Chassis Systems Lab**

Apply technical knowledge acquired in classroom to lab assignments.

**AU 202 Advanced Automotive Electrical Systems**

This course covers electronic theory; wiring diagrams; test equipment; and diagnosis, repair and replacement of electronics, lighting, gauges, horn, wiper, accessories, and body modules. Topics include networking and module communication, circuit construction, wiring diagrams, circuit testing, and troubleshooting. Upon completion, students will be able to properly use wiring diagrams, diagnose, test, and repair wiring, lighting, gauges, accessories, modules and electronic components.

**AU 202L Advanced Automotive Electrical Systems Lab**

Apply technical knowledge acquired in classroom to lab assignments.

**AU 301 Automotive Engine Performance & Drivability**

This course covers the introduction, theory of operation and diagnostic procedures used to locate engine performance concerns. Topics will include currently used fuel-injected systems, computerized ignition, injection components,

emission control, OBD II (on-board diagnostics) and inter-related electrical/electronic systems. Upon completion, students will be able to diagnose and repair complex engine performance concerns using appropriate test equipment and service information.

**AU 301L Automotive Engine Performance & Drivability Lab**

Apply technical knowledge acquired in classroom to lab assignments.

**AU 302 Automotive Climate Control Systems**

This course covers the theory of refrigeration and heating; including manual and electronic climate control systems. Students will understand the importance of recovery and recycling refrigerant as well as adhering to safety and environmental regulations. Upon completion, students will be able to diagnose and safely service climate control systems using appropriate tools, equipment, and service information.

**AU 302L Automotive Climate Control Systems Lab**

Apply technical knowledge acquired in classroom to lab assignments.

**AU 303 Customer Service**

This course emphasizes how to provide excellent customer service. Students learn proper telephone skills, problem resolution skills and how to handle difficult situations.

**AU 303L Customer Service Lab**

Apply technical knowledge acquired in classroom to lab assignments.

**AU 401 Automotive Drive Train Systems**

This course covers operation, diagnosis, service, and repair of automatic transmissions/transaxles. Topics include hydraulic, pneumatic, mechanical, and electrical/electronic operation of automatic drive trains and the use of appropriate service tools and equipment. This course will also cover manual transmissions/transaxles, clutches, driveshaft's, axles, and final drives. Topics include theory of torque, power flow, and manual drive train servicing and repair using appropriate service information, tools, and equipment.

Upon completion, students will be able to explain operational theory, diagnose and repair automatic and manual drive trains.

**AU 401L Automotive Drive Train Systems Lab**

Apply technical knowledge acquired in classroom to lab assignments.

**AU 402 Externship**

Students will learn advanced career planning practices and demonstrate skills and competencies in externship assignments. Students must have a "C+" or better in current coursework, must not be under any type of probationary contract, and must complete and submit a regular lab work experience employer evaluation. The instructor may terminate industry work experiences at any time if students do not adhere to these requirements.

## AUTOMOTIVE TECHNOLOGY BOOK AND TOOL LIST

The book and tool list for students in the Automotive Technology Program is intended to be a minimum requirement to complete the program.

### Book List:

The book list will be provided with your course syllabi on your first day of school.

### Required Book:

Automotive Technology, Fifth Edition, Jack Erjavec, 2005

### Tool List:

The cost of tools for the Automotive Program is \$2,613-\$3,500 depending on the brand purchased. During the first week of class, new students will meet with tool vendors to purchase tools. Tool prices may vary. The prices stated do not include any mark-up for program students or any sales taxes. Tool list may vary according to industry requirements.

Antifreeze tester

Allen wrenches, standard (.050"-3/8") metric (1.5mm-7mm)

Adjustable wrenches – 10"

Battery tools

Battery nut pliers

Battery terminal clamp puller

Post cleaner, top & side

Blow gun-rubber tip, OSHA approved

Brake tools

Spring pliers

Hold-down tool

Adjustable spoon

Chisel & punch set, including:

Tapered punches

Pin punches

Brass drift punch

Cold chisel

Cape chisel

Combination wrenches

Standard – 1/4"-3/4"

Metric – 7mm-19mm

Compression tester

Digital multi-meter

Dial caliper/w 6" ruler

Drill – 3/8" battery powered with clutch

Drill bits – 29 piece, reduced shank, 1/16-1/2

Feeler gauges (1) – straight

Fender covers (2)

File set, three piece, 6" flat, round & triangle

Filter wrenches – oil, 3 1/2" & 2 7/8"

Flare nut wrenches – 3/8"-3/4" (10mm-17mm)

Flashlight with batteries

Hack saw with blades

Hammers

16 oz. ball peen

48-60 oz. hand sledge

Dead blow

Air impact gun – 1/2" drive, with sockets – 1/2"-11/8"

Inspection mirror

Magnetic pickup tool

Pliers

Wire crimping

Needle nose

6" slip joint

6" diagonal cutter

8" locking pliers

10" or 12" adjustable water pump

Pry bar – 16"

Remote starter switch

Safety glasses

Scraper – gasket

Screwdrivers

Slot – stubby, #1, #2, #3

Phillips – stubby, #1, #2, #3

Torx set 3/8" drive T10-T50 and 1/4"-3/8" drive bits

Snap ring plier set – long, med, & small: (not replacement bit type)

Socket set – 1/4" drive

Standard shallow 1/4"-9/16"

Standard deep 3/16"-9/16"

Metric shallow 4mm-15mm

Metric deep 6mm-15mm

Ratchet

Extension: 2" long, 6" long

Screwdriver handle

Adapter – 1/4" -3/8"

Universal joint – 1/4" drive

Socket set – 3/8" drive

1/4"-7/8" standard shallow

3/8"-7/8" standard deep

6mm-19mm metric shallow

10mm-19mm metric deep

Flex sockets – 3/8" -3/4" (10mm-19mm)

Ratchet

Extensions (4) – short, med, long 24"

Spark plug sockets, 5/8" & 13/16" universal joint

Adapter – 3/8" - 1/2"

Universal joint, 3/8" drive

Socket set – 1/2" drive

Adapters – 1/2" -3/8"

7/16" -1 1/4" standard shallow

1/2"-1 1/4" standard deep

10mm-24mm metric shallow

Ratchet and breaker bar

Extensions (3) – 2", 5" & 10".

Universal joint – 1/2" drive

Solder gun – 250 watt or greater or butane type

Spark plug gap gauge

Spark plug wire remover plier type

Spark tester (in-line)

Steel tape measure – 12'

Stethoscope

Test light – 12 volt

Tire air check, with adapter

Tire pressure gauge

Tire valve core tool

Torque wrench – 1/2" drive, 25-250 ft./lb.

Torque wrench – 3/8" drive, 25-250 in./lb.

Wire brush

Rollaway tool box with or without top box adequate to hold required tools with reasonable room for expansion

## ❖ business technology & accounting program

The Business Technology & Accounting Program is the launching pad toward entry-level jobs in a variety of business and office positions such as software applications specialist, bookkeeper, office administrator, secretary and office/clerical positions. These types of positions are in constant demand and serve as the first step up the ladder to an office or business environment.

The first two quarters prepare students to take Microsoft Office Specialist (MOS) certification exams in Microsoft Word, Excel, Access and PowerPoint. By the end of the first two quarters, students will be able to demonstrate a solid understanding of computers including entry-level keyboarding operations and basic maintenance. They will develop an understanding of how to use the Windows operating system and various software applications. They will also learn the importance of career planning and how to develop a positive customer service environment.

In the second two quarters, students will advance into more specialized subjects. Students will be required to develop a solid understanding of entry-level desktop publishing and computerized accounting and acquire a higher level of keyboarding skills as they prepare for externships and employment opportunities. They will also prepare to take the National Registered Bookkeeper (NRB) certification exam.

Students will learn advanced career planning practices and demonstrate skills and competencies in an externship assignment. Students must have a "C+" or better in current coursework, must not be under any type of probationary contract, and must complete and submit a regular lab work experience employer evaluation. The instructor may terminate industry work experiences at any time if students do not adhere to these requirements.

The Business Technology & Accounting Program is 12 months in length. The student will earn 90.0 credit hours which are 1,344 clock hours. Tuition is payable on a quarterly basis. There are four quarters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Quarter 1	BTA 101	Computer Applications	30	3.0
	BTA 101L	Computer Applications Lab	30	1.5
	BTA 105	Business English I	30	3.0
	BTA 105L	Business English I Lab	30	1.5
	BTA 110	Keyboarding I	12	1.0
	BTA 110L	Keyboarding I Lab	18	.5
	BTA 115	Word Processing	30	3.0
	BTA 115L	Word Processing Lab	30	1.5
	BTA 120	Spreadsheets	30	3.0
	BTA 120L	Spreadsheets Lab	30	1.5
	BTA 130	Business Math	30	3.0
	BTA 130L	Business Math Lab	<u>36</u>	<u>1.5</u>
		336	24.0	
Quarter 2	BTA 201	Business English II	30	3.0
	BTA 201L	Business English II Lab	30	1.5
	BTA 205	Database & Integration	44	4.0
	BTA 205L	Database & Integration Lab	44	2.0
	BTA 210	Keyboarding II	12	1.0
	BTA 210L	Keyboarding II Lab	18	.5
	BTA 215	Business Presentation	40	4.0
	BTA 215L	Business Presentation Lab	46	2.0
	BTA 220	Career Planning I	18	1.5
	BTA 220L	Career Planning I Lab	12	.5
	BTA 230	Business Etiquette	18	1.5
	BTA 230L	Business Etiquette Lab	<u>24</u>	<u>1.0</u>
		336	22.5	
Quarter 3	BTA 301	Business English III	30	3.0
	BTA 301L	Business English III Lab	30	1.5
	BTA 305	Business Ethics	30	3.0
	BTA 305L	Business Ethics Lab	30	1.5
	BTA 310	Financial Accounting	36	3.5
	BTA 310L	Financial Accounting Lab	40	2.0
	BTA 315	Career Planning II	15	1.5
	BTA 315L	Career Planning II Lab	20	1.0
BTA 320	Business Communications	24	2.0	

(cont. on next page)

			Clock Hours	Credit Hours
	BTA 320L	Business Communications Lab	27	1.0
	BTA 325	Office Administration	24	2.0
	BTA 325L	Office Administration Lab	<u>30</u>	<u>1.5</u>
			336	23.5
Quarter 4	BTA 401	Customer Service	20	2.0
	BTA 401L	Customer Service Lab	20	1.0
	BTA 405	Employment Preparation	20	2.0
	BTA 405L	Employment Preparation Lab	15	.5
	BTA 410	Managerial Accounting	35	3.5
	BTA 410L	Managerial Accounting Lab	30	1.5
	BTA 415	Entrepreneurship	36	3.5
	BTA 415L	Entrepreneurship Lab	40	2.0
	BTA 430E	Externship	<u>120</u>	<u>4.0</u>
			336	20.0
	Program Totals		1344	90.0

## BUSINESS TECHNOLOGY & ACCOUNTING COURSE DESCRIPTIONS

### BTA 101 Computer Applications

This course covers the basics of computer hardware, software, networks and the Internet. The objective is to prepare the student to take the MOS certification exam. Students learn Microsoft Publisher to create posters, newsletters, flyers and more, covering topics such as page layout, command frames, table frames, WordArt, background pages and much more.

### BTA 101L Computer Applications I Lab

Directed lab with structured learning.

### BTA 105 Business English I

A concentrated overview of sentence writing, this course emphasizes sentence combining, basic mechanics and paragraph writing.

### BTA 105L Business English I Lab

Directed lab with structured learning.

### BTA 110 Keyboarding I

In this course, students learn beginning typing and 10-key skills. The objectives are for students to learn how to type by touch and how to take a timed keyboarding test for accuracy and speed.

### BTA 110L Keyboarding I Lab

Directed lab with structured learning.

### BTA 115 Word Processing

Students learn how to use Microsoft Word for basic and advanced word processing. The objective of this course is to prepare students to take the MOS certification exam for Word.

### BTA 115L Word Processing Lab

Directed lab with structured learning.

### BTA 120 Spreadsheets

Students learn Microsoft Excel and how to build business and financial applications for forecasting, budgeting and basic bookkeeping. The objective of this course is to prepare students to take the MOS certification exam for Excel.

### BTA 120L Spreadsheets Lab

Directed lab with structured learning.

### BTA 130 Business Math

Students will review the basic operations of arithmetic, understand and manage their personal finances, as well as grasp the fundamentals of business finances. This course will prepare students to be smart shoppers, informed taxpayers, and valued employees. Basic math skills will be covered in a step-by-step manner, building student confidence along the way.

### BTA 130L Business Math Lab

Directed lab with structured learning.

### BTA 201 Business English II

This course emphasizes basic punctuation, grammar rules, and sentence structure. The course is designed to introduce basic reading skills and to develop basic writing skills. Coursework emphasizes writing from observation as well as writing in response to readings. Students will practice writing sound paragraphs which express a main idea clearly and develop it fully with a minimum of errors in sentence structure, punctuation and spelling.

### BTA 201L Business English II Lab

Directed lab with structured learning.

### BTA 205 Database & Integration

Students learn how to create and use databases with Microsoft Access. The objective of this course is to prepare students to take the MOS certification exam for Access. Students will gain exposure to Microsoft Outlook and receive hands-on integration of the entire Microsoft Office Suite.

### BTA 205L Database & Integration Lab

Directed lab with structured learning.

### BTA 210 Keyboarding II

In this course students learn how to improve their accuracy and typing speed. Students also learn formatting for personal and business letters, memoranda, simple tabulation techniques, proofreading and editing. This course covers the basics of computer hardware, software, networks and the Internet.

**BTA 210L Keyboarding II Lab**

Directed lab with structured learning.

**BTA 215 Business Presentation**

This course provides instruction in developing presentation materials. Students create a variety of charts, graphs and interactive presentations. Microsoft PowerPoint enables users to quickly create high-impact, dynamic presentations, while integrating workflow and ways to easily share information.

**BTA 215L Business Presentation Lab**

Directed lab with structured learning.

**BTA 220 Career Planning I**

This course is designed to teach students how to write a professional resume package and to learn basic interviewing skills.

**BTA 220L Career Planning I Lab**

Directed lab with structured learning.

**BTA 230 Business Etiquette**

This course focuses on the fundamentals of etiquette as it relates to business and business relationships inside and outside the office.

**BTA 230L Business Etiquette Lab**

Directed lab with structured learning.

**BTA 301 Business English III (Writing for Business)**

Students learn how to write technical papers, reports, directions, letters and proposals and how to utilize these skills for a career in business.

**BTA 301L Business English III Lab**

Directed lab with structured learning.

**BTA 305 Business Ethics**

This course examines the ethical challenges facing individuals and businesses in modern society. The course utilizes case studies of professionals working in various areas of business and provides guest speakers with real-world experiences.

**BTA 305L Business Ethics Lab**

Directed lab with structured learning.

**BTA 310 Financial Accounting**

Students learn QuickBooks software and basic bookkeeping and accounting skills such as accounts payable, accounts receivable, payroll and general ledger.

**BTA 310L Financial Accounting Lab**

Directed lab with structured learning.

**BTA 315 Career Planning II**

Students learn and study the importance of human resources, financial services, marketing and business communications.

**BTA 315L Career Planning II Lab**

Directed lab with structured learning.

**BTA 320 Business Communications**

Students learn various forms of written business communications and effective verbal communications including proper telephone skills.

**BTA 320L Business Communications Lab**

Directed lab with structured learning.

**BTA 325 Office Administration**

This course is designed to prepare students to manage an office and provides office-related situations including decision-making and critical thinking activities.

**BTA 325L Office Administration Lab**

Directed lab with structured learning.

**BTA 401 Customer Service**

This course emphasizes how to provide excellent customer service. Students learn proper telephone skills, problem resolution skills and how to handle difficult situations.

**BTA 401L Customer Service Lab**

Directed lab with structured learning.

**BTA 405 Employment Preparation**

This course develops the personal and professional skills needed to be successful in business. Topics include confidence building, seeking to understand, beginning with clarity, knowing your personality profile, coping with difficult people, and balancing professional and personal priorities individually and in a team environment.

**BTA 405L Employment Preparation**

Directed lab with structured learning.

**BTA 410 Managerial Accounting**

This course teaches the basic principles and practices of billing, collections, account aging, cash management, account management, report generation and exceptions reporting in an office environment.

**BTA 410L Managerial Accounting Lab**

Directed lab with structured learning.

**BTA 415 Entrepreneurship**

This course focuses on developing and manufacturing a product, obtaining licenses, writing a business plan, selecting suppliers, setting prices, selecting a financial institution and developing advertisements for a small business.

**BTA 415L Entrepreneurship Lab**

Directed lab with structured learning.

**BTA 430E Externship**

Students will learn advanced career planning practices and demonstrate skills and competencies in externship assignments. Students must have a "C+" or better in current coursework, must not be under any type of probationary contract, and must complete and submit a regular lab work experience employer evaluation. The instructor may terminate industry work experiences at any time if students do not adhere to these requirements.

## **BUSINESS TECHNOLOGY & ACCOUNTING BOOK AND TOOL LIST**

The book and tool list for students in the Business Technology & Accounting Program is intended to be a minimum requirement to complete the program.

Tool and book costs are approximately \$2,620. Purchase or lease your laptop computer before school begins.

Estimated cost of a laptop computer and software is \$1,170. Your instructor will give details regarding the purchase of your books and supplies on the first day of school. Book and tool prices may vary. The prices stated do not include mark-up for program students or any sales taxes.

### **Book List:**

The book list will be provided with your course syllabi on your first day of school.

### **Tool List:**

Laptop computer with appropriate software  
Dictionary  
Book bag

### **Students may purchase their computer through a vendor of their choice, including:**

Dell.com  
Toshiba.com  
Sony.com  
Apple.com  
Hp.com  
Gateway.com

Staples, Office Max, Best Buy and Office Depot are authorized PC dealers.

### **Laptop Computer and Accessories:**

Approximate cost is \$900

### **Minimum System Requirements:**

Microsoft Windows 7 Operating System  
1 GHz 32-bit (x86) or 64-bit (x64) processor  
1 GB of system memory  
40 GB hard drive with at least 15 GB of available space  
Support for DirectX 9 graphics, or higher with:  
WDDM Driver  
128 MB of graphics memory (minimum)  
Pixel Shader 2.0 hardware  
32 bits per pixel  
Carrying case  
USB flash drive – 1 GB

### **Software Required:**

Approximate cost is \$270

Microsoft Office Professional 2007  
QuickBooks



## ❖ electrical technology

The Electrical Technology Program offers students a diversified curriculum that guides them through the process of becoming electricians. Students will be introduced to the generation and distribution of AC/DC electricity as well as utilizing green technologies including solar and wind turbine theory and applications. During classroom, lab and fieldwork experiences, students gain valuable theory while incorporating current NEC codes and WAC/RCW rules, laws, and procedures with hands-on application throughout the two-year program.

The Washington State Department of Labor & Industries recognizes two years of training received from Perry Technical Institute's Electrical Technology Program toward the General Journeyman 01 certification. Graduates must accumulate an additional 4,000 hours of industrial/commercial electrical work before applying to take their journeyman examination with the State of Washington.

Challenging employment opportunities await graduates of the Electrical Technology Program. If a student wishes to seek an externship with an employer, they may be allowed the opportunity to do so during the EL501E (field wiring) as per externship criteria and for the last 20 school days of training for the EL608E externship (field wiring). The goal for students who successfully complete this course is gainful employment as third-year electrical trainees. The two largest groups of potential employers are electrical construction contractors and electrical departments in manufacturing industries.

The Electrical Technology Program is 24 months in length (six trimesters). The student will earn 136 credit hours which are 2,784 clock hours. Tuition is payable on a trimester basis. There are three trimesters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Trimester 1	EL 101	Applied Electrical Math	65	4.0
	EL 102	Safety Orientation/School Rules	8	.50
	EL 103	Industrial First Aid & CPR	8	.50
	EL 104	Safety Meetings	15	1.0
	EL 105	DC Fundamentals	105	7.0
	EL 106	National Electric Code/WAC Code	138	9.0
	EL 107	Introduction to Voltage Systems	25	1.5
	EL 108	Wiring Practices & Switch Hook-ups	50	3.0
	EL 109L	Lab and Shop Projects	<u>50</u>	<u>1.5</u>
		464	28.0	
Trimester 2	EL 201	AC Theory Single Phase	100	6.5
	EL 202	AC Motors	30	2.0
	EL 203	DC Motors & Generators	30	2.0
	EL 204	NEC Review & Testing	30	2.0
	EL 205	National Electric Code Articles 430 & 440	35	2.0
	EL 206	Electro-Mechanical Motor Controls	104	6.5
	EL 207	Safety Meetings	15	1.0
	EL 208L	Lab & Shop Projects	<u>120</u>	<u>4.0</u>
		464	26.0	
Trimester 3	EL 301	Introduction to Digital	45	3.0
	EL 302	Programmable Logic Controllers	115	7.5
	EL 303L	Lab & Shop Projects	115	3.5
	EL 304	NEC Review & Testing	14	0.5
	EL 305	Blueprint Reading	50	3.0
	EL 306	NEC & Load Sizing Calculations	110	7.0
	EL 307	Safety Meetings	<u>15</u>	<u>1.0</u>
		464	25.5	
Trimester 4	EL 401	AC Theory, Three Phase & Power Factor	60	4.0
	EL 402	Three-Phase Systems & Distribution	50	3.0
	EL 403	Transformer Connections	55	3.5
	EL 404	NEC Articles 450, 500, 680	40	2.5
	EL 405	NEC & Calculations Review	30	2.0
	EL 406	Utility Regulations & WAC Code Rules	44	2.5
	EL 407	Conduit Bending & Wiring Practices	40	2.5
	EL 408L	Lab & Shop Projects	130	4.0
	EL 409	Safety Meetings	<u>15</u>	<u>1.0</u>
		464	25.0	
Trimester 5	EL 501E	Externship	464	10.0

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			Clock Hours	Credit Hours
Trimester 6	EL 601	Solid State Electronic Fundamentals	90	6.0
	EL 602	Transistors & Operational Amplifiers	40	2.5
	EL 603	Variable Speed Drives	50	3.0
	EL 604	NEC & Theory Review & Test	50	3.0
	EL 605L	Lab & Shop Projects	75	2.5
	EL 606	Safety Meetings	15	1.0
	EL 607	Resume/Job Search	20	1.0
	EL 608E	Externship	<u>124</u>	<u>2.5</u>
		464	21.5	
Program Totals			2784	136.0

## ELECTRICAL TECHNOLOGY COURSE DESCRIPTIONS

### EL 101 Applied Electrical Math

Working fractions, factoring, transposing equations, powers of 10, working with exponents, unit conversions, trigonometric functions and the Pythagorean Theorem. Applying these math facts to the following: Ohm's Law, The Power Formulas, along with other AC and DC theory which need accrual circuit values solved. Application for mathematics will continue throughout the program sections.

### EL 102 Safety/Orientation/School Rules

Requirements for safety of students and instructors to lead them into the standard practices of industry and proper care and use of school and personal property.

### EL 103 Industrial First Aid & CPR

Each student is required to have a valid Industrial First Aid & CPR card. An outside agency approved to teach Industrial First Aid & CPR classes and issue cards performs this service.

### EL 104 Safety Meetings

Each week there will be a safety meeting for the Electrical Department. The meeting has a safety curriculum and a safety video that are covered with the students. Accident reports and unsafe condition reports are reviewed.

Safety demonstrations are performed to show the correct way to use tools, ladders, scaffoldings and other equipment needed in the electrical trade. Industrial product representatives also demonstrate their product lines when available. The students elect safety officers to represent the Electrical Program at the school's monthly safety committee meeting.

### EL 105 DC Fundamentals

Basic electrical definitions, current flow through electrical circuits, conventional current flow, series, parallel and series-parallel circuits. The basic green technologies of solar and wind turbine fundamentals are introduced.

### EL 106 National Electric Code

Minimum standards for installing and maintaining electrical installations and the maintenance of the systems by NFPA (National Fire Protection Association) based on the most current edition of the NEC Vol. 70 code. RCW 19.28 Laws and WAC 296-46B rules regulations that supersede the National Electric Codes minimum standards and are enforced and practiced in the industry.

### EL 107 Introduction to Voltage Systems

Names, schematics, grounding, configurations and hook-ups of the single-phase transformers and three-phase transformers used in the industry.

### EL 108 Wiring Practices & Switch Hook-ups

Proper installation of wire, functions and wiring switches, receptacles and lighting fixtures.

### EL 109L Lab & Shop Projects

The labs consist primarily of students doing switch hook-ups using non-metallic cable, metallic cable and wire run in conduit.

### EL 201 AC Theory Single-Phase

RL, RC and RLC series circuits and the effects of the inductive and capacitive reactance. Impedance and power factor.

### EL 202 AC Motors

Single-phase motor hook-ups; reversing externally reversible motors; four major parts of a motor; run winding/start windings; using an OHM meter; and properly connect to line voltages. Three-phase wye connected; high and low voltage connections; delta high and low voltage connections; identify, drawing and numbering 9 and 12 lead wye and delta motors; and reversing three-phase motors.

### EL 203 DC Motors & Generators

Differences and similarities between DC motors and generators; calculating the counter EMF generated in the armature of the motor; performance characteristics of DC shunt, series and compound motors; assigning correct polarity to interpoles installed in DC motors; drawing the process of controlling speed of various DC motors; drawing the process of reversing the rotation of any DC motor; determining the speed regulation of DC motors; and calculating power losses and horsepower output of DC motors.

DC generator operations; components of a DC generator; function of various generator components; the theory of operation of different types of DC generators; advantages and disadvantages of different types of generators; recognizing different kinds of generators by their construction details hook-up; schematic diagrams of different generator configurations; connecting generator windings in accordance with established practices; connecting rheostats for the purpose of controlling voltage output; mathematical calculations to predict electrical quantities related to generators; and the costs of electrical power, efficiency and horsepower ratings. Students will also

acquire the knowledge and theory needed to construct and troubleshoot green energy power sources.

#### **EL 204 NEC Code Review & Testing**

Code evaluation, reviewing the code covered in the E1 section of the program.

#### **EL 205 National Electrical Code Articles 430 & 440**

NEC Article 430 – Motor feeder short-circuit and ground-fault protection; motor disconnecting means; motor branch-circuit, short-circuit and ground-fault protection; motor circuit conductor; motor controller; motor control circuits; motor overload protection; thermal protection; secondary controller; secondary conductors; and secondary resistors.

NEC Article 440 – Code Section applying to sizing the conductor and protection to central electric space heating equipment; sizing the circuit conductors and protection for a five-horsepower motor used as a blower; the differences in the rules between motors and air conditioning when installing a disconnecting means; sizing the circuit protection device and conductors to an individual air conditioning unit; and testing laboratories' requirements for short-circuit and ground-fault protection and the requirements for air conditioners.

#### **EL 206 Electro-Mechanical Motor Controls**

The principles of two- and three-wire controls and the use of relays, mag-starters, timers, sensors, along with the symbols and ladder diagrams needed to make a successful control installation. Photoelectric controls, thru-beam, retroreflective, diffused and specular types will be addressed. Inductive and capacitive proximity sensors and pressure sensors will be utilized in discussion and lab exercises.

#### **EL 207 Safety Meetings**

Each week there will be a safety meeting for the Electrical Department. The meeting has a safety curriculum and a safety video that are covered with the students. Accident reports and unsafe condition reports are reviewed.

Safety demonstrations are performed to show the correct way to use tools, ladders, scaffoldings and other equipment needed in the electrical trade. Industrial product representatives also demonstrate their product lines when available. The students elect safety officers to represent the Electrical Program at the school's monthly safety committee meeting.

#### **EL 208L Lab & Shop Projects**

Using ladder diagrams, students install the wiring to motor control lab stations. Students will also do troubleshooting after the instructor bugs the station.

#### **EL 301 Introduction to Digital**

Examination of several different numbering systems, including but not limited to logic gates, numbering systems, conversions and combination logic.

#### **EL 302 Programmable Logic Controllers**

The programmable logic controller, focus on Allen-Bradley PLC5, Allen-Bradley SLC500 series, various small fixed I/O type PLCs. The software covered is RsLogix500, RsLogix5 and RsLinx. Programming concepts range from programming of discrete I/Os to the use of analog I/O. PLC installation,

wiring, troubleshooting, and how to construct programs with all safety concerns.

#### **EL 303L Lab & Shop Projects**

Students will develop, use and create programs and use logical diagrams to control the desired process by analyzing inputs and updating outputs. Also by monitoring devices and troubleshooting the written program.

#### **EL 304 NEC Review & Testing**

Code evaluation of previously covered code articles.

#### **EL 305 Blueprint Reading**

Terms, symbols, layout, organization and structure of plans that are used for residential, commercial and industrial buildings. Understand and interpret prints for identification of code violations, conflicts of space and safety issues.

#### **EL 306 NEC & Load Sizing Calculations**

Covering code Articles 220 and 240, calculating the ampacity of service conductors, feeder conductors, branch circuit conductors and the ampacity rating of the panels and load centers they supply, including the overcurrent devices used for protection.

#### **EL 307 Safety Meeting**

Each week there will be a safety meeting for the Electrical Department. The meeting has a safety curriculum that is covered with the students. Accident reports and unsafe condition reports are reviewed.

Safety demonstrations are performed to show the correct way to use tools, ladders, scaffoldings and other equipment needed in the electrical trade. Industrial product representatives also demonstrate their product lines such as CAD-welding, powder-actuated fastening systems and GFCI protection.

The students elect safety officers to represent the Electrical Program at the school's monthly safety committee meeting.

#### **EL 401 AC Theory, Three-Phase & Power Factor**

Single-phase RL, RC, RLC parallel circuits, vectors, power-factor and correction. Understanding the relationships between current, voltage and power in three-phase configurations. Three-phase RL, RC, RLC circuits and vectors. Application of power factor and power factor corrections to save energy and increase system capacity.

#### **EL 402 Three-Phase Systems, Distribution & Power-Factor Corrections**

Operational characteristics of three-phase generators – including hydro, solar and wind – and their connection to transformers for the purpose of cross-country power transmission. Circuit characteristics of the transmission and distribution system, the purpose and function of power substations and local power distribution concepts.

#### **EL 403 Transformer Connections**

ASA, NEMA and industrial standards for transformer lead identification and polarity requirements. Practical application of single-phase isolation type transformer configurations. Practical application of three-phase configurations for isolation-type transformers. Practical application of single- and three-phase buck and boost autotransformers.

#### **EL 404 National Electric Code Articles 450, 500 & 680 NEC**

NEC Article 450 – Code requirements for sizing of transformers, conductors and overcurrent protection

NEC Article 500 – Requirements for the use of the Class, Division, Group and Zone system and the general installation requirements for electrical wiring and apparatus utilized in hazardous locations

NEC Article 680 – Applying the provisions of Article 680 to swimming pools, fountains and similar installations. Forming shell, dry, wet or no niche, pool cover electrically operated, receptacles, lighting fixtures, lighting outlets, switch devices, ceiling suspended paddle fans, electric pool water heaters, underground wiring locations, disconnecting means, permanently installed pools, grounding bonding requirements and common bonding grids, and spa and hot tub requirements

#### **EL 405 NEC & Calculations Review**

Evaluation of previously covered code and wire sizing calculations.

#### **EL 406 Pacific Power Requirements, WAC & Utility Regulations**

Requirements of our local serving utility, Pacific Power. Topics covered will include, but are not limited to, service lateral burial depths, overhead service height requirements, conduit sizing in relation to service ampacities, use of rigid metal conduit, use of PVC conduit, CT installation requirements, support requirements for overhead services and proper use of Pacific Power's required forms and documents. Washington Administrative Code (WAC) and Revised Code of Washington (RCW) requirements for the electrical industry including, but not limited to: electrical industry scopes of work, licensing qualifications, exams, fees, penalties, types of certifications and continuing education requirements.

#### **EL 407 Conduit Bending Practices**

Introduction to the use of hand, hydraulic and PVC conduit benders. Lab exercises will include the following: predetermined 90-degree stubs, predetermined offsets, box offsets, back-to-back 90 degree stubs, three-bend saddles, four-bend saddles and kicks.

#### **EL 408L Lab & Shop Projects**

The student will practice applied wiring techniques in various hands-on exercises and labs including, but not limited to: conduit bending, switch connections, single- and three-phase power factor correction, transformer connections, non-metallic cable, metallic cable, wire pulling, panel, box and device installation and connections.

#### **EL 409 Safety Meetings**

Each week there will be a safety meeting for the Electrical Department. The meeting has a safety curriculum and a safety video that are covered with the students. Accident reports and unsafe condition reports are reviewed.

Safety demonstrations are performed to show the correct way to use tools, ladders, scaffoldings and other equipment needed in the electrical trade. Industrial product representatives also

demonstrate their product lines when available. The students elect safety officers to represent the Electrical Program at the school's monthly safety committee meeting.

#### **EL 501E Externship**

On-the-job training projects doing hands-on electrical wiring installations in residential and commercial buildings. All trainee electrical installations are supervised by a journeyman electrician and inspected by the Department of Labor and Industries. Completion of an externship packet is required.

#### **EL 601 Solid State Electronic Fundamentals**

Function and operation of diodes, SCRs, triacs, diacs, UJTs and their use in rectification and control of current by the switching of PN junctions. Building inverters that can be used with green energy technologies with solar energy sources to convert the direct current into alternating current.

#### **EL 602 Operational Amplifiers**

Construction, theory and operation of transistors and their applications to control voltage levels. Basic operation and theory of the op-amp, variations of connections, using negative feedback.

#### **EL 603 Variable Speed Drives**

Fundamentals and functions of both DC motor drives and AC variable frequency drives.

#### **EL 604 NEC & Theory Review & Testing**

Code and theory evaluation, covering material in previous sections of the training program. Including Article 690 of the NEC with Green Technology Solar Photovoltaic Systems.

#### **EL 605L Lab & Shop Projects**

Lab time will give the students the opportunity to apply the use of training equipment including oscilloscopes, signal generators and DC power supplies, used with solid state components to determine how and why they operate. Variable frequency drives used with motors and motor controllers will allow the students the hands-on training to help reinforce the classroom teaching to keep up with industry demands. Introducing green technology with solar energy sources and storing and conveying electricity through solar cells.

#### **EL 606 Safety Meetings**

Each week there will be a safety meeting for the Electrical Department. The meeting has a safety curriculum and a safety video that are covered with the students. Accident reports and unsafe condition reports are reviewed.

Safety demonstrations are performed to show the correct way to use tools, ladders, scaffoldings and other equipment needed in the electrical trade. Industrial product representatives also demonstrate their product lines when available. The students elect safety officers to represent the Electrical Program at the school's monthly safety committee meeting.

#### **EL 607 Resume/Job Search**

Preparation for an effective job search. Resume preparation, interviewing skills and the job application process.

#### **EL 608E Externship (Field Wiring)**

Students who have had a job offer as an electrician may

leave the program and work in the field under a training extern agreement with Perry Technical Institute, the employer and the student. Completion of an externship packet is required

### **ELECTRICAL TECHNOLOGY BOOK LIST, TOOL LIST AND FIELD TRIPS**

The book and tool list for students in the Electrical Technology Program is intended to be a minimum requirement to complete the program.

Tool and book costs are approximately \$3,000. The tools and books may be purchased anywhere you choose. Please make sure that your purchases are equivalent to the listed items. Tools will be required within the first six weeks of school. Books are available at Perry Technical Institute. Students may purchase all their books at the beginning or as classes progress. Students must, however, have their books with them at the beginning of each new trimester.

Touring industrial facilities such as hydroelectric dams, steam generation sites, manufacturing plants and mills is educational and of great benefit to electrical trainees. Students will be required to attend any field trips scheduled by the instructor during the course. The cost of field trips can run between \$600 to \$700 and will be at the student's expense.

#### **Book List:**

The book list will be provided with your course syllabi on your first day of school.

#### **Tool List:**

Tool prices may vary. The prices stated do not include any mark-up for program students or any sales taxes.

Two 9" channel lock pliers  
Two 16" channel lock pliers  
Industrial flashlight w/batteries  
Wire stripper (10-18 AWG solid)  
Romex stripper #14/2 NM-B to #12/2 NM-B  
Fuse puller (medium size)  
Crimp tool  
7" needle nose pliers  
9" lineman's pliers  
8" angle cutters  
3/16" X 10" slotted screw-holding screwdriver  
Right hand or left hand nail pouch  
6" expanded jaw crescent wrench  
12" expanded jaw crescent wrench  
1/2" conduit bender and handle  
3/4" conduit bender and handle  
Conduit reaming tool  
Tin snips  
1/2" X 12" round file  
1" X 12" flat file  
Slim triangle file 3/8" X 8"  
Tool pouch eight-pocket extra capacity tool pouch  
2" tool pouch belt  
Stubby screwdriver (1-1/2" square shank) standard  
Stubby screwdriver (1-1/2" square shank) #2 Phillips  
4" square shank screwdriver standard  
8" square shank screwdriver standard  
4" shank screwdriver # 2 Phillips

#2 LR driver for locked recessed square screws  
1/4" x 4 1/4" center punch  
Large folding Allen wrench set (3/16" - 3/8")  
Small folding Allen wrench set (1/16" - 5/32")  
20 oz. straight claw hammer with non-conductive handle  
1" x 25' steel rule  
Magnetic torpedo level (no dog)  
Safety glasses – clear  
20-piece 3/8" drive socket set  
Utility knife  
15-piece drill bit set  
9-piece end wrench set (1/4" - 3/4")  
Tool box or bag  
Hard hat  
Nut driver set – long shank  
Fluke T5-1000 digital voltage tester (V-□-A)  
Fluke 87 – 5E digital multi-meter kit  
Solenoid volt meter  
12 lab alligator double clip leads 12"  
12" hacksaw  
Sheet rock saw  
Carpenter square  
Plumb bob  
Chalk line box & chalk  
1/2" heavy-duty electric drill  
Low-temp solder station (iron & holder)  
Solder sucker  
Lockout /tagout set  
Cordless drill – 12, 14 or volt, 1/2" chuck  
Tips for cordless drill :  
1 each –2", 4" & 6" long #2 Phillips tip  
2", 4" & 6" long #2 LR (locked recess) tip

## ❖ heating, ventilation, air conditioning & refrigeration technology

Perry Technical Institute's two-year HVAC/R Technology Program is divided into four sections: 1) HVAC/R Fundamentals 2) Residential/Light Commercial HVAC/R 3) Commercial Refrigeration and 4) Industrial HVAC/R. Classroom and shop training prepares students to enter the HVAC/R industry as qualified entry-level technicians who enjoy outstanding employment opportunities. The students learn the curriculum through classroom and extensive hands-on training in lab-related instruction.

Perry Technical Institute's HVAC/R Program is approved by the Washington State Department of Labor & Industries as a 06A HVAC/R Specialty Electrical Training Program. Graduates will be credited with one year (or 2,000 hours) towards the two years (or 4,000 hours) required by the State of Washington to be eligible to take the certification exam for the 06A HVAC/R Specialty Electrical License.

Students have the opportunity to gain industry certifications in several areas, giving them competitive advantages in the employment market. Technician certifications offered are Universal R-410A Safety, EPA 608 Refrigerant, EPA 609 Refrigerant and Green Mechanical Systems. If a student wishes to seek an externship with an employer, he/she would be allowed the opportunity to do so during the last 20 school days of training. The HVAC/R Technology Program is 24 months in length. The student will earn 210.5 credit hours which are 2,784 clock hours. Labor & Industries does not separate break times and credits 3,000 hours towards classroom participation. Tuition is payable on a quarterly basis. There are four quarters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Quarter 1	RE 101	Electrical & Tool Safety	10	1.0
	RE 102	First Aid	5	0.5
	RE 103	Applied Mathematics for Electricity & Electronics	40	4.0
	RE 104	Electrical/HVAC/R Tools & Equipment	15	1.5
	RE 105	Refrigerant EPA Regulations	7	0.5
	RE 106	The Refrigeration System, Electrical & Mechanical	65	6.5
	RE 107	Equipment Retrofit of Oils & Refrigerants	5	0.5
	RE 108	Electrical/HVAC/R Computer Software	14	1.0
	RE 109	Electrical Fundamentals	30	3.0
	RE 110	Interpreting Schematic & Ladder Diagrams	27	2.5
	RE 111L	Silver Brazing Lab	10	0.5
	RE 112L	Laboratory Projects/Shop Work	<u>120</u>	<u>6.0</u>
		348	27.5	
Quarter 2	RE 200	The Refrigeration System, Electrical/Mechanical	45	4.5
	RE 201	Interpreting Schematic & Ladder Wiring Diagrams	45	4.5
	RE 202	Fundamentals of Electricity	40	4.0
	RE 203	Electric Heat Operating & Safety Controls	68	6.5
	RE 204L	Laboratory Projects/Shop Work	<u>150</u>	<u>7.5</u>
		348	27	
Quarter 3	RE 301	Industrial & Electrical Safety	20	2.0
	RE 302	Proper Use of Tools & Equipment	30	3.0
	RE 303	Proper Use & Handling of HCFC/HFC Refrigerants	20	2.0
	RE 304	Indoor Air Quality	30	3.0
	RE 305	Electrical Motors & Diagrams	37	3.5
	RE 306	Controls & Theory	20	2.0
	RE 307	Heating & Cooling Equipment	30	3.0
	RE 308L	Laboratory Projects/Shop Work	47	2.0
	RE 309L	Sheet Metal Lab	14	0.5
	RE 310L	Application of Heating & A/C Lab	75	3.5
	RE 311L	Application of Controls Lab	<u>25</u>	<u>1.0</u>
		348	25.5	
Quarter 4	RE 400	Electrical Diagrams	20	2.0
	RE 401	Heating & Cooling Equipment	20	2.0
	RE 402	Theory of Combustion	20	2.0
	RE 403	Psychrometrics	20	2.0
	RE 404L	Application of Heating & A/C Lab	67	3.0
	RE 405	Residential Duct Design	28	2.5
	RE 406L	Application of Controls Lab	25	1.0
	RE 407	Residential Load Calculations	30	3.0
	RE 408	Air Distribution & Balance	20	2.0
	RE 409	Oil Heat	20	1.0
	RE 410L	Oil Heat Lab	10	0.5
	RE 411L	Laboratory Projects/Shop Work	<u>68</u>	<u>3.0</u>
		348	24.0	

			Clock Hours	Credit Hours
Quarter 5	RE 501	WAC & NEC for HVAC/R	25	2.5
	RE 502	Commercial Systems & Components	50	5.0
	RE 503	Troubleshooting Commercial Systems	25	2.5
	RE 504	Electrical Theory, Circuits, Controls & Wiring Schematics	62	6.0
	RE 505	Commercial Compressors	15	1.5
	RE 506	Refrigerant Retrofits	20	2.0
	RE 507	Evaporators, Condensers & Cooling Towers	10	1.0
	RE 508L	Laboratory Projects/Shop Work	<u>141</u>	<u>7.0</u>
		348	27.5	
Quarter 6	RE 601	WAC & NEC for HVAC/R	25	2.5
	RE 602	Commercial Systems & Components	20	2.0
	RE 603	Electrical Theory-Circuits, Controls & Wiring Schematics	45	4.5
	RE 604	Heat Load & Piping Calculations for Commercial Equipment	40	4.0
	RE 605	Commercial Ice & Ice Cream Machines	35	3.5
	RE 606	Ultra-Low Temperature Systems	20	2.0
	RE 607	Troubleshooting Commercial Systems	32	3.0
	RE 608L	Laboratory Projects/Shop Work	<u>131</u>	<u>6.5</u>
		348	28.0	
Quarter 7	RE 701	Energy Management Systems	55	5.5
	RE 702	Central Fan Systems	20	2.0
	RE 703	Pneumatic Systems	20	2.0
	RE 704	Industrial Chiller & Boiler Systems	65	6.5
	RE 705	Water Treatment for HVAC Systems	15	1.5
	RE 706	Hydronic Heating Systems	30	3.0
	RE 707	Residential/Commercial HVAC/R Systems Review I	45	4.5
	RE 708L	Laboratory Projects	<u>98</u>	<u>4.5</u>
		348	29.5	
Quarter 8	RE 801	Industrial & Ammonia Plant Safety	30	3.0
	RE 802	Ammonia Refrigeration & Electrical Systems	40	4.0
	RE 803	Industrial Compressors	40	4.0
	RE 804	Industrial Maintenance	30	3.0
	RE 805	Industrial Electrical Systems	40	4.0
	RE 806	Residential/Commercial HVAC/R Systems Review II	38	3.5
	RE 808E	Externship	<u>130</u>	<u>4.0</u>
		348	25.5	
	Program Totals		2784	210.5

## HEATING, VENTILATION, AIR CONDITIONING & REFRIGERATION TECHNOLOGY COURSE DESCRIPTIONS

### RE 101 Electrical & Tool Safety

Safety topics for both the classroom and shop environment. Specific tools, procedures and equipment.

### RE 102 First Aid

First aid and CPR training. First aid card given upon successful completion of class.

### RE 103 Applied Mathematics for Electricity & Electronics

Mathematics used for electrical theory, series/parallel/combination electrical circuits, algebraic formulas, exponents, electronic units of measure, Ohm's Law, Watt's Law/Power, areas and volume. Application for mathematics will continue to be covered during second quarter of instruction.

### RE 104 Electrical/HVAC/R Tools & Equipment

Safety practices and working concepts of electrical measuring instruments, hand tools, including tools and equipment such as Voltmeter, Ammeter, Ohmmeter, refrigerant recovery equipment, vacuum pumps, oxy-acetylene torches, thermistor vacuum gages and gage manifolds.

### RE 105 Refrigerant EPA Regulations

The rules and regulations concerning the handling of refrigerants. Upon successful completion, student will become universally certified under the 608 provisions of the Environmental Protection Agency.

### RE 106 The Refrigeration System, Electrical & Mechanical

Four main components of a mechanical compression refrigeration system, each of their functions within the system including the pressures and temperatures associated with each component, along with fluid flow, state change, heat transfer both sensible and latent. Motor operation, function, troubleshooting, replacement and maintenance.

**RE 107 Equipment Retrofit of Oils & Refrigerants**

Retrofitting existing systems with an alternative refrigerant due to costs and/or environmental concerns. Alternative refrigerants characteristics including changes in pressures, temperatures, charging techniques, and compatible oils.

**RE 108 Electrical HVAC/R Computer Software**

Training on computers using software specifically tailored to the needs of the refrigeration technician. Software concentrates on the fundamentals required to be successful in the trade including electrical fundamentals; series, parallel and combination electrical circuits; operation of electrical components; operation of volt and ohmmeters; electrical troubleshooting by application and use of electrical diagrams and electrical meters; area and volume calculations; types of heat and heat transfer; gas laws; temperature scales (Fahrenheit, Celsius, Rankin and Kelvin); absolute and gage pressures; pressure enthalpy diagrams; and function and operation of compressor, evaporator, condenser and metering devices.

**RE 109 Electrical Fundamentals**

Electrical safety, atomic structure, electron flow theory, voltage current resistance relationships (Ohm's Law); heating, operating and safety controls; heat and magnetism produced by current flow; electrical, series and parallel circuits; resistive and inductive loads; conductors (hot, neutral and safety ground); and measuring instruments. 120-volt circuits.

**RE 110 Interpreting Schematic & Ladder Diagrams**

Tracing of electric circuits and the study of controls, their use and installation. Conversion of schematic to ladder diagrams. The development of electrical diagrams so as to meet required system operation. Sequence of operation of equipment by "reading" electrical diagrams. Troubleshooting by use of electrical diagrams.

**RE 111L Silver Brazing Lab**

Introduction to proper joining of copper to copper and copper to steel tubing by use of oxy-acetylene torches.

**RE 112L Laboratory Projects/Shop Work**

Practical application of classroom instruction on actual equipment. Application and use of electrical and HVAC/R tools and equipment. Introduction to servicing residential refrigerators and freezers. Lab time includes the following: electrical checks, wiring and operations of relays, capacitors, cold controls, defrost controls, heaters, thermostats, compressor and fan motors. Mechanical checks of the refrigeration system. Repair of customer equipment on campus.

**RE 200 The Refrigeration System, Electrical & Mechanical**

Expansion of material on the four main components of a mechanical compression refrigeration system includes motor operation, function, troubleshooting and wiring.

**RE 201 Interpreting Schematic & Ladder Wiring Diagrams**

Tracing of electric circuits and the study of controls, their use and installation. Conversion of schematic to ladder diagrams. The development of electrical diagrams so as to meet required system operation. Sequence of operation of equipment by "reading" electrical diagrams. Troubleshooting by use of electrical diagrams.

**RE 202 Fundamentals of Electricity**

Expansion of material on electrical fundamentals including electrical safety, voltage current resistance relationships, Ohm's Law, heat and magnetism produced by current flow, electrical circuits, series and parallel circuits and 120-, 240- and 24-volt circuits.

**RE 203 Electric Heat Equipment Operating & Safety Controls**

Electrical/electrical mechanical/solid state and mechanical operating and safety controls. Introduction to operating and safety controls as related to domestic refrigeration systems and electric forced air furnaces. Theory, application and operation of these controls so as to allow students to apply this knowledge on various equipment types. 120-, 240- and 24-volt controls. Introduction to residential forced air electric furnaces and controls. Topics include maintenance, airflow calculations, temperature rise, and reading and developing wiring diagrams. Operation and troubleshooting of electric heat sequencers, transformers, thermostats, motors, capacitors, heating elements, safety devices, relays and contactors.

**RE 204L Laboratory Projects/Shop Work**

This section of the course is used for practical application of principles introduced in the classroom. Lab time includes an emphasis on electrical measurements for troubleshooting and hands-on wiring of equipment. Electrical checks, wiring and operations of relays, capacitors, single and multi-speed single phase fractional horsepower motors (shaded pole, PSC, CSR) heaters, low-voltage heat/cool thermostats, compressor and fan motors. Shop time is used for wiring, troubleshooting and maintaining controls as well as actual operation and troubleshooting of electric furnaces and their controls.

**RE 301 Industrial & Electrical Safety**

Review and reinforcement of shop safety procedures and techniques. Introduction to fall protection and ladder safety with emphasis on application of all safety-related concepts in the workplace or shop environments. Proper lockout/tagout of electrical equipment, as well as equipment safety grounding procedures. NEC compliance Articles 100 and 250.

**RE 302 Proper Use of Tools & Equipment**

Proper use and application of tools utilized in the HVAC trade. Examples of tools would include refrigerant recovery equipment, vacuum pumps, electronic scales and micron gauges. Proper use of digital multi-meters, ammeters and temperature analyzers is emphasized.

**RE 303 Proper Use & Handling of HCFC/HFC Refrigerants**

The safe handling of refrigerants. Proper HVAC system charging. Refrigerant recovery and applications of R-22, HFC refrigerants R-410A & R-422B.

**RE 304 Indoor Air Quality**

The fundamentals of air filtration, including all types of air filters associated with residential and light commercial HVAC systems, from disposable air filters to state-of-the-art electronic air cleaners. Humidification and types of humidifiers are covered as well. State of the art green technology such as heat and energy recovery ventilators and economizers are introduced.

**RE 305 Electric Motors & Diagrams**

Interpretation of both ladder and pictorial type wiring diagrams. ARI standard graphic electrical symbols are introduced and applied to electrical diagrams. All types of single-phase motors are discussed. Introduction to green technology ECM motors as well.

**RE 306 Controls & Theory**

Introduction to specific controls and control strategies that relate to residential and light commercial HVAC/R systems. Types of controls included range from residential and commercial programmable setback thermostats to HVAC system protection controls and safeties. NEC compliance, Article 725 and Table 11A.

**RE 307 Heating & Cooling Equipment**

Residential and light commercial HVAC equipment, both packaged and split systems. Heating systems covered include fossil fuel units, such as natural and LP gas units. High efficiency condensing and standard efficiency furnaces are covered. Oil-based heating systems, electric heating and heat pump systems. Introduction to geothermal heat pump systems.

**RE 308L Laboratory Projects/Shop Work**

Typical lab projects will include tasks such as soldering, steel pipe threading, wiring and proper refrigerant charging of A/C units.

**RE 309L Sheet Metal Lab**

Basic sheet metal fabrication concepts. Fabrication of several sheet metal projects using not only purchased sheet metal hand tools, but the heavier shop fabrication equipment associated with HVAC duct systems. Examples include hand-operated brakes, manual and electro-mechanical shears.

**RE 310L Application of Heating & A/C Lab**

Application of concepts learned in the classroom to operational HVAC equipment. Hands-on orientation and application of mechanical and electrical concepts as they relate to residential and light commercial HVAC/R equipment.

**RE 311L Application of Controls Lab**

Application of control strategies to wire and operate several types of HVAC equipment. Types of systems include heat pumps, oil, gas and electric forced air HVAC systems. Both packaged and split systems are addressed.

**RE 400 Electrical Diagrams**

Interpretation of both ladder and pictorial type wiring diagrams relating to residential and light commercial HVAC systems. Additional ARI standard graphic electrical symbols are introduced and applied to electrical diagrams. NEC compliance using Article 300.

**RE 401 Heating & Cooling Equipment**

Residential and light commercial HVAC equipment, both packaged and split systems. Heating systems covered include fossil fuel units such as natural, LP gas units, oil heating systems, electric heating and heat pump systems. Systems covered range from standard efficiency to extremely energy efficient high efficiency units. Evaporative cooling principles and equipment are introduced.

**RE 402 Theory of Combustion**

Combustion process relating to fossil fuel heating systems. Fuel types included are natural, LP gas and oil. Venting of combustion by-products by induced draft and gravity draft. Proper combustion vent sizing utilizing equipment manufacturer approved AGA/GAMA sizing tables.

**RE 403 Psychrometrics**

Introduction to psychrometrics: defined as the study of air and its properties. The psychrometric chart is utilized for better understanding the process of conditioning air.

**RE 404L Application of Heating & A/C Lab**

Application of concepts learned in the classroom to operational HVAC equipment. Hands-on orientation involving application of mechanical and electrical concepts as they relate to residential and light commercial HVAC equipment.

**RE 405 Residential Duct Design**

Introduction to duct design process. Residential duct design utilizing sections of the Manual D (ACCA) duct design process as outlined in Refrigeration and Air Conditioning Technology, 6th edition, Whitman, Johnson, Tomczyk and Silberstein.

**RE 406L Application of Controls Lab**

Application of control strategies learned in the classroom to wire and operate several types of HVAC equipment. Types of systems include heat pumps, oil, gas and electric forced air HVAC systems. Both packaged and split systems are addressed.

**RE 407 Residential Load Calculations**

Residential load calculation referencing the Manual J load calculation method published by Air Conditioning Contractors of America (ACCA). Correct sizing of the heating and cooling equipment is covered. Green technology methods of construction, such as the Leadership in Energy and Environmental Design (LEED) green building rating system is covered.

**RE 408 Air Distributions & Balance**

Basics of air distribution and balancing residential and light commercial HVAC air delivery systems. Introduction to several types of air system side components such as grills, registers and diffusers. Proper application of each type of air delivery component is introduced. Introduction to equipment typically used for air balancing.

**RE 409 Oil Heat**

Application of knowledge learned in the classroom to the lab/shop environment. All laboratory/shop tasks are performed on functional oil furnaces. The scope of tasks involves electrical wiring, mechanical operation and combustion analysis of oil heating systems.

**RE 410L Oil Heat Lab**

Oil heating systems focusing on high pressure, gun-type oil burners that utilize number two fuel oil. Ignition primary control systems include both stack and cadmium cell types. Other subjects covered include fuel pump pressure regulation, fuel nozzle sizing, venting and combustion analysis. Combustion analysis is performed on oil furnaces using both chemical and digital analysis tools.

### **RE 411 Laboratory Projects/Shop Work**

Completion of several lab projects including wiring, combustion analysis tasks performed on functional HVAC equipment. Combustion analysis is performed on natural gas furnaces using both chemical and digital analysis tools. Airflow calculation and ductwork leakage rates are tested using state of the art duct pressurizing equipment.

### **RE 501 WAC & NEC for HVAC/R**

RCW 19.28, WAC 296-46A, WAC 296-401B and articles from the NEC will be covered.

### **RE 502 Commercial Systems & Components**

The use of pressure controls relating to commercial equipment including low-pressure controls, high-pressure controls, oil pressure safety controls and fan cycling controls. Operating pressures and temperatures required for the different applications of commercial equipment. Different refrigerant controls used in commercial refrigeration including thermal expansion valves, automatic expansion valves, capillary tubes, electronic expansion valves to save energy, crankcase pressure regulators, evaporator pressure regulators, solenoid valves, oil pumps, head pressure control valves, and pressure differential valves. Floating head pressure control valves, liquid pressure amplifiers, mechanical sub cooling and ambient sub-cooling will be discussed as means to save energy on new and existing equipment. Proper installation methods focusing on refrigerant containment to preserve the environments will be covered. Proper setting and proper wiring methods as specified by NEC will be covered for a wide variety of control applications.

### **RE 503 Troubleshooting Commercial Systems**

Mechanical and electrical problems that occur within commercial equipment. Recognizing symptoms, identifying the problem and formulating a solution. Manufacturers' performance charts will be used to show students the effects of running systems that are not properly maintained and the effects to system capacity, energy consumption, and equipment life span will be discussed. Proper usage of meters and instruments as well as safety procedures will be covered.

### **RE 504 Electrical Theory, Circuits, Controls & Wiring Schematics**

Operations of electrical controls as applied to commercial refrigeration including relays, contactors, motor starters, fan delays, temperature-actuated controls and a variety of switching devices. Defrost controls that incorporate the use of fan delays and temperature terminators as a means to save energy will be covered as well as conventional defrost controls. Single-phase 120/240-volt, three-phase 240/480-volt as well as Delta High Leg will be covered. Wiring and operating characteristics of a wide variety of motors including the newer higher efficiency motors will be covered. Manufacturers' electrical schematics and control strategies as applied to commercial systems. Wiring and control strategies. Installation, setting and proper wiring methods as specified by NEC will be covered for a wide variety of control/motor applications.

### **RE 505 Commercial Compressors**

Replacement of compressors and related electrical starting components. Testing of motor windings and related electrical starting components. Interpretation of manufacturers' electrical

performance charts under all conditions. Operations and evaluation of commercial compressors for all applications. Introduction to newer and more efficient compressors for the commercial refrigeration section will be covered including Discus Scroll and Screw compressor technology. Efficiency tests of compressors in and out of systems. Installation and proper wiring methods as specified by NEC will be covered for a wide variety of compressor applications.

### **RE 506 Refrigerant Retrofits**

Replacement refrigerants used in place of the CFC and HCFC refrigerant now banned by EPA. Proper techniques for oil changes and charging procedures for the alternative refrigerants will be covered. The use of HFC refrigerants and the importance of retrofitting to the more environmentally friendly refrigerants will be covered as well as proper containment and recovery. Also, students will be made aware of the statistics of refrigerant leaks to the environment and procedures to help eliminate sources of leaks. The effect of retrofits affecting motor amp draw as well as possible fan installation and electrical control adjustments to prevent motor overheating and motor overload.

### **RE 507 Evaporators, Condensers & Cooling Towers**

Components that transfer heat within the refrigeration system including evaluating, servicing, maintaining, repairing and replacement of the various components. Emphasis will be put on the efficiency of water units compared to that of air units as well as the effect of, lack of maintenance on system performance and energy consumption. Installation, setting and proper wiring methods as specified by NEC will be covered for a wide variety of motor applications.

### **RE 508L Laboratory Projects/Shop Work**

Hands-on evaluation and repair of a wide variety of live refrigeration equipment. Drawing of electrical diagrams and the wiring of systems to match their electrical diagram. Recognizing a symptom, identifying the problem and formulating a solution. Ability to set, adjust and evaluate a wide variety of refrigerant and electrical controls under different conditions. Installation, setting and proper wiring methods as specified by NEC will be covered for a wide variety of control applications.

### **RE 601 WAC & NEC for HVAC/R**

RCW 19.28, WAC 296-46A, WAC 296-401B, and articles from the NEC will be covered.

### **RE 602 Commercial Systems & Components**

The use of pressure controls relating to commercial equipment including low-pressure controls, high-pressure controls, oil pressure safety controls and fan cycling controls. Operating pressures and temperatures required for the different applications of commercial equipment. Different refrigerant controls used in commercial refrigeration including thermal expansion valves, automatic expansion valves, capillary tubes, electronic expansion valves to save energy, crankcase pressure regulators, evaporator pressure regulators, solenoid valves, oil pumps, head pressure control valves, and pressure differential valves. Floating head pressure control valves, liquid pressure amplifiers, mechanical sub cooling and ambient sub-cooling will be discussed as means to save energy on new and existing equipment. Proper Installation methods focusing on refrigerant containment to preserve the environments will

be covered. Proper setting and proper wiring methods as specified by NEC will be covered for a wide variety of control applications.

### **RE 603 Electrical Theory-Circuits, Controls & Wiring Schematics**

Operations of electrical controls as applied to commercial refrigeration including relays, contactors, motor starters, fan delays, temperature-actuated controls and a variety of switching devices. Defrost controls that incorporate the use of fan delays and temperature terminators as a means to save energy will be covered as well as conventional defrost controls. Single-phase 120/240-volt, three-phase 240/480-volt as well as Delta High Leg will be covered. Wiring and operating characteristics of a wide variety of motors including the newer higher efficiency motors will be covered. Manufacturers' electrical schematics and control strategies as applied to commercial systems. Wiring and control strategies. Installation, setting and proper wiring methods as specified by NEC will be covered for a wide variety of control/motor applications.

### **RE 604 Heat Load & Piping Calculations for Commercial Equipment**

Calculation of the heat gain due to infiltration and product load for medium and low temperature applications. Proper piping and installation of commercial equipment using sizing charts and piping schematics to learn the various piping techniques involved with commercial systems for medium and low temperature applications. Proper sizing of equipment based on BTUH requirements as well as voltages, amp draw and phase of electricity available. Installation, setting and proper wiring methods as specified by NEC will be covered for a wide variety of installation applications.

### **RE 605 Commercial Ice & Ice Cream Machines**

Examination of a wide variety of ice and ice cream machines. Water-related problems as well as operational, mechanical and electrical problems involving ice and ice cream machines. Installation of well as service will be covered. Emphasis is put on the reading and interpretation of the manufacturers' wiring schematics. Installation, setting and proper wiring methods as specified by NEC will be covered for a wide variety of ice and ice cream machine applications.

### **RE 606 Ultra-Low Temperature Systems**

Ultra-low temperature systems including training on cascade and compound systems. Pressures and temperatures as well as wiring methods and wiring schematics for ultra-low temperature equipment will be covered. Installation, setting and proper wiring methods as specified by NEC will be covered for a variety of low temperature applications.

### **RE 607 Troubleshooting Commercial Systems**

Mechanical and electrical problems that occur with commercial equipment. Recognizing symptoms, identifying the problem and formulating a solution. Proper usage of meters and instruments as well as safety procedures will be covered.

### **RE 608L Laboratory Projects/Shop Work**

Hands-on evaluation and repair of a wide variety of live refrigeration equipment, including ice machines, ice cream machines and ultra-low temperature units. Basic arc and acetylene welding will be covered. Drawing of electrical

diagrams and the wiring of systems to match their electrical diagram. Recognizing a symptom, identifying the problem and formulating a solution. Ability to set, adjust and evaluate a wide variety of refrigerant and electrical controls under different conditions. Installation, setting and proper wiring methods as specified by NEC will be covered for a wide variety of control applications

### **RE 701 Energy Management Systems**

Control terminology and fundamentals of computer control as applied to HVAC/R and building maintenance. This type of control systems provides energy savings throughout the entire building. Types of control systems, network wiring, types of inputs and outputs and system configurations. NEC compliance using Chapters 2, 3 and 9. Lab work will include: Wiring direct digital control simulators (including communication cables), component wiring of input boards, output boards, modems, sensors and controlled devices.

### **RE 702 Central Fan Systems**

Types of fan systems used in large industrial facilities: including proportional motor control operation of dampers, economizers that allow for free cooling from the use of outside air, heating valves, chilled water valves, preheat coils, desiccant wheels, and reheat wheels and the humidification requirements which can make a more comfortable and efficient building. Electrical control of these systems will be covered in detail. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 703 Pneumatic Systems**

Fundamentals of pneumatic systems: including air supply, sensors, actuators, transmitters and receiver controllers. Operation and maintenance of these components will be discussed for use in HVAC systems. Electrical wiring of end control devices, air compressors and refrigerated air dryers will be taught. This includes the NEC compliance, using Chapter 2, 3 and 9.

### **RE 704 Industrial Chiller & Boiler Systems**

Industrial air conditioning systems using chilled water. Compressor types, evaporator chiller barrels, water-cooled condensers, air-purgers, absorption systems and low-pressure refrigerant. Electrical safety, diagnostics and troubleshooting; oil temperature and pressure safety controls, capacity control wiring, high-pressure refrigerant and water flow controls. Operation and maintenance of large industrial boilers including high and low pressure design, water tube and fire tube models, vertical and horizontal types. The types of fuel systems used. Blow down heat recovery. Steam trap maintenance. Boiler safety controls including low-water cutoff, high-water cutoff, water-makeup and ignition systems. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 705 Water Treatment for HVAC Systems**

Fluid coolers, cooling towers and boilers require technicians to maintain the water quality for proper heat exchange. Metal corrosion and higher energy costs are the results of neglect of these components. Students will learn why chemical treatment is necessary, the types of chemicals used, conductivity testing, PH balance and chemical feed systems.

### **RE 706 Hydronic Heating Systems**

Systems that heat with hot water or steam including boiler types, system piping, water pumps, expansion tanks and

ignition control systems. Boiler control wiring including high-limit safety controls, aquastats and pressure relief valves will be covered. Geothermal heat pumps, open and closed loop piping systems, electrical controls, troubleshooting and related campus equipment will be covered. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 707 Residential/Commercial HVAC/R Systems Review I**

Review of residential/commercial HVAC/R systems will be conducted throughout the seventh quarter. Students will be preparing for employment in companies repairing various types of HVAC/R equipment. This overview of material will reinforce information taught in previous sections of the program. The troubleshooting, wiring and repair of these systems will be discussed. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 708L Laboratory Projects**

Lab time will give the students the opportunity to apply the skills they have learned. Training equipment, lab projects, computer simulators and on-site service work will allow the student hands-on training to help reinforce the classroom teaching.

### **RE 801 Industrial & Ammonia Plant Safety**

Safety precautions when using anhydrous ammonia for refrigeration. Safe handling and response to ammonia spills including industrial plant safety. Working with heavy equipment and high voltage equipment in an industrial facility. Safety working around three-phase 480-volt equipment. Process Safety Management (PSM), industrial plant safety plans and evacuation plans for facilities that contain 10,000 pounds or more of ammonia including code compliance, operator training, emergency response procedures and risk reduction. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 802 Ammonia Refrigeration & Electrical Systems**

Components used in ammonia systems including direct expansion systems, brine systems, flooded systems, accumulators, evaporative condensers, hot gas defrost, water defrost, and associated controls. Evaporators and components used with flooded systems including gravity flooded, liquid re-circulation systems, surge tanks, low pressure receivers, float switches, metering devices and oil draining procedures. Cold storage and controlled atmosphere storage facilities including the refrigeration systems, room temperatures, long-term storage requirements, oxygen and carbon dioxide control, humidity control and nitrogen purging. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 803 Industrial Compressors**

Types of compressors found in industrial HVAC/R systems: including operation and maintenance of reciprocating, centrifugal and screw compressors. Three-phase 240/480-volt systems including; Wye/Delta, part winding start and autotransformers will be covered. Disassembly and repair of industrial compressors including taking measurements using inside and outside micrometers, and calipers to determine the condition of internal parts. Cylinders, crankshafts, pistons and rods along with inspection of suction and discharge valves. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 804 Industrial Maintenance**

Maintenance requirements for industrial facilities including preventive maintenance for compressors, drive motors, water treatment and refrigeration equipment. Maintenance of evaporative condensers, defrost systems and OSHA compliance. Recognition of electrical safety hazards in and around the mechanical equipment room. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 805 Industrial Electrical Systems**

The examination and interpretation of complex electrical circuits will be taught. Conversion of schematic to ladder diagrams and the sequence of operation of the assigned equipment. Three-phase 240/480-volt systems wiring used in the operation and safety controls associated with industrial HVAC/R systems including part winding start, Y-Delta start, across the line start, compressor-starting systems. Frequency drives, Oil temperature and pressure safety controls. Capacity control wiring, refrigerant pressure and water flow controls. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **806 Residential/Commercial HVAC/R Systems Review II**

Review of residential/commercial HVAC/R systems will be conducted throughout the seventh quarter. Students will be preparing for employment in companies repairing various types of HVAC/R equipment. This overview of material will reinforce information taught in previous sections of the program. The troubleshooting, wiring and repair of these systems will be discussed. This includes the NEC compliance, using Chapters 2, 3 and 9.

### **RE 808E Externship**

In lieu of on-campus training, during the last 20 school days, students are allowed the opportunity to take full-time employment with their future employer.

## **HVAC/R TECHNOLOGY BOOK AND TOOL LIST**

The book and tool list for students in the HVAC/R Program is intended to be a minimum requirement to complete the program. The prices stated do not include any mark-up for program students or any sales taxes. Tool and book costs are approximately \$2,400.

### **Book List:**

The book list will be provided with your course syllabi on your first day of school.

### **Tool List:**

The tools in List #1 may be purchased anywhere you choose and you may begin purchasing those tools before you start school. Please do not purchase the tools in list #2 until after you begin training. Both tool lists will be required within the first month. Tool prices may vary.

### **List #1:**

Stubby driver combo Phillips & standard  
Phillips driver #0 & small standard  
Phillips driver #1  
Phillips driver #2  
Screwdriver 3/16" x 4"  
Screwdriver 1/4" x 4"  
Screwdriver 5/16" x 6"

Screwdriver 3/8" x 8"  
 Off-set screw driver kit  
 Nut driver 1/4"  
 Nut driver 5/16"  
 Combination end wrench set 1/4"- 3/4"  
 Adjustable end wrench 10"  
 Hex key (Allen) 15-piece set 1/16" -3/8"  
 Plumbers pliers 10" (channel locks)  
 Diagonal cutters 8"  
 Long nose pliers 8"  
 Flat file 10" (mill)  
 Hacksaw frame  
 Hacksaw blades 12" x 32 teeth \*order 3 each  
 Hacksaw blades 12" x 18 teeth \*order 2 each  
 Scratch awl  
 Steel tape measure (10' x 1/2")  
 Safety glasses with side shields  
 Flashlight (with magnet recommended)  
 Batteries for flashlight  
 Pocket inspection mirror 14" extension  
 Drop light with receptacle 16/3 wire x 25'  
 Ball peen-hammer 8 oz.  
 Wire brush  
 Wire stripper/crimper  
 Roll electrical tape Scotch-33  
 One pair thin leather work gloves  
 2 jumper wires or 2 red & 2 black alligator clips with insulated boots to make jumper wires  
 Tool bag  
 1 clipboard  
 Tube reamer  
 11-in-1 screwdriver to include T10, T15 torx and #1, #2 square drives

**List # 2:**

Type K thermocouple pipe clamp temperature probe 80PK-8  
 Vise grip pinch-off tool  
 Valve stem wrench  
 Little "Imp" tube cutter  
 Big "Imp" tube cutter  
 Caliper rule 4" or longer  
 Manifold  
 Glycerin-filled gauge low-side  
 Glycerin-filled gauge high-side  
 Permeation resistant charging hoses standard fittings  
 Standard hose for manifold  
 Fluke 52 temperature analyzer  
 Two extra temperature probes for Fluke 52 (4 total)  
 Leak-detecting solution (bubbles)  
 UEI DL 49 clamp on ammeter  
 Fluke 116 HVAC multimeter  
 Alligator clip accessories for Fluke Model 116  
 Robinair brass core removal tool  
 J.B. piercing valves  
 1 pound silver braze rod  
 1/4" flare x 1/8" pipe half union  
 Adapter 90-degree (Seal Right, low loss fitting)  
 1 Troy oz. 56% silver solder  
 Silver solder flux paste  
 Small stainless steel brush  
 Roll sanding cloth  
 Tube bender for 1/4", 5/16", 3/8" ACR copper tubing  
 Swaging – flaring kit (1/4" to 5/8")  
 1/4" flare union



## ❖ information technology & communication systems

The goal of the Information Technology & Communication Systems Program is to provide graduates with the wide variety of skills necessary to obtain entry-level employment and achieve success in their careers. Throughout two years of training, the combination of classroom, lab and field projects provides students with the proper balance of theory and hands-on experience. Numerous industry certifications such as CompTIA, Cisco and FCC can be achieved with the knowledge gained through this process. The program is approved by the State of Washington as a two-year Limited Energy (06) Specialty Electrical training program.

The two-year training program is divided into four six-month sections of curriculum. In the first section there is instruction in CompTIA+ Personal Computer Maintenance, server administration and intro to data networking. This section allows the student to achieve a working knowledge of their personal computer's hardware components, software, and basic networking. In addition, the first section concentrates on electronics technology with training in applied mathematics for electronics, DC and AC electronics and solid state theory, to give the student the fundamentals necessary to progress through the advanced curriculum of the next three sections. Heavy emphasis is placed on lab projects and hands-on training, which reinforces the learning process.

Section two builds on the electronics theory covered in the first section with applications to the advanced electronics circuits of transistors, operational amplifiers, digital electronics and wireless technology. Numerous hands-on lab projects allow the student to reinforce the classroom theory with practical applications. The material covered in this section will enable the student to pursue employment in the wireless communication and cellular telephone fields.

Section three offers the highly respected training curriculum of the Cisco Networking Academy. The Cisco Academy provides innovative instruction in network hardware configuration and prepares the student for Cisco Certification. The training in this section will enable the student to seek a career and achieve success in information technology as a PC-network technician and enable him/her to advance to Network Management positions. The training in this section prepares the student for the IP-based systems covered in the last section of training.

Section four exposes students to voice telephony, with installation procedures of equipment and cabling. Local loop, key systems, PBXs, computer telephone integration, VoIP and voice mail systems are also covered. Installation standards for public address and sound systems and fire and security alarm systems are covered in accordance with the National Electrical Code and National Fire Protection Association. Installation of actual systems in a lab environment is included to give the student practical experience. Throughout the two-year training, students prepare themselves for the workforce. Resume writing, interview skills and documentation of their experience at Perry Technical Institute in a portfolio enable the student to conduct an effective job search.

Employment opportunities continue to expand as business and industry become more dependent on information and communication systems and the Internet. There is a high demand for trained technicians who install, configure and maintain the equipment that enable us to communicate effectively.

The Information Technology & Communication Systems Program is 24 months in length (eight quarters). The student will earn 193 credit hours which are 2,688 clock hours. Tuition is payable on a quarterly basis. There are four quarters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Quarter 1	ITC 101	Applied Mathematics for Electronics I	110	11.0
	ITC 102	Electronics: DC/AC Fundamentals	130	13.0
	ITC 104L	Laboratory Instruction	<u>96</u>	<u>4.5</u>
			336	30.0
Quarter 2	ITC 201	Applied Mathematics for Electronics II	110	11.0
	ITC 202	Personal Computers A+	130	13.0
	ITC 204L	PC A+ Laboratory Instruction	<u>96</u>	<u>4.5</u>
			336	30.0
Quarter 3	ITC 301	Communications & Wireless Electronics I	130	13.0
	ITC 302	Digital Electronics I	60	6.0
	ITC 304L	Laboratory Instruction	<u>146</u>	<u>7.0</u>
			336	26.0
Quarter 4	ITC 401	Communications & Wireless Electronics II	120	12.0
	ITC 402	Digital Electronics II	80	8.0
	ITC 404L	Laboratory Instruction	<u>136</u>	<u>6.5</u>
			336	26.5
Quarter 5	ITC 501	Cisco Networking I	60	6.0
	ITC 501L	Cisco Laboratory Instruction I	106	5.0
	ITC 502	Cisco Networking II	50	5.0
	ITC 502L	Cisco Laboratory Instruction II	<u>120</u>	<u>6.0</u>
			336	22.0

(cont. on next page)

			Clock Hours	Credit Hours
Quarter 6	ITC 601	Cisco Networking III	60	6.0
	ITC 601L	Cisco Laboratory Instruction III	106	5.0
	ITC 602	Cisco Networking IV	50	5.0
	ITC 602L	Cisco Laboratory Instruction IV	<u>120</u>	<u>6.0</u>
			336	22.0
Quarter 7	ITC 701	Basic Telephony & Cabling Standards	80	8.0
	ITC 702	Voice Communication Systems I	116	11.5
	ITC 703	Employment Search: Resumes & Interview Skills	20	2.0
	ITC 705L	Laboratory Instruction	<u>120</u>	<u>6.0</u>
			336	27.5
Quarter 8	ITC 802	Voice Communications	84	8.0
	ITC 804	Limited Energy	51	5.0
	ITC 805L	Laboratory Instruction	81	4.0
	ITC 806	Externship	<u>120</u>	<u>4.0</u>
			336	21.0
		Program Totals	2688	193

## INFORMATION TECHNOLOGY & COMMUNICATION SYSTEMS COURSE DESCRIPTIONS

### ITC 101 Applied Mathematics for Electronics I

Mathematics required to evaluate and understand the electronic circuits and equipment which will be covered.

### ITC 102 Electronics: Direct Current Fundamentals, Advanced DC, AC

Basic electronic components and DC circuit operation is introduced including test equipment and tools. DC network analysis, AC circuits, and their effect on reactive components are covered as well.

### ITC 104L Laboratory Instruction

Application of the technical knowledge acquired in the classroom to practical electronic circuits. The concepts of teamwork, analytical problem solving and troubleshooting are introduced. The students begin preparing a portfolio, documenting their experiences and training through the program.

### ITC 201 Applied Mathematics for Electronics II

A continuation of Quarter 1 Mathematics for Electronics. Emphasis is placed on the math necessary to understand AC circuits and decibel power calculations.

### ITC 202 Personal Computers A+

Theory, operation, assembly and maintenance of personal computer hardware and peripheral devices, in a hands-on environment. Operation of PC operating systems, including; software installation, management, utilities and troubleshooting. Introduction to local and wide area computer networks. Network protocols, topologies, and services are covered to enable the student to understand basic networking models. Preparation for the CompTIA A+ Certification.

### ITC 204L Laboratory Instruction

Software and hardware installation is accomplished which allow the student to install, maintain and troubleshoot computer systems. Server and workstation configuration and connection to the network is accomplished as well to help grasp the networking model.

### ITC 301 Communications & Wireless Electronics I

Advanced DC and AC electronics, transistors, and integrated circuit operational amplifiers utilized as voltage amplifiers, active filters and oscillators. Radio frequency theory, noise, bandwidth, AM, FM and digital modulators.

### ITC 302 Digital Electronics I

Boolean algebra and binary arithmetic provide the basis for the understanding of complex digital logic circuits. Logic gates and combinational logic.

### ITC 304L Laboratory Instruction

Application of the technical knowledge acquired in the classroom to practical power supplies, transistor amplifiers and switches, and operational amplifier circuits. The concepts of teamwork, analytical problem solving and troubleshooting are reinforced.

### ITC 401 Communications & Wireless Electronics II

A continuation of Communications & Wireless Electronics. AM transmitters and receivers, transceivers, RF transmission, propagation, waveguides, transmission lines and antenna systems are covered. RF system installation, maintenance and troubleshooting are presented to prepare the student for entry into the cellular telephone, microwave communications, wireless networking and associated fields. The students prepare and test for the FCC Radiotelephone License certification.

### ITC 402 Digital Electronics II

A continuation of Digital Electronics. Analysis, design and operation of digital circuits.

### ITC 404L Laboratory Instruction

Application of the technical knowledge acquired in the classroom to digital circuits, and practical AM and FM radio circuits. Spectrum analyzers and power/SWR measurements on radio transmitter and antenna systems. Radio receiver alignment, testing and troubleshooting.

### ITC 501 Cisco Networking I

(Networking for Home and Small Businesses v4.0) This Cisco Networking Academy course teaches students the skills

needed to obtain entry-level home network installer jobs. It also helps students develop some of the skills needed to become network technicians, computer technicians, cable installers, and help desk technicians. It provides a hands-on introduction to networking and the Internet using tools and hardware commonly found in home and small business environments.

#### **ITC 501L Cisco Laboratory Instruction I**

Application of the technical knowledge acquired in ITC 501 Cisco Networking I

#### **ITC 502 Cisco Networking II**

(Working at a Small-to-Medium Business or ISP v4.1) This Cisco Networking Academy course prepares students for jobs as network technicians and helps them develop additional skills required for computer technicians and help desk technicians. It provides a basic overview of routing and remote access, addressing, and security. It also familiarizes students with servers that provide e-mail services, Web space, and authenticated access. Students learn about the soft skills required for help desk and customer service positions. Helps them prepare for the CCENT certification exam. Network monitoring and basic troubleshooting skills are taught in context.

#### **ITC 502L Cisco Laboratory Instruction II**

Application of the technical knowledge acquired in ITC 502 Cisco Networking II.

#### **ITC 601 Cisco Networking III**

(Introducing Routing and Switching in the Enterprise v4.0) This Cisco Networking Academy course familiarizes students with the equipment applications and protocols installed in enterprise networks, with a focus on switched networks, IP telephony requirements, and security. It also introduces advanced routing protocols such as Enhanced Interior Gateway Routing Protocol (EIGRP) and Open Shortest Path First (OSPF) Protocol. Hands-on exercises, including configuration, installation, and troubleshooting, reinforce student learning.

#### **ITC 601L Cisco Laboratory Instruction III**

Application of the technical knowledge acquired in ITC 601 Cisco Networking III.

#### **ITC 602 Cisco Networking IV**

(Designing and Supporting Computer Networks v4.0) This Cisco Networking Academy course introduces students to network design processes using two examples: a large stadium enterprise network and a medium-sized film company network. Students follow a standard design process to expand and upgrade each network, which includes requirements gathering, proof-of-concept and project management. Lifecycle services, including upgrades, competitive analyses, and system integration, are presented in the context of pre-sale support. In addition to the Packet Tracer and lab exercises found in the previous courses, there are many pen-and-paper and role-playing exercises that students complete while developing their network upgrade proposals.

#### **ITC 602L Cisco Laboratory Instruction IV**

Application of the technical knowledge acquired in ITC 602 Cisco Networking IV.

#### **ITC 701 Basic Telephony & Cabling Standards**

Preparation of the student for entry into the telephone industry. Cabling installation, telephone sets and local loop are covered. The history of the industry and industry terms are presented. National Electrical Code and industry cabling and equipment standards are covered. Data cable installer certificate obtained through industry provided certification. (Certification may occur in section 3 or 4)

#### **ITC 702 Voice Communication Systems I**

Installation, programming and troubleshooting of business telephone systems including key systems, hybrids and an introduction to PBX switching equipment in a simulated business environment is accomplished. Transmission lines and long distance networks, which tie telephone switches together, are covered. Customer service concepts are presented, to enable the student to communicate effectively with the customer.

#### **ITC 703 Employment Search: Resumes & Interview Skills**

Designed to prepare the student to mount an effective job search. Resume preparation, interview skills and the job application process are covered as the portfolio preparation process is completed.

#### **ITC 705L Laboratory Instruction**

Application of the technical knowledge acquired in the classroom to industry standard telephone systems and related equipment. Hands-on experience with industry standard tools and practices is accomplished in the installation of copper and fiber optic cable systems for voice and data networks. Numerous system installation labs and off-campus field projects enable the student to apply knowledge gained in the classroom to actual field installations. Proper installation practices are covered in accordance with the National Electrical Code and industry standards.

#### **ITC 802 Voice Communication Systems II**

A continuation of Quarter 7 Voice Communication Systems. The convergence of voice and data, through the development of Computer-telephone Integration (CTI) and Voice over Internet (VoIP) concepts. Installation, programming and troubleshooting of PBX and VoIP equipment in a simulated business environment is accomplished. Voice mail is integrated into the system and the programming of system features is accomplished. Customer service concepts are presented, to enable the student to communicate effectively with the customer.

#### **ITC 804 Limited Energy Systems: Alarms & Amplified Sound**

Fire alarm system installation, programming and troubleshooting are covered. Proper installation practices are covered in accordance with the National Electrical Code and NFPA 72: National Fire Alarm Code. Amplified sound and speaker systems, including 70V distribution systems and intercom systems are covered.

#### **ITC 805L Laboratory Instruction**

Application of the technical knowledge acquired in the classroom to industry standard telephone systems and related equipment. Hands-on experience with industry standard tools and practices is accomplished in the installation of copper and fiber optic

cable systems for voice and data networks. Numerous system installation labs and off-campus field projects enable the student to apply knowledge gained in the classroom to actual telephone equipment and data network cable installations. Installation of fire alarms in a lab environment. Proper installation practices are covered in accordance with The National Electrical Code and industry standards.

#### **ITC 806 Externship**

The student has the option of obtaining practical experience in a workplace environment in lieu of the last month of training on campus. Externships must relate to the training that would occur in the last quarter of ITCS and must be approved by the Department Head.

#### **INFORMATION TECHNOLOGY & COMMUNICATION SYSTEMS EQUIPMENT LIST**

Students have the opportunity to train on the following manufacturer's equipment:

##### **Electronics Test Equipment:**

Digital multi-meter  
Elenco oscilloscopes, signal generators and power supplies  
Hitachi oscilloscopes  
Elenco power supplies, signal generators and Heathkit curve tracer

##### **Wireless Test Equipment:**

Tektronix 492 spectrum analyzer  
Elenco AM signal generators/modulators  
Hewlett Packard FM signal generators/modulators  
Hewlett Packard 8921A cell site test sets  
Wiltron/Anritsu site master SWR/RL and fault location testers  
BIRD watt meters  
Fluke Etherscope

##### **Telephone and PA Systems:**

Panasonic  
Toshiba  
Comdial  
Lucent/Avaya  
Nortel Meridian opt 11 PBX  
Nortel Norstar  
ESI  
Mitel PBX  
Mitel VoIP  
Duvoice voice mail  
Valcom paging  
Bogen 70V PA system

##### **Personal Computers and Servers:**

Various manufacturers, including Dell, Gateway, IBM and clones.  
Operating systems include DOS, Win 9X, Win 2000, Win XP, Vista, Windows 7, Windows 2003 Server, Mac OS, Linux

##### **Transmission and Network Equipment:**

Cisco routers and switches  
T1 CSU/DSU  
Hewlett Packard switches  
Fluke network analyzer  
Fluke cable certifier  
Fluke cable tester

##### **Alarm Systems:**

Silent Knight 5700 Fire Alarm Control Communicator  
System sensors, pull stations and signal devices

#### **INFORMATION TECHNOLOGY & COMMUNICATION SYSTEMS BOOK AND TOOL LIST**

The book and tool list for students in the Information Technology & Communication Systems program is intended to be a minimum requirement to complete the program. The total cost of books, tools, laptop and software is approximately \$3,900.

##### **Book List:**

The book list will be provided with your course syllabi on your first day of school.

##### **Basic Tool List:**

You will need approximately \$2,500 for laptop, software and tool purchases your first week of training. Tool prices may vary. The estimated price does not include mark-up for program students or sales tax. The following is the minimum required for the program:

Canvas tool case  
Digital multi-meter  
Logic probe  
Engineering programmable calculator (HP35S)  
Proto solderless breadboard and wire jumper kit  
Pomona lead set  
Safety glasses  
25 watt soldering iron (two flat tips, small and medium) with soldering iron stand  
De-soldering tool (vacuum type)  
Flux brush  
2 standard screwdrivers (4 ½" x 1/8" dia., 6" x 3/16")  
2 Phillips screwdrivers (5 ½" #1 size, 7 5/8" #2 size)  
Jeweler's screwdrivers  
Electrician's scissors  
Antistatic wrist strap  
Small side cutters  
Large side cutters  
Small needle nose pliers  
6" adjustable wrench  
Pliers  
Connector tool RJ 11/45  
Cable prep tool (Data Cable)  
Electrical tape  
Punch down tool (66 and 110 bits)  
Inductive amp  
Tone tracer  
Modular adapter (cable test)  
Spudger  
110 block test adapter  
T-25M staple gun  
Staples T25M (pkg/1000)  
Nylon tie wraps 7" (pkg/200)

##### **Laptop Computer and Software:**

Purchase of a personal laptop computer and academic versions of software are required. Software is available at reduced prices while you are enrolled as a student. CAD software provided as part of lab fee. Students may purchase their computer through the vendor of their choice.

**Hardware Minimum Requirements:**

1 GHz processor  
60 GB HD  
512 MB RAM (1GB recommended for Windows 7)  
DVD drive  
USB 2.0  
WiFi 802.11b/g  
USB flashdrive  
USB-serial adapter

**Software Minimum Requirements:**

Microsoft Windows XP Operating System (Windows 7 recommended)  
Antivirus program (regularly updated)  
Microsoft Office 2007 Standard/Student Edition



## ❖ instrumentation & industrial automation technology

The Instrumentation & Industrial Automation Technology Program focuses on a curriculum designed to introduce students to today's world of computerized industrial automated manufacturing. The 24-month training encompasses a basic understanding of mathematics for electronics, electricity, solid state, digital devices, applied physics and calculus. Programmable logic controllers, transmitters, transducers, recorders and controllers will be used to simulate control techniques. Temperature, level, flow and pressure are just a few of the process controls that instrumentation technicians monitor, install, troubleshoot, repair and calibrate.

Safety is an integral part of instruction throughout the program. Regularly scheduled safety meetings are held to ensure that proper safety practices are being followed. Proper clothing including solid shoes, no sandals, long pants and full shirts with a minimum of cap sleeves must be worn. Safety glasses must be worn in lab. Unsafe practices will result in points being deducted from lab assignments and/or other disciplinary actions.

Students are encouraged to join the International Society of Automation (ISA). The student chapter participates in chapter meetings and activities. Tours are scheduled with a variety of industries to expose students to instrumentation technicians in the work environment. The tours are required of all students enrolled in the Instrumentation & Industrial Automation Technology Program. Clock hours shown in the program outline are approximations and may be adjusted by the instructor to accommodate classroom needs. These hours may take place either in a classroom setting or as instruction in the lab area.

The goal of the Instrumentation & Industrial Automation Technology Program is to provide the resources and instruction necessary to allow students opportunities for entry-level employment as instrumentation technicians. Employment opportunities exist in almost all types of industrial product manufacturing. If a student wishes to seek an externship with an employer, they would be allowed the opportunity to do so during the last 20 school days of training.

The Instrumentation & Industrial Automation Technology Program is 24 months in length (six trimesters). The student will earn 132.0 credit hours which are 2,688 clock hours. Tuition is payable on a trimester basis. There are three trimesters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Trimester 1	IN 101	Math for Electronics	137	9.0
	IN 102	Electrical Fundamentals	112	7.5
	IN 103	Solid State Devices	32	2.0
	IN 104L	Lab & Shop Projects	<u>167</u>	<u>5.5</u>
			448	24.0
Trimester 2	IN 201	Electrical Fundamentals	90	6.0
	IN 202	Solid State Devices	40	2.5
	IN 203	Operational Amplifiers	84	5.5
	IN 204	Physics I	46	3.0
	IN 205L	Lab & Shop Projects	<u>188</u>	<u>6.0</u>
			448	23.0
Trimester 3	IN 301	Instrument Maintenance & Calibration	64	4.0
	IN 302	Physics II	114	7.5
	IN 303	Calculus I	57	3.5
	IN 304L	Lab & Shop Projects	<u>213</u>	<u>7.0</u>
			448	22.0
Trimester 4	IN 401	Instrumentation & Process Control	90	6.0
	IN 402	Motor Control	25	1.5
	IN 403	Calculus II	58	3.5
	IN 404L	Lab & Shop Projects	<u>275</u>	<u>9.0</u>
			448	20.0
Trimester 5	IN 501	Instrumentation & Process Control	30	2.0
	IN 502	Digital Fundamentals	87	5.5
	IN 503	Programmable Logic Controllers	90	6.0
	IN 504	Networking Fundamentals	35	2.0
	IN 505L	Lab & Shop Projects	<u>206</u>	<u>6.5</u>
			448	22.0

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			Clock Hours	Credit Hours
Trimester 6	IN 601	Analytical Instrumentation	64	4.0
	IN 601L	Lab & Shop Projects	68	2.0
	IN 602	Industrial Computing	124	8.0
	IN 603	Employment Preparation	72	4.5
	IN 604E	Externship	<u>120</u>	<u>2.5</u>
			448	21.0
Program Totals			2688	132.0

## INSTRUMENTATION & INDUSTRIAL AUTOMATION TECHNOLOGY COURSE DESCRIPTIONS

### IN 101 Math for Electronics

Numbers, addition, subtraction, multiplication and division of polynomials, equations, powers of ten, units and dimensions, special products and factoring, algebraic fractions, fractional equations, graphs, simultaneous equations, exponents and radicals, quadratic equations, angles, trigonometric functions, trigonometric tables, solution of right triangles, and trigonometric identities and equations.

### IN 102 Electrical Fundamentals

Electric circuits, starting with the nature of electricity, Ohm's Law and electrical calculations, conductors, insulators, resistors, series resistive circuits, parallel resistive circuits, series-parallel resistive circuits, voltage cells, batteries and capacitance.

### IN 103 Solid State Devices

Basic definitions, semiconductor diodes, rectifier diode circuits, basic DC power supply and transformer usage.

### IN 104L Lab & Shop Projects

School rules, conduct and dress code, including proper clothing requirements and the use of safety glasses, general safety practices concerning the usage and proper maintenance procedures for electrical and general shop equipment. First aid and CPR training for two-year certification; tool and book purchases; explanation of ISA; overview of basic personal computer operation including the Windows environment focusing on desktop and Explorer; and use of networks by locating computers, printers and files that are networked. MS Word will be incorporated into technical report writing skills, use of word processor for lab assignments, applying classroom theory to practical lab assignments. Safety is stressed at all times.

### IN 201 Electrical Fundamentals

Network analysis techniques, network theorems, magnetism, magnetic circuits, inductance, capacitance, series and parallel AC circuits, and power in AC circuits.

### IN 202 Solid State Devices

Semiconductor diodes, DC power supplies – single-phase, transistor as DC switch, transistor as an AC amplifier, silicon-controlled rectifiers, triac, diac and unijunction transistor and solid state transducers.

### IN 203 Operational Amplifiers

Introduction to OP amps, first experiences with an OP amp, inverting and non-inverting amplifiers, comparators and

controls, differential, instrumentation and bridge amplifiers and integrated circuit timers.

### IN 204 Physics I

Technical mathematics and friction, equilibrium, torque and rotational equilibrium and uniformly accelerated motion are covered in this section of physics.

### IN 205L Lab & Shop Projects

Applying classroom theory to practical lab assignments and simulators, using Microsoft Word and AutoCad. Safety is stressed at all times.

### IN 301 Instrument Maintenance & Calibration

Loop concepts, calibration methods, analog transmitters, transducers, controllers, process variables and ISA books are included.

### IN 302 Physics II

Uniformly accelerated motion is covered in this section of physics. Projectile motion; Newton's Second Law; work, energy and power; impulse and momentum; simple machines; elasticity; fluids at rest; fluids in motion; temperature and expansion; quantity of heat; transfer of heat; and thermal properties of matter are covered.

### IN 303 Calculus I

Analytic geometry, equations of curves and curve sketching, functions, derivatives, formulas for calculating derivatives.

### IN 304L Lab & Shop Projects

Applying classroom theory to practical lab assignments and simulators. Safety is stressed at all times.

### IN 401 Instrumentation & Process Control

Process and instrumentation diagramming, loop sheets, electrical diagramming, valves, proportional, integral and derivative controls, tuning controllers, fluid power systems and smart devices.

### IN 402 Motor Control

Lockout/tagout, electric symbols, ladder diagramming, contactors, single-phase, three-phase and DC motors, variable speed devices.

### IN 403 Calculus II

Applications of derivatives, anti-differentiation, trigonometric functions and definite integral calculus.

### IN 404L Lab & Shop Projects

Applying classroom theory to practical lab assignments and simulators. Safety is stressed at all times.

### **IN 501 Instrumentation & Process Control**

Advanced control concepts, flame safety and boiler operation.

### **IN 502 Digital Fundamentals**

Introductory digital concepts, number systems, operations and codes, logic gates, Boolean algebra and logic simplification, combinational logic, functions of combinational logic and related devices.

### **IN 503 Programmable Logic Controllers**

Overview of PLCs, PLC hardware components, fundamentals of logic, basics of PLC programming, developing PLC ladder and wiring diagrams and basic PLC functions.

### **IN 504 Networking Fundamentals**

Introduction to networks, network components and real-world networks.

### **IN 505L Lab & Shop Projects**

Applying classroom theory to practical lab assignments and simulators. Safety is stressed at all times.

### **IN 601 Analytical Instrumentation**

Applications and implementation of process analyzer systems. Chemistry as it pertains to process analyzers. Theory and operation of electrochemical and compositional process analyzers.

### **IN 601L Lab & Shop Projects**

Applying classroom theory to practical lab assignments and simulators. Safety is stressed at all times.

### **IN 602 Industrial Computing**

Configurations of distributive process control, hardware implementations and plant loop communications all utilizing control simulators. Hardware and software configurations and implementation utilizing software packaged for personal computers that provides interfaces between operator and controller. HMI software configurations on PLC-controlled simulators.

### **IN 603 Employment Preparation**

Personal resume development to be used in job search. Development of a list of potential employers for setting interview schedules. Interviewing techniques and feedback from practice interviews.

### **IN 604E Externship**

Students who have had a job offer as an instrumentation technician may leave the program and work in the field under a training extern agreement with Perry Technical Institute, the employer and the student.

## **INSTRUMENTATION & INDUSTRIAL AUTOMATION TECHNOLOGY BOOK AND TOOL LIST**

The book and tool list for students in the Instrumentation & Industrial Automation Technology Program is intended to be a minimum requirement to complete the program.

Tool and book costs will be approximately \$3,500. Please be prepared to pay this amount within your first week of training. Your instructor will give details regarding the purchase of your tools and books on the first day of school.

### **Book List:**

The book list will be provided with your course syllabi on your first day of school.

### **Tool List:**

Tool prices may vary. The prices stated do not include any mark-up for program students or any sales taxes. The following tools are the minimum required for this program.

Safety glasses with clear lenses  
Pencil-type soldering iron (maximum of 25 watts)  
Soldering iron holder  
Desoldering tool  
Slotted screwdriver 3" long x 1/8" diameter shaft, 1/8" wide tip  
Slotted screwdriver 4" long x 3/16" diameter shaft, 3/16" wide tip  
Slotted screwdriver 6" long x 1/4" diameter shaft, 1/4" wide tip  
#0 Phillips tip screwdriver 3" shaft length  
#1 Phillips tip screwdriver 3" shaft length  
#2 Phillips tip screwdriver 4" shaft length  
Set jeweler's screwdrivers or miniature electronics screwdrivers  
Nut driver set, (3/32" 1/8", 5/32", 3/16", 7/32" 1/4", 9/32" 5/16", 11/32", 3/8")  
Diagonal cutting pliers 4"  
Long nose pliers 4"  
Set combination end wrenches 1/4"-3/4"  
Set miniature combination end wrenches (1/8", 5/32", 3/16", 7/32" 1/4", 9/32" 5/16", 11/32", 3/8") (ignition wrenches)  
Wire stripper (#20-#30 AWG)  
Crimper/stripper tool (#10-#22 AWG)  
Pocket flashlight  
16 pin test clips  
Ball hex set 1/16"-3/8"  
Ball hex set 1.5mm-10mm  
Adjustable wrench 6"  
Adjustable wrench 10"  
Adjustable joint plier 9"  
6" dial or digital caliper (metal)  
Two padlocks – #3 Masterlock 1"-1&1/2" key lock (no combos)  
Tape measure 25'  
WSU-30M or equivalent hand wire wrap/unwrap tool  
Digital multimeter (Fluke Model 87)  
Pomona lead set  
Electronic calculator (Hewlett-Packard HP-33S)  
Anti-static wrist strap, 6-foot  
Perry-Cal Kit  
Tool tote bag, soft-side canvas or nylon, 16" maximum length

Purchase of a personal laptop computer and academic versions of software are required. Software is available at reduced prices while you are enrolled as a student. Students may purchase their computer through a vendor of their choice.

### **Laptop Computer and Accessories:**

Approximate cost is \$850.

### **Recommended minimum for PC:**

Pentium IV, Pentium M Processor, or equivalent  
Windows 2000, XP, VISTA, or latest Microsoft operating system  
2 GB RAM

60 GB hard drive  
USB port  
CD burner  
Carrying case  
Mouse  
USB flash drive, 2 GB (or more)

**Software Required :**

Approximate cost is \$320.  
Microsoft Office (Student Edition Available)  
Autocad LT (Student Edition Available)



## ❖ legal assistant/paralegal program

The Legal Assistant/Paralegal Program is the launching pad towards entry-level legal office jobs in businesses such as private legal firms and government offices. The program provides a combination of training in traditional office skills, soft skills, and specialized legal skills. Paralegals are trained to assist attorneys with legal tasks such as preparing case material and data prior to litigation while understanding and properly using legal terminology.

The first two quarters prepare students to take Microsoft Office Specialist (MOS) certification exams in Microsoft Word, Excel, Access, and PowerPoint. By the end of the first two quarters, students will be able to demonstrate a solid understanding of computers including entry-level keyboarding operations and basic maintenance. They will develop an understanding of how to use the Windows operating system and various software applications. They will also learn the importance of career planning and how to develop a positive customer service environment.

In the third and fourth quarters, students advance into more specialized subjects. By the end of the fourth quarter, students will be required to develop a solid understanding of civil law, criminal law, legal terminology, legal research, writing techniques, and legal documents as they prepare for externships and employment opportunities. Students will also prepare to take the Accredited Legal Secretary (ALS), the Certified Legal Assistant (CLA) and the PLS (Professional Legal Secretary) examinations during the last quarter of the program.

Students will learn advanced career planning practices and demonstrate skills and competencies in externship assignments. Students must have a "C+" or better in current coursework, must not be under any type of probationary contract, and must complete and submit a regular lab work experience employer evaluation. The instructor may terminate industry work experiences at any time if students do not adhere to these requirements.

The Legal Assistant/Paralegal Program is 12 months in length. The student will earn 90 credit hours which are 1,344 clock hours. Tuition is payable on a quarterly basis. There are four quarters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Quarter 1	BTA 101	Computer Applications	30	3.0
	BTA 101L	Computer Applications Lab	30	1.5
	BTA 105	Business English I	30	3.0
	BTA 105L	Business English I Lab	30	1.5
	BTA 110	Keyboarding I	12	1.0
	BTA 110L	Keyboarding I Lab	18	.5
	BTA 115	Word Processing	30	3.0
	BTA 115L	Word Processing Lab	30	1.5
	BTA 120	Spreadsheets	30	3.0
	BTA 120L	Spreadsheets Lab	30	1.5
	BTA 130	Business Math	30	3.0
	BTA 130L	Business Math Lab	<u>36</u>	<u>1.5</u>
		336	24.0	
Quarter 2	BTA 201	Business English II	30	3.0
	BTA 201L	Business English II Lab	30	1.5
	BTA 205	Database & Integration	44	4.0
	BTA 205L	Database & Integration Lab	44	2.0
	BTA 210	Keyboarding II	12	1.0
	BTA 210L	Keyboarding II Lab	18	.5
	BTA 215	Business Presentation	40	4.0
	BTA 215L	Business Presentation Lab	46	2.0
	BTA 220	Career Planning I	18	1.5
	BTA 220L	Career Planning I Lab	12	.5
	BTA 230	Business Etiquette	18	1.5
	BTA 230L	Business Etiquette Lab	<u>24</u>	<u>1.0</u>
		336	22.5	
Quarter 3	LAP 301	Paralegal Fundamentals I	30	3.0
	LAP 301L	Paralegal Fundamentals I Lab	30	1.5
	LAP 305	Paralegal Ethics	30	3.0
	LAP 305L	Paralegal Ethics Lab	30	1.5
	LAP 310	Civil Litigation	36	3.5
	LAP 310L	Civil Litigation Lab	40	2.0
	LAP 315	Legal Terminology & Transcription	15	1.5
	LAP 315L	Legal Terminology & Transcription Lab	20	1.0

(cont. on next page)

			Clock Hours	Credit Hours
	LAP 320	Customer Service	24	2.0
	LAP 320L	Customer Service Lab	27	1.0
	LAP 325	Legal Research & Writing	24	2.0
	LAP 325L	Legal Research & Writing Lab	<u>30</u>	<u>1.5</u>
			336	23.5
Quarter 4	LAP 401	Medical Terminology	20	2.0
	LAP 401L	Medical Terminology Lab	20	1.0
	LAP 405	Employment Preparation	20	2.0
	LAP 405L	Employment Preparation Lab	15	.5
	LAP 410	Criminal Law	35	3.5
	LAP 410L	Criminal Law Lab	30	1.5
	LAP 415	Paralegal Fundamentals II	36	3.5
	LAP 415L	Paralegal Fundamentals II Lab	40	2.0
	LAP 430E	Externship	<u>120</u>	<u>4.0</u>
			336	20.0
	Program Totals		1344	90.0

## LEGAL ASSISTANT/PARALEGAL COURSE DESCRIPTIONS

### BTA 101 Computer Applications

This course covers the basics of computer hardware, software, networks and the Internet. The objective is to prepare students to take the MOS certification exam. Students learn Microsoft Publisher to create posters, newsletters, flyers and more, covering topics such as page layout, command frames, table frames, WordArt, background pages and much more.

### BTA 101L Computer Applications Lab

Directed lab with structured learning.

### BTA 105 Business English I

A concentrated overview of sentence writing, this course emphasizes sentence combining, basic mechanics and paragraph writing.

### BTA 105L Business English I Lab

Directed lab with structured learning.

### BTA 110 Keyboarding I

In this course, students learn beginning typing and 10-key skills. The objectives are for students to learn how to type by touch and how to take a timed keyboarding test for accuracy and speed.

### BTA 110L Keyboarding I Lab

Directed lab with structured learning.

### BTA 115 Word Processing

Students learn how to use Microsoft Word for basic and advanced word processing. The objective of this course is to prepare students to take the MOS certification exam for Word.

### BTA 115L Word Processing Lab

Directed lab with structured learning.

### BTA 120 Spreadsheets

Students learn Microsoft Excel and how to build business and financial applications for forecasting, budgeting and basic bookkeeping. The objective of this course is to prepare students to take the MOS certification exam for Excel.

### BTA 120L Spreadsheets Lab

Directed lab with structured learning.

### BTA 130 Business Math

Students will review the basic operations of arithmetic, understand and manage their personal finances, as well as grasp the fundamentals of business finances. This course will prepare students to be smart shoppers, informed taxpayers, and valued employees. Basic math skills will be covered in a step-by-step manner, building student confidence along the way.

### BTA 130L Business Math Lab

Directed lab with structured learning.

### BTA 201 Business English II

This course emphasizes basic punctuation, grammar rules, and sentence structure. The course is designed to introduce basic reading skills and to develop basic writing skills. Coursework emphasizes writing from observation as well as writing in response to readings. Students will practice writing sound paragraphs which express a main idea clearly and develop it fully with a minimum of errors in sentence structure, punctuation, and spelling.

### BTA 201L Business English II Lab

Directed lab with structured learning.

### BTA 205 Database & Integration

Students learn how to create and use databases with Microsoft Access. The objective of this course is to prepare students to take the MOS certification exam for Access. Students will gain exposure to Microsoft Outlook and receive hands-on integration of the entire Microsoft Office Suite.

**BTA 205L Database and Integration Lab**

Directed lab with structured learning.

**BTA 210 Keyboarding II**

In this course students learn how to improve their accuracy and typing speed. Students also learn formatting for personal and business letters, memoranda, simple tabulation techniques, proofreading and editing. This course covers the basics of computer hardware, software, networks and the Internet.

**BTA 210L Keyboarding II Lab**

Directed lab with structured learning.

**BTA 215 Business Presentation**

This course provides instruction in developing presentation materials. Students create a variety of charts, graphs and interactive presentations. Microsoft PowerPoint enables users to quickly create high-impact, dynamic presentations, while integrating workflow and ways to easily share information.

**BTA 215L Business Presentation Lab**

Directed lab with structured learning.

**BTA 220 Career Planning I**

This course is designed to teach students how to write a professional resume package and to learn basic interviewing skills.

**BTA 220L Career Planning I Lab**

Directed lab with structured learning.

**BTA 230 Business Etiquette**

This course focuses on the fundamentals of etiquette as it relates to business and business relationships inside and outside the office.

**BTA 230L Business Etiquette Lab**

Directed lab with structured learning.

**LAP 301 Paralegal Fundamentals I**

This course provides a thorough introduction to not only the legal system in general, but to specific areas of the law and the paralegal's integral role as a member of the legal team. The student will gain a comprehensive understanding of the laws in our society, the importance of ethical and professional responsibilities, and the skills needed to thrive in this environment.

**LAP 301L Paralegal Fundamentals I Lab**

Directed lab with structured learning.

**LAP 305 Paralegal Ethics**

This course provides a study of legal ethics from the perspective of the paralegal to prepare paralegal students for the ethical dilemmas they will face on the job. The ABA Model Rule that applies to attorneys is introduced and students will learn to act in accordance with rules for the ethical conduct of attorneys. Students will also study the Washington Rules of Professional Conduct. Hypotheticals and cases on each topic will be provided for further real-world application.

**LAP 305L Paralegal Ethics Lab**

Directed lab with structured learning.

**LAP 310 Civil Litigation**

Students will learn the litigation process in detail in a variety of contexts, providing relevance of litigation to other legal specialties, such as personal injury, real estate, employment, and intellectual property law. Students will also be exposed to a variety of sample legal documents, such as complaints, interrogatories and deposition summaries, as well as case studies.

**LAP 310L Civil Litigation Lab**

Directed lab with structured learning.

**LAP 315 Legal Terminology & Transcription**

Students will master all the skills necessary to produce a transcript that accurately reflects court proceedings, depositions, legal stipulations, hearings, and intra/interoffice meetings.

**LAP 315L Legal Terminology & Transcription Lab**

Directed lab with structured learning.

**LAP 320 Customer Service**

This course emphasizes how to provide excellent customer service. Students learn proper telephone skills, problem resolution skills and how to handle difficult situations.

**LAP 320L Customer Service Lab**

Directed lab with structured learning.

**LAP 325 Legal Research & Writing**

Students will take a hands-on approach to researching, documenting, and citing during the legal research and writing process. Students will receive an introduction to research, analytical principles, and the legal process. They will then take an in-depth exploration of the legal writing process.

**LAP 325L Legal Research & Writing Lab**

Directed lab with structured learning.

**LAP 401 Medical Terminology**

This course is designed to teach students to accurately spell, pronounce and define common medical terms related to major disease processes, diagnostic procedures, laboratory tests, abbreviations, drugs and treatment modalities.

**LAP 401L Medical Terminology Lab**

Directed lab with structured learning.

**LAP 405 Employment Preparation**

This course develops the personal and professional skills needed to be successful in business. Topics include confidence building, seeking to understand, beginning with clarity, knowing your personality profile, coping with difficult people, and balancing professional and personal priorities individually and in a team environment.

**LAP 405L Employment Preparation Lab**

Directed lab with structured learning.

**LAP 410 Criminal Law**

This course covers the essentials of both substantive criminal law and criminal procedure. Students will learn about criminal responsibility and the procedural aspects of the entire criminal justice system from arrest to appeal and habeas corpus.

### **LAP 410L Criminal Law Lab**

Directed lab with structured learning.

### **LAP 415 Paralegal Fundamentals II**

This course will provide a continuation of the paralegal's role in the legal organization. Students will also focus on three sections of document preparation that include goals, forms, instruments, pleadings, American jurisprudence, contracts, real estate transactions, wills, trusts, bankruptcy, criminal practices, federal practices, and domestic relations. In this course students will also undertake a business office filing simulation.

### **LAP 415L Paralegal Fundamentals II Lab**

Directed lab with structured learning.

### **LAP 430E Externship**

Students will learn advanced career planning practices and demonstrate skills and competencies in externship assignments. Students must have a "C+" or better in current coursework, must not be under any type of probationary contract, and must complete and submit a regular lab work experience employer evaluation. The instructor may terminate industry work experiences at any time if students do not adhere to these requirements.

## **LEGAL ASSISTANT/PARALEGAL PROGRAM BOOK AND TOOL LIST**

The book and tool list for students in the Legal Assistant/Paralegal Program is intended to be a minimum requirement to complete the program.

Tool and book costs are approximately \$2,620. Purchase or lease your laptop computer before school begins. Estimated cost of a laptop computer and software is \$1,170. Your instructor will give details regarding the purchase of your books and supplies on the first day of school. Book and tool prices may vary. The prices stated do not include mark-up for program students or any sales taxes.

#### **Book List:**

The book list will be provided with your course syllabi on your first day of school.

#### **Tool List:**

Laptop computer with appropriate software  
Dictionary  
Book bag

#### **Students may purchase their computer through a vendor of their choice, including:**

Dell.com  
Toshiba.com  
Sony.com  
Apple.com  
Hp.com  
Gateway.com

Staples, Office Max, Best Buy and Office Depot are authorized PC dealers.

#### **Laptop Computer and Accessories:**

Approximate cost is \$900.

#### **Minimum System Requirements:**

Microsoft Windows 7 operating system  
1 GHz 32-bit (x86) or 64-bit (x64) processor  
1 GB of system memory  
40 GB hard drive with at least 15 GB of available space  
Support for DirectX 9 graphics, or higher with:  
WDDM Driver  
128 MB of graphics memory (minimum)  
Pixel Shader 2.0 hardware  
32 bits per pixel  
Carrying case  
USB flash drive – 1 GB

#### **Software Required:**

Microsoft Office Professional 2007  
Approximate cost is \$270



## ❖ machine technology

The goal of the Machine Technology Program is to prepare students for entry-level positions in a variety of manufacturing fields. Students learn the machine trade through the integration of machining theory and practical application in the machine shop. They use the skills they learn to plan and carry out the operations needed to make machined products that meet precise specifications.

The working properties of metals, applied mathematics, blueprint reading, computer numerical control (CNC) programming and computer-aided manufacturing (CAM) using Mastercam are some of the subjects the students study to develop the skills demanded by today's industry.

Students have a chance to demonstrate skills and competencies while gaining valuable work experience by electing an externship option pending instructor approval. Students who maintain a 3.0 GPA will be eligible for externships in the seventh quarter of training.

There are numerous employment opportunities throughout the Northwest for students who successfully complete the Machine Technology Program. Graduates will be qualified for entry-level positions in fields such as aerospace, tool and die making, mold making and other specialty machining industries.

The Machine Technology Program is 24 months in length. The student will earn 171 credit hours which are 2,688 clock hours. Tuition is payable on a quarterly basis. There are four quarters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Quarter 1	MA 101	Shop Safety	15	1.5
	MA 102	First Aid	6	0.5
	MA 103	Mathematics for Machine Technology 1	50	5.0
	MA 104	Elementary Blueprint Reading 1	35	3.5
	MA 105	Machine Tool Practices 1	40	4.0
	MA 106L	Machine Lab	<u>190</u>	<u>9.5</u>
			336	24.0
Quarter 2	MA 201	Mathematics for Machine Technology 2	50	5.0
	MA 202	Elementary Blueprint Reading 2	36	3.5
	MA 203	Machine Tool Practices 2	40	4.0
	MA 204L	Machine Lab	<u>210</u>	<u>10.5</u>
			336	23.0
Quarter 3	MA 301	Mathematics for Machine Technology 3	50	5.0
	MA 302	Intermediate Blueprint Reading 1	36	3.5
	MA 303	Machine Tool Practices 3	40	4.0
	MA 304L	Machine Lab	<u>210</u>	<u>10.5</u>
			336	23.0
Quarter 4	MA 401	Mathematics for Machine Technology 4	50	5.0
	MA 402	Intermediate Blueprint Reading 2	36	3.5
	MA 403	Machine Tool Practices 4	40	4.0
	MA 404L	Machine Lab	<u>210</u>	<u>10.5</u>
			336	23.0
Quarter 5	MA 501	Geometric Dimensioning & Tolerancing 1	26	2.5
	MA 502	Computer Numerical Control Programming 1	30	3.0
	MA 503	Fundamentals of Tool Design 1	40	4.0
	MA 505L	Machine Lab	<u>240</u>	<u>12.0</u>
			336	21.5
Quarter 6	MA 601	Geometric Dimensioning & Tolerancing 2	26	2.5
	MA 602	Computer Numerical Control Programming 2	30	3.0
	MA 603	Fundamentals of Tool Design 2	40	4.0
	MA 605L	Machine Lab	<u>240</u>	<u>12.0</u>
			336	21.5
Quarter 7	MA 701	Geometric Dimensioning & Tolerancing 3	26	2.5
	MA 702	Computer Numerical Control Programming 3	30	3.0
	MA 703	Fundamentals of Tool Design 3	40	4.0
	MA 704E	Externship	<u>240</u>	<u>8.0</u>
			336	17.5

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Quarter 8			Clock Hours	Credit Hours
	MA 801	Geometric Dimensioning & Tolerancing 4	26	2.5
	MA 802	Computer Numerical Control Programming 4	30	3.0
	MA 803	Fundamentals of Tool Design 4	40	4.0
	MA 804E	Externship	<u>240</u>	<u>8.0</u>
			336	17.5
	Program Totals		2688	171.0

## MACHINE TECHNOLOGY COURSE DESCRIPTIONS

### MA 101 Shop Safety

Fundamental safety procedures for each group of machine tools in the shop. General shop safety considerations including proper clothing, eye protection and lifting are also covered.

### MA 102 First Aid/CPR

This course covers first aid and CPR instruction.

### MA 103 Mathematics for Machine Technology

Operations with fractions, mixed numbers and decimals as they relate to the machine trades. The topics covered are the basic math skills of addition, subtraction, multiplication and division. Calculations involving exponents, percentages, percents and rates are also covered.

### MA 104 Elementary Blueprint Reading 1

Fundamental skills needed to read and interpret industrial drawings. Topics covered include drawing layouts, symbols and the different drawing views used to describe machined parts.

### MA 105 Machine Tool Practices 1

Use of hand tools including hacksaws, files, taps and dies. Topics also include the use of measuring instruments such as steel rules, vernier scales, micrometers and dial indicators. Precision layout techniques, drilling machine operation, drill bit sharpening and tapping are covered.

### MA 106L Machine Lab

Operation of drill presses, band saws, bench grinders and basic hand tools will be applied in the shop. Operations performed will include filing a block square, precision hole layout, drill bit sharpening, drilling and tapping.

### MA 201 Mathematics for Machine Technology 2

Customary and metric linear measuring systems as well as the fundamentals of algebra found in the machine trades. Topics include using the principles of equality and rearranging of formulas to solve common shop problems.

### MA 202 Elementary Blueprint Reading 2

Further develops the skills learned in Elementary Blueprint Reading 1. Topics covered include the dimensions and symbols used to call out common features such as counterbores, countersinks, fillets and spot faces. Other topics include tapers, chamfers, bevels and screw threads.

### MA 203 Machine Tool Practices 2

Different types of lathes, their nomenclature and their operation and setup theories. Topics covered include turning, thread cutting, grooving, drilling and tapping. The operation of band saws, cold saws and abrasive saws is also covered.

### MA 204L Machine Lab

Operation and set-up of engine lathes will be applied in the shop. Operations include turning, thread cutting, grooving, drilling and tapping. Also covered are the setups of four-jaw chucks, follower rests and steady rests.

### MA 301 Mathematics for Machine Technology 3

Fundamentals of plane geometry. Shop problems are solved by applying the geometric principles of triangles, common polygons and circles. Other topics covered include geometric construction, area calculations and volume calculations.

### MA 302 Intermediate Blueprint Reading 1

Advanced blueprinting topics such as orthographic projection, sectioning and special views used in industrial drawing to further define machined parts. Geometric tolerances, their datums and modifiers, along with threaded fasteners, are covered.

### MA 303 Machine Tool Practices 3

Operation and set-up theories of the vertical milling machine. Topics covered include face milling, rough/finish milling, hole layout, drilling and tapping. Also covered are heat treating of materials, material properties and material application.

### MA 304L Machine Lab

Operation and set-up of the vertical milling machine will be applied in the shop. Operations will include face milling, rough/finish milling, hole layout, drilling and tapping. Also covered are general machine set-ups including dialing vises and head tramping.

### MA 401 Mathematics for Machine Technology 4

Trigonometric functions and compound angles as they apply in the machine trades. Calculations of angles and sides of right triangles, the Cartesian coordinate system, the laws of sines and cosines, and compound angle calculations are covered.

### MA 402 Intermediate Blueprint Reading 2

As a continuation of Intermediate Blueprint Reading 1, this course further develops advanced blueprint reading skills. The topics of pipe threads, dovetails and steel identification are covered along with structural steel shapes and welding. The special considerations of blueprints for castings, worm gears and mechanical fasteners are also covered.

### MA 403 Machine Tool Practices 4

Operation and set-up theories of horizontal milling machines and surface grinders. Milling topics covered include face milling, rough and finish milling. Surface grinding topics include selection of grinding wheels, coolant and work-holding options. The basic theories of arc, MIG and TIG welding will also be covered.

**MA 404L Machine Lab**

Operation and set-up of the horizontal milling machines and surface grinders will be applied in the shop. Milling operations will include face milling, rough and finish milling. Surface grinder operations will include block squaring and angle grinding. The fundamental operations of arc, MIG and TIG welding will be covered.

**MA 501 Geometric Dimensioning & Tolerancing 1**

Fundamental geometric dimensioning and tolerancing skills needed to interpret industrial drawings. Topics covered are material conditions, form variation and fits. Also covered are datum dimensioning, datum symbols, feature symbols and datum target symbols.

**MA 502 CNC Programming 1**

Manual programming including definitions and application of G&M codes as well as program formats for CNC turning and milling machines. Programming of lathes and milling machines with conversational-based controls is also covered.

**MA 503 Fundamentals of Tool Design 1**

Principles of tooling materials, cutting tool design, work holding principles and jig design. Economic design, break-even charts, mechanical properties of materials and heat-treating are covered. Additional topics include the fundamentals of chip formation, cutting forces, locating principles and clamping.

**MA 505L Machine Lab**

Classroom theory will be applied to tool and cutter grinding. Topics covered are operations such as end mill, wheel cutter and form tool sharpening. Other topics covered include gear hobbing, indexing operations and machine tool rebuilding.

**MA 601 Geometric Dimensioning & Tolerancing 2**

Further develops geometric dimensioning and tolerancing skills needed to interpret industrial drawings. Topics are conventional tolerance, material conditions, datum precedence, form and profile tolerance and free state variation.

**MA 602 CNC Programming 2**

Computer-aided drafting and modeling. Includes sketching, dimensioning and blueprint formatting as well as extruding two-dimensional sketches into three-dimensional solid models.

**MA 603 Fundamentals of Tool Design 2**

Principles of fixture design. Principles such as tool types, tool positioning and tool mounting will be covered. Additional topics include the fundamentals of power presses such as hydro forming, CNC laser cutting, turret punching and forging. Also covered are metal cutting, forming and drawing, beading and culling, deep drawing and extrusion.

**MA 605L Machine Lab**

Programming skills and set-up procedures will be used to produce parts with CNC milling and turning centers. Determining part pricing using tooling costs, material costs and time estimation are also covered.

**MA 701 Geometric Dimensioning & Tolerancing 3**

Further develops fundamental geometric dimensioning and tolerancing skills needed to interpret industrial drawings. Topics covered are tolerances of orientation, run-out and location

tolerances along with combining of geometric tolerances, tangent plane symbols, coaxial features and spherical features.

**MA 702 CNC Programming 3**

Fundamental 2-D computer-aided machining. Topics include geometry formation such as lines, arcs, points and splines. Also covered are creating drill tool paths, contour tool paths and pocketing tool paths.

**MA 703 Fundamentals of Tool Design 3**

Principles of tool design. Topics covered include inspection and gauging, joining processes and modular automated tool handling. Principles such as wear allowances, coordinate measuring machines, resistance welding and riveting are covered along with tool design through 3-D modeling and simulation.

**MA 704E Externship**

Practical experience in a workplace environment.

**MA 801 Geometric Dimensioning & Tolerancing 4**

Further develops fundamental geometric dimensioning and tolerancing skills needed to interpret industrial drawings. Topics covered are locating tolerances of fasteners, projected tolerance zones, virtual conditions, concentricity tolerance, positional tolerancing for coaxiality and symmetry.

**MA 802 CNC Programming 4**

Fundamental three-dimensional CAM. Topics include geometry formation such as surfaces and solids. Also covered are creating surface-driven and solid-driven tool paths.

**MA 803 Fundamentals of Tool Design 4**

A study of geometric dimensioning and tolerancing as applied to tool design. Topics covered are symbols and definitions, tree-plane concepts, general rules and reference.

**MA 804E Externship**

Practical experience in a workplace environment.

**MACHINE TECHNOLOGY BOOK AND TOOL LIST**

The book and tool list for students in the Machine Technology Program is intended to be a minimum requirement to complete the program. The total tool and book costs are approximately \$3,575.

**Book List:**

The book list will be provided with your course syllabi on your first day of school.

**Tool List:**

The estimated cost of tools for the Machine Technology Program is \$2,800. Students will meet with vendors and purchase/order their tools in the first or second week of class. Tool prices may vary and do not include any mark-up for program students or sales tax.

**General Hand Tools:**

Toolbox, top (Kennedy 52611 or equivalent)  
 Toolbox, bottom (Kennedy 297B or equivalent)  
 Screwdriver, 10-piece set  
 Wrench, adjustable 8"

Wrench, offset box end 3/4 X 7/8  
 Wrench, hex, ball-end, 22-piece set  
 Pliers, three-piece set  
 Hacksaw, 12"  
 Hammer, 24 oz dead blow  
 Hammer, 16 oz ball peen  
 Punch, prick  
 Punch, center  
 File card, with brush  
 File, 10" mill smooth  
 File, 8" mill smooth  
 File, 7" mill smooth  
 File, needle six-piece set  
 Handle, file three each  
 Gloves, welding  
 Honing stone, bench  
 Tape measure, 1" x 25'  
 Glasses, safety  
 Chuck key, #T6  
 Chuck key, #T5  
 Chuck key, #T9  
 Ink, layout  
 Remover, layout ink  
 Scriber (General #88 or equivalent)  
 Protractor (General #17 or equivalent)

#### **Machinist Hand Tools:**

Square, combination, four-piece set (Starret, #51548)  
 Gage, combination drill point (Starret, #50150 or equivalent)  
 Gage, center (Starret, #51475 or equivalent)  
 Gage, screw pitch (Starret, #50035)  
 Base, magnetic (Starret, #52743)  
 Edge finder (Starret, #53063)  
 Calipers, firm joint hermaphrodite (Starret, #51143 or equivalent)  
 Rule, 6" inch/metric (Starret, #51331 or equivalent)  
 Base, magnetic (Mighty Mag)  
 Thread measuring wire set  
 Gage, acme thread  
 Hone, tool sharpening  
 Deburring kit  
 Indicator, 1" travel  
 Tap, HSS, 6-32  
 Tap, HSS, 6-40  
 Tap, HSS, 8-32  
 Tap, HSS, 8-36  
 Tap, HSS, 10-24  
 Tap, HSS, 10-32  
 Tap, HSS, ¼-20  
 Tap, HSS, ¼-28  
 Tap, HSS, 5/16-18  
 Tap, HSS, 5/16-24  
 Tap, HSS, 3/8-16  
 Tap, HSS, 3/8-24  
 Tap, HSS, 7/16-14  
 Tap, HSS, 7/16-20  
 Tap, HSS, ½-13  
 Tap, HSS, ½-20  
 Tap, HSS, 9/16-12  
 Tap, HSS, 9/16-18  
 Tap, HSS, 5/8-11  
 Tap, HSS, 5/8-18  
 Drill, HSS, 115-piece set

Countersink, HSS, ¾" 82 deg  
 Center drill, HSS, #3 60 deg  
 Center drill, HSS, #4 60 deg  
 Tool bit, Lathe, HSS, 3/8 sq 2 each  
 Tool bit, Lathe, HSS, 1/4 sq

#### **Precision Measuring Tools:**

Micrometer, three-piece set (Mititoyo, #103-922)  
 Indicator, dial test set (Mititoyo, #513-402T)  
 Caliper, 6" dial (Mititoyo, #505-675)  
 Gage, telescoping, set (Starret, #52616)



## ❖ medical office administration & coding program

The goal of the Medical Office Administration & Coding Program is to prepare graduates for entry-level positions in the growing field of health care office professionals. These are rewarding careers that not only have good advancement potential, but allow graduates to do the kind of work that helps other people. Graduates of this program will be prepared for positions such as: medical office assistant, medical coder, medical office computer specialist, receptionist, reimbursement specialist, coder and other administrative positions in medical offices, hospitals and other health care organizations. The program also prepares graduates to take the Microsoft Office Specialist (MOS) exams in Word, Excel, Access and PowerPoint; the National Certification for Medical Office Assistants (NCMOA) exam; and the AAPC's Certified Professional Coder (CPC) exam. This six-quarter program incorporates in-depth computer training, the basics of working in a medical office, billing, medical coding, and accounts receivable management.

The first two quarters prepare students to take Microsoft Office Specialist (MOS) certification exams in Microsoft Word, Excel, Access and PowerPoint. By the end of the first two quarters, students will be able to demonstrate a solid understanding of computers including entry-level keyboarding operations and basic maintenance. They will develop an understanding of how to use the Windows operating system and various software applications. They will also learn the importance of career planning and how to develop a positive customer service environment.

In the third and fourth quarters, students learn the basics of working in a medical office setting. Subjects include: Medical Terminology, Anatomy and Physiology, Medical Office Procedures, Basic Diagnostic and Procedures Coding, and Human Diseases. The goal for quarter three and four is for students to be prepared to take the National Certification for Medical Office Assistants (NCMOA) exam. Students will also learn valuable career planning and business communications skills for the medical industry. During these last two quarters, students will learn advanced and specialty skills in medical coding, billing, and reimbursement. Students will gain experience with complex coding scenarios and application within different medical specialties. Students will also be able to demonstrate an understanding of health information departments and record systems.

In the last two quarters, students use the knowledge they gained in the previous quarters to delve into intermediate, advanced and specialty medical coding. Medical reimbursement is covered thoroughly in these last quarters. Students will cover various health care delivery systems such as: hospital, mental health, skilled nursing and hospice. Business Communication is covered in this section to ensure that students have a solid grasp in business writing and other communications. Upon completion of this program, students will be prepared to take the Certified Professional Coder (CPC) examination.

Students will learn advanced career planning practices and demonstrate skills and competencies in externship assignments by electing an externship option pending instructor approval. Students must have a "C+" or better in current coursework, must not be under any type of probationary contract, and must complete and submit a regular lab work experience employer evaluation. The instructor may terminate industry work experiences at any time if students do not adhere to these requirements.

The Medical Office Administration & Coding Program is 18 months in length. The student will earn 139 credit hours which are 2,016 clock hours. Tuition is payable on a quarterly basis. There are four quarters in an academic year.

### PROGRAM OUTLINE

			Clock Hours	Credit Hours
Quarter 1	BTA 101	Computer Applications	30	3.0
	BTA 101L	Computer Applications Lab	30	1.5
	BTA 105	Business English I	30	3.0
	BTA 105L	Business English I Lab	30	1.5
	BTA 110	Keyboarding I	12	1.0
	BTA 110L	Keyboarding I Lab	18	.5
	BTA 115	Word Processing	30	3.0
	BTA 115L	Word Processing Lab	30	1.5
	BTA 120	Spreadsheets	30	3.0
	BTA 120L	Spreadsheets Lab	30	1.5
	BTA 130	Business Math	30	3.0
	BTA 130L	Business Math Lab	<u>36</u>	<u>1.5</u>
			336	24.0
Quarter 2	BTA 201	Business English II	30	3.0
	BTA 201L	Business English II Lab	30	1.5
	BTA 205	Database & Integration	44	4.0
	BTA 205L	Database & Integration Lab	44	2.0
	BTA 210	Keyboarding II	12	1.0
	BTA 210L	Keyboarding II Lab	18	.5
	BTA 215	Business Presentation	40	4.0
	BTA 215L	Business Presentation Lab	46	2.0
	BTA 220	Career Planning I	18	1.5
	BTA 220L	Career Planning I Lab	12	.5
	BTA 230	Business Etiquette	18	1.5

(cont. on next page)

			Clock Hours	Credit Hours
	BTA 230L	Business Etiquette Lab	<u>24</u>	<u>1.0</u>
			336	22.5
Quarter 3	MOA 301	Anatomy & Physiology	30	3.0
	MOA 301L	Anatomy & Physiology Lab	30	1.5
	MOA 305	Health Care Law & Ethics	30	3.0
	MOA 305L	Health Care Law & Ethics Lab	30	1.5
	MOA 315	Medical Terminology	35	3.5
	MOA 315L	Medical Terminology Lab	40	2.0
	MOA 320	Medical Career Planning	15	1.5
	MOA 320L	Medical Career Planning Lab	20	1.0
	MOA 325	Human Diseases	30	3.0
	MOA 325L	Human Diseases Lab	25	1.0
	MOA 330	Computers in Health Care	25	2.5
	MOA 330L	Computers in Health Care Lab	<u>26</u>	<u>1.0</u>
			336	24.5
Quarter 4	MOA 401	Customer Service in the Medical Industry	38	3.5
	MOA 401L	Customer Service in the Medical Industry Lab	38	1.5
	MOA 405	Basic Diagnostic Coding	43	4.0
	MOA 405L	Basic Diagnostic Coding Lab	40	2.0
	MOA 410	Basic Procedures Coding	43	4.0
	MOA 410L	Basic Procedures Coding Lab	48	2.0
	MOA 415	Medical Office Procedures	48	4.5
	MOA 415L	Medical Office Procedures Lab	<u>38</u>	<u>1.5</u>
			336	23.0
Quarter 5	BTA 325	Business Communication	25	2.5
	BTA 325L	Business Communication Lab	30	1.5
	MOA 505	Medical Reimbursement	36	3.5
	MOA 505L	Medical Reimbursement Lab	30	1.5
	MOA 510	Health Care Delivery Systems	30	3.0
	MOA 510L	Health Care Delivery Systems Lab	30	1.5
	MOA 515	Intermediate Diagnostic Coding	40	4.0
	MOA 515L	Intermediate Diagnostic Coding Lab	40	2.0
	MOA 520	Intermediate Procedure Coding	35	3.5
	MOA 520L	Intermediate Procedure Coding Lab	<u>40</u>	<u>2.0</u>
			336	25.0
Quarter 6	MOA 601	Advanced Coding	30	3.0
	MOA 601L	Advanced Coding Lab	30	1.5
	MOA 605	Specialty Coding	40	4.0
	MOA 605L	Specialty Coding Lab	40	2.0
	MOA 610	Health Care Records	36	3.5
	MOA 610L	Health Care Records Lab	40	2.0
	MOA 615E	Medical Coding Practicum Externship	<u>120</u>	<u>4.0</u>
			336	20.0
	Program Totals		2016	139.0

## MEDICAL OFFICE ADMINISTRATION & CODING PROGRAM COURSE DESCRIPTIONS

### BTA 101 Computer Applications I

This course covers the basics of computer hardware, software, networks and the Internet. The objective is to prepare the student to take the MOS certification exam.

### BTA 101L Computer Applications I Lab

Directed lab with structured learning.

### BTA 105 Business English I

A concentrated review of sentence writing, this course emphasizes sentence combining, basic mechanics and paragraph writing.

### BTA 105L Business English I Lab

Directed lab with structured learning.

### BTA 110 Keyboarding I

In this course, students learn beginning typing and 10-key skills. The objectives are for students to learn how to type by touch and how to take a timed keyboarding test for accuracy and speed.

### BTA 110L Keyboarding I Lab

Directed lab with structured learning.

### BTA 115 Word Processing

Students learn how to use Microsoft Word for basic and advanced word processing. The objective of this course is to prepare students to take the MOS certification exam for Word.

**BTA 115L Word Processing Lab**  
Directed lab with structured learning.

**BTA 120 Spreadsheets**  
Students learn Microsoft Excel and how to build business and financial applications for forecasting, budgeting and basic bookkeeping. The objective of this course is to prepare students to take the MOS certification exam for Excel.

**BTA 120L Spreadsheets Lab**  
Directed lab with structured learning.

**BTA 130 Business Math**  
Students will review the basic operations of arithmetic, understand and manage their personal finances, as well as grasp the fundamentals of business finances. This course will prepare students to be smart shoppers, informed taxpayers, and valued employees. Basic math skills will be covered in a step-by-step manner, building student confidence along the way.

**BTA 130L Business Math Lab**  
Directed lab with structured learning.

**BTA 201 Business English II**  
This course emphasizes basic punctuation and grammar rules and covers sentence structure. The course is designed to introduce basic reading skills and to develop basic writing skills. Coursework emphasizes writing from observation as well as writing in response to readings. The focus is on writing sentences which demonstrate a grasp of basic syntax and usage, and writing sound paragraphs which express a main idea clearly and develop it fully with a minimum of errors in sentence structure, punctuation and spelling.

**BTA 201L Business English II Lab**  
Directed lab with structured learning.

**BTA 205 Database & Integration**  
Students learn how to create and use databases with Microsoft Access. The objective of this course is to prepare students to take the MOS certification exam for Access. Students will gain exposure to Microsoft Outlook and receive hands-on integration of the entire Microsoft Office Suite.

**BTA 205L Database & Integration Lab**  
Directed lab with structured learning.

**BTA 210 Keyboarding II**  
In this course students learn how to improve their accuracy and typing speed. Students also learn formatting for personal and business letters, memoranda, simple tabulation techniques, proofreading and editing. This course covers the basics of computer hardware, software, networks and the Internet.

**BTA 210L Keyboarding II Lab**  
Directed lab with structured learning.

**BTA 215 Business Presentation**  
This course provides instruction in developing presentation materials. Students create a variety of charts, graphs and interactive presentations. Microsoft PowerPoint enables users to quickly create high-impact, dynamic presentations, while integrating workflow and ways to easily share information.

**BTA 215L Business Presentation Lab**  
Directed lab with structured learning.

**BTA 220 Career Planning I**  
This course is designed to teach students how to write a professional resume package and to learn basic interviewing skills.

**BTA 220L Career Planning I Lab**  
Directed lab with structured learning.

**BTA 230 Business Etiquette**  
This course focuses on the fundamentals of etiquette as it relates to business and business relationships inside and outside the office.

**BTA 230L Business Etiquette Lab**  
Directed lab with structured learning.

**MOA 301 Anatomy & Physiology**  
A study of the structure and function of the human body utilizing a system approach. Emphasis placed on the gross and microscopic anatomy as well as the physiology of the cell, skeletal system, muscular system, nervous system, cardiovascular, respiratory, urinary, reproductive, endocrine, digestive, lymphatic, special senses and integumentary systems.

**MOA 301L Anatomy & Physiology Lab**  
Directed lab with structured learning.

**MOA 305 Health Care Law & Ethics**  
This course examines the ethical challenges facing individuals and businesses in modern society. The course utilizes case studies of professionals working in various areas of business and provides guest speakers with real-world experiences.

**MOA 305L Health Care Law & Ethics Lab**  
Directed lab with structured learning.

**MOA 315 Medical Terminology**  
This course is designed to teach students to accurately spell, pronounce and define common medical terms related to major disease processes, diagnostic procedures, laboratory tests, abbreviations, drugs and treatment modalities.

**MOA 315L Medical Terminology Lab**  
Directed lab with structured learning.

**MOA 320 Medical Career Planning**  
Students learn advanced interviewing skills, how to construct a portfolio of their work and job-seeking skills. This course will guide the student through the elements of career planning, including self-understanding, and exploring a variety of medical careers paths.

**MOA 320L Medical Career Planning Lab**  
Directed lab with structured learning.

**MOA 325 Human Diseases**  
Emphasis placed on the disease processes affecting the human body via an integrated approach to specific disease entities, including the study of causes, diagnosis and treatment of disease.

**MOA 325L Human Diseases Lab**

Directed lab with structured learning.

**MOA 330 Computers in Health Care**

Overview of commonly available software tools used in health care, including introduction to encoding tools and computer-assisted coding software used in today's health care data processing. Introduction to the electronic health record process and medical office database management software found in American health care delivery. Prerequisites: Completion of six semester credits in software applications courses, or passing the school's computer proficiency exam.

**MOA 330L Computers in Health Care Lab**

Directed lab with structured learning.

**MOA 401 Customer Service in the Medical Industry**

This course emphasizes how to provide excellent customer service. Effective verbal communication and telephone skills are taught. Problem resolution skills and how to handle difficult situations are important elements of this course. Soft skills such as patience and empathy are stressed.

**MOA 401L Customer Service in the Medical Industry Lab**

Directed lab with structured learning.

**MOA 405 Basic Diagnostic Coding**

This course is an introduction to basic diagnostic coding and presents students with the characteristics and conventions of ICD-9-CM and ICD-10-CM (International Classification of Diseases, 9th and 10th Edition, Clinical Modification), and other diagnosis coding systems or code sets (DSM-IV, ICD-0, etc.). Focus is placed on using official coding guidelines correctly and the course includes extensive practice coding exercises.

**MOA 405L Basic Diagnostic Coding Lab**

Directed lab with structured learning.

**MOA 410 Basic Procedure Coding**

This course is an introduction to basic procedural coding and presents students with the characteristics of CPT-4 (Current Procedural Terminology), HCFPCS (Health Care Financing Administration Common Procedure Coding System) Level II codes, ICD-9-CM Volume III, and ICD-10-PCS. The course focuses on correct code assignment and includes extensive practice coding exercises.

**MOA 410L Basic Procedures Coding Lab**

Directed lab with structured learning.

**MOA 415 Medical Office Procedures**

This course introduces and teaches the tasks of a medical office assistant's career: How to perform administrative functions, records management, medical communications, telephone triage, preparing patients charts, scheduling appointments, and an introduction to patient billing and processing insurance claims. Emphasis is placed on developing a working knowledge of concepts, processes and procedures in the billing cycle from point of service to receipt of payment. The course covers how to recognize components of a compliance plan for physician office billing, filing of appeals and focuses on decision making and critical thinking activities.

**MOA 415L Medical Office Procedures Lab**

Directed lab with structured learning.

**BTA 325 Business Communication**

Students learn various forms of written business communication including routine business correspondence (e-mail, memo, letters), reports, and proposals. Students will also take part in team building activities that incorporate communicating at work, communicating in small groups and teams, workplace listening and nonverbal communication, and communicating across cultures. Career planning is also integrated into this course (resume, cover letter and references).

**BTA 325L Business Communication Lab**

Directed lab with structured learning.

**MOA 505 Medical Reimbursement**

Students will study federal, state, private health insurance plans including managed care systems. Students will learn the processing cycle of health insurance claims, health insurance terminology, reimbursement methodologies for professional services, and proper completion of the 1500 billing form. An overview of billing systems for hospitals, nursing homes, home health care, hospice, surgical centers, and rehabilitation centers including proper submission of UB-92 billing forms will be provided. Emphasis is also placed on the definition of data items and edits to support facility billing practices; the examination of billing system management reports; and legal issues related to reimbursement processing.

**MOA 505L Medical Reimbursement Lab**

Directed lab with structured learning.

**MOA 510 Health Care Delivery Systems**

Students will demonstrate an understanding of health care delivery systems. They will analyze the organization of health care delivery in hospitals, mental health and ambulatory care centers, home health agencies and nursing homes. Students will learn about educational preparation and responsibilities of health care professionals as well as government regulations and licensure/regulatory agencies.

**MOA 510L Health Care Delivery Systems Lab**

Directed lab with structured learning.

**MOA 515 Intermediate Diagnostic Coding**

This course will serve as a continuation of basic diagnostic coding and the characteristics and conventions of ICD-9-CM and ICD-10-CM coding. Students will analyze and discuss case studies using more complex code assignments with ICD-9-CM and PPS application examples for ICD coding (DRG, RUGS, HHRG, etc.). Students will compare and contrast ICD-9-CM and ICD-10-CM code assignments and conventions. The course will provide an introduction to Systematized Nomenclature of Medicine (SNOMED) and an overview of its role in the health care delivery system as the basis for an electronic health record – outlining its relationship to the administrative code sets currently used for billing and statistical reporting and includes definitions for crosswalks and maps used in the clinical coding process.

**MOA 515L Intermediate Diagnostic Coding Lab**

Directed lab with structured learning.

### **MOA 520 Intermediate Procedure Coding**

This course will serve as a continuation of basic procedural coding and the characteristics and conventions of RBRVS and APCs. Students will analyze and discuss case studies and more complex code assignments using CPT and HCPCS Level II codes. Students will learn procedure coding for inpatients (ICD-9-CM Volume III or ICD-10-PCS – compares and contrasts the two systems at an introductory level).

### **MOA 520L Intermediate Procedure Coding Lab**

Directed lab with structured learning.

### **MOA 601 Advanced Coding**

This course provides students with advanced understanding of complex coding scenarios, with an emphasis on medical coding services such as medical visits, diagnostic testing and interpretation, treatments, surgeries and anesthesia. This course covers more advanced coding concepts using step-by-step methods that give a more in-depth understanding of physician-based medical coding to ensure gathering the correct information from documents, selecting the right codes, and determining the correct sequencing of those codes.

### **MOA 601L Advanced Coding Lab**

Directed lab with structured learning.

### **MOA 605 Specialty Coding**

This course provides students with advanced understanding of complex coding scenarios, with an emphasis on coding within different medical specialties. Students will learn the specific coding challenges of each of the following specialties: Obstetrics and Gynecology; Gastroenterology; Podiatry; Dermatology; Ear, Nose and Throat; Surgery; Radiology; Inpatient Coding; and Cardiology.

### **MOA 605L Specialty Coding Lab**

Directed lab with structured learning.

### **MOA 610 Health Care Records**

Students will demonstrate an understanding of health information department and record systems. Students will compare and contrast health care data sets (primary versus secondary records). Students will analyze the content and uses of hospital and physician clinic patient records. Students will learn documentation requirements and the evaluation of documentation completeness and quality. This course will expose students to record storage and retrieval systems (manual and electronic). Special emphasis on privacy, confidentiality, security, HIPAA requirements, release of information, and professional ethics will be stressed in this section.

### **MOA 610L Health Care Records Lab**

Directed lab with structured learning.

### **MOA 615E Medical Coding Practicum Externship**

The externship will provide students with coding practices in a hospital, physician's office, clinic or other health care setting with directed projects common to a clinical coding specialist on the job. Students will practice with clinical code assignment and billing methodologies, including projects and cases that replicate typical coding tasks in a physician's office, hospital outpatient clinic, ambulatory surgery, and hospital acute care

settings that employ coding professionals. This practicum will focus on building speed and accuracy using actual medical records.

### **MEDICAL OFFICE ADMINISTRATION & CODING BOOK AND TOOL LIST**

The book and tool list for students in the Medical Office Administration & Coding Program is intended to be a minimum requirement to complete the program.

Tool and book costs are approximately \$3,135. Purchase or lease your laptop computer before school begins.

Estimated cost of a laptop computer and software is \$1,070. Your instructor will give details on the first day of school regarding the purchase of your books and supplies. Book and tool prices may vary. The prices stated do not include mark-up for program students or any sales taxes.

#### **Book List:**

The book list will be provided with your course syllabi on your first day of school.

#### **Tool List:**

Laptop computer with appropriate software  
Dictionary  
Book bag or carrying case

#### **Students may purchase their computer through a vendor of their choice, including:**

Dell.com  
Toshiba.com  
Sony.com  
Apple.com  
Hp.com  
Gateway.com

Staples, Office Max, Best Buy and Office Depot are authorized PC dealers.

#### **Laptop Computer and Accessories:**

Approximate cost is \$900.

#### **Minimum System Requirements:**

Microsoft Windows 7 operating system  
1 GHz 32-bit (x86) or 64-bit (x64) processor  
1 GB of system memory  
40 GB hard drive with at least 15 GB of available space  
Support for DirectX 9 graphics, or higher with:  
WDDM Driver  
128 MB of graphics memory (minimum)  
Pixel Shader 2.0 hardware  
32 bits per pixel  
Carrying case  
USB flash drive – 1 GB

#### **Software Required:**

Microsoft Office Professional 2007  
Approximate cost is \$170

## ❖ visual communication & graphic technology

The Visual Communication & Graphic Technology Program curriculum develops the skills needed by individuals desiring entry-level employment and/or self-employment in a wide variety of business and workplace settings. Industry standards are stressed and creative abilities are challenged, through hands-on applications.

The first two quarters prepare students to take Microsoft Office Specialist (MOS) certification exams in Microsoft Word, Excel, Access and PowerPoint. By the end of the first two quarters, students will be able to demonstrate a solid understanding of computers, how to use the Windows operating system and various software applications including entry-level keyboarding and basic maintenance. Students will be exposed to Business English and Math and given opportunities to demonstrate their knowledge in these areas throughout the entire six months. They will also develop an understanding of the importance of career planning and how to develop a positive customer service environment.

Students have the opportunity to earn one or more internationally-recognized certifications, including the W3Schools HTML Developer Certificate, and Adobe Certified Associate Certificates in Photoshop, Flash and Dreamweaver. The goal for those who successfully complete the Visual Communication & Graphic Technology Program is entry-level employment in the field of visual communications and graphic technology.

PTI's Visual Communication & Graphic Technology Department is a member of the Yakima Advertising Federation (an affiliate of the American Advertising Federation) and the International Sign Association. These memberships offer students opportunities to network with industry professionals; participate in award competitions and other activities.

The Visual Communication & Graphic Technology Program is 24 months in length. The student will earn 170 credit hours which are 2,688 clock hours. Students may do an externship dependent on satisfactory completion of the first seven quarters of the program. Externships are dependent on a satisfactory host site that will provide the job skills training to enhance skills and concepts taught in the Visual Communication & Graphic Technology Program.

### PROGRAM OUTLINE

			Clock Hour	Credit Hours
Quarter 1	BTA 101	Computer Applications	30	3.0
	BTA 101L	Computer Applications Lab	30	1.5
	BTA 105	Business English I	30	3.0
	BTA 105L	Business English Lab	30	1.5
	BTA 110	Keyboarding I	12	1.0
	BTA 110L	Keyboarding I Lab	18	.5
	BTA 115	Word Processing	30	3.0
	BTA 115L	Word Processing Lab	30	1.5
	BTA 120	Spreadsheets	30	3.0
	BTA 120L	Spreadsheets Lab	30	1.5
	BTA 130	Business Math	30	3.0
	BTA 130L	Business Math Lab	<u>36</u>	<u>1.5</u>
		336	24.0	
Quarter 2	BTA 201	Business English II	30	3.0
	BTA 201L	Business English II Lab	30	1.5
	BTA 205	Database & Integration	44	4.0
	BTA 205L	Database & Integration Lab	44	2.0
	BTA 210	Keyboarding II	12	1.0
	BTA 210L	Keyboarding II Lab	18	.5
	BTA 215	Business Presentation	40	4.0
	BTA 215L	Business Presentation Lab	46	2.0
	BTA 220	Career Planning I	18	1.5
	BTA 220L	Career Planning I Lab	12	.5
	BTA 230	Business Etiquette	18	1.5
	BTA 230L	Business Etiquette Lab	<u>24</u>	<u>1.0</u>
		336	22.5	
Quarter 3	VCG 105	Illustration I	38	3.5
	VCG 105L	Illustration I Lab	74	3.5
	VCG 110	Fundamental Design	38	3.5
	VCG 110L	Fundamental Design Lab	74	3.5
	VCG 115	Sign Design I	38	3.5
	VCG 115L	Sign Design I Lab	<u>74</u>	<u>3.5</u>
		336	21.0	

(cont. on next page)

			Clock Hour	Credit Hours
Quarter 4	VCG 205	Photography I	20	2.0
	VCG 205L	Photography I Lab	40	2.0
	VCG 210	Typography & Composition	10	1.0
	VCG 210L	Typography & Composition Lab	40	2.0
	VCG 215	Visual Design I	70	7.0
	VCG 215L	Visual Design I Lab	<u>156</u>	<u>7.5</u>
			336	21.5
Quarter 5	VCG 305	Digital Design I	70	7.0
	VCG 305L	Digital Design I Lab	156	7.5
	VCG 310	Employment Preparation	10	1.0
	VCG 310L	Employment Preparation Lab	40	2.0
	VCG 315	Creative Advertising I	20	2.0
	VCG 315L	Creative Advertising I Lab	<u>40</u>	<u>2.0</u>
			336	21.5
Quarter 6	VCG 405	Illustration II	40	4.0
	VCG 405L	Illustration II Lab	80	4.0
	VCG 410	Sign Design II	60	6.0
	VCG 410L	Sign Design II Lab	<u>156</u>	<u>7.5</u>
			336	21.5
Quarter 7	VCG 505	3D Design	38	3.5
	VCG 505L	3D Design Lab	74	3.5
	VCG 510	Photography II	38	3.5
	VCG 510L	Photography II Lab	74	3.5
	VCG 515	Visual Design II	38	3.5
	VCG 515L	Visual Design II Lab	<u>74</u>	<u>3.5</u>
			336	21.0
Quarter 8	VCG 605	Digital Design II	27	2.5
	VCG 605L	Digital Design II Lab	37	1.5
	VCG 610	Creative Advertising II	17	1.5
	VCG 610L	Creative Advertising II Lab	37	1.5
	VCG 615	Entrepreneurship	17	1.5
	VCG 615L	Entrepreneurship Lab	17	.5
	VCG 620	Portfolio Development	27	2.5
	VCG 620L	Portfolio Development Lab	37	1.5
VCG 625	Externship	<u>120</u>	<u>4.0</u>	
			336	17.0
	Program Totals		2688	170

## VISUAL COMMUNICATION & GRAPHIC TECHNOLOGY COURSE DESCRIPTIONS

### BTA 101 Computer Applications I

This course covers the basics of computer hardware, software, networks and the Internet. The objective is to prepare the student to take the MOS certification exam.

### BTA 101L Computer Applications I Lab

Directed lab with structured learning.

### BTA 105 Business English I

A concentrated review of sentence writing, this course emphasizes sentence combining, basic mechanics and paragraph writing.

### BTA 105L Business English I Lab

Directed lab with structured learning.

### BTA 110 Keyboarding I

In this course, students learn beginning typing and 10-key skills. The objectives are for students to learn how to type by touch and how to take a timed keyboarding test for accuracy and speed.

### BTA 110L Keyboarding I Lab

Directed lab with structured learning.

### BTA 115 Word Processing

Students learn how to use Microsoft Word for basic and advanced word processing. The objective of this course is to prepare students to take the MOS certification exam for Word.

### BTA 115L Word Processing Lab

Directed lab with structured learning.

**BTA 120 Spreadsheets**

Students learn Microsoft Excel and how to build business and financial applications for forecasting, budgeting and basic bookkeeping. The objective of this course is to prepare students to take the MOS certification exam for Excel.

**BTA 120L Spreadsheets Lab**

Directed lab with structured learning.

**BTA 130 Business Math**

Students will review the basic operations of arithmetic, understand and manage their personal finances, as well as grasp the fundamentals of business finances. This course will prepare students to be smart shoppers, informed taxpayers, and valued employees. Basic math skills will be covered in a step-by-step manner, building student confidence along the way.

**BTA 130L Business Math Lab**

Directed lab with structured learning.

**BTA 201 Business English II**

This course emphasizes basic punctuation and grammar rules and covers sentence structure. The course is designed to introduce basic reading skills and to develop basic writing skills. Coursework emphasizes writing from observation as well as writing in response to readings. The focus is on writing sentences which demonstrate a grasp of basic syntax and usage, and writing sound paragraphs which express a main idea clearly and develop it fully with a minimum of errors in sentence structure, punctuation and spelling.

**BTA 201L Business English II Lab**

Directed lab with structured learning.

**BTA 205 Database & Integration**

Students learn how to create and use databases with Microsoft Access. The objective of this course is to prepare students to take the MOS certification exam for Access. Students will gain exposure to Microsoft Outlook and receive hands-on integration of the entire Microsoft Office Suite.

**BTA 205L Database & Integration Lab**

Directed lab with structured learning.

**BTA 210 Keyboarding II**

In this course students learn how to improve their accuracy and typing speed. Students also learn formatting for personal and business letters, memoranda, simple tabulation techniques, proofreading and editing. This course covers the basics of computer hardware, software, networks and the Internet.

**BTA 210L Keyboarding II Lab**

Directed lab with structured learning.

**BTA 215 Business Presentation**

This course provides instruction in developing presentation materials. Students create a variety of charts, graphs and interactive presentations. Microsoft PowerPoint enables users to quickly create high-impact, dynamic presentations, while integrating workflow and ways to easily share information.

**BTA 215L Business Presentation Lab**

Directed lab with structured learning.

**BTA 220 Career Planning I**

This course is designed to teach students how to write a professional resume package and to learn basic interviewing skills.

**BTA 220L Career Planning I Lab**

Directed lab with structured learning.

**BTA 230 Business Etiquette**

This course focuses on the fundamentals of etiquette as it relates to business and business relationships inside and outside the office.

**BTA 230L Business Etiquette Lab**

Directed lab with structured learning.

**VCG 105 Illustration I**

Illustration basics introduced and reviewed with hand sketching, edges, spaces, relationships, lights, shadows and gestalt. Introduction to digital illustration tools, brushes, selections, and layers using a combination of painting and photography.

**VCG 105L Illustration I Lab**

Directed lab with structured learning.

**VCG 110 Fundamental Design**

Introduction to design basics, principles, process, formats and terminology. Study of basic typography significance, history, composition, legibility and layout in combination with images and color in logos and designs. Principles of speech and presentation will be introduced.

**VCG 110L Fundamental Design Lab**

Directed lab with structured learning.

**VCG 115 Sign Design I**

Introduction to the sign industry, digital sign design software and visual study of existing signage, logos and creative text.

**VCG 115L Sign Design I Lab**

Directed lab with structured learning.

**VCG 205 Photography I**

Introduction to photography, the camera and its functions. Basic photographic techniques are applied, including proper exposure, outdoor and ambient lighting, and composition.

**VCG 205L Photography I Lab**

Directed lab with structured learning.

**VCG 210 Typography & Composition**

Digital typography exploration including font identification and management, and application of basic design principles, respectively.

**VCG 210L Typography & Composition Lab**

Directed lab with structured learning.

**VCG 215 Visual Design I**

Introductory through intermediate career and communication skills in print production and graphic design.

**VCG 215L Visual Design Lab**

Directed lab with structured learning.

**VCG 305 Digital Design I**

Introductory through intermediate Web design, communication, project management and related technologies.

**VCG 305L Digital Design I Lab**

Directed lab with structured learning.

**VCG 310 Employment Preparation**

Development of resume, cover letter and references page. Exploration of job shadow and externship opportunities.

**VCG 310L Employment Preparation Lab**

Directed lab with structured learning.

**VCG 315 Creative Advertising I**

A study of different practical methods for creating innovative and unforgettable advertisements, from finding the elusive "big idea" to reworking classic techniques.

**VCG 315L Creative Advertising I Lab**

Directed lab with structured learning.

**VCG 405 Illustration II**

Study and application of digital illustration special effects, type effects and advanced techniques. Study of traditional and digital illustration in mainstream marketing.

**VCG 405L Illustration II Lab**

Directed lab with structured learning.

**VCG 410 Sign Design II**

Introduction to the sign industry history, terminology, materials and equipment. Introduction to pricing and manufacturing of signage. Application of vinyl signage, large format printing, vehicle graphics and various outdoor advertising formats using proprietary software and equipment for the commercial sign industry.

**VCG 410L Sign Design II Lab**

Directed lab with structured learning.

**VCG 505 3D Design**

Introduction to three dimensional modeling software and its many uses in a graphic design workflow. Examination of the functions of space, volume, mass, plane, and line in the creation of a variety of print advertising collateral for inclusion in final portfolio. Basics of animation and storytelling will also be covered.

**VCG 505L 3D Design Lab**

Directed lab with structured learning.

**VCG 510 Photography II**

Basic studio lighting, advertising photography, outdoor and studio portraits. Guidance and application of architecture and outdoor photography.

**VCG 510L Photography II Lab**

Directed lab with structured learning.

**VCG 515 Visual Design II**

Advanced level development of career and communication skills in print production and graphic design. Principles and procedures for technical writing will also be introduced.

**VCG 515L Visual Design II Lab**

Directed lab with structured learning.

**VCG 605 Digital Design II**

Advanced Web design, communication, project management and related technologies.

**VCG 605L Digital Design II Lab**

Directed lab with structured learning.

**VCG 610 Creative Advertising II**

Exploration of visualizing concepts; the art of illusion and paradox; using metaphor and analogy; and deploying shock tactics and humor.

**VCG 610L Creative Advertising II Lab**

Directed lab with structured learning.

**VCG 615 Entrepreneurship**

Exploration of small business planning, advantages and liabilities.

**VCG 615L Entrepreneurship Lab**

Directed lab with structured learning.

**VCG 620 Portfolio Development**

Development of portfolios that students will use for employment search, job interviews and/or self-employment.

**VCG 620L Portfolio Development Lab**

Directed lab with structured learning.

**VCG 625 Externship**

Students will learn advanced career planning practices and demonstrate skills and competencies in externship assignments. Students must have a "C+" or better in current coursework, must not be under any type of probationary contract, and must complete and submit a regular lab work experience employer evaluation. The instructor may terminate industry work experiences at any time if students do not adhere to these requirements.

**VISUAL COMMUNICATION & GRAPHIC TECHNOLOGY BOOK AND TOOL LIST**

The book and tool list for students in the Visual Communication & Graphic Technology Program is intended to be a minimum requirement to complete the program.

Book, tool and supply costs are approximately \$4,150. Purchase of any equipment or software prior to school beginning is not recommended.

Please be prepared to pay approximately \$500 for books and supplies the first day of class. Your instructor will give details regarding the purchase of your books and supplies on the

first day of school. Book and tool prices may vary. The prices stated do not include mark-up for program students or any sales taxes.

**Book List:**

The book list will be provided with your course syllabi on your first day of school.

**Tool List:**

Art kit and supplies: Approximate cost is \$150.

Camera and tripod: Approximate cost is \$300.

The following is intended to be used as a minimum guide. Please ask an instructor for specifications before purchasing a camera. Other accessories are optional.

Digital Camera – 6 megapixel resolution (minimum) with manual focus, manual exposure, 8x optical zoom and hot shoe  
2 GB (minimum) memory storage for camera  
Tripod

Laptop computer, case and pen tablet: Approximate cost is \$1,200.

Purchase of a personal laptop computer is required before school starts. Academic versions of graphics software are available at reduced prices while you are enrolled as a student.

**Students may purchase their computer through a vendor of their choice, including:**

- Dell.com
- Toshiba.com
- Sony.com
- Apple.com
- Hp.com
- Gateway.com

Staples, Office Max, Best Buy and Office Depot are authorized PC dealers.

**Recommended Minimum System Requirements for PC:**

- 1.8 GHz or faster Intel Core 2 Duo or AMD equivalent**
- Windows XP OS with service pack 3, or Vista OS
- 2 GB RAM
- 256 MB 16-bit video
- 160 GB hard drive or larger
- USB 2.0 port
- DVD burner
- Carrying case
- Pen/mouse drawing tablet
- 2 GB USB flash drive (Mac & PC compatible)

**Recommended Minimum System Requirements for Mac:**

- Intel-based Core 2 Duo processor
- Mac OS X 10.4.11 or higher
- Windows XP OS with service pack 3, or Vista OS
- 2 GB RAM
- 256 MB 16-bit video
- 120 GB hard drive or larger
- USB 2.0 port
- DVD burner
- Carrying case
- Pen/mouse drawing tablet
- 2 GB USB flash drive (Mac & PC compatible)

**Software:**

Approximate cost is \$1,100 (\$1,200 for Mac users).

Software will be purchased after starting class. Students will receive information on which versions to purchase and available vendors. Mac users are required to purchase the Windows operating system.

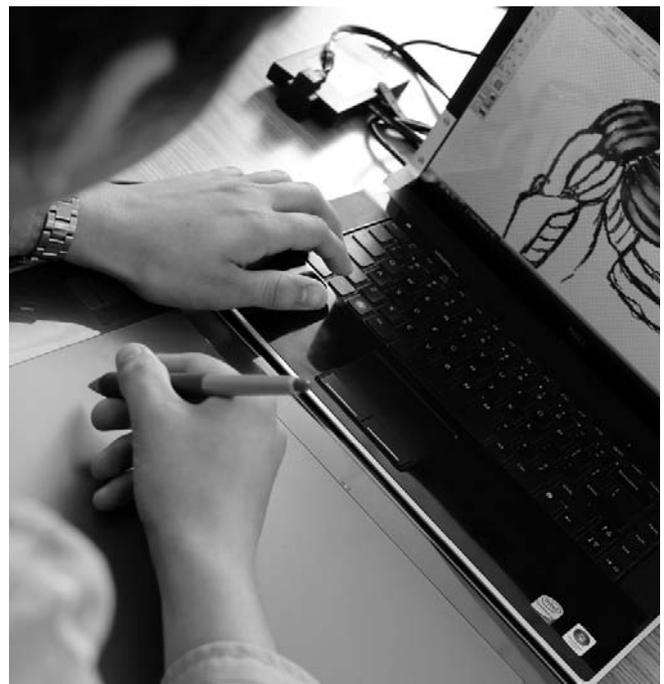
- Microsoft Office Professional 2007
- Adobe Creative Suite Design Premium
- CorelDraw
- Corel Painter
- Maxon Cinema4D

**Miscellaneous Expenses:**

Approximate cost is \$10 a month for the 24-month program. CD/DVD-R, business cards, business license, Web domain and hosting, batteries, etc.

**Portfolio expenses:**

Approximate cost is \$150 in the eighth quarter.



## ❖ administration

### **Christine Coté, President**

B.A. – Central Washington University

### **Nathan Hull, Dean of Education**

B.S. – Central Washington University

B.A. – Eastern Washington University

Washington Residency Certificate (Secondary)

Washington State Vocational Education Certificate

Microsoft Certified Application Specialist

### **Tracy Stoffer, Director of Finance/Human Resource**

B.S. – Central Washington University

Certified Public Accountant

### **Erin Fishburn, Foundation Director**

B.S. – Portland State University

### **Leanne LaBissoniere, Director of Public Relations & Marketing**

B.A. – Central Washington University

### **Carol Helms, Financial Aid Director**

A.A. – Yakima Valley Community College

### **Jill Cope, Registrar**

B.A. – Minot State University

### **Jeanine Benoit, IT Systems Administrator**

Certificate – Telecommunications, Perry Technical Institute

## RECRUITMENT

### **Nicole Trammell Woolpert, Recruiter**

B.S. – Central Washington University

Certificate – Graphics, Perry Technical Institute

Washington State Vocational Education Certificate

### **Raul Luna, Recruiter**

Certificate – Graphics, Perry Technical Institute

Washington State Vocational Education Certificate

### **Derek Smith, Recruiter**

A.O.S. – Western Culinary Institute

## ❖ faculty

### AUTOMOTIVE TECHNOLOGY

#### **Jason Lamiquiz, Department Head**

A.A.S. – Yakima Valley Community College

ASE Master Automobile Technician

ASE Advanced Level Engine Performance

#### **Dustin Morrill, Instructor**

ASE Master Automobile Technician

ASE Advanced Level Engine Performance

### BUSINESS TECHNOLOGY & ACCOUNTING MEDICAL OFFICE ADMINISTRATION & CODING LEGAL ASSISTANT/PARALEGAL

#### **Lashel Church, Department Head**

American Academy of Professional Coders – Certified

Professional Coder

Microsoft Certified Application Specialist

#### **Jennifer McMurtrey, Instructor**

A.A. – Columbia Basin College

B.S. – University of Phoenix

Microsoft Certified Application Specialist

#### **Wendy Aguilar, Instructor**

A.A. – Yakima Valley Community College

B.S. – Central Washington University

Business Accounting Certificate – Heald Business College

#### **Becki Willard, Instructor**

A.A. – San Bernardino Valley College

Paralegal Certificate – San Bernardino Valley College

#### **Doreen Pastrana, Instructor**

### ELECTRICAL TECHNOLOGY

#### **Mike Tucker, Department Head**

Certificate – Electrical, Perry Technical Institute

A.A.S. – Yakima Valley Community College

Washington State Vocational Education Certificate

Washington State General Master Electrician 01 Certificate

#### **Jon Bolin, Instructor**

Certificate – Electrical, Perry Technical Institute

Washington State General Electrical Journeyman 01

Certificate

#### **Nathan Klebaum, Instructor**

Certificate – Electrical, Perry Technical Institute

Washington State General Electrical Journeyman 01

Certificate

#### **Jason Lidke, Instructor**

Certificate – Electrical, Perry Technical Institute

Washington State General Electrical Administrator (01)

Certificate

**Forrest Buchmann, Instructor**

Certificate – Electrical, Perry Technical Institute  
 Washington State Vocational Education Certificate  
 Washington State General Master Electrician 01 Certificate

**Ron Zike, Instructor**

Washington State Vocational Education Certificate  
 Washington State General Master Electrician 01 Certificate

**Maria Werremeyer, Lead Field Journeyman Electrician**

Certificate – Electrical, Perry Technical Institute  
 Washington State General Electrical Journeyman 01  
 Certificate

**Phil Quenzer, Field Journeyman Electrician**

Certificate – Electrical, Perry Technical Institute  
 Washington State General Electrical Journeyman 01  
 Certificate

**Todd Thomas, Field Journeyman Electrician**

Certificate – Electrical, Perry Technical Institute  
 Washington State General Electrical Journeyman 01  
 Certificate  
 Washington State General Electrical Administrator 01  
 Certificate

**HEATING, VENTILATION, AIR CONDITIONING & REFRIGERATION TECHNOLOGY****Marc Mitchell, Department Head**

Certificate – HVAC/R, Perry Technical Institute  
 A.A.S. – Yakima Valley Community College  
 Washington State Vocational Education Certificate  
 Washington State 06A Master Electrical Specialty License  
 EPA 608 Universal Certification

**Craig Heckart, Instructor**

Certificate – HVAC/R, Perry Technical Institute  
 Washington State Vocational Education Certificate  
 Washington State 06A Electrical Specialty License  
 EPA 608 Universal Certification

**Dan Henderson, Instructor**

Certificate – HVAC/R, Perry Technical Institute  
 A.A.S. – Yakima Valley Community College  
 Washington State Vocational Education Certificate  
 Washington State 06A Master Electrical Specialty License  
 Washington State 07 Electrical Specialty License  
 EPA 608 Universal Certification

**Van Henderson, Instructor**

Certificate – HVAC/R, Perry Technical Institute  
 Washington State 06A Electrical Specialty License  
 EPA Refrigerant Certification Type Universal

**INFORMATION TECHNOLOGY & COMMUNICATION SYSTEMS****Michael Smith, Department Head**

Certificate – Instrumentation & Industrial Electronics, Perry  
 Technical Institute  
 A.A.S. – Yakima Valley Community College  
 Washington State Vocational Education Certificate

**Andy Fischer, RCDD, Instructor**

Certificate – Telecommunications, Perry Technical Institute  
 Washington State Vocational Education Certificate  
 A.A.S. – Telecommunications, Yakima Valley Community  
 College  
 Registered Communications Distribution Designer

**Francisco Magana, Instructor**

Certificate – Telecommunications, Perry Technical Institute  
 Certified Internet Web Master

**Josh Phillips, Instructor**

B.S. – City University  
 Certificate – Telecommunications, Perry Technical Institute  
 Washington State Vocational Education Certificate

**INSTRUMENTATION & INDUSTRIAL AUTOMATION TECHNOLOGY****Tony Nirk, Department Head**

Certificate – Instrumentation, Perry Technical Institute  
 A.A.S. – Pierce College Fort Steilacoom  
 Washington State Vocational Education Certificate

**Larry Dagdagan, Instructor**

Certificate – Instrumentation, Perry Technical Institute  
 Washington State Vocational Education Certificate

**Shon McIntyre, Instructor**

Certificate – Telecommunications, Perry Technical Institute  
 Washington State Vocational Education Certificate

**Doug Oswald, Instructor**

Certificate – Instrumentation, Perry Technical Institute  
 Washington State Vocational Education Certificate

**Gerry Ries, Instructor**

Certificate – Instrumentation, Perry Technical Institute  
 Washington State Vocational Education Certificate  
 ISA Certified Control Systems Technician

**Dave Sylvanus, Instructor**

Certificates – Instrumentation and Machine, Perry Technical  
 Institute  
 A.A.S. – Instrumentation and Machine, Yakima Valley  
 Community College  
 ISA Certified Control System Technician (CCST) Level II  
 Washington State 07 Nonresidential Maintenance Specialty  
 Electrician  
 Washington State Vocational Education Certificate

**MACHINE TECHNOLOGY****Dan Steinmetz, Department Head**

Department Head  
 Washington State Vocational Education Certificate

**Jay Wellner, Instructor**

Certificate – Machine, Perry Technical Institute

## VISUAL COMMUNICATION & GRAPHIC TECHNOLOGY

### Michael Malaska, Department Head

Certificate – Graphics, Perry Technical Institute  
Washington State Vocational Education Certificate

### Jamaica Jo, Instructor

Certificate – Graphics, Perry Technical Institute  
Washington State Vocational Education Certificate

### Shawn Hayden, Instructor

Certificate – Graphics, Perry Technical Institute  
A.A.S. – Yakima Valley Community College

### Briana Bizier, Instructor

B.A. – Colby College  
M.A. – University of Chicago Divinity School  
Microsoft Certified Application Specialist

## ❖ phone list

To call the following, please dial (509) 453-0374 and ask for the extension.

Operator	0
Cashier	218

### President's Office

President	216
Executive Assistant	214

### Foundation Office

Foundation Director	206
Foundation/Attendance Rep	230

### Facilities & Safety

Facilities & Safety Manager	214
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### Student/Instructional Services

Dean of Education	211
Education Coordinator	217
Registrar	227
Admissions Representative	205
Admissions Representative	267
Career Services	226

### Student Financial Services

Financial Aid Director	208
Financial Services Assistant	218
Financial Aid Representative	209
Financial Aid Loan Coordinator	212
Student Accounts Representative	202

### Recruiting/Marketing

Recruiting Agent	220
Recruiting Agent.	228
Recruiting Agent	226
PR & Marketing Director	219

### Business Services/Human Resources

Director of Finance	207
Administrative Assistant	215
Payroll and Benefits Coordinator	210
Accounts Payable Technician	213
Purchasing Coordinator	204





PERRY  
TECHNICAL  
INSTITUTE

2011 West Washington Avenue  
Yakima, WA 98903-1296  
(509) 453-0374 • (888) 528-8586



## ❖ the campus

- |  |           |
|--|-----------|
| 1) Main Office   |           |
| Admissions   | 1st Floor |
| Financial Services   | 1st Floor |
| President's Office   | 1st Floor |
| Business Services/HR   | 1st Floor |
| Dean of Education  | 2nd Floor |
| Recruitment  | 2nd Floor |
| Public Relations   | 2nd Floor |
| Foundation Office  | 2nd Floor |
| Attendance   | 2nd Floor |
| 2) Instrumentation & Industrial Automation Technology                          |           |
| 3) Machine Technology  |           |
| 4) Electrical Technology   |           |
| 5) Automotive Technology   |           |
| 6) Visual Communication & Graphic Technology                                   | 2nd Floor |
| 7) Business Technology & Accounting and Medical Office Administration & Coding | 2nd Floor |
| 8) Heating, Ventilation, Air Conditioning & Refrigeration Technology           | 1st Floor |
| 9) Business Technology & Accounting and Legal Assistant/Paralegal              |           |
| 10) Information Technology & Communication Systems                             |           |
| 11) Student Services • Career Services and Counseling                          |           |
| 12) The Hangar Bookstore and Gear Shop   |           |

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