

**ARKANSAS DEPARTMENT OF EDUCATION DIVISION  
OF CAREER AND TECHNICAL EDUCATION  
PROGRAM OPERATIONAL GUIDE  
2020-21**



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# 2020-21 ARKANSAS STANDARDS OF ACCREDITATION

## DIVISION OF CAREER AND TECHNICAL EDUCATION REQUIREMENTS

### ADE Rules Governing the Standards for Accreditation of Arkansas Public Schools and School Districts

1-A.1.2 For Grades 5-8, all students shall receive instruction annually in each of the following content areas (S/P):

1-A.1.2.1 English Language Arts;

1-A.1.2.2 Mathematics;

1-A.1.2.3 Science;

1-A.1.2.4 Social Studies;

1-A.1.2.5 Physical Education;

1-A.1.2.6 Fine Arts;

1-A.1.2.7 Health and Safety; and

1-A.1.2.8 Career and Technical Education.

**Note:** To comply with State Standard 1-A.1.2.8, the Division of Career and Technical Education defines the foundation courses required for all Career and Technical Education (CTE) program for 2020-2021 school year are:

Courses 399050 Keyboarding 7-8 or KeyCode 399320 **and** 399280 Career Development shall be instructed in grades 7 or 8 annually. If a district wishes to offer Keyboarding at a grade level lower than grade 7, approval must be sought from Division of Career and Technical Education prior to implementation. **A request should be submitted through ADE Course Approval System in addition to the Program Coordinator of the Business and Marketing Education office.**

*\*If a school currently has an approved transition plan in place which allows Keyboarding to be taught in a grade lower than 7, Division of Career and Technical Education will honor the provisions of the approved plan until such time as the school requests the plan be rescinded.*

1-A.1.3 For Grades 9-12, the following content areas shall be offered annually for a total of 38 units, except as otherwise allowed by law and these rules (S/P):

1-A.1.3.1 English Language Arts - 6 units;

1-A.1.3.2 Science - 5 units;

1-A.1.3.3 Mathematics - 6 units;

1-A.1.3.4 Computer Science - 1 unit;

1-A.1.3.5 Foreign Languages - 2 units of the same language;

1-A.1.3.6 Fine Arts - 3 ½ units;

1-A.1.3.7 Social Studies - 4 units;

1-A.1.3.8 Health and Safety Education and Physical Education - 1 ½ units; and

1-A.1.3.9 Career and Technical Education - 9 units of sequenced career and technical education courses representing three (3) occupational areas.

**Note:** To comply with State Standard 1-A.1.3.9, schools must:

Offer 1 program of study from 3 different Occupational Areas annually. Each Occupational Area defines the required entry level (core) course for each program of study. Core courses must be offered annually.

# STATEMENT OF ASSURANCE

All career and technical education opportunities are offered without regard to race, color, national origin, sex, handicap, or age. The following civil rights laws protect individuals from discrimination in programs or activities receiving federal financial assistance:

- Title IV of the Civil Rights Act of 1964
- Title IX of the Education Amendments of 1972
- Section 504 of the Rehabilitation Act of 1973
- Age Discrimination Act of 1975

For Additional Information: <https://www2.ed.gov/about/offices/list/ocr/reports-resources.html>

# PROGRAM APPROVAL

Requires completion of an approved program of study that leads to a recognized postsecondary credential, offering a sequence of CTE courses sufficient in size, scope, and quality to comprise a CTE program, offering work-based learning opportunities to students, leadership development such as through a CTE student organization, and the integration applied academics.

Programs of study are reviewed annually. Programs granted approval status shall:

1. Follow all policies and procedures;
2. Remove all critical elements identified in tiered support review(s); and
3. Follow all required program guidelines.

Only career and technical courses approved by DCTE are eligible for Perkins funding and graduation credit. For information on the Standards for Accreditation at <https://adedata.arkansas.gov/sfa>.

FULLY APPROVED PROGRAMS	
If a program received full approval during the previous academic year (AY) and one of the following actions applied the following year, then the district will receive the program status indicated:	
ACTION	PROGRAM STATUS
Critical Elements, including Safety Violations and Office of Civil Rights Violations, received from previous Tiered Support Activities (formerly Technical Assistance Visits)	Conditional Approval
No CTSO active roster	Conditional Approval
No program of study	Conditional Approval
No required foundation courses (reviewed by appropriate program area)	Conditional Approval
Meets all Division of Career and Technical Education policies and standards	<b>FULL APPROVAL</b>

CONDITIONALLY APPROVED PROGRAMS	
If a program was conditionally approved during the previous academic year (AY) and one of the following actions applies the following year, then the district will receive the program status indicated:	
ACTION	STATUS TO RECEIVE
Problems are corrected	<b>FULL APPROVAL</b>
Problems not corrected	Disapproval (see Accountability below)
Critical Elements, including Safety Violations and Office of Civil Rights Violations, received from previous Tiered Support Activities (formerly Technical Assistance Visits)	Disapproval (see Accountability below)

## **TIERED SUPPORT (Formerly TA Visit or Onsite Compliance Review)**

The structure of technical assistance site visits is shifting from a compliance-enforced fixed 5-year rotation of site visits to an annual, ongoing customer-service focused, tiered support model. Although the process is in transition in 2020-21, adherence to existing requirements and documentation is expected until the new process is in place.

## **MINIMUM FACILITIES REQUIREMENTS**

Facility requirements must meet Arkansas Department of Education guidelines

[http://arkansasfacilities.arkansas.gov/public/userfiles/documents/Facilities\\_Manual\\_20162017/FM\\_Career\\_Educ](http://arkansasfacilities.arkansas.gov/public/userfiles/documents/Facilities_Manual_20162017/FM_Career_Educ)

[ation.pdf](http://arkansasfacilities.arkansas.gov/public/userfiles/documents/Facilities_Manual_20162017/FM_Career_Educ). Equipment requirements may be obtained from the appropriate program office and shall be met within the specified time for program approval.

## **SAFETY**

Space and special equipment for CTE labs are varied and unique. Safety should be of the utmost consideration at all times in planning a facility and locating equipment. Sufficient electrical power should be included to support major pieces of equipment in the lab, including a sufficient number of electrical outlets. OSHA standards shall be followed where applicable.

A student wash up area and proper exhaust and filtration of harmful fumes/dust shall be provided according to the facilities requirements document:

[http://arkansasfacilities.arkansas.gov/public/userfiles/documents/Facilities\\_Manual\\_20162017/FM\\_Career\\_Education.pdf](http://arkansasfacilities.arkansas.gov/public/userfiles/documents/Facilities_Manual_20162017/FM_Career_Education.pdf)

. The laboratory shall be zoned and color-coded identifying specific work areas and pedestrian walkways. Large open areas for instructional activities shall be provided.

Caution must be exercised and enrollment must be limited so that an overcrowded situation does not occur. For the specifications for the lab areas, please see the Arkansas Facilities website linked in the Facilities section above.

## **MINIMUM START-UP EQUIPMENT REQUIREMENTS**

Each Career and Technical Education (CTE) Occupational Program Area issues minimum equipment lists annually. The equipment lists are considered the *minimum* equipment necessary for students to master the program area standards established by the Division of Career and Technical Education. The current version of equipment lists applies to new programs being implemented during the school year in which the equipment lists are issued. Equipment lists may be located at [DCTE Occupational Areas](#) on the Division's Occupational Areas web page.

# FOUNDATION COURSES FOR ALL PROGRAMS OF STUDY

## **399050      Keyboarding**

**1 Semester              Grade Levels: 7-8 (NO CREDIT)**

Keyboarding is a one-semester course designed to help students develop speed and accuracy by learning the touch operation of alphanumeric/keyboard characters. Emphasis is placed on the following: mastery of the keyboard with desirable keyboarding techniques; development of speed and accuracy; basic problem-solving applications of centering and arranging reports, letters, and tables; proofreading; formatting; and proper care of the equipment. Keyboarding is a foundation for developing entry-level skills for business careers.

## **399320      KeyCode**

**1 Semester              Grade Levels: 7-8 (NO CREDIT)**

KeyCode is a one-semester course designed to cover the state keyboarding and computer science coding block standards. Emphasis is placed on the following: understanding the importance of Career and Technical Student Organizations (CTSO), soft skill development, operation and management of classroom equipment, touch typing method, simple document formatting, and the computer science coding block. A minimum of 5 weeks shall be dedicated to students using keyboarding skills as they relate to formulating algorithms as well as create, analyze, test and debug computer programs in order to solve real-world problems. A text based programming language is required to accomplish these tasks.

## **399280      Career Development**

**1 Semester              Grade Levels: 7 or 8 (8th grade recommended) (NO CREDIT)**

This CTE foundation course is a one or two semester class for grades 7-8 designed to teach career development through research and understanding of self and the world of work for college and career readiness. Career research and decision-making with education and training plans for exploration and development will be core standards. Students will be knowledgeable of career options, and the personal skills, aptitudes, and employer expectations of future careers of choice. Students will identify personal traits and characteristics for a better understanding of self in their pursuit of finding a meaningful, fulfilling and rewarding career. Through better recognition and understanding of personal interests, values, aptitudes and abilities students can assess how they relate to the world of work in order to acquire the skills necessary for appropriate placement in the workforce. In addition, students will demonstrate the use of technology to gather information about careers and demonstrate an understanding of the ways in which work, family, and leisure roles are interrelated. Students shall develop a career focus with viable expectations for success based upon careful research, consistent planning and employment preparation.

# Operational Guide for Trade and Industry

<b>CLUSTER: ARCHITECTURE AND CONSTRUCTION</b>	
<b>PATHWAY</b>	<b>PROGRAM OF STUDY</b>
Construction	Construction Technology
	Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR)

<b>CAREER CLUSTER: ARTS, A/V TECHNOLOGY AND COMMUNICATIONS</b>	
<b>PATHWAY</b>	<b>PROGRAM OF STUDY</b>
A/V Technology & Film	A/V Tech & Film
Journalism and Broadcasting	Radio Broadcasting
	Television Production
Visual Arts	Advertising and Graphic Design
	Commercial Photography

<b>CAREER CLUSTER: GOVERNMENT AND PUBLIC ADMINISTRATION</b>	
<b>PATHWAY</b>	<b>PROGRAM OF STUDY</b>
National Security	Air Force JROTC
	Army JROTC
	Marines JROTC
	Navy JROTC

<b>CAREER CLUSTER: HEALTH SCIENCE</b>	
<b>PATHWAY</b>	<b>PROGRAM OF STUDY</b>
Therapeutic Services	Medical Professions
	Sports Medicine

<b>CAREER CLUSTER: LAW, PUBLIC SAFETY, CORRECTIONS AND SECURITY</b>	
<b>PATHWAY</b>	<b>PROGRAM OF STUDY</b>
Law Enforcement Services	Criminal Justice

<b>CAREER CLUSTER: MANUFACTURING</b>	
<b>PATHWAY</b>	<b>PROGRAM OF STUDY</b>
Maintenance, Installation, and Repair	Industrial Equipment Technologies
	Major Appliance Technology
Manufacturing Production	Electronics
	Furniture Manufacturing
	Precision Machining Technology
	Welding
	Advanced Manufacturing

<b>CAREER CLUSTER: TRANSPORTATION, DISTRIBUTION, AND LOGISTICS</b>	
<b>PATHWAY</b>	<b>PROGRAM OF STUDY</b>
Facility & Mobile Equipment Maintenance & Repair	Aviation Technology
	Medium/Heavy Truck Technology
	Power Equipment Technology
	Automotive Collision Repair Technology
	Automotive Service Technology

## **Career and Technical Student Organization**

SkillsUSA and/or HOSA shall be an integral part of each instructional program respectively and shall follow the same guidelines, goals, objectives, and participate in activities of the Arkansas state chapter as well as the respective national organization. The CTSO chosen shall align itself with the specific program of study.

National SkillsUSA: <https://www.skillsusa.org/>

National HOSA: <http://www.hosa.org/>

## **Trade and Industry Laboratory Safety**

Space and special equipment for the program areas of Trade and Industry are varied and unique. Contact with the Trade and Industry staff in the Department of Career Education is very important in the planning process. Safety should be of the utmost consideration at all times in planning a facility and locating equipment. Sufficient electrical power should be included to support major pieces of equipment in the lab, including a sufficient number of electrical outlets.

A wash up area shall be accessible for students and staff at all times. Proper exhaust and filtration of harmful fumes/dust etc. shall be in compliance with local and state requirements. The laboratory should be zoned and color coded identifying specific work areas and pedestrian walkways. Large open areas for instructional activities should be provided.

Trade and Industry programs are based on real world tasks and equipment usage that can sometimes be hazardous; therefore student safety must be of the utmost concern.

Caution must be exercised and enrollment must be limited so that an overcrowded situation does not occur. The specifications for the laboratory areas are major priorities to ensure student safety. Please refer to the website listed at the beginning of the CTE Operational Guide section for these specifications.



## Pathways and Programs of Study by Career Cluster

### CAREER CLUSTER: ARCHITECTURE & CONSTRUCTION

The Architecture and Construction Cluster encompasses designing, planning, managing, building, and maintaining physical structures and the larger built environment, including roadways and bridges and industrial, commercial, and residential facilities and buildings

#### Pathway: Construction

Program of Study	Level One	Level Two	Level Three
Construction Technology	Construction Fundamentals 494480	Carpentry 494460	1. Construction Lab 490040 2. Cabinetry 494470 3. Electrical 494500 4. HVACR 1 495100 5. Mechanical, Plumbing & Electrical Systems 493840 6. Plumbing 494510 7. Furniture Manufacturing I 494850 8. Furniture Manufacturing II 494870 9. Furniture Manufacturing Lab 490060 10. Youth Apprenticeship: T&I AC 490340 11. Career Practicum: T&I AC 490730

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

#### Pathway: Construction

Program of Study	Level One	Level Two	Level Three
Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR)	HVACR I 495100	HVACR II 495110	1. HVACR Lab 490070 2. Cabinetry 494470 3. Carpentry 494460 4. Electrical 494500 5. Mechanical, Plumbing & Electrical Systems 493840 6. Plumbing 494510 7. Youth Apprenticeship: T&I AC 490340 8. Career Practicum: T&I AC 490730

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

## **CAREER CLUSTER: AUDIO/VIDEO TECHNOLOGY & COMMUNICATIONS**

Arts, Audio/Video Technology & Communications is focused on designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism and entertainment services

### **Pathway: A/V Technology & Film**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
A/V Tech and Film	Fundamentals of Audio/Video Tech & Film 493640	Intermediate Audio/Video Tech & Film 493650	<ol style="list-style-type: none"> <li>1. Advanced Audio/Video Tech &amp; Film 493660</li> <li>2. Audio/Video Tech and Film Lab 493670</li> <li>3. Youth Apprenticeship: T&amp;I AVTC 490350</li> <li>4. Career Practicum: T&amp;I AVTC 490740</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

### **Pathway: Journalism & Broadcasting**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
Radio Broadcasting	Fundamentals of Radio 493380	Intermediate Radio 493390	<ol style="list-style-type: none"> <li>1. Advanced Radio 493400</li> <li>2. Radio Lab 493410</li> <li>3. Youth Apprenticeship: T&amp;I AVTC 490350</li> <li>4. Career Practicum: T&amp;I AVTC 490740</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

### **Pathway: Journalism & Broadcasting**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
Television Production	Fundamentals of Television 493420	Intermediate Television 493430	<ol style="list-style-type: none"> <li>1. Advanced Television 493440</li> <li>2. Television Lab 493450</li> <li>3. Youth Apprenticeship: T&amp;I AVTC 490350</li> <li>4. Career Practicum: T&amp;I AVTC 490740</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

**Pathway: Visual Arts**

Program of Study	Level One	Level Two	Level Three
Advertising and Graphic Design	Fundamentals of Advertising and Graphic Design 494150	Intermediate Advertising and Graphic Design 494170	<ol style="list-style-type: none"> <li>Advanced Advertising and Graphic Design 494130</li> <li>Advertising and Graphic Design Lab 494160</li> <li>Youth Apprenticeship: T&amp;I AVTC 490350</li> <li>Career Practicum: T&amp;I AVTC 490740</li> </ol>
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**Pathway: Visual Arts**

Program of Study	Level One	Level Two	Level Three
Commercial Photography	Digital Photography I 494350	Digital Photography II 494370	<ol style="list-style-type: none"> <li>Digital Photography III 494380</li> <li>Digital Photography Lab 494360</li> <li>Youth Apprenticeship: T&amp;I AVTC 490350</li> <li>Career Practicum: T&amp;I AVTC 490740</li> </ol>
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**CAREER CLUSTER: GOVERNMENT & PUBLIC ADMINISTRATION**

Government & Public Administration focuses on planning and performing government functions at the local, state and federal levels, including governance, national security, foreign service, planning, revenue and taxation, and regulations.

**Pathway: National Security**

Program of Study	Level One	Level Two	Level Three
Air Force JROTC	Air Force JROTC I 495760	Air Force JROTC II 495770	Air Force JROTC III 495780 Air Force JROTC IV 495880
	-or-		
	JROTC Health 480950 JROTC Physical Education 485950		
<b>Students can take JROTC Health and Physical Education at any level</b>			

**Pathway: National Security**

Program of Study	Level One	Level Two	Level Three
Army JROTC	Army JROTC I 495790	Army JROTC II 495800	Army JROTC III 495810 Army JROTC IV 495890
	<b>-or-</b>		
	JROTC Health 480950 JRTOC Physical Education 485950		
<b>Students can take JROTC Health and Physical Education at any level</b>			

**Pathway: National Security**

Program of Study	Level One	Level Two	Level Three
Marine JROTC	Marine JROTC I 495820	Marine JROTC II 495830	Marine JROTC III 495840 Marine JROTC IV 495900
	<b>-or-</b>		
	JROTC Health 480950 JRTOC Physical Education 485950		
<b>Students can take JROTC Health and Physical Education at any level</b>			

**Pathway: National Security**

Program of Study	Level One	Level Two	Level Three
Navy JROTC	Navy JROTC I 495850	Navy JROTC II 495860	Navy JROTC III 495870 Navy JROTC IV 495910
	<b>-or-</b>		
	JROTC Health 480950 JRTOC Physical Education 485950		
<b>Students can take JROTC Health and Physical Education at any level</b>			

**CAREER CLUSTER: HEALTH SCIENCE**

Health Science focuses on managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development

**Pathway: Therapeutic Services**

Program of Study	Level One	Level Two	Level Three
Medical Professions	Foundations of Health Care 495350	Anatomy/Physiology 424030	1. Abnormal Psychology 495370 2. First Responder 494140 3. Human Behavior & Disorders 495320 4. Introduction to Medical Professions Expanded 495380 5. Medical Lab (1.0) 490520 6. Medical Lab (.5) 490510 7. Medial Math 495240 8. Medical Procedures Expanded 495390 9. Medical Terminology 495360 10. Pathology 495290 11. Pharmacy Technology Fundamentals 495280 12. Certified Nursing Assistant (CNA) (.5) 490030 13. Certified Nursing Assistant (CNA) (1) 490500 14. Youth Apprenticeship: T&I HS 490370 15. Career Practicum: T&I HS 490760

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

**Pathway: Therapeutic Services**

Program of Study	Level One	Level Two	Level Three
Sports Medicine	Foundations of Sports Medicine 494050	Anatomy/Physiology 424030	<ol style="list-style-type: none"> <li>1. Sports Medicine Injury Assessment 494070</li> <li>2. First Responder 494140</li> <li>3. Human Behavior &amp; Disorders 495320</li> <li>4. Introduction Medical Professions Expanded 495380</li> <li>5. Medical Math 495240</li> <li>6. Medical Procedures Expanded 495390</li> <li>7. Medical Terminology 495360</li> <li>8. Medical Lab (1.0) 490520</li> <li>9. Medical Lab (.5) 490510</li> <li>10. Pathology 495290</li> <li>11. Pharmacy Technology Fundamentals 495280</li> <li>12. Youth Apprenticeship: T&amp;I HS 490370</li> <li>13. Career Practicum: T&amp;I HS 490760</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

**Pathway: Therapeutic Services**

Program of Study	Level One	Level Two	Level Three
Emergency Preparedness	Emergency Preparedness I 490050	Emergency Preparedness II 490420	<ol style="list-style-type: none"> <li>1. Emergency Preparedness Lab (.5) 490530</li> <li>2. Emergency Preparedness Lab (1) 490540</li> <li>3. Youth Apprenticeship: T&amp;I HS 490370</li> <li>4. Career Practicum: T&amp;I HS 490760</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

## **CAREER CLUSTER: LAW, PUBLIC SAFETY, CORRECTIONS, & SECURITY**

Law, Public Safety, Corrections & Security: Planning, managing, and providing judicial, legal, and protective services, including professional and technical support services in the fire protection and criminal justice systems

### **Pathway: Law Enforcement Services**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
Criminal Justice	Introduction to Criminal Justice 494620	Foundations of Law Enforcement 494630	<ol style="list-style-type: none"> <li>1. Crime Scene Investigation 494600</li> <li>2. Criminal Law 494610</li> <li>3. First Responder 494140</li> <li>4. Youth Apprenticeship: T&amp;I LPSCS 490360</li> <li>5. Career Practicum: T&amp;I LPSCS 490770</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

## **CAREER CLUSTER: MANUFACTURING**

Manufacturing: Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities, such as production planning and control, maintenance, and manufacturing/process engineering

### **Pathway: Maintenance, Installation, and Repair**

<b>Program of Study</b>	<b>Level One</b>	<b>Level Two</b>	<b>Level Three</b>
Industrial Equipment Technologies	Industrial Technologies I 495150	Industrial Technologies II 495170	<ol style="list-style-type: none"> <li>1. Industrial Technologies Lab 495160</li> <li>2. Electronics I 494800</li> <li>3. Electronics II 494820</li> <li>4. Electronics Lab 494810</li> <li>5. Machine Tool I 495200</li> <li>6. Machine Tool II 495220</li> <li>7. Machine Tool Lab 495210</li> <li>8. Youth Apprenticeship: T&amp;I MFT 490450</li> <li>9. Career Practicum: T&amp;I MFT 490780</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

**Pathway: Maintenance, Installation, and Repair**

Program of Study	Level One	Level Two	Level Three
Major Appliance Technology	Major Appliance Technology I 495250	Major Appliance Technology II 495270	<ol style="list-style-type: none"> <li>1. Major Appliance Technology Lab 490080</li> <li>2. Youth Apprenticeship: T&amp;I: MFT 490450</li> <li>3. Career Practicum: T&amp;I MFT 490780</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

**Pathway: Manufacturing Production**

Program of Study	Level One	Level Two	Level Three
Electronics	Electronics I 494800	Electronics II 494820	<ol style="list-style-type: none"> <li>1. Electronics Lab 490080</li> <li>2. Youth Apprenticeship: T&amp;I MIRP 490450</li> <li>3. Career Practicum: T&amp;I MIRP 490780</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

**Pathway: Manufacturing Production**

Program of Study	Level One	Level Two	Level Three
Advanced Manufacturing	Introduction to Manufacturing 494940	Design for Manufacturing 494950	<ol style="list-style-type: none"> <li>1. Manufacturing Production Processes 494960</li> <li>2. Machine Power and Equipment Systems 494970</li> <li>3. Youth Apprenticeship: T&amp;I MFT 490450</li> <li>4. Career Practicum: T&amp;I MFT 490780</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)



**Pathway: Manufacturing Production**

Program of Study	Level One	Level Two	Level Three
Precision Machine Manufacturing	Machine Tool I 495200	Machine Tool II 495220	1. Machine Tool Lab 495210 2. Youth Apprenticeship – T&I: MFT 490450 3. Career Practicum: T&I MFT 490780
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**Pathway: Manufacturing Production**

Program of Study	Level One	Level Two	Level Three
Welding	Metal Fabrication 495570	Shielded Metal Arc Welding 495580	1. Gas Metal Arc Welding 495550 2. Gas Tungsten Arc Welding 495560 3. Advanced Shielded Metal Arc Welding 495540 4. Welding Lab 490190 5. Youth Apprenticeship: T&I MFT 490450 6. Career Practicum: T&I MFT 490780
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**CAREER CLUSTER: TRANSPORTATION, DISTRIBUTION AND LOGISTICS**

Transportation, Distribution & Logistics: Planning, managing, and moving of people, materials, and goods by road, pipeline, air, rail, and water and related professional and technical support services, such as transportation infrastructure planning and management, logistic services, and mobile equipment and facility maintenance.

**Pathway: Facility and Mobile Equipment Maintenance and Repair**

Program of	Level One	Level Two	Level Three
Aviation Technology	Aviation I 494250	Aviation II 494260	1. Aviation Lab 490020 2. Youth Apprenticeship: T&I TDL 490560 3. Career Practicum: T&I TDL 490790
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**Pathway: Facility and Mobile Equipment Maintenance**

Program of Study	Level One	Level Two	Level Three
Medium/Heavy Truck Technology	Medium/Heavy Brake/Drive Train 494650	Medium/Heavy Electrical Systems/HVAC 494660	<ol style="list-style-type: none"> <li>1. Medium/Heavy Steering &amp; Suspension/Hydraulics 494230</li> <li>2. Medium/Heavy Diesel Engines/CAB 494240</li> <li>3. Medium/Heavy Truck Lab 490090</li> <li>4. Youth Apprenticeship: T&amp;I TDL 490560</li> <li>5. Career Practicum: T&amp;I TDL 490790</li> </ol>
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**Pathway: Facility and Mobile Equipment Maintenance**

Program of Study	Level One	Level Two	Level Three
Power Equipment Technology	Power Equipment Technology I 495400	Power Equipment Technology II 495420	<ol style="list-style-type: none"> <li>1. Power Equipment Technology Lab 490100</li> <li>2. Youth Apprenticeship: T&amp;I TDL 490560</li> <li>3. Career Practicum: T&amp;I TDL 490790</li> </ol>
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**Pathway: Facility and Mobile Equipment Maintenance**

Program of Study	Level One	Level Two	Level Three
Automotive Collision Repair Technology	Non-Structural Analysis/Repair 494300	Painting & Refinishing 494310	<ol style="list-style-type: none"> <li>1. Damage Analysis, Estimating and Customer Service 494220</li> <li>2. Structural Analysis/Repair 494320</li> <li>3. Automotive Collision Lab 490000</li> <li>4. Youth Apprenticeship: T&amp;I TDL 490560</li> <li>5. Career Practicum: T&amp;I TDL 490790</li> </ol>
Industry Recognized Certifications can be referenced at: <a href="#">DCTE: Trade &amp; Industry</a>			

**Pathway: Facility and Mobile Equipment Maintenance**

Program of Study	Level One	Level Two	Level Three
Automotive Service Technology	Brakes/Manual Drive Train 494180	Automotive Electrical Systems/HVAC 494190	<ol style="list-style-type: none"> <li>1. Engine Performance /Engine Repair 494200</li> <li>2. Suspension &amp; Steering/Automatic Transmission 494210</li> <li>3. Automotive Service Lab 490010</li> <li>4. Youth Apprenticeship: T&amp;I TDL 490560</li> <li>5. Career Practicum: T&amp;I TDL 490790</li> </ol>

Industry Recognized Certifications can be referenced at: [DCTE: Trade & Industry](#)

## **MIDDLE SCHOOL COURSES**

The DCTE Office of Trade and Industry must approve middle school course offerings.

## **HIGH SCHOOL COURSES**

### **495370 Abnormal Psychology**

**Credit: .5 Grade Levels: 9-12**

This course provides a basic survey of maladaptive human behavior. Major psychological disorders, their causes, symptom behaviors, cultural influences, and relevant treatment approaches are discussed. Included topics are historical medical background, perspectives of treatment of the mentally ill, fundamental definitions, causes of anxiety disorders, disorders of mood including depression and bipolar disorder, personality disorders, disorders of thought including schizophrenia, substance-related disorders, and domestic violence. Legal, ethical, and social issues relating to the medical professional's role in treating psychological disorders are explored.

### **494130 Advanced Advertising and Graphic Design**

**Credit: 1 Grade Levels: 11-12**

Advanced Advertising and Graphic Design takes the best, most important and relevant components of Advertising and Graphic Design Introduction and Intermediate courses, and expands them for the serious third year student. Each component is flexible and can be implemented throughout the school year, fulfilling the 120 credit hours of instruction. Each component is essentially intertwined with each other and may be implemented simultaneously.

### **493660 Advanced A/V Tech & Film**

**Credit: 1 Grade Levels: 11-12**

This independent production based program is designed to allow mastery of the knowledge and skills needed to begin a successful Audio/Video or Film career.

### **493400 Advanced Radio**

**Credit: 1 Grade Levels: 11-12**

This independent production based program is designed to allow mastery of the knowledge and skills needed to begin a successful radio broadcasting career.

### **495540 Advanced Shielded Metal Arc Welding**

**Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment. Emphasis of this course will be the use of shielded metal arc welders.

### **493440 Advanced Television**

**Credit: 1 Grade Levels: 11-12**

This independent production-based program is designed to allow the student to master the knowledge and skills needed to begin a successful television career

### **494160 Advertising and Graphic Design Lab**

**Credit: 1 Grade Levels: 10-12**

This production-based program is designed to allow the serious advertising design students time for the development of skills and knowledge needed to execute a comprehensive advertising design product.

### **495760 Air Force JROTC I**

**Credit: 1 Grade Levels: 9-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

### **495770 Air Force JROTC II**

**Credit: 1 Grade Levels: 10-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

### **495780 Air Force JROTC III**

**Credit: 1 Grade Levels: 11-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495880 Air Force JROTC IV**

**Credit: 1 Grade Level: 12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495790 Army JROTC I**

**Credit: 1 Grade Levels: 9-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495800 Army JROTC II**

**Credit: 1 Grade Levels: 10-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495810 Army JROTC III**

**Credit: 1 Grade Levels: 11-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495890 Army JROTC IV**

**Credit: 1 Grade Level: 12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**424030 Anatomy and Physiology**

**Credit: 1 Grade Levels: 9-12**

This course focuses on anatomical and physiological systems of the body as well as the diseases of those systems.

**493670 Audio/Video Tech and Film Lab**

**Credit: 1 Grade Levels: 11-12**

Simulated experiences of theory based content from courses 493640 and 493650.

**490000 Automotive Collision Lab**

**Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the related industry through a series of progressive exercise that cover a board range of projects.

**494190 Automotive Electrical Systems/HVAC**

**Credit: 1 Grade Levels: 9-12**

This course prepares individuals to engage in the diagnosis and repair of electrical/electronic systems. Instruction will include units on general electrical system diagnosis and service.

**490010 Automotive Service Lab**

**Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the related industry through a series of progressive exercise that cover a board range of projects.

**494250 Aviation I**

**Credit: 1 Grade Levels: 9-12**

This program will include instruction on the general core curriculum required by the Federal Aviation Administration.

**494260 Aviation II**

**Credit: 1 Grade Levels: 10-12**

This program will include instruction on the general core curriculum required by the Federal Aviation Administration (FAA). This course will prepare students for the Air Frame and Power Plant School certified by the FAA.

**490020 Aviation Lab**

**Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the related industry through a series of progressive exercise that cover a board range of projects.

**494180 Brakes/Manual Drive Train****Credit: 1 Grade Levels: 9-12**

This course prepares individuals to engage in the diagnosis and repair of brakes. Instruction will include units on hydraulic system diagnosis and repair, drum brake diagnosis and repair, and disc brake diagnosis and repair.

**494470 Cabinetry****Credit 1 Grade Levels: 9-12**

This instructional course prepares individuals to apply technical knowledge and skills to lay out, fabricate, erect, install, and repair cabinets using hand and power tools.

**494460 Carpentry****Credit: 1 Grade Levels: 9-12**

This instructional course prepares individuals to apply technical knowledge and skills to lay out, fabricate, erect, install, and repair wooden structures and fixtures using hand and power tools.

**490030 Certified Nursing Assistant (CNA) Program****Credit: .5 Grade Levels: 10-12**

This certification course is approved as an expansion to the Medical Professions Program of Study only.

**490500 Certified Nursing Assistant (CNA) Program****Credit: 1 Grade Levels: 10-12**

This certification course is approved as an expansion to the Medical Professions Program of Study only.

**494480 Construction Fundamentals****Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to apply technical knowledge and skills in the building, inspecting, and maintaining of structures and related properties. Successful completion will allow student to earn NCCER credential in CORE curriculum. If used as a core requirement for Construction Technology, Welding, Industrial Technologies or other NCCER courses the instructor needs to be NCCER certified.

**490040 Construction Lab****Credit 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the construction industry through a series of progressive exercises that cover a broad range of projects.

**494610 Criminal Law****Credit: 1 Grade Levels: 9-12**

This course emphasizes the study of substantive criminal law. Selected crimes most likely to be dealt with by the criminal justice professional are explored through discussion, where applicable, of the English Common Law precedents, general modern application, and specific Arkansas Criminal Code.

**494600 Crime Scene Investigation****Credit: 1 Grade Levels: 9-12**

Prerequisite: Foundations of Law Enforcement (494630)

This course provides students with an overview of the basics of crime scene investigations. Students will gain an understanding of the skills necessary to properly recognize, document, collect, process, and preserve evidence.

**494220 Damage Analysis, Estimating and Customer Service****Credit: 1 Grade Levels: 9-12**

This course will educate the student on how to assess and analyze collision damaged vehicles. The student will also learn the fundamentals of damage patterns and different types of damage. Hand written and computer generated estimates using the latest estimating software and resources will be taught.

**494950 Design for Manufacturing****Credit: 1 Grade Levels: 10-12**

In this course, students will apply the technologies that are found in modern clean, production environments. Students study effective and energy efficient control of pumping, conveyors, piping, pneumatic and hydraulic control systems. Students apply total quality management to production design to assure quality. Students also focus on properties of materials and material testing, creating documentation to support designs, examining properties and justifying material selections based on properties. Students learn that old products become the new raw materials for new products.

**494350 Digital Photography I****Credit: 1 Grade Levels: 9-12**

This core instructional program prepares individuals to effectively communicate ideas and information to business and consumer audiences and record events and people via film, still or video photography.

**494370 Digital Photography II****Credit: 1 Grade Levels: 10-12**

This core production based instructional program allows the photography student to implement artistic techniques to effectively communicate ideas and information to business and consumer audiences and record events and people via film, still or video photography.

**494380 Digital Photography III****Credit: 1 Grade Levels: 11-12**

This independent production based program is designed to provide the advanced photography student with knowledge and highly advanced skills for a comprehensive career in photography.

**494360 Digital Photography Lab****Credit: 1 Grade Levels: 10-12**

This production-based program will allow the serious photography student time for the development of skills and knowledge needed to produce comprehensive photography products.

**494500 Electrical****Credit: 1 Grade Levels: 9-12**

This course prepares individuals to apply technical knowledge and skills to install and repair residential electrical systems.

**494800 Electronics I****Credit: 1 Grade Levels: 9-12**

Electronics I is an applied course in the manufacturing cluster for students interested in learning more about careers as an electronic technician, maintenance technician, electromechanical technician, and manufacturing engineer. This course covers basic electrical and mechanical components of electronic systems with instrument controls and embedded software designs.

**494820 Electronics II****Credit: 1 Grade Levels: 9-12**

Electronics II is a multi-disciplinary study to develop specialized and highly trained technicians dealing with the integration of mechanical devices, actuators, sensors, intelligent controllers and computers.

**490080 Electronics Lab****Credit: 1 Grade Levels: 9-12**

Simulated experiences of theory based content from courses 494800 and 494820.

**494200 Engine Performance/ Engine Repair****Credit: 1 Grade Levels: 9-12**

This course prepares individuals to engage in the diagnosis and repair of engine performance. Instruction will include units on general engine diagnosis and computerized engine controls diagnosis and repair.

**490050 Emergency Preparedness I****Credit: 1 Grade Levels: 11-12**

This course introduces a career in Emergency Preparedness that can lead to employment. Emergency Preparedness I course includes, but not limited to, fire history, emergency responder, health, safety, situational awareness, personal protective equipment; governing agencies, nutrition and physical fitness.

**490420 Emergency Preparedness II****Credit: 1 Grade Levels: 11-12**

This course provides the foundations and hands-on training that will lead to a career in Emergency Preparedness that can lead to employment, after further instruction, to a career as an Emergency Responder or other disciplines in the Emergency Preparedness realm. It includes, but is not limited to, search and rescue, utility ropes and knots, forcible entry, ladders, ventilation, water hose characteristics, fire attack, disaster simulations and the Candidate Physical Ability Test 2 (CPAT).

**494140 First Responder**  
**Credit: 1 Grade Levels: 9-12**

This course introduces students to emergency medical technician occupational skills. Prior approval must be obtained from the Trade and Industry Sciences Office before this course is implemented.

**495350 Foundations of Health Care**  
**Credit: 1 Grade Levels: 9-12**

This course is designed to introduce students to medical professions and the basic foundational skills for first aid and the treatment of patients. Along with Anatomy and Physiology this is a foundation core course for subsequent education and training in health services. This course is a revised combination of Introduction to Medical Professions and Medical Procedures.

**494630 Foundations of Law Enforcement**  
**Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control, and public relations.

**494050 Foundations of Sports Medicine**  
**Credit: 1 Grade Levels: 9-12**

This course provides students with a general overview of sports medicine and its history from the perspective of the healthcare community that includes injury prevention, treatment, rehabilitation, psychosocial, and administration concerns. Students will gain an understanding of sports medicine and the role it plays in the athletic community.

**494150 Fundamentals of Advertising and Graphic Design**  
**Credit: 1 Grade Levels: 9-12**

This instructional program in the applied visual arts is a core course and prepares individuals to use artistic techniques to effectively communicate ideas and information to business and consumer audiences via illustrations and other forms of printed media.

**493640 Fundamentals of A/V Tech & Film**  
**Credit: 1 Grade Levels: 9-12**

Students in this core program will learn the basics of film and television production as well as other forms of audio-video communication such as animation, graphics, and sound production for video. They will also study the history of audio- video technology and film as well as career development and employment in this pathway.

**493380 Fundamentals of Radio**  
**Credit: 1 Grade Levels: 9-12**

Principles of announcing/audio engineering: study of voice, diction, pronunciation and delivery will be explored in this course. Experience in various types of announcing, concepts and techniques of sound production, including the coordinating and directing processes, hands-on experience with equipment, sound sources, and direction of talent, equipment maintenance and operations.

**493420 Fundamentals of Television**  
**Credit: 1 Grade Levels: 9-12**

The core program is designed to give practical knowledge in preparation for the pursuit of a career in television.

**494850 Furniture Manufacturing I**  
**Credit: 1 Grade Levels: 9-12**

This course will introduce the beginning furniture and cabinetmaking student to the various stages of construction and assembly of wood products and related materials. This course is intended to provide students with the basic knowledge and skills necessary to design, construct, and finish furniture and/or cabinets in the woodworking industry.

**494870 Furniture Manufacturing II**  
**Credit: 1 Grade Levels: 9-12**

This course is a continuation of Furniture Manufacturing I. This course provides intermediate furniture and cabinetmaking students with the necessary knowledge and skills to pursue employment in related industries.

**490060 Furniture Manufacturing Lab**  
**Credit: 1 Grade Levels: 11-12**

Simulated experiences of theory based content from courses 494850 and 494870.



**495550 Gas Metal Arc Welding**

**Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment. Emphasis of this course will be the use of gas metal arc welders.

**495560 Gas Tungsten Arc Welding**

**Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment. Emphasis of this course will be the use of gas tungsten arc welders.

**495320 Human Behavior and Disorders**

**Credit: .5 Grade Levels: 9-12**

This course focuses on normal behavior and personality, abnormal behavior and personality, and behavior disorders and the therapies used to treat those disorders and abnormalities.

**495100 HVACR I**

**Credit: 1 Grade Levels: 9-12**

This course prepares individuals to apply technical knowledge and skills to repair, install, service, and maintain the operating condition of heating, air conditioning, and refrigeration systems.

**495110 HVACR II**

**Credit: 1 Grade Levels: 10-12**

This course prepares individuals to apply technical knowledge and skills to repair, install, service, and maintain the operating condition of heating, air conditioning, and refrigeration systems.

**490070 HVACR Lab**

**Credit: 1 Grade Levels: 9-12**

**This course provides the student time to build skills and knowledge of the related industry through a series of progressive exercise that cover a board range of projects.**

**495160 Industrial Equipment Technologies Lab**

**Credit: 1 Grade Levels: 9-12**

This production-based program is designed to allow for the development of skills and knowledge needed to execute comprehensive industrial equipment maintenance.

**495150 Industrial Technologies I**

**Credit: 1 Grade Levels: 9-12**

The student will be trained to perform a variety of skills to repair, install, fabricate, set up, adjust, and do preventive maintenance to industrial machinery and equipment.

**495170 Industrial Technologies II**

**Credit: 1 Grade Levels: 10-12**

The student will be trained to perform a variety of skills to repair, install, fabricate, set up, adjust, and do preventive maintenance to industrial machinery and equipment.

**494170 Intermediate Advertising and Graphic Design**

**Credit: 1 Grade Levels: 10-12**

This is a core course emphasizing the integration of computer skills and knowledge of software used in the market place.

**493650 Intermediate A/V Tech & Film**

**Credit: 1 Grade Levels: 10-12**

This core program is designed to develop high level technical skills in preparation for a career in Audio/Video and Film Production.

**493390 Intermediate Radio**

**Credit: 1 Grade Levels: 10-12**

This core program is designed to develop high level technical skills in preparation for a career in radio broadcasting.

**493430 Intermediate Television****Credit: 1 Grade Levels: 10-12**

The core course will provide an understanding of production principles and experience with the video camera, lighting instruments and techniques, microphones, script creation, and editing. Students will perform assignments on camera as well as studio and control room duties.

**494620 Introduction to Criminal Justice****Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to perform the duties of police and public security officers, including patrol and investigative activities, traffic control, crowd control, and public relations.

**495340 Introduction to Medical Professions****Credit: .5 Grade Levels: 9-12**

This course provides a general overview of the many health-related occupations and the special concerns of the health care worker. *Will be discontinued after 2018-2019 School Year (Replaced by Foundations of Health Care)*

**495380 Introduction to Medical Professions Expanded****Credit: .5 Grade Levels: 9-12**

This course is designed as an extension of Introduction to Medical Professions. The course provides students with a general overview of the more crucial content areas of the health science technology education program core courses. Areas covered are medical terminology, medical math, human growth and development, processes of disease, and employability skills needed within the health care industry. This course is recommended for students who will not have the opportunity to take any additional health science technology education courses other than Introduction to Medical Professions.

**494940 Introduction to Manufacturing****Credit: 1 Grade Levels: 9-12**

This course will engage students in the use of modern technologies in the design and improvement of products. Students will use three-dimensional CAD software in the creation and analysis process. Students will document designs using standards set by industry for design documentation. Students will implement methods of green production and just-in-time component supply which allow for the lowest cost and highest quality products. Students will design and troubleshoot data acquisition, programmable logic control, process monitoring, automation and robotic systems. Students will incorporate sensing and vision systems, utilizing cameras and sensors to control automated systems.

**480950 JROTC Health****Credit: 1 Grade Levels: 9-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**485950 JROTC Physical Education****Credit: 1 Grade Levels: 9-12**

The JROTC physical education program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495200 Machine Tool I****Credit: 1 Grade Levels: 9-12**

This course is designed to provide students with a basic understanding of the precision machining processes used in industry, manufacturing, maintenance, and repair. The course instructs students in industrial safety, terminology, tools and machine tools, measurement and layout. Students will become familiar with the setup and operation of power saws, drill press, lathe, milling machine, grinders and receive an introduction to CNC (computer controlled) machines.

**495220 Machine Tool II****Credit: 1 Grade Levels: 9-12**

This course is a more in-depth study of skills learned in Machine Tool I, with a stronger focus on CNC setup/operation/programming. Classroom activities will concentrate on precision set-up and inspection work, as well as machine shop calculations. Students will develop skills in advanced machining and measuring parts involving tighter tolerances. A continued focus on safety will also be presented.

**495210 Machine Tool Lab****Credit: 1 Grade Levels: 9-12**

Simulated experiences of theory based content from courses 495200 and 495220.

**495250 Major Appliance Technology I**

**Credit: 1 Grade Levels: 9-12**

This independent production based course will provide the appliance repair student with the practical knowledge and highly advanced skills for a comprehensive career in appliance repair.

**495270 Major Appliance Technology II**

**Credit: 1 Grade Levels: 9-12**

This independent production based course will provide the appliance repair student with the practical knowledge and highly advanced skills for a comprehensive career in appliance repair.

**490080 Major Appliance Technology Lab**

**Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the related industry through a series of progressive exercise that cover a board range of projects.

**495260 Manufacturing and Production Lab**

**Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the manufacturing industry through a series of progressive exercises that cover a broad range of projects.

**494970 Manufacturing Power & Equipment Systems**

**Credit: 1 Grade Levels: 10-12**

Students will create plant designs to process and automatically assemble materials into new products. Students follow the process of developing and producing a new product from prototype to final product. They will accomplish this by creating a production flow plan that allows for the mass production of the product. Students will analyze and evaluate all aspects of the design and production processes with an emphasis on clean, lean and green production. Students will utilize data acquisition, quality control processes and Six Sigma methodology to control production.

**494960 Manufacturing Production Processes**

**Credit: 1 Grade Levels: 10-12**

Students will design cost-effective work cells incorporating automation and robotics to improve quality of final products. The advanced production in this course depends on the use and coordination of information, automation, network systems, vision and sensing systems. Students will design and create mechatronic systems and automated tooling to accomplish these advanced tasks. Students produce authentic documentation about their cyber-mechanical systems and the integration with data to control and monitor processes.

**495820 Marine JROTC I**

**Credit: 1 Grade Levels: 9-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495830 Marine JROTC II**

**Credit: 1 Grade Levels: 10-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495840 Marine JROTC III**

**Credit: 1 Grade Levels: 11-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495900 Marine JROTC IV**

**Credit: 1 Grade Level: 12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**493840 Mechanical, Plumbing and Electrical Systems**

**Credit: 1 Grade Level: 11-12**

This is a foundation course to combine electrical, plumbing and HVAC courses into a one credit introductory course.

**493670 Media Communications Lab**

**Credit: 1 Grade Levels: 10-12**

This production-based program is designed to allow the audio/video student studio time for the development of skills needed to execute a comprehensive media career.

**495230 Medical Clinical Internship/Specialization (.5 Credit)**

**Credit: .5 Grade Levels: 11-12**

This is an educational program that offers Specialized Training in a health related field. It may also alternate in-school instruction and supervised on-the-job training activities in health science technology occupations.

**495310 Medical Clinical Internship/Specialization**

**Credit: 1 Grade Levels: 11-12**

This is an educational program that offers Specialized Training in a health related field. It may also alternate in-school instruction and supervised on-the-job training activities in health science technology occupations.

**490520 Medical Lab (1.0)**

**Credit: 1 Grade Levels: 11-12**

Simulated experiences of theory based content from courses 493350 and 424030.

**490510 Medical Lab (.5)**

**Credit: .5 Grade Levels: 11-12**

Simulated experiences of theory based content from courses 493350 and 424030.

**495240 Medical Math**

**Credit: 1 Grade Levels: 9-12**

This course is designed to increase students' ability to identify, solve, and apply mathematical principles involving temperature, weights, and measures used in the health care delivery system.

**495330 Medical Procedures**

**Credit: .5 Grade Levels: 9-12**

Medical Procedures is a one-unit course that helps students develop specific and general skills needed by the health science technology professional. *Will be discontinued after 2018-2019 School Year (Replaced by Foundations of Health Care)*

**495390 Medical Procedures Expanded**

**Credit: .5 Grade Levels: 9-12**

This course focuses on the specific skills needed in several different areas of health care. Students are able to build upon the skills gained in the Medical Procedures course. The different areas addressed are dental assisting, laboratory assisting, medical assisting, nurse assisting, physical therapy assisting, and veterinary assisting.

**495360 Medical Terminology**

**Credit: .5 Grade Levels: 9-12**

Medical Terminology assists students in developing the language used for communication in the healthcare profession.

**494650 Medium/Heavy Brake/Drive Train**

**Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to diagnose and repair diesel equipment in on-road and off-road vehicles and machinery.

**494660 Medium/Heavy Electrical Systems/HVAC**

**Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to diagnose and repair diesel equipment in on-road and off-road vehicles and machinery. Advanced on-the-job training may be included.

**494230 Medium/Heavy Steering & Suspension/Hydraulics**

**Credit: 1 Grade Levels: 9-12**

This course prepares individuals to apply technical knowledge to diagnose and repair steering & suspension/hydraulics in trucks, buses, and other commercial and industrial vehicles.

**494240 Medium/Heavy Diesel Engines/CAB**

**Credit: 1 Grade Levels: 9-12**

This course prepares individuals to apply technical knowledge to diagnose and repair diesel engines and CAB in trucks, buses, and other commercial and industrial vehicles.

**490090 Medium/Heavy Truck Lab**

**Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the related industry through a series of progressive exercise that cover a board range of projects.

**495570 Metal Fabrication**

**Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to apply technical knowledge and skills in the building, inspecting, and maintaining of structures and related properties. Successful completion will allow student to earn NCCER credential in CORE curriculum. This may be taught as a stand-alone elective. If used as a core requirement for Construction Technology, Welding, Industrial Technologies or other NCCER courses the instructor needs to be NCCER certified.

**495850 Navy JROTC I**

**Credit: 1 Grade Levels: 9-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495860 Navy JROTC II**

**Credit: 1 Grade Levels: 10-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495870 Navy JROTC III**

**Credit: 1 Grade Levels: 11-12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history.

**495910 Navy JROTC IV**

**Credit: 1 Grade Level: 12**

The JROTC program stresses military discipline, with a curriculum that emphasizes study of military science and military history

**494300 Non-Structural Analysis/Repair**

**Credit: 1 Grade Levels: 9-12**

This course concentrates on analysis and repair of the nonstructural components as they pertain to collision repair.

**494310 Painting/Refinishing**

**Credit: 1 Grade Levels: 9-12**

This course concentrates on painting and refinishing as they pertain to collision repair. The course includes causes and correction of finish defects.

**495290 Pathology**

**Credit: .5 Grade Levels: 9-12**

This course is devoted to the exploration of human pathology. Pathology is the branch of medical science that studies the causes, nature, and effects of diseases. This course of study begins with an introduction to pathology-related terms, predisposing factors of diseases, the relationship between diagnosis and prognosis, and disease treatments. Following the introduction, the course delves into a range of pathology-related topics and their relationships to specific systems of the human body. The topics include signs and symptoms of pathology, the effects of trauma, the effects of age, and characteristics of common diseases.

**495280 Pharmacy Technology Fundamentals**

**Credit: 1 Grade Levels: 9-12**

Provides an overview of the pharmacy technology field and develops the fundamental concepts and principles necessary for successful participation in the pharmacy field.

**494510 Plumbing****Credit: 1 Grade Levels: 9-12**

This course prepares individuals to apply technical knowledge and skills to lay out, assemble, install, and maintain piping fixtures and piping systems, hot water, heating, cooling, and drainage systems.

**495400 Power Equipment Technology I****Credit: 1 Grade Levels: 9-12**

Power Equipment Technology I & II prepares students for careers in the Power Equipment industry. The course sequence focuses on duties and tasks performed by professionals in power equipment repair occupations, as well as pre-employment and employment skills.

**495420 Power Equipment Technology II****Credit: 1 Grade Levels: 9-12**

Power Equipment Technology I & II prepares students for careers in the Power Equipment industry. The course sequence focuses on duties and tasks performed by professionals in power equipment repair occupations, as well as pre-employment and employment skills.

**490100 Power Equipment Technology Lab****Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the transportation industry through a series of progressive exercises that cover a broad range of projects. Simulated experiences of theory based content from courses 495400 and 495420.

**493410 Radio Lab****Credit: 1 Grade Levels: 10-12**

This production-based program is designed to allow the broadcasting student studio time for the development of skills needed to execute a comprehensive radio career.

**495580 Shielded Metal Arc Welding****Credit: 1 Grade Levels: 9-12**

This instructional program prepares individuals to apply technical knowledge and skills to unite or separate metal parts by heating, using a variety of techniques and equipment. Emphasis of this course will be the use of shielded metal arc welders.

**494070 Sports Medicine Injury Assessment****Credit: 1 Grade Levels: 9-12**

Prerequisite: 494050 Foundations of Sports Medicine

This course provides students with the skills needed to evaluate sports related injuries. Students will gain an understanding of common injuries that affect athletes, injury assessment, and treatment.

**494320 Structural Analysis/Repair****Credit: 1 Grade Levels: 10-12**

This course concentrates on analysis and repair of the structural components as they pertain to collision repair.

**494210 Suspension & Steering/Automatic Transmissions****Credit: 1 Grade Levels: 9-12**

This course prepares individuals to engage in the diagnosis and repair of suspension and steering. Instruction will include units on steering systems diagnosis and repair; suspension systems diagnosis and repair; wheel alignment diagnosis, adjustment, and repair; and wheel and tire diagnosis and repair.

**493450 Television Lab****Credit: 1 Grade Levels: 10-12**

This production-based program is designed to allow the television student studio time for the development of skills needed to execute a comprehensive TV career.

**490190 Welding Lab****Credit: 1 Grade Levels: 9-12**

This course provides the student time to build skills and knowledge of the related industry through a series of progressive exercise that cover a board range of projects.