Tishomingo County Career & Technical Center

Programs and Entrance Requirements

2025-2026 School Year

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PREFACE

Students from Tishomingo County High School and Belmont High School have the opportunity to attend the Tishomingo County Career and Technical Center. It is the intention of the staff at the center that students be acquainted with course offerings and criteria to be used in trade area selection. The Tishomingo County Career & Technical Center does not discriminate from enrolling students on the grounds of race, color, religion, sex, or national origin. The counselors at TCCTC work closely with students' home schools. Students are informed of the programs at TCCTC through 8th grade recruitment visits. During these visits, the students get to see each program in operation. This is to help them identify their interests and assist them in making future educational plans. Faculty and staff members also make special visits to the middle schools and the high schools to recruit students during the spring semester.

This booklet is to be used as a guide through which students considering attending the Tishomingo County Career & Technical Center may obtain a broader base for making wise choices in a trade selection. Care has been taken to present descriptions of each of the courses offered along the entrance requirements to enroll in each. Additional information can be obtained by calling 662-438-6689 or emailing a counselor at hgaylor@tcsk12.com or csmothers@tcsk12.com.

The Tishomingo County Career and Technical Center adheres to the principle of equal education and employment opportunities without regard to race, sex, color, creed, or national origin. The Tishomingo County Career and Technical Center welcomes students who are disabled, disadvantaged, or of limited English proficiency. Assistance and other services are provided for all who need help in successfully completing vocational training.
Title IV Coordinator: Josh McClung – jrmcclung@tcsk12.com
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<u>Career and Technical Center Entrance Requirements:</u> The purpose of these requirements is to ensure that all students entering career and technical classes will be given the best opportunity to become skilled individuals and gain valuable training that will lead to future employment opportunities.

All students entering a 1st year career and technical class must <u>meet or exceed</u> the following requirements before they will be considered for enrollment in a course. Failure to meet any of the requirements will result in the students being denied entrance into the course.

1. Students must meet or exceed all academic requirements as set forth by the state of Mississippi and the TCSD for their current grade level.
2. Students must be in the grade specified per courses offered below.
3. Entering 9th Grade students requesting courses at TCCTC must meet the following requirements in addition to any requirements listed by specific course.
    i. Minimal disciplinary issues. (To be determined by the administration of TCCTC)
    ii. Good attendance
    iii. Be in good academic standing including language arts, and math.
    iv. Exhibit maturity and self-control consistent with expectations of a student who may be in a dangerous situation. (To be determined through conversations with counselors and teachers. Final determination will be at the discretion of the CTE director)
    v. Recommendation from middle school principal and counselor.
    vi. All final decisions on entering 9th grade student placement will be at the discretion of the CTE director.

b. Diversified Agriculture 9th and above
NOTE: 9th grade students will be required to submit the following before being admitted
    i. Recommendation from middle school principal and counselor.

c. Ag Power and Machinery 9th and above
NOTE: 9th grade students will be required to submit the following before being admitted
    i. Recommendation from middle school principal and counselor.

d. Educator Preparation 9th and above
NOTE: 9th grade students will be required to submit the following before being admitted.
    i. Recommendation from middle school principal and counselor.
    ii. Students must be in good academic standing with a 2.5 GPA or higher.
    iii. Students must have limited absences.
    iv. Students must have limited discipline referrals.

NOTE: ***Priority will be given to 11th and 12th grade students.***

e. Collision Repair 9th and above

NOTE: 9th grade students will be required to submit the following before being admitted.

i. Recommendation from middle school principal and counselor.

f. Culinary Arts 9th and above

NOTE: 9th grade students will be required to submit the following before being admitted.

i. Recommendation from middle school principal and counselor.

g. Architectural Drafting and Design 9th and above

i. 1st year students must have completed transition to algebra with at least a 70 average
ii. Entering 9th grade students must have at least a 70 average in 8th grade math.

NOTE: 9th grade students will be required to submit the following before being admitted.

iii. Recommendation from middle school principal and counselor.

h. Health Sciences 10th and above

i. 1st year students must be enrolled in or have completed Biology 1 with at least an 80 average.
ii. 1st year students are strongly encouraged to be enrolled in A&P at the same time as Health Sciences.
iii. 1st year students must also have maintained at least a "C" average in academic classes prior to enrollment.
NOTE: *Exceptions may be made at the discretion of the instructor and the administration.*
iv. Recommendation from middle school principal and counselor.

i. Information Technology 9th and above

i. Only 16 students will be accepted per wave. (Due to equipment constraints.) Priority will be given to 10th and 11th grade students.

NOTE: 9th grade students will be required to submit the following before being admitted.

ii. Recommendation from middle school principal and counselor.

j. Industrial Maintenance 9th and above

NOTE: 9th grade students will be required to submit the following before being admitted

i. Recommendation from middle school principal and counselor.

k. Welding 9th and above
NOTE: 9th grade students will be required to submit the following before being admitted
    i. Recommendation from middle school principal and counselor.

l. Robotics and Engineering 9th and above
    i. Students must be enrolled in or have completed Algebra 1 with a minimum 80 average.
    ii. Students must have at least an 80 average in their last completed science course.
    iii. Students must have at least a 2.5 GPA.
    iv. Entering 9th graders must have at least an 80 average in 8th grade math and science.

NOTE: *Exceptions to this order may be made at the discretion of the administration.*
NOTE: 9th grade students will be required to submit the following before being Admitted.
    v. Recommendation from middle school principal and counselor.

4. In the event of registration in excess of available classroom slots, entrance/admission eligibility will be determined by the following in order.
    a. Meets or exceeds all entrance requirements.
    b. Academic GPA
    c. Absentees
    d. Discipline Referrals

NOTE: *Exceptions to this order may be made at the discretion of the administration*

All students applying for entrance to a 2nd year career and technical course must meet or exceed the following requirements before they will be considered for enrollment. These requirements are set forth in order to ensure maximized student learning and achievement in preparation for gainful employment or continued education. In addition to the following general requirements Health Sciences and WBL have further requirements that must be met. Those requirements are listed below.

1. All students who apply for the 2nd year of a career and technical program must attain the minimum passing score on any standardized test or national certification as prescribed by MDE. Programs that do not have a CPAS or a National Certification exam will require students to successfully complete a Work-Based Learning(WBL) experience, as prescribed by MDE along with completed documentation in order to enroll in the second year. This is to ensure that students are prepared and capable of demonstrating satisfactory progress and skill advancement during the delivery of the more stringent curriculum associated with the 2nd year programs.

2. Students must meet or exceed all academic requirements as set forth by the state of Mississippi and the TCSD for their current grade level and advance to the next grade level.
3. Students must have successfully completed the 1st year of the same career and technical class with at least a 70 average.
4. Students must have minimal absences and discipline referrals
   * Note: *Exceptions may be made for documented extenuating circumstances as well as students with specific requirements as set forth by the TCSD. Exceptions to this may be made at the discretion of the administration.*

(1). Health Sciences II Entrance Requirements. The purpose for the requirements is to ensure that Health Sciences II students will be prepared for their clinical experiences. The standards listed below are to ensure that students will be safe and effective during the clinical trials and have the opportunity to maximize their learning experience.

All students entering *Health Sciences II* must meet or exceed the following requirements before they will be considered for enrollment in the class. Failure to meet any of the requirements will result in the students being denied entrance into the course.

1. All students must complete Health Sciences I with an average meeting one of the following criteria.
   a. A minimum final average of 80 with no restriction on the final exam grade. OR
   b. A minimum final average of 78 or 79 AND at least an 85 on the final exam grade.
2. All students must provide their own transportation to and from clinical. All transportation must be approved and the student must meet all school and school district guidelines for driving.
   a. NOTE: Students are not allowed to ride together.
   b. NOTE: Students must also complete and return a voluntary drug testing acceptance form.
3. Students must have a recent NEGATIVE TB test.
4. Students must have all vaccinations updated before they enter the clinical area.
5. Students must complete Health Sciences I with minimal absences.
6. Students must have ZERO discipline referrals.
7. Students and or Parents/Guardians must pay for liability insurance through the Health Sciences class.

Work Based Learning Experience Entrance Requirements: The purpose for these requirements is to ensure that WBL students are prepared for their experience and gain as much valuable training and education as possible during the WBL course.

1. Students must meet or exceed all academic requirements as set forth by the state of Mississippi and the TCSD for their current grade level.
2. WBL requires students to have gainful employment or other approved activities that may require travel; therefore in order for the students to have the most productive experience possible they must be enrolled in either the 11th or 12th grade with preference being given to 12th grade students.
   a. Note: *Exceptions may be made but are at the discretion of the instructor and the administration.*

3. Students must complete an application process, which includes but may not be limited to the following.
    a. Submit an application and a current resume.
    b. Participate in an interview process with the instructor.
4. Students may also be asked to complete other requirements based on specific needs that are identified by the instructor and or MDE

"Show Cause Exemption Policy"

The purpose of the "Show Cause" exemption is to insure that students have the opportunity to justify their desire to reenter a class in which they under performed. Exemptions will be considered for students who present valid reasoning before the committee. The following steps must be taken to apply for show cause exemption:

1. Complete Show Cause Exemption application which is attached to this letter.
2. After applying for exemption or being recommended by the H.S. principal students must "Show Cause" to the committee before the last scheduled day of the school year that is ending. Students may show cause by:
    a. Written declaration delivered to the exemption committee in <u>hand written</u> essay format.
    b. Appearing in person before the exemption committee to present their reasoning for exemption.
3. The student applying for the exemption must complete all "Show Cause" documentation, declarations and explanations. NOTE: *Declarations or other documentation received that is not the work of the student will immediately disqualify the student from the exemption process.*
4. Applications for show cause will be reviewed by the CTE director, CTE counselors, CTE Special Populations Coordinator and instructors to determine eligibility for second year enrollment.

Diversified Agriculture

The Agricultural Sciences Career Cluster covers the broad field of occupations related to the production and use of plants and animals for food, fiber, aesthetic, and environmental purposes. According to the U.S. Department of Labor, the growing interest in worldwide standardization of agricultural equipment should result in increased employment of agricultural engineers. Job opportunities should also result from the increasing demand for agricultural products, the continued efforts for more efficient agricultural production, and the increasing emphasis on the conservation of resources.

Principles of Agriscience is the foundation course for the agricultural and environmental science and technology (AEST) program. All students must complete Concepts of Agriscience before being allowed to enroll in the advanced courses of the program. The course serves as an introduction to the sciences, technologies, and applied practices of the progressive agriculture/agriscience industry. Emphasis is on an active learning environment enriched with technology and science-based applications. The course focuses on providing an opportunity for students to explore the different fields of the agricultural sciences and develop foundational skills and knowledge needed for advancement in other courses and programs.

Course Sequence for Diversified Agriculture:

1st Year 1st Semester: Principles of Agriscience
1st Year 2nd Semester: Plants Core

2nd Year 1st Semester: Animals Core
2nd Year 2nd Semester: Capstone

Upon completing all four credits of the pathway, students will be designated as completers and have potentially met the requirements for two science credits towards graduation and one IHL science credit or advanced elective for postsecondary.

HEALTH SCIENCES

Health Sciences is a pathway of courses for students in the Health Sciences career cluster. The Health Sciences pathway includes classroom and hands-on experiences that will provide students with an overview of the health-care field as outlined in the States' Career Clusters Health Science Cluster and the National Consortium on Health Science and Technology Education as well as begin to prepare students for careers in occupations projected to have a high number of available jobs in the next 10 years including registered nurses, nurse aides, practical nurses, and home health aides.

Health Science Core: The first course of the secondary Health Sciences program introduces students to careers available in the health field, basic anatomy and physiology, and basic patient care skills. Upon completion of this course, students will be trained to be entry-level general basic health-care assistants and trained in CPR and first aid. Students will be able to make an informed choice of a health occupation that they plan to pursue.

Health Sciences II: The emphasis of the second course is primarily to expose students to advanced skills in the various health occupations and the basic health-care sciences. Students may participate in shadowing experiences in selected health-care facilities. Upon completion of this advanced course, students will be trained to work as entry-level assistants in various health occupations and will be certified in CPR at the health-care provider level. *This course offers 2 Carnegie units. Students who complete Health Sciences II may count one of the credits earned in this course as two science credits toward graduation requirements if they complete both years of the Health Sciences program.*

Special Entrance Requirements 1st year students:

1. 10th grade and above
2. 1st year students are strongly encouraged to be enrolled in A&P at the same time as Health Sciences.
3. 1st year students must also have maintained at least a "C" average in both English and Math class.
   NOTE: *Exceptions may be made at the discretion of the instructor and the administration.*

Credits: 2 Elective Carnegie units

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Special Entrance Requirement 2nd year students:

The purpose for the requirements is to ensure that Health Sciences II students will be prepared for their clinical experiences. The standards listed below are to ensure that students will be safe and effective during the clinical trials and have the opportunity to maximize their learning experience.

All students entering Health Sciences *II* must meet or exceed the following requirements before they will be considered for enrollment in the class. Failure to meet any of the requirements will result in the students being denied entrance into the course.

1. All students must complete Health Sciences I with an average meeting one of the following criteria.
   a. A minimum final average of 80 with no restriction on the final exam grade. OR
   b. A minimum final average of 78 or 79 AND at least an 85 on the final exam grade.
8. All students must provide their own transportation to and from clinical. All transportation must be approved and the student must meet all school and school district guidelines for driving.
   a. NOTE: Students are not allowed to ride together.
   b. NOTE: Students must also complete and return a voluntary drug testing acceptance form.
9. Students must have a recent NEGATIVE TB test.
10. Students must have all vaccinations updated before they enter the clinical area.
11. Students must complete Health Science Core with minimal absences.
12. Students must have ZERO discipline referrals.
13. Students and or Parents/Guardians must pay for liability insurance through the Health Sciences class.

Grades: 11th-12th
Credits: 2 Carnegie Units of Science

Educator Preparation

Educator Preparation is a pathway for students in the Education and Training career cluster. The Educator Preparation program is a high school program with courses designed to attract students to the field of education, to provide information and field experiences relevant to pursuing a degree in education, and to prepare students for the rigors of a career in education so they will remain long-term educators. The Educator Preparation program includes classroom and hands-on experiences that will prepare students for employment or postsecondary education. Students will develop a professional portfolio featuring work samples, experiences, and career plans related to the field.

Course Description Educator Preparation I

Educator Preparation I is an entry-level course. Students gain foundation competencies related to students as learners, planning and assessing teaching, teaching strategies, and communication skills. Students receive hands-on field experiences (two Carnegie units).

Grades: 9th – 12th
Prerequisites:

1. C or higher in English (the previous year)
2. C or higher in high school-level mathematics (last course taken or the instructor can specify the level of math instruction needed)
3. Instructor approval and TABE reading score (eighth grade or higher)
4. No more than two disciple referrals (the previous year)
5. 90% attendance rate

or

1. TABE reading score (eighth grade or higher)
2. Instructor approval

or

1. Instructor approval

Credits: 2 Carnegie Units
***Priority placement is given to 11th graders**
Course Description: Educator Preparation II

Teacher Academy II provides students with the opportunity to gain advanced skills needed to enhance them as learners, teachers, and communicators. Students receive advanced hands-on field experiences (two Carnegie units).

Grades: 10th – 12th
Prerequisites: Educator Preparation I
Credits: 2 Carnegie Units

COLLISION REPAIR TECHNOLOGY

Collision Repair is a hands-on program that will prepare students for employment or continuing education in the collision repair industry. The content is based on industry content. The content consists of fundamentals; mechanical/electrical components; nonstructural analysis and damage repair; structural analysis and damage repair; and painting and refinishing.

Course Description: Collision Repair I
Fundamentals of Collision Repair contains information on safety, tool identification/use, employee information, collision estimating, paint mixing/matching, service specification and service information, measurement, and personal/ business finance, introduction to steering and suspension systems, concepts of electronic/electrical systems, concepts of brake systems, introduction to heating /cooling systems, concepts to cooling systems, introduction to restraint systems, inspecting and analyzing body components, repairs to outer body panels, and introductory welding, frame inspection and repair, unibody inspection and repair, and introductory welding/cutting applications.

Grades: **9th – 12th**
Prerequisites: **None**
Credits: **2 Carnegie Units**

Course Description: Collision Repair Technology II
Advanced Fundamentals of Collision Repair contains information on safety, tool identification/use, employee information, collision estimating, paint mixing/matching, service specification and service information, measurement, personal and business skills, metal finishing and body filling, movable glass/hardware, advanced welding, frame inspection and repair, unibody measurement and repair, fixed glass procedures, and advanced welding/cutting applications.

Grades: **10th – 12th**
Prerequisites: **Collision Repair I**
Credits: **2 Carnegie Units**

Year 2 students will take the Automotive Service Excellence exam.

CULINARY ARTS

Course Description: Culinary Arts I
The foundational skills necessary in the foodservice industry are included in Culinary Arts I. Content such as food safety and sanitation; equipment, safety, and security; culinary foundations and math; and an introduction to the hospitality industry are included in the course. This course also emphasizes the real-world, hands-on practice of food preparation. Food preparation techniques included in this course include breakfast foods, dairy, and sandwiches; fruits, vegetables, salads, and garnishes; and potatoes and grains.

Grades: **9th – 12th**
Prerequisites: **None**
Credits: **2 Carnegie Units**

Course Description: Culinary Arts II
Culinary Arts II emphasizes the hands-on practice of food preparation. The food preparation techniques in this course include desserts and baked goods; meat, poultry, and seafood; and stocks, sauces, and soups. This course also places emphasis on an internship experience. While they participate in on-the-job training, students will use skills related to management and business concepts, customer communication, and customer service. This course should only be taken after students successfully pass Culinary Arts I.

Grades: **9th – 12th**
Prerequisites: **Culinary Arts I**
Credits: **2 Carnegie Units**

ARCHITECTURAL DESIGN AND DRAFTING

Architecture and Drafting is a pathway in the Architecture and Construction career cluster. Study in this program allows students to produce workable drawings on the drawing board and with the computer. Upon successful completion of the program, the student will be qualified for an entry-level drafting or related position or may pursue postsecondary education. Skills developed through the course of study assist students in meeting requirements for the ADDA certification. Students are provided the opportunity to participate in career and technical student organizations, including SkillsUSA.

Architectural Design and Drafting I is the entry-level course of the secondary Architecture and Drafting program. Students will gain foundation competencies related to orientation, safety, leadership and personal development, and drafting and CAD skills.

Grades: **9th – 12th**
Prerequisites: **See Note**
Credits: **2 Carnegie Units**

Note*

i. 1st year students must have completed transition to algebra with at least a 70 average and be enrolled in algebra 1 or have completed algebra 1 with at least a 70 average.
ii. Entering 9th grade students must have at least a 70 average in 8th grade Math.

Architectural Design and Drafting II is the exit level course of the secondary Architecture and Drafting program. Students will gain foundation competencies related to orientation, safety, advanced leadership and personal development, architectural drafting, and CAD skills. The architectural drafting section includes floor plans, elevations, foundations, and sections.

Grades: **10th – 12th**
Prerequisites: **Architectural Design and Drafting II**
Credits: **2 Carnegie Units (1 Math credit, above Algebra I, and 1 elective credit may be earned)**

Year 2 students will take the AutoCAD national certification test.

INFORMATION TECHNOLOGY

The information technology (IT) program is designed to provide the basic foundation, skills, and knowledge for computer networking, applications, and support. Students will develop the skills necessary to prepare for certification exams and will learn how to develop, support, and integrate computing systems. They will acquire network planning and management skills and the ability to provide technical support. The program will provide hands-on experience in computer systems support and skill in network setup and maintenance.

Industry standards referenced are from the *Skill Standards for Information Technology* published by the National Workforce Center for Emerging Technologies. Program competencies are designed to prepare students for CompTIA IT Fundamentals certification and Microsoft Technology Associate: Networking Fundamentals certification. Additional research data used in the development of this publication were collected from a review of related literature and from surveys of local experts in business, industry, and education.

Course Description: Information Technology Associate I
This course covers the explanation of technology and computer hardware basics, compatibility issues, common errors associated with computer hardware, software installation and functions, security risks and prevention, Green IT, and preventative maintenance of computers. Students

Grades: **9th – 12th**
Prerequisites: **None**
Credits: **2 Carnegie Units**

Course Description: Information Technology Associate II
This course teaches the basic concepts of networking, network operating systems, networking types, standards, and how data is encoded and transmitted. This course is designed to prepare students for CompTia's Network+ CertMaster Learn Certification of Competency.

Grades: **10th – 12th**
Prerequisites: **Information Technology I (pass national certification test, if applicable)**
Credits: **2 Carnegie Units**

***Information Technology II students will take CompTia's Network+ CertMaster Learn Certification of Competency. Information Technology I students will take CompTia's Tech+ CertMaster Learn Certification of Competency.**

INDUSTRIAL MAINTENANCE

Industrial Maintenance is an instructional program that prepares students for employment or continued education in the occupations of installation, maintenance, and repair work. The curriculum framework for this program was developed in partnership with the Mississippi Construction Education Foundation (MCEF). MCEF is the accredited sponsor for the National Center for Construction Education and Research (NCCER).
When developing this curriculum, the authors recognized the importance of incorporating differentiated instruction and the needs of the 21st-century learners. Therefore, teaching strategies include a blend of online and face-to-face instruction that align with NCCER Connect e-books, online lectures, video presentations, online quizzes, active figures, and Spanish content. Students will have access to this information to learn new content as well as to review, reinforce, or revise their work.

Course Description: Industrial Maintenance I
The Industrial Maintenance I course introduces students to fundamentals of safety, tools, math, blueprint reading, materials handling, fasteners and anchors, oxy-fuel cutting, brazing and soldering, basic electricity, and an introduction to the National Electrical Code.

Grades: 9th – 12th
Prerequisites: None
Credits: 2 Carnegie Units

Course Description: **Industrial Maintenance II**
Industrial Maintenance II is a continuation of Industrial Maintenance I with the emphasis on employability skills, safety, gaskets, packing, pumps, drivers, valves, lubrication, construction drawings, test equipment, material handling and rigging, mobile and support equipment, electrical theory, conductor termination and splices, hydraulic and pneumatic controls, and welding.

Grades: 10th – 12th
Prerequisites: Installation and Service I and successfully passing the NCCER
Credits: 2 Carnegie Units

***Students in the Industrial Maintenance Class will have the opportunity to become NCCER credentialed.**

Work Based Learning

Work Based Learning is the new name for Career Pathway Experience. WBL provides the students the opportunity to take knowledge and skills learned in the pathway classroom and to apply and test that learning in the workplace. The student will benefit from the WBL course due to the school's ability to meet the needs of a diverse student population.

Work Based Learning is a two-year work-based learning program designed for juniors and seniors. WBL provides students the opportunity to take knowledge and skills learned in the classroom and apply the learning in authentic workplace situations. The course will foster self-directed learning; enhance communication skills, leadership, and problem-solving; contribute to community economic development; and prepare students for the transition from school to college or the workforce.

Students must successfully complete the following for enrollment into the CPE Program:

- Complete a WBL Application for Enrollment.
- Submit a resume.
- Obtain three favorable teacher recommendations.
- Successfully participate in an interview with the WBL Coordinator.

Once enrolled in the WBL Program, students must maintain employment for the duration of the school year, abide by the rules and regulations of the WBL Program, and attend regularly scheduled WBL classes.

The course now contains some flexibility regarding credit issued:

- Students can earn as little as a 1/2 credit and up to 2 credits. Credit issued is based on their work hours:
    1. 70-139 hours=1/2 credit
    2. 140-279 hours=1 credit
    3. 280+ hours=2 credits

WELDING

Welding is an instructional program that prepares students for employment or continued education in the occupations of the welding field. The curriculum framework for this program was developed in partnership with the Mississippi Construction Education Foundation (MCEF). MCEF is the accredited sponsor for the National Center for Construction Education and Research (NCCER).

Course Description: Introduction to Welding – Course Code: 993300
This course focuses on the NCCER Learning Series Core and SMAW. Students will leave the class with a firm foundation of knowledge in the areas of employability skills, safety, and basic tool knowledge. Additionally, students will learn Oxyfuel Cutting fundamentals. Students will cover proper equipment setup, safety measures, and correct welding techniques.

Grades: **9th – 12th**
Prerequisites: **None**
Credits: **2 Carnegie Units**

Course Description: Advanced Welding – Course Code: 993301
This course focuses on specialized PAC, CAC, and advanced techniques used in SMAW. Additionally, this course will offer students the opportunity to examine GMAW and FCAW. Additionally, students will learn about GTAW. Students will learn safety measures, setup procedures, and welding techniques for each type of welding. This two-Carnegie-unit course should only be taken after students successfully complete Introduction to Welding.

Grades: **10th – 12th**
Prerequisites: **Welding I and successfully passing the NCCER**
Credits: **2 Carnegie Units**

***Students in the Welding Class will have the opportunity to become NCCER credentialed.**

ENGINEERING

Engineering and Mechatronics is a program in pre-engineering, robotics, and automated manufacturing for high school students. The purpose of the program is to provide pupils with expanded knowledge of the use of critical thinking, analysis, problem solving, and technological skills and to enable them to apply knowledge in a technological context. Hands-on experiences related to the application of engineering concepts in the workplace are central to all portions of this course. Students will develop academic, 21st century, and human relations skills and competencies that accompany technical skills for job success to help foster lifelong learning. Students who complete the program will be better prepared to enter and succeed in the engineering and STEM-related workforce or programs offered by Mississippi community and junior colleges, as well as institutions of higher education.

Course Description: Engineering and Mechatronics I
Engineering I teaches students about student organizations and introduces them to the engineering design process along with ethical and safe practice standards. Concepts of 3D sketching and modeling by hand and with CAD software are introduced within the context of engineering design and prototype development. Robotics concepts in engineering are covered with understanding catalyzed by student competitions. This course also focuses on several fields of engineering and engineering technology specialization to include technical writing and analysis.

Grades: **9th – 12th**
Prerequisites:

- Students must be enrolled in or have completed Algebra 1 with a minimum 80 average.
- Students must have at least a 2.5 GPA.
- Entering 9th graders must have at least an 80 average in 8th grade math and science.

Credits: **2 Carnegie Units**

Course Description: Engineering II
Engineering II is a comprehensive course that focuses on Advanced CAD modeling and simulations. It also introduces students to modern manufacturing systems, or how robotics and drafting work together to create products. Electrical, fluid, and thermal systems are covered in more detail due to their relevance in real-world applications and industry. Additionally, the course teaches students advanced robotic concepts. Students will also learn valuable workforce readiness skills and prepare for jobs in the field of engineering, which will be demonstrated with all other parts of the course in a capstone unit.

Grades: **10th – 12th**
Prerequisites: **Engineering I**
Credits: **2 Science Credits**
***Engineering II students will take the SolidWorks exam.**

AG POWER AND MACHINERY

Agriculture Technology and Mechanical Systems Core is an instructional program designed to provide basic skills for students to become employed in the industry of agricultural power mechanics or to continue their education in postsecondary institutions. Skills taught in this pathway relate to the selection, operation, service, maintenance, and repair of a variety of agricultural power units and agricultural machinery and equipment. Students in the pathway will participate in active learning exercises including integral activities of the FFA organization and supervised experiences.

Course Description: Agriculture Technology and Mechanical Systems

This course focuses on introducing students to safety, measurements, fasteners, and basic cutting and welding skills. Students will leave the class with a firm foundation of knowledge in the areas of employability skills, safety, and basic tool knowledge. Students will learn about the FFA and SAE. Additionally, this course introduces students to basic equipment systems, maintenance, and repair.

Grades: **9th – 12th**
Prerequisites: **None**
Credits: **2 Carnegie Units**

Course Description: Agriculture Power and Machinery
This course emphasizes specialized systems such as Diesel engines and hydraulics and more time with cutting and welding covering advanced techniques. This course will also offer students the opportunity to examine electrical and electronic systems found on modern agricultural equipment. Students will learn about equipment operation, advanced technology in agriculture power, and new and emerging technologies.

Grades: **10th – 12th**
Prerequisites: **Agriculture Technology and Mechanical Systems**
Credits: **2 Carnegie Units**