

**PROGRAM CONCENTRATION: Architecture, Construction,
Communications & Transportation**
CAREER PATHWAY: Transportation Logistical Support
**COURSE TITLE: Chassis System and Design
(Brake & Steering)**

Chassis System and Design (Brake & Steering) is a course for the Transportation Logistical Support Pathway. The course will help students build a strong scientific knowledge base and develop skills related to vehicle chassis systems in the logistics and transportation sector. Mastery of these standards through project-based learning and leadership development activities of the Career and Technical Student Organizations will help prepare students with a competitive edge for the transportation logistics marketplace.

Note: For a more comprehensive and authoritative report of national academic related skills please refer to the National Automotive Technicians Education Foundation's document "APPLIED ACADEMIC & WORKPLACE SKILLS FOR AUTOMOBILE TECHNICIANS" available at www.natef.org

ACT-CSD-1 Demonstrate knowledge of general suspension and steering systems, diagnosis, and repair.

Academic Standards:

ELA11LSVI The student participates in student-to-teacher, student-to-student, and group verbal interactions.

MM4A2. Students will use the circle to define the trigonometric functions.

SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

National Academic Standards (NATEF):

LA283 The technician uses computerized and other databases to obtain system information.

MA153 The technician can visually formulate an angle, (e.g. suspension system or drive belt) and verify its conformance to the manufacturer's specified angle.

SC516 The technician can explain how rotational motion can be changed to linear motion and why balance is important in these rotating systems.

ACT-CSD-2 Demonstrate knowledge of steering geometry diagnosis, adjustment, and repair.

Academic Standards:

ELA11LSVI The student participates in student-to-teacher, student-to-student, and group verbal interactions.

MM4A2. Students will use the circle to define the trigonometric functions.

SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

National Academic Standards (NATEF):

LA278 The technician uses text resources such as glossaries of terms, service manual indexes, database menus, and tables of contents to gather data for diagnosis and repair.

MA180 The technician can use angle measurement equipment and techniques to determine any vehicle angle measurement variance from the manufacturer's specifications.

SC351 The technician can demonstrate an understanding of circular motion in a part in a vehicle as it relates to such events as toe out on turns and tracking.

ACT-CSD-3 Demonstrate knowledge of chassis materials and components.

Academic Standards:

ELA11W3 The student uses research and technology to support writing.

SPS2. Students will explore the nature of matter, its classifications, and the system for naming types of matter.

National Academic Standards (NATEF):

LA038 The technician collects and organizes oral and written information based on discussions, notes, observations, personal experiences, and data collection that will assist in the problem analysis and solution process.

MA172 The technician can discuss symptoms of problems with a customer or associate technician and identify any relevant missing data required to solve the problem.

SC447 The technician can explain how levers can be used to increase an applied force over distance.

ACT-CSD-4 Demonstrate knowledge of hydraulic system diagnosis and repair.

Academic Standards:

ELA11W3 The student uses research and technology to support writing.

MM3A3. Students will solve a variety of equations and inequalities.

SPS8. Students will determine relationships among force, mass, and motion.

ACT-CSD-5 Demonstrate knowledge of brake diagnosis and repair.

Academic Standards:

ELA11W3 The student uses research and technology to support writing.

MM3P4. Students will make connections among mathematical ideas and to other disciplines.

SPS8. Students will determine relationships among force, mass, and motion.

National Academic Standards (NATEF):

LA286 The technician uses the service manual, in both database and hard copy formats, to identify the manufacturer's specifications for system operation and potential malfunctions.

MA161 The technician can determine the degree of conformance to the manufacturer's specifications for length, volume and any other appropriate measurements in the English system.

SC510 The technician can explain the dynamic control properties of a hydraulic system.

ACT-CSD-6 Demonstrates knowledge of related physical science principles.

Academic Standards:

ELA11W3 The student uses research and technology to support writing.

MM3P4. Students will make connections among mathematical ideas and to other disciplines.

SPS8. Students will determine relationships among force, mass, and motion.

ACT-CSD-7 Identify hybrid vehicle power steering system electrical circuits, service and safety precautions.

Academic Standards:

ELA11W3 The student uses research and technology to support writing.

SCSh9. Students will enhance reading in all curriculum areas.

National Academic Standards (NATEF):

LA286 The technician uses the service manual, in both database and hard copy formats, to identify the manufacturer's specifications for system operation and potential malfunctions.

SC194 The technician can demonstrate an understanding of the role of the generator in maintaining battery and system voltage.

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.