**SkillsUSA Career Clusters and Competitions**

**A/V Technology and Communications**

Designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services.

**Advertising Design**

This contest tests technical skills and creative aptitude as though contestants worked for an ad agency. In addition to a written test, competitors will recreate a provided advertisement on the computer. Competitors are judged on their accuracy, proficiency with industry software and ability to meet a deadline. Contestants also compete in a creative portion of the competition. The creative portion involves the application of creative thinking and a design challenge. Layout, drawing and illustration skills are used, as well as the ability to create vibrant, effective designs using the computer.

**Graphic Communications**

Student competitors participate in an eight-part contest which includes the following segments in alphabetical order:

* **Digital Press** – using a Roland Digital Print and Cut Device, the student will prepare the machine for operation, then carry out the print production file setup, creating a finished printed and cut heat transfer t-shirt graphic.
* **Digital Workflow** – The student creates a print and cut ready file using Adobe Illustrator on an Apple computer, following instructions to create a file that matches a provided sample. The student accesses the files and follows instructions to perform preflight operations, reviewing and making corrections as needed for correct output files ready for transfer to the Roland Print Cut Device in Digital Press.
* **Finishing** – The student completes finishing techniques relating to Roland Heat Transfer applications by removing excess vinyl from their printed work, installation of a transfer mask, and applying the heat transfer to 3 separate locations of the heat transfer garment.
* **Offset Press Simulator Operations** –Using Offset Print simulation software of a Sheetfed Offset press (SheetSim-SHOTS simulator), the student will solve exercises, in a limited time, with printing problems and settings on a 4 color Sheetfed Offset press. The student will have access to standard quality control tools (product, magnifier, densitometer). This examination will demonstrate the ability of students to manage the offset printing process.
* **Oral Professional Assessment** – the student participates in an interview exercise.
* **Production Planning** – The student will solve production planning challenges in consideration for graphic preparation of print and cut graphics.
* **Technical Knowledge Test** – the student completes a general technical knowledge test developed using competencies from the introduction to graphic Communications accreditation area of PRINT-ED.

**Pin Design (State Conference)**

Students present their state-winning pin along with their artwork and participate in an oral presentation regarding all aspects of their creation of the design. Contestants will explain how the pin represents their state, its unique qualities and why another SkillsUSA student or adult member would want to wear the pin. The student must also create a table top display that is educational and represents the process that took place in creating the design.

**Screen Printing Technology**

Contestants are tested on their ability to prepare screens (coat, expose, etc.), register a multi-color design on a manual printing press, and print a multi-color design on a manual printing press. Contestants also complete a written technical knowledge test and participate in an oral professional assessment.

**T-shirt Design**

The contest is designed to assess the ability of the competitor to design and produce a drawing of that design, as well as give a presentation regarding all aspects of his or her creation of the design.

**Web Design and Development**

Teams will complete a series of challenges focusing on website usability and accessibility, with at least one challenge related to scripting (client or server or both). Teams will also be evaluated on the process they use to meet the challenges and how well they work as a team. Teams may be interacting with a local server environment.

**Architecture and Construction**

Careers in designing, planning, managing, building and maintaining the built environment.

**Cabinetmaking**

Contestants build a small cabinet from the materials and drawings supplied. Contestants are expected to read the drawings, lay out and cut the parts using a table saw, laminate trimmer, hand drill, hinge boring machine and various hand tools. The parts must be accurately assembled, sanded and adjusted to tolerances specified by the judges.

**Carpentry**

Contestants frame walls using wood and/or steel studs, cut and install rafters, gable end overhangs, fascia board and soffit installation, install sheathing and/or exterior siding and trim. Demonstration of knowledge of stair construction is required. Contestants will be judged on accuracy, ability to read and interpret blueprints, workmanship, safety and the proper use of tools, equipment and materials.

**Electrical Construction Wiring**

Contestants are required to complete a written test of questions formulated from the latest edition of the National Electric Code (NEC), a practical conduit bending exercise and hands-on installation of a conduit system, cabling system and wiring devices. Working from drawings and specification sheets, contestants are required to install an electrical system common in most residential and light commercial projects. Judging is based on general workmanship, accuracy of layout and installation, and adherence to the current NEC and standard industry safe practices

**Masonry**

The SkillsUSA Masonry competition highlights skills training in the masonry industry. The exciting competition spotlights our industry’s finest masons and focuses attention on careers in the masonry industry. Students are expected to construct a composite brick and block project in a six-hour period that tests their ability to meet industry standards in quality. In addition to a written exam, students will be judged on a number of criteria to determine the winners. The contest project will include components of the most frequently used details in masonry construction.

**Plumbing**

Contestants “rough-in” hot and cold-water lines with copper tubing and “rough-in” sanitary drainage, waste and vent lines with cast iron and PVC plastic for a water closet, a lavatory, a washer box and a floor drain. Water pipes are pressure tested on completed projects. Professional plumbers and pipefitters judge the contestants on accuracy, workmanship, proper selection and use of tools and supplies and proper safety procedures.

**TeamWorks**

Teams of four students are required to build a construction project, over three days, that demonstrates their ability to work together as a team. Each team will be required to understand the project elements based on a detailed blue print and special instructions presented at the pre-competition orientation. Each team must write a project completion “action plan” and present their “action plan” as one of the “key” elements of the competition (all team members must participate during the presentation). During the “construction project”, the team demonstrates their ability to work together by using their carpentry, roofing, electrical, plumbing and masonry skills. Judging is based on the team’s presentation skills, ability to construct the project per “competition specified” building codes, jobsite safety and cleanliness, organized and correct ordering of materials from the competition material depot, proper use and accountability of tools and equipment and the rate of completion of the project. TeamWorks is not only a SkillsUSA competition, but a way of learning, for each team member, to help maximize their skills for their future.

**Welding**

Competitors receive contest drawings and a set of welding procedure specifications. All drawings, welding symbols, and welding terms conform to the latest edition of the American Welding Society standards. Through a series of stations, contestants are tested on various aspects of welding: measuring weld replicas, using weld measuring gauges; laying out a plate and using oxy-acetylene equipment to cut several holes that are checked for accuracy and quality; gas metal arc welding (GMAW) on steel making welds in various positions using short circuiting transfers; flux cored arc welding (FCAW) using a shielding gas, making welds in various positions and, using a combination machine capable of providing the correct welding current for shielded metal arc (SMAW) and gas tungsten arc welding (GTAW). Competitors complete the steel project and weld an aluminum project in various positions using a variety of filler metals

**Welding Fabrication**

A team competition that requires three students from each school to use their welding and fabrication skills to build a designed project from given material.  The project will be constructed by the competitors based on prints provided by the committee.  Teams should be skilled in the following welding and cutting processes: SMAW, GTAW, GMAW, FCAW / OFC and PAC.  The students are also required to be proficient in using common tools of a workshop.

**Welding Sculpture**

Contestants demonstrate their ability to design and produce a welded sculpture and will be able to describe all aspects of their creation of the design. Previously welded sculptures are displayed for the national competition. A notebook is required displaying evidence of creating the original work. Each participant is interviewed regarding aspects of design and creation of the piece. There is no live welding on site.

**Health Science**

Planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.

**First Aid/CPR {(Must be 16 yrs. or older) 1 Student/School for State Competition}**

Evaluates a contestant's ability to perform procedures or take appropriate action based on scenarios presented related to CPR (Adult/AED, 2 man system, child and infant CPR) first aid medical emergencies. There is also a written exam. All skills are judged on nationally accepted standards identified by The American Red Cross, The American Heart Association, The American Safety and Health Institute and The National Safety Council.

**Medical Math {3 Students/School for State Competition}**

Contestants demonstrate their knowledge of general math concepts used in the healthcare fields. They complete a written test that may include the use of ratio/proportion, dosage calculation, metric and household equivalents, Roman numerals, abbreviations, and general math including percentages, among other medical math-related problems.

**Medical Terminology {3 Students/School for State Competition}**

To evaluate the knowledge of medical terminology and abbreviations of an individual preparing for employment in the health occupations fields.

**Hospitality and Tourism**

The management, marketing and operations of restaurants and other food services, lodging, attractions, recreation events and travel related services.

**Commercial Baking**

Contestants are challenged to meet production and quality standards expected by industry. The contest includes a written examination and practical exercises. Contestants demonstrate their knowledge and skills through scaling, mixing, preparing and baking seven products. The products include breads, rolls, cookies, pastry and pies. The student must also demonstrate their cake decorating skills. The contestant must work efficiently to produce quality products in a job-like setting.

**Culinary Arts**

The competition will encompass both hot and cold food preparation and presentation. Contestants will demonstrate their knowledge and skills through the production of a four-course menu in a full-day competition. The contestants are evaluated on organization, knife skills, cooking techniques, creative presentation, sanitation and food safety techniques, and above all, the quality and flavor of their prepared items. The high school competitors will work from one menu to demonstrate fundamental cooking techniques. The college/postsecondary students will work from a market basket format and create their own menus based on fundamental cooking techniques.

**Restaurant Service**

Contestants are tested on skills required in the "front of the house" of a fine restaurant. The focus is on guest service and guest relations in the dining room including: table set up; greeting guests; reservations procedures; presentation of menus; description of food, drinks, soups and specials of the day; taking orders; serving each course and clearing the table after each course; and preparation and presentation of the check and closing remarks. Contestants are judged on personal appearance, tableside manner, professionalism, ease with guests, courtesy, general knowledge and technical and verbal skills.

**Human Services**

Preparing individuals for employment in Career Pathways Showcase that relate to families and human needs such as counseling and mental health services, family and community services, personal care, and consumer services.

**Barbering**

The contest is defined by industry standards as identified by the SkillsUSA Barbering technical committee and the National Barbering Association. The contest is divided into four separate skill performance tests, a written examination and an oral assessment.

**Cosmetology**

Students will demonstrate their skills in haircutting, hair styling and long hair design in four separate tests. All work is performed on mannequins, so everyone begins with the same model and the same type of hair. Contestants will create one 90-degree women’s haircut, one woman’s cut, and one man’s cut from a finished photo. A display of creativity is seen in the long hair segment of the competition where these future salon professionals demonstrate their own design skills. A parade finale closes the contest with each contestant walking down the stage with their completed mannequins to present to the audience.

**Esthetics**

The contestants are evaluated on their techniques and professionalism in the field of skin care. Contestants are tested in two different soft skill tasks including a written knowledge exam covering the fundamentals of skin care and oral professional presentation. Additionally, contestants are tested in four technical skill performance tasks consisting of a facial cleansing massage; basic facial; beauty makeup; and fantasy makeup applications. An emphasis on safety and infection control measures will be used in all segments of the skill performance areas

**Nail Care**

The purpose of this contest is to evaluate each contestant’s preparation for employment and to recognize outstanding students’ excellence and professionalism in the field of nail technology. The practical applications evaluate the contestant’s ability to perform the most common nail services in the salon today.  The contest consists of six separate segments: oral communication skills, acrylic application, tip and light-cured enhancement overlay application, nail polish application, nail art, pedicuring and a written exam. The written exam tests basic knowledge of proper sanitation, chemical safety, salon procedures, etc.

**Information Technology**

Building linkages in IT occupations for entry level, technical and professional careers related to the design, development, support and management of hardware, software, multimedia and systems integration services.

**Computer Programming**

Contestants demonstrate knowledge of computer programming, describe how programs and programming languages work and describe the purposes and practices of structured programming. The contest may include a computer programming problem consisting of background information and program specifications. An appropriate (successfully executable) computer program from design notes and instructions will be developed.

**Cyber Security**

**ELIGIBILITY**(Team of 2) Open to active SkillsUSA members enrolled in programs with Cyber Security, Information Security, or Systems and Networking Security Architecture the contest is defined by industry standards as determined from elements of the NIST Publication 800-181 Cyber Security Workforce Framework Categories include: Securely Provision (SP) Operate and Maintain (OM)

Protect and Defend (PR). Students will be tested on the elements of the NIST Publication 800-181 Cyber Security Workforce Framework Categories.

**Information Technology Services**

Contestants compete in modules designed to test their knowledge as an IT service professional. The contest will challenge contestants to correct end-user computing issues, configure and secure networks, manage virtual machines, navigate and modify Windows registry, deploy operating systems, leverage troubleshooting software and tools, identify virus and malware origins, work with mobile devices, and proficiently use command line interfaces. Additionally, contestants are evaluated on their interpersonal skills (such as communication, teamwork, and honesty). In the national contest, contestants take an official CompTIA A+ Certification exam, and receive their certification if they pass.

**Internetworking**

The contest focuses on testing the networking knowledge and hands-on ability of the competitors. The online written portion tests the student’s complete knowledge of internetworking concepts. The hands-on component demonstrates the abilities of the contestant to make cables, trouble shoot network systems, configure routers, switches and servers, and to deliver customer service in a technical assistant center environment. The contestants will find errors in WAN and LAN networks; do a full network configuration using routers, switches, and servers; talk a technician through an error they are having on their network; and take an online, certification type test. The national contest is based on the most current CCNA certification. In today’s job market system administration skills are needed, therefore server skills that will be scored include, but are not limited to: DNS, Active Directory, and DHCP.

For more information including last-minute updates on the national competition, be sure to follow our Facebook page at: <https://www.facebook.com/SkillsUSA.Internetworking>

**Technical Computer Applications**

Contestants will be expected to demonstrate installation, configuration and use of Windows, Mac OSX and Linux Professional Operating Systems and one or more integrated office suite packages including email, word processing, spreadsheet applications, database applications, web page development, money management applications, presentations applications, internet browser applications, etc. The use of Open source software such as OpenOffice will be preferable. Microsoft Office and other integrated office suites could be used. The utilization of instant messaging, collaboration and social networking software will be required during the contest. Contestants will be expected to perform in teams while demonstrating individual technical skills. The contest will include an oral presentation demonstrating the student’s ability to communicate with others, a hands-on skills demonstration, and a one-hour time allotted written examination.

**Law, Public Safety, Corrections and Security**

Planning, managing, and providing legal, public safety, protective services and homeland security, including professional and technical support services

**Crime Scene Investigation**

Contestants will be directed to the crime scene and briefed as to the situation. The three-person team will process the crime scene. They will legally search for, properly collect and remove evidence of the crime. One member of the team will be required to lift a latent fingerprint from a pre-selected item of evidence. After the scene has been processed, the contestants will write their report, draw the crime scene sketch and mark their evidence.

**Criminal Justice**

For students preparing to be police officers or to work in other areas of criminal justice. Typically, this contest will utilize both written examination and practical exercises to evaluate the contestants’ abilities and knowledge of the field. The contestants are scored on their knowledge and application of U.S. Constitutional Law, written and verbal communications skills, and their ability to handle an entry-level law enforcement position.

**Leadership**

**American Spirit {3 Member team - 1 Team/School for State Competition}**

This is a notebook contest documenting SkillsUSA chapters’ community service; patriotism and citizenship; and promotion of career and technical education projects that demonstrate a belief in the American way of life and the purposes of SkillsUSA

**Career Pathways Showcase {3 Member team - 1 Team/School for State Competition}**

Student teams use their course of study as the basis of a project that will benefit their class, school, community or industry. The project must highlight an aspect of their career cluster training. Upon completion of the project, the students will develop a display and use it within the community to explain their training and project. This contest will judge mastery of their training, its application, the project’s benefit to their community, and display and presentation techniques.

**Chapter Business Procedure {7 Member team - 1 Team/School for State Competition}**

Student teams of six demonstrate knowledge of parliamentary procedure in both a written exam and a team demonstration. The written exam will consist of 100 questions related to materials found in [Robert’s Rules of Order—Newly Revised. Order a copy here](http://tinyurl.com/kbpzf2n). Scores are averaged and included as part of the team’s overall score. During the presentation, the team will demonstrate the running of a typical business meeting using a standard order of business. During the presentation, the team must properly insert into the order of business the secretary’s minutes, treasurer’s report and business items identified by the technical committee. In addition to the debate and transaction of the business items, teams will also properly demonstrate at least six different parliamentary procedure motions, including at least one of each of the following: main, privileged, subsidiary, incidental and motions that bring back issues to the floor. Minutes of the demonstration will be read by the secretary upon completion of the demonstration.

**Chapter Display {3 Member team - 1 Team/School for State Competition}**

SkillsUSA student members build a three-dimensional display that articulates a national annual theme established by SkillsUSA. The team of three students builds and sets up the display and all three students present information about the display during a presentation and interview with judges.

**Community Service {3 Member team - 1 Team/School for State Competition}**

The community service competition evaluates local chapter activities that benefit the community. SkillsUSA chapters present their best community service project for the year. Contestants are evaluated on a notebook that details their chapter’s community service project and on a presentation to a panel of three judges. The competencies that are evaluated are based on the team’s professionalism in the visual representation of the project, designing and implementing an engaging presentation, and effective delivery of that presentation.

**Customer Service {Individual Competition - 1 Student/School for State Competition}**

The contest evaluates students’ proficiency in providing customer service. The contest involves live, role-playing situations. Contestants demonstrate their ability to perform customer service in both written and oral forms including telephone and computer skills, communications, problem solving, conflict resolution and business etiquette.

**Employment Application Process**

Tests the contestant’s readiness in applying for employment and their understanding of the process. The competition includes completing an application and interviewing with the judges. Their résumé and portfolio are used during their interviews. The contest is available to students who are classified under the provisions of Public Law 105-17, Individuals with Disabilities Education Act, 1997.

**Entrepreneurship {4 Member team - 1 Team/School for State Competition}**

A team event testing students' knowledge in starting their own businesses by developing business plans that identify needed products or services in a local market. Emphasis is placed on financial planning and practicality of product/service. Teams give oral presentations based upon their written plans and the team must successfully answer questions by a team of judges in response to typical problem encountered by entrepreneurs during their first year of business.

**Extemporaneous Speaking {Individual Competition - 1 Student/School for State Competition}**

The contest requires contestants to give a three- to five-minute speech on an assigned topic with five minutes of advance preparation. Contestants enter the preparation area one at a time, where they are given a speech topic. They are judged on voice, mechanics, platform deportment, organization and effectiveness.

**Health Knowledge Bowl {4 Member team - 1 Team/School for State Competition}**

Tests teams of four students on their collective knowledge of health occupations. Teams are judged on speed and accuracy answering questions in nine categories: (1) academic foundations; (2) communication; (3) systems; (4) employability skills; (5) legal responsibility; (6) ethics; (7) safety practices; (8) teamwork; and, (9) health maintenance.

**Health Occupations Professional Portfolio**

The contest recognizes students for their successful development of a professional portfolio. The competition evaluates the ability of the students to present themselves to a prospective employer. The contestants show the use of the portfolio use effective communication skills in presenting. The contest consists of two parts: a portfolio notebook and a live presentation by the contestant.

**Job Interview {Individual Competition - 1 Student/School for State Competition}**

This contest is divided into three phases: completion of employment applications; preliminary interviews with receptionist; and, in-depth interviews. Contestants are evaluated on their understanding of employment procedures faced in applying for positions in the occupational areas in which they are training.

**Job Skill Demonstration A**

Contestants demonstrate and explain an entry-level skill used in the occupational area for which they are training. Competitors in Job Skill A must demonstrate a career objective in an occupational area that is included in one of the contest areas of the SkillsUSA Championships.

**Job Skill Demonstration Open {Individual Competition - 1 Student/School for State Competition}**

Contestants demonstrate and explain an entry-level skill used in an occupational area outside of their training program. Any technical skill may be demonstrated, from outside the training program of the participant.

**Occupational Health and Safety Notebook {3 Member team - 1 Team/School for State Competition}**

Students demonstrate the safety and health endeavors of their respective technical programs by putting together a scrapbook that highlights important programs, activities and events related to their school’s health and safety program. The competition encourages chapters to be active in all phases of SkillsUSA. The health and safety activities of the chapters are evaluated on the planning and organization of four projects and the final outcome of those projects. Students are interviewed and scrapbooks are scored by a panel of judges based on the quality and content of the scrapbooks and on the candidate’s presentation during the interview process.

**Opening and Closing Ceremonies {7 Member team - 1 Team/School for State Competition}**

A teamwork and oral presentation contest that evaluates teams’ understanding of the symbolic representation of the colors and assembled parts of the SkillsUSA emblem. Each team includes seven registered members in the roles of president, vice president, parliamentarian, reporter, treasurer, secretary and historian.

**Outstanding Chapter**

The Outstanding Chapter contest consists of activities members have been involved with during the school year including chapter meetings, leadership training, publicity, community service projects, professional development, program of work, awards, local and state competition and other selected chapter activities. Each activity is documented according to guidelines and submitted in a scrapbook for judging. One student representative is interviewed during the competition.

**Prepared Speech {Individual Competition - 1 Student/School for State Competition}**

This contest requires students to deliver a five- to seven-minute speech on a common theme established by SkillsUSA for the current school year. Contestants are evaluated on their ability to present thoughts relating to the central theme clearly and effectively, and are rated on voice, mechanics, and platform deportment.

**Promotional Bulletin Board {3 Member team - 1 Team/School for State Competition}**

Judges bulletin board displays created by SkillsUSA chapters based on the annual SkillsUSA theme. The bulletin boards promote SkillsUSA, career and technical education in general, and related occupational information. An accompanying notebook documents the development and construction of the bulletin board. An oral presentation explains the process, purpose and educational value.

**Quiz Bowl {7 Member team which includes 5 competitors and 2 alternates - 1 Team/School for State Competition}**

The Quiz Bowl tests a team of five competitors on their ability to quickly respond to questions covering the areas of academic knowledge, *SkillsUSA Career Essentials* knowledge and current events. The competitors also demonstrate communications, time management, teamworking and problem-solving skills. The participants respond to a question by activating a buzzer. The teams receive one point for a correct answer and lose a point for each incorrect answer. The preliminary and final rounds are 100 questions each.

**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.

**Additive Manufacturing**

Additive manufacturing embraces a wide range of materials and derivative processes to build parts suitable for end-use service. The virtually unlimited design freedom enabled by additive manufacturing allows the creation of shapes and the integration of feature and function that previously required subassemblies. Employment opportunities for creative individuals are growing as industry adopts additive manufacturing methods. Ready access to workstations and service providers makes the Internet a growing marketplace for public additive manufacturing gadgets.

**Automated Manufacturing Technology**

The contest evaluates teams for employment in integrated manufacturing technology fields of computer aided drafting/design (CAD), computer aided manufacturing (CAM), and computer numerical controlled machining (CNC). CAD operators construct the part geometry; the CAM operator generates the tool paths; and the CNC operator sets up and machines the part.

**Industrial Motor Control**

Students demonstrate their knowledge of electrical principles, equipment and industry codes and standards as it relates to the design and installation of motor control systems. Students demonstrate their skills and abilities in applying that knowledge by properly installing motor control equipment and associated enclosures, raceways, pilot devices and circuitry in accordance with accepted industry practice and National Electric Code requirements.

**Mechatronics**

The contest requires contestants to understand the new industrial discipline of “mechatronics,” the ability to understand complex systems that integrate various elements in the mechanical, fluid power, and controls domain, combined with the ability to work in a team environment with people of different areas of expertise. Mechatronic specialists must have well developed skills in pneumatic technology, electrical and electronics systems, mechanical systems and general automation techniques and practices, including systematic troubleshooting methods. This competition consists of three events designed to measure the skills required in the modern automated manufacturing environment. Contestants are required to assemble, adjust and test an automated machine system, troubleshoot and repair a faulty machine system and take a comprehensive written test. The contest elements have been designed to be as realistic as possible, closely resembling the tasks and activities of modern automation professionals. High school teams of two compete in a construction phase and a troubleshooting phase. In addition, there is an individual oral interview.

**Mobile Robotics Technology**

The contest includes activities that simulate situations encountered by robotic programmers and support professionals. Teams are given a task to solve using a mobile robotic system provided by the technical committee. Teams will have two scored chances to solve the mobile robotic challenge. Once a team has performed the required task or set of tasks, a design change may be introduced. Contestants are required to adhere to industry safety standards using the hardware and software provided.

**Robotics: Urban Search and Rescue**

A two-member team builds a robot and arm mechanism prior to the competition and then, during the competition, remotely operates the robot. The robot should be capable of locating, grabbing and moving simulated ordnances on the challenge course. This remotely operated vehicle (ROV) must traverse the course, locate the ordnances, secure them and properly dispose of them. Each team will perform one round of competition consisting of a time limited mission to locate and dispose of two ordnances.

**Science, Technology, Engineering and Mathematics (STEM)**

Planning, managing and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

**Engineering Technology/Design**

A team of three students demonstrates their ability to design an innovative engineering project and present those ideas along with a display and live model. During the presentation, students are judged on their performance as a professional team, presentation of their project to a panel of judges from the engineering field, their storyboard presentation model, and the overall effect of the presentation.

**Related Technical Math {Individual Competition - 3 Students/School for State Competition}**

On a written test, contestants demonstrate skills required to solve mathematical problems commonly found in the skilled trades and professional and technical occupations. Skills demonstrated include addition, subtraction, multiplication and division of whole numbers, fractions and decimals; applied word problems; percentages; ratio proportions; averages; area; volume; metric measures and traditional (Imperial) measures and trigonometry.

**Transportation Distribution and Logistics**

Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.

**Automobile Maintenance and Light Repair (Demonstration, High School only)**

The contest will be consistent with the auto maintenance and light repair task list outlined in guidelines published by the National Institute for Automotive Service Excellence (ASE) and the A SE Education Foundation at: [www.aseeducationfoundation.org](http://www.aseeducationfoundation.org/). Contestants will demonstrate their ability to perform jobs or skills selected from the standards mentioned above as determined by the SkillsUSA Championships Technical Committee.

**Automotive Refinishing Technology**

Contestant must demonstrate the ability to perform skills based on the task list outlined by the National Institute for Automotive Excellence (ASE) and the National Automotive Technicians Education Foundation (NATEF). The competition includes a series of workstations to assess skills in surface preparation, spray gun operation, paint mixing, matching and applying, solving paint applications problems, determining finish defects, causes and cures, and utilizing safety precautions. Competitors also complete an interview, a written estimate and an ASE written exam. The overall appearance of the finished products, speed and proper safety practices is judged.

**Automotive Service Technology**

Contestants will demonstrate their ability to perform jobs and skills based on the task list outlined by the National Institute for Automotive Service Excellence (ASE) and the National Automotive Technicians Education Foundation (NATEF). Workstations consist of on-vehicle, simulations, bench and component testing and a written test. Contestants are judged on technical competency, accuracy, quality, safety and ability to follow directions. There are 13 skill stations including the written test.

**Collision Repair Technology**

Contestants demonstrate their ability to perform jobs and skills based on the task list outlined by the National Institute for Automotive Service Excellence (ASE) and the ASE Education Foundation. The competition includes a series of workstations to assess skills in the following areas: metal straightening, attachment methods, plastic repair and structural analysis. The overall appearance of the finished product, speed and proper safety practices are judged. There are written tests on estimating, structural analysis, and an ASE exam. The students fill out a job application, bring a resume, and go through a mock interview.

**Diesel Equipment Technology**

Contestants cycle through fourteen stations testing and troubleshooting engines, electrical and electronics systems, power train systems including chassis, transmissions and carriers. Contestants also demonstrate skills in hydraulic systems, vehicle inspections, fundamental failure analysis, brake systems, air-conditioning systems and general shop skills. Contestants also perform a job interview and complete a written test.

**Power Equipment Technology**

Tests the student’s skills in all areas of this technology. They must know and understand both two- and four-cycle engines. They should know and understand the related theories that go along with the types of engines that they will come across in the industry. They should also understand drive trains, hydraulic, as well as wiring schematics. Contestants will need to be versed in customer service. As they rotate through the various stations they are judged and scored on both physical and oral skills. They are further tested with their ability to read and follow the job tasks that are given.