

## SkillsUSA Florida: State Contests by Career Cluster

Each competitive event offered by SkillsUSA Florida at the annual State Leadership and Skills Conference aligns with a career cluster, [as defined by the Florida Department of Education](#). For specific contest guidelines and eligibility, refer to the official national technical standards.

### ARCHITECTURE AND CONSTRUCTION:

**Architectural Drafting** - Contestants will use their drafting skills to solve an Architectural problem, including a written test, a hand sketch, and drawings computer-generated. The contest tests the contestants' problem-solving abilities, not simply their CAD skills.

**Building Maintenance** - Students will be expected to compete in a higher level of mastery areas including, but are not limited to, carpet care, office and restroom cleaning, floor care and liquid measurement.

**Cabinetmaking** - Requires the building of a small cabinet from 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.

**Carpentry** - Contestants will frame walls using wood and or metal 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.

**Heating, Ventilation, Air Conditioning and Refrigeration (HVACR)** - The contest includes a series of testing stations designed to assess skills identified by industry HVACR standard, which may include work with ice machines, refrigerated display cases, small package HVAC units, furnaces and split-system air conditioning and/or heat pump units and geothermal units.

**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.

**Masonry** - The students will be expected to construct a composite brick & block project that will test their ability to meet industry standards in quality. The contest project will include components of the most frequently used details in residential 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.

**TeamWorks** - Teams of four students will be required to build a construction project that will demonstrate their ability to work to understand the project elements based on a detailed blueprint and special instructions. During the project, the Team will demonstrate their ability to work together by using their carpentry, 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, proper use and accountability of tools and equipment and the rate of completion of the project for the Team.

**Welding** - Competitors receive contest drawings and a set of welding procedure specifications. 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, SMAW, GMAW, GTAW, FCAW and OFC. 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 the given material. Each team is required to be skilled in the following welding and cutting processes: SMAW, GTAW, GMAW, FCAW and OFC.

**Welding Sculpture** - Contestants demonstrate their ability to design and produce a sculpture of that design, as well as give a presentation regarding all aspects of their creation of the design. A notebook is required displaying evidence of original work and will participate in an interview regarding aspects of design and creation of the piece. There is no live welding on site.

## ARTS, A/V TECHNOLOGY AND COMMUNICATIONS:

**3-D Visualization and Animation** - Teams of 2 must produce high quality images and an animated short subject using 3D computerized images. Students are evaluated on their technical knowledge, production skills and creative abilities, including visual development and storyboarding.

**Advertising Design** - Tests technical skills and creative aptitude just as though contestants worked for an ad agency. In addition to a written test, competitors will re-create a given advertisement on the computer. Contestants also compete in a creative portion of the competition, which involves the application of creative thinking and development of a design problem.

**Audio/Radio Production** - Students will produce (plan, write, voice, record, edit, render, etc.) a 5-minute radio production such as a PSA, NPR style soundscape or news story, or similar. A 30-Second Ad Spot will be produced and inserted into the production.

**Broadcast News Production** - Two students serve as the news anchor team, one student will serve as the team's director/technical director, and one student will serve as the floor director. Each team will have two hours to write and produce their rundown before assigned contest time. Teams will produce and complete a three-minute newscast as if it were live.

**Digital Cinema Production** – A team of 2 will be judged in the following areas: a written exam, a storyboard, an interview with 1 or more judges and a short video (4.5 to 5 minutes) that will be filmed and edited on site.

**Graphic Communications** - Student competitors participate in a seven-part contest which includes Digital Workflow, Electronic Prepress, Finishing, Offset Press Operations, Oral Professional Assessment, Production Planning, and Technical Knowledge Test.

**Interactive Application and Video Game Development** – A team of 2 provides a working sample or prototype of an original interactive application or video game, and Game Design Document (GDD), including SWOT analysis.

**Photography** - Contestants demonstrate their ability to use digital SLR's, image editing software (Adobe Photoshop) and professional studio lighting. Students perform on-site photography, portrait studio lighting & posing, process and print digital photos and submit two 11x14 or 16x20 mounted & matted photographs in advance of the contest to be judged and displayed at the competition.

**Screen Printing Technology** - Contestants are tested on their ability to prepare screens, register a multi-color design on a manual four color one station rotary press, and print a multi-color design on a manual six color four station rotary press.

**Television (Video) Production** - Teams of two contestants are required to plan and shoot a video (generally 30 seconds or one minute in length) on location to convey the "theme" of the event. Editing is done in the contest area with special emphasis on professional production of the video by industry standards, quality of audio and video, and adequate conveyance of the "theme" to the viewer.

**Web Design** - Teams will complete a series of challenges focusing on website usability and accessibility, with at least one challenge related to scripting.

## ENGINEERING AND TECHNOLOGY EDUCATION:

**Electronics Technology** - The contest is divided into five sections: customer service exam, written exam, soldering, breadboarding and troubleshooting. Contestants' will demonstrate their knowledge of analog and digital circuitry; ability to troubleshoot electronic circuits; ability to construct and test experimental circuits; and, ability to design and select circuit components.

**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.

**Mobile Electronics Installation** - This event tests contestant's abilities to perform standard installation practices used by certified, professional mobile electronics installers. This event includes hands-on applications that include taking electrical measurements, installing consumer electronics equipment in a mobile environment, soldering, working with relay circuits and troubleshooting electronic circuitry.

**Mobile Robotics Technology** - The contest will test the ability to perform, exhibit and compile skills and knowledge from the following list of competencies determined by the SkillsUSA Mobile Robotic technical committee. It will evaluate each contestant's preparation for employment in the field of robotics with emphasis on the team approach to problem solving in a work environment.

**Principles of Technology** - Evaluates contestants' understanding of basic technical concepts/principles of the applied sciences and ability to demonstrate and explain the concept/principle in action and application. Any technical concept may be demonstrated, provided it is related to the principles of technology curriculum and incorporates basic principles of the applied sciences.

**Related Technical Math** - 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.

**Robotics: Urban Search and Rescue** - To evaluate team members' skills and preparation for employment in fields related to and including robotics, engineering, automation, manufacturing, electronics, and emergency services. To recognize outstanding performance by participants in scenarios that require problem solving and teamwork in a real-world situation.

**Team Engineering Challenge (Middle School)** - This contest is designed to evaluate and to recognize outstanding students for excellence and professionalism in the areas of creative and critical thinking skills and the decision-making process, to solve a problem. The contest is intended to foster creativity, innovation, teamwork, and problem-solving skills.

**UAV Drones Competition** – Student teams develop real-world expertise in UAV multi-rotor design, construction, programming, operation and repair. Fundamental drone piloting and safety skills are learned through participation.

## HEALTH SCIENCES:

**Basic Health Care Skills - Contestants** will demonstrate their knowledge and ability to perform entry-level procedures or skills based on the following list of core standards: Academic Foundations, Communication Skills, Career Opportunity Concepts and Systems, Employability and Teamwork, Ethical and Legal Issues, Safety Practices.

**Dental Assisting** - Contestants demonstrate procedures specified in the accreditation standards for Dental Assisting Education Programs of the Commission on Dental Accreditation. Students are judged in chair-side assisting, preparation of dental materials, infection control, and emergency, laboratory and office procedures.

**Emergency Medical Technician** – A team of 2 students compete in three rounds, including a written exam, skill stations, and medical and trauma scenarios.

**First Aid/CPR** - 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. Skills are judged on nationally accepted standards identified by various leading health organizations.

**Health Knowledge Bowl** – Teams of 4 are tested on their collective knowledge of health occupations, judged on speed and accuracy answering questions in nine categories: Academic Foundations, Communication, Systems, Employability Skills, Legal Responsibility, Ethics, Safety Practices, Teamwork, and Health Maintenance.

**Health Occupations Professional Portfolio** - The competition evaluates the ability of the students to market themselves to a prospective employer by presenting a portfolio and use effective communication skills in presenting.

**Medical Assisting** - Contestants are tested on their skills in the clinical and administrative setting. They are judged on speed, the use of correct safety measures and their ability to interact personally with a patient. The students are also judged on general office skills, communication skills, patient education, knowledge of anatomy and physiology, terminology, instrument identification and equipment, as well as on a variety of clinic procedures and techniques.

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

**Nurse Assisting** - Students will demonstrate knowledge and skill in performing personal care, encouraging patient independence, assisting with ambulation, and performing other routine tasks, including standard infection control procedures used in basic nurse assisting. Contestants will demonstrate CPR knowledge measurement of vital signs.

**Practical Nursing** - Contestants are judged on their knowledge of medical terminology, body structure and function, nutrition, medications and nursing care. They must also demonstrate their abilities to perform job skills such as: administration of oral, subcutaneous and nasogastric medications; physical assessment; insertion of a nasogastric tube; sterile dressing change and cardiopulmonary resuscitation.

## HOSPITALITY AND TOURISM:

**\*Culinary Essentials Certification** – Students will take the American Culinary Federation Certified Culinary Essentials exam. This exam demonstrates a student's proficiency in industry-standard competencies and aligns with the ACF's Certified Fundamental Cook (CFC) certification. Upon successfully passing the exam, the student is eligible to attempt the ACF CFC written and practical exams.

**Commercial Baking** - Contestants demonstrate their knowledge and skills through scaling, mixing, preparing and baking six products, including breads, rolls, Danish, cookies and pies. The student also must demonstrate their cake decorating skills.

**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 will be rated on their organization, knife skills, cooking techniques, creative presentation, sanitation food safety techniques, and above all, the quality and flavor of their prepared items.

**\*Culinary Quiz Bowl** – A team of 3-5 students participate in a timed live quiz bowl and complete a written exam based on culinary and hospitality knowledge.

**\*MRE Challenge** – A team of 2 students are provided 6-8 various MREs (Meals Ready to Eat) and must create a full meal, including an entrée, appetizer, beverage, and dessert. The only materials permitted are those contained within the MREs, and no additional ingredients or methods of preparation are permitted.

**Restaurant Service** - Contestants are tested on skills required in the "front of the house" of a fine dining restaurant. Students are judged on providing great service and guest relations in the dining room including table set up, greeting guests, description of menu and specials of the day, taking orders, serving and clearing each course, preparation and presentation of the check and closing remarks.

**\*Wedding Cake Design** – A team of 2 students design a 3-tiered wedding cake and execute the preparation on site. Students participate in an interview regarding their creative process and technical abilities, and all decorations must be edible.

## HUMAN SERVICES:

**Barbering** – students execute three cuts during this contest, including duplicating a given cut, a flat top, and a creative freestyle design. They also participate in an interview component and provide a presentation to the judges on their creative design.

**Cosmetology** - Contestants will create one 90-degree women's haircut, one woman's 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

**\*Cosmetology Quiz Bowl** - A team of 3-5 students participate in a timed live quiz bowl and complete a written exam based on cosmetology knowledge

**Early Childhood Education** - Contestants will prepare a written lesson plan and take a written test assessing their knowledge of child development and effective teaching strategies, demonstrate their understanding of the unique age-related learning characteristics of young children and the relevant social interactions as they implement the lesson.

**Esthetics** - The Esthetics competition evaluates the contestants' techniques and professionalism in the field of skin care. Students will be tested in four different areas: an oral skin consultation; a written exam covering the fundamentals of skin care; sanitation; skin analysis; a hands-on basic facial demonstration; and daytime and fantasy make-up application.

**\*Hair Weave** - Contestants will demonstrate their ability to create an original weave style comparable to industry standards using sewing &/or bonding, cutting and styling techniques. The style must be an original, creative, weave design, and should show evidence of advanced skill level. The style must include attaching, shaping & thermal styling of artificial hair.

**Nail Care** - The contest consists of 6 separate segments; oral communication skills, acrylic application, tip and wrap application, nail polish application, nail art pedicuring and a written exam. The practical applications evaluate the contestant's ability to perform the most common nail services in the salon today.

## INFORMATION TECHNOLOGY:

**Computer Programming** - Competition consists of project coding and output, a skill-related written test and an interview. Each project's specifications are written for Visual Basic, Java, C#, C++ and RPG.

**Cybersecurity** – A team of 2 students display knowledge of industry standard processes and procedures for hardening an end point or stand-alone computing device, and demonstrate abilities to securely provision operating systems, software, and configure security at initial provisioning stages, manage switch security, and demonstrate hardening of servers against attacks.

**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).

**Internetworking** - The contest consists of three main parts--networking design, general networking knowledge and hands-on evaluations. The contestants will find errors in WAN and LAN networks; do an ISP configuration using routers and switches; talk a technician through an error they are having on their network; and, take an online, certification type test.

**Internet of Things** - Contestants will be judged and scored on installation of residential products including Home Theater system, computer networking, video security equipment and knowledge of different smart home technologies.

**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. Contestants will be expected to perform in teams while demonstrating individual technical skills.

**Telecommunications Cabling** - This competition tests to worldwide industry standards for data and voice connections, physical and logical networks and signal transmission. Contestants demonstrate skills in reading network design documentation, parts list set-up and purchase, pulling and mounting cable, choosing wiring closets, patch panel installation and termination, installing jacks and cable testing.

## LAW, PUBLIC SAFETY AND SECURITY:

**Crime Scene Investigation** - The contestants will, as a three-person team, 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** - 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.

**Firefighting** - The Firefighting contest evaluates safety; breathing apparatus; fire streams; ladders, ropes, knots and hoses; fire control; ventilation; emergency medical care and rescue; and protecting fire cause evidence. Contestants are evaluated using standards established by the National Fire Protection Association (NFPA).

## LEADERSHIP AND OCCUPATIONAL:

**Action Skills** - A five- to seven-minute demonstration of an occupational skill in an area in which a student is training. Contestants use examples, experiments, displays or practical operations to clearly explain their skills using contestant-prepared visual aids.

**American Spirit** - 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** - Student teams will 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 their community to explain their training and their project.



**Chapter Display** - The contest selects the outstanding promotional exhibit designed and constructed by a team of 3 students and is built around and articulates a common theme established annually by SkillsUSA.

**Community Action Project** - A team of two contestants develop, execute, document and present a project that was completed in their community or school which provides a benefit to the community or the school, and to evaluate local activities that benefit the community and to recognize excellence and professionalism in the area of community service.

**Community Service** - SkillsUSA chapters present their best community service project for the year. Contestants are evaluated on a notebook which reports their chapter's community service project and on a live presentation, which is given to a panel of judges.

**Customer Service** - The contest involves live, role-playing situations. Contestants demonstrate their ability to provide quality customer service, 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. Their resume and portfolio are used during their interviews.

**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.

**Entrepreneurship** - 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** - 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.

**First Aid/CPR** - 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. 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.

**Job Interview** - 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 for 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** - Contestants demonstrate and explain an entry-level skill used in the occupational area for which they are training or outside of their training program. Any technical skill may be demonstrated.

**Occupational Health and Safety** - Contestants 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. These activities are evaluated on the planning and organization of four projects and the outcome of those projects.

**Opening and Closing Ceremonies** - 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. The contest is a demonstration of the SkillsUSA Opening and Closing Ceremonies conducted according to the script and description as printed in the SkillsUSA Championships Technical Standards.

**Outstanding Chapter** - The Outstanding Chapter 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.

**Pin Design** - Students present their final design 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 the state, its unique qualities and why another SkillsUSA student or adult member would want to wear it.

**Prepared Speech** - Requires students to deliver a speech five to seven minutes in length on a common theme established by National SkillsUSA. Contestants are evaluated on their ability to present thoughts relating to a central theme clearly and effectively, and on voice, mechanics, and platform deportment.

**Principles of Engineering Technology** - Evaluates contestants' understanding of basic technical concepts/principles of the applied sciences and ability to demonstrate and explain the concept/principle in action and application. Any technical concept may be demonstrated, provided it is related to the principles of technology curriculum and incorporates basic principles of the applied sciences.

**Promotional Bulletin Board** - Bulletin board displays are 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.

**\*Promotional Poster** – A team of 2 students are provided with materials to create a poster to promote a given theme. The entire project is produced on site, and students participate in an interview with judges regarding their creative process.

**Quiz Bowl** - The Quiz Bowl tests a team of 5 competitors' ability to quickly respond to questions covering the areas of academic knowledge, professional development and current events. The participants respond to a question by activating a buzzer system. The teams receive one point for a correct answer and lose a point for each incorrect answer. The active rounds (preliminary and finals) are 100 questions each.

**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.

## MANUFACTURING:

**Additive Manufacturing** - Contestants should expect to demonstrate their ability to use 3D CAD, design for the advantages of additive manufacturing, account for limitations of major 3D printing technologies, advocate for design choices, and use creativity to solve physical problems with real constraints.

**Automated Manufacturing Technology** - The contest evaluates teams of 3 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.

**CNC Milling** - The contest will assess the ability to write the CNC program for a part, drawing and materials, determine tool offsets, setting up the machine and producing a part on a milling machine. The contest will include a written test evaluating a contestant's knowledge of Computer Numeric Control machining in such areas as: basic machining skills, CNC programming, setting up a CNC machine, performing mathematical calculations related to CNC, communication and inspection.

**CNC Technician** - Contestants will compete in NIMS Level I & II manual machining skills and knowledge areas including operation of manual milling machines, lathes, drill presses, and surface grinders. Contestant knowledge of CNC programming skills using a PC and related knowledge and skill in the areas of engineering drawing interpretation, GD&T, technical math, machining practices, use of precision measuring/hand tools and ability to communicate verbally using proper industry terminology will be evaluated.

**CNC Turning** - The contest will assess the ability to write the CNC program for a part drawing and materials, determine tool offsets, setting up the machine and producing a part on a lathe in such areas as: basic machining skills, knowledge of CNC programming, setting up a CNC machine, performing mathematical calculations related to CNC, communication and inspection.

**Major Appliance and Refrigeration Technology** - Contestants rotate from station to station diagnosing common service issues on refrigerators, washers, dryers, ranges, microwave ovens and dishwashers. Contestants also demonstrate their ability to braze by assembling a copper and steel tubing project per a schematic provided.

**Mechatronics** - Contestants will be required to assemble, adjust and test an automated machine system, troubleshoot and repair a faulty machine system and take a comprehensive written test. Teams of two will compete in a construction phase and a troubleshooting phase. In addition, there will be an individual oral interview.

**Robotics and Automation Technology** - Challenges two-person teams to demonstrate operation of a five-axis servo-robot along with a set of sensors and motorized devices to resolve a simulated production process problem.

**Technical Drafting** - The contest will focus on the solution of industry-developed problems by applying appropriate technical drafting skills and tools including computer-aided drafting (CAD).

## TRANSPORTATION, DISTRIBUTION AND LOGISTICS:

**Automotive Refinishing Technology** - Contestant will demonstrate the ability to perform jobs and 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 including surface preparation, spray gun operation, paint mixing, matching and applying, solving paint applications problems, determining finish defects, causes and cures and utilizing safety precautions.

**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 will be judged on technical competency, accuracy, quality, safety and ability to follow directions.

**Aviation Maintenance Technology** - Contestants perform tasks that represent the types of maintenance they will handle in the aircraft industry. The contest scope is consistent with the airframe and power plant mechanics certification guide published by the Federal Aviation Administration.

**Collision Damage Appraisal** - The contest will be consistent with the Collision Repair/Refinishing Technician Task List outlined in the guidelines published by the National Institute for Automotive Service Excellence (ASE) and the National Technicians Education Foundation (NATEF), [www.natef.org](http://www.natef.org). Contestants demonstrate their ability to perform jobs and skills based on, but not limited to handwritten estimating, computerized estimates/appraisals, frontal damage, unibody damage, light mechanical damage, rear damage including quarter panel replacement. The overall accuracy and quality of the finished products, speed and proper safety practices will be judged.

**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 National Automotive Technicians Education Foundation (NATEF). The competition includes a series of workstations to assess skills in the following areas: metal straightening, welding, plastic repair and structural analysis.

**Diesel Equipment Technology** - Contestants cycle through 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.

**Marine Service Technology** - The hands-on test stations include many aspects of 2-stroke and 4-stroke outboard, stern drive and inboard troubleshooting and repair. Students should be proficient in marine application electrical/ignition systems, fuel systems, cooling systems, lubrication systems, drive/transmission systems and boat and trailer rigging and repair.

**Motorcycle Service Technology** - Contestants perform technical skills including performing scheduled maintenance tasks; use of service, electrical diagnostic and parts manuals; electrical diagnostics; precision measurement; brake service; chassis/suspension service; fuel delivery system inspection and repair; transmission and drive systems; power train systems; on Harley-Davidson motorcycles.

**MLR (Maintenance Light Repair)** - 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 ASE 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.

**Power Equipment Technology** - Students must know and understand both 2 & 4 cycle engines and the related theories that go along with engines that they will come across in the industry. They will also understand drive trains, hydraulic, as well as wiring schematics.