CATA Curricular Code Change Proposal

Submission Instructions, please read in full before submitting your proposal:

1. Fill in all the below information.
2. Download the current code from the CATA Website: Curricular Activities Code
    1. Do not delete anything from the code. Strikethrough parts to delete. Any new wording, type into the code and highlight in yellow.
    2. Upload "Proposed Code" below.
    3. Upload any additional documents if needed
    4. Scroll all the way to the bottom and sign the form.
3. **IMPORTANT - Answering "Yes" to any of the questions requires the Host Site's Contest Coordinator's signature.**
    1. After all information is filled out, codes are updated and you have signed the form, hit "Save" on the bottom right-hand corner. **DO NOT** hit "SUBMIT".
    2. Once you hit "Save" a box will appear with a link. This link is specific to your proposal. You can email the link to yourself and also copy from this box.
    3. Email this link to the Host Site coordinator to review your proposal. When emailing the Host Site, request that they review your proposal and sign in the "Host Site Coordinator's" Signature box. Request that they hit "Save" after signing the document and let you know that the signature is complete.
    4. Using the link, pull up your proposal and confirm that the signatures are complete and hit "Submit". Once you hit "Submit", you will no longer be able to make any changes to your submission.

Name of Contest:
Equipment Technician

Curricular Codes Open - List A
**Equipment Technician

Out of Rotation Curricular Codes

Revive a Contest: Please enter the name of the contest below and contact the CATA office for a copy of the Code.

Proposed by:
Arthur Faria

School:
Reedley College

Email:
arthur.faria@reedleycollege.edu

Issue:
Clarifying language has been added to the Technical Skills and Troubleshooting portions of the contest. The troubleshooting tool list has also been updated. In addition, language has been added to the work order stating that all required pre-operation inspections and safety checks must be completed and any identified concerns addressed prior to starting or operating equipment.

This proposal will require a contest to open out of rotation: (Please note: It is highly recommended that you, or a representative, attend the pre-conference governing board meeting to answer any questions regarding proposed curricular code changes to contests that are requested to be opened out of rotation.)
No

The change will affect General Rules:
No

The change will affect the awards needed:
No

The proposed change will affect contest forms:
Yes

The proposed change will affect contest hosting site (e.g. additional facilities, new sections, additional scoring, etc.)
No

If you answered YES to any of the above questions, please explain:
Adds clarifying language to contest forms.

Which JudgingCard scorecard will be used for tabulations?

Is this a New Contest Proposal?
No

If you answered YES to this being a New Contest Proposal, please indicate who will be sponsoring the contest. New Contest Proposals require a 3-year sponsor.

Contact information for Sponsor:

If you answered yes to any of the above questions, you need to include the following signature:

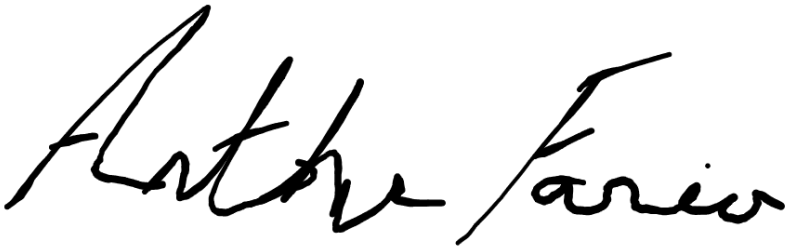
Host Site Contest Coordinator's Name:
Arthur Faria

CDE Host Site Contest Coordinator's Signature (agreeing that changes are able to be accommodated by the host site.)

Upload code with tracked changes:
2026 Eq Tech Code Changes.docx

Upload any additional information you would like:

Please sign below:



EQUIPMENT TECHNICIAN

Purpose and Standards

The purpose of establishing an Equipment Technician contest for the California Association of Future Farmers of America (FFA) is to foster the development of technical skills and knowledge among students in the field of agricultural mechanics. This contest aims to:

1. **Enhance Practical Skills**: Provide hands-on learning opportunities that enhance students' proficiency in diagnosing, repairing, and maintaining agricultural equipment.
2. **Promote Career Readiness**: Equip students with industry-relevant skills that prepare them for successful careers in agricultural mechanics and related fields.
3. **Encourage Innovation**: Inspire innovative thinking and problem-solving abilities through real-world applications and challenges.
4. **Strengthen Industry Connections**: Build strong connections between students, educators, and industry professionals to facilitate mentorship, internships, and job placements.
5. **Highlight the Importance of Agricultural Mechanics**: Raise awareness about the critical role of agricultural equipment technicians in ensuring the efficiency and productivity of the agricultural sector.
6. **Foster Teamwork and Leadership**: Encourage teamwork, leadership, and communication skills by engaging students in collaborative projects and competitions.
7. **Recognize Excellence**: Acknowledge and reward outstanding student achievements and technical expertise in agricultural mechanics.

Foundation Standards: Mathematics Algebra 10, 12, 13, 15 and Geometry 8, 10, 11, Listening and Speaking 1.8, 2.3, Technology 4.1, 4.2, 4.6, Problem Solving and Critical Thinking 5.1, 5.2, 5.3, Health and Safety 6.2, 6.4, 6.5, Ethics and Legal Responsibilities 8.3, Leadership and Teamwork 9.1, 9.2, 9.3.

Ag Mechanics Pathway Standards: Safety B 1.0, Engines and Machinery B 10.0, B11.0.

Contestants

The contest team will be made up of three or four members. The scores of the three highest team members shall be used for the team score. All team members are eligible for individual awards. Each member will compete in Identification, Theory, Pre-Delivery Inspection & Technical Skill areas. The top ten teams based on the combined scores of Identifications, Theory, PDI and Technical Skill areas, will compete in the team Troubleshooting activity.

Classes

Class	Individual Points	Team Points
Identification	50	150
Theory Test	100	300
Pre-Delivery Inspection (PDI)	100	300
Technical Skills	200	600
Troubleshooting		500
Total	450	1850

Tiebreaker

1. Individual and team ties will be broken by individual's/team's scores on technical skills test.
2. If a tie persists it will be broken by score on theory test.
3. If a tie persists it will be broken by score on Pre-Delivery Inspection.
4. ~~If a tie persists it will be broken by score on identification test.~~
5. ~~If a tie persists it will be broken by team troubleshooting score.~~

~~Ties in the individual sub-contests will be broken by the highest individual overall score. Team sub-contests will be broken by the highest overall team score. Sub-contest Awards~~

Sub-contest Awards

Sub-contest ribbons will be awarded to the top five individuals and teams in Identification, Theory Test, Pre-Delivery Inspection and Technical Skills, as well as the top five teams in Troubleshooting.

Requirements of the Host Institution

The sponsoring institution will indicate the equipment brand, model and type to be used, and provide all service publications and scoring rubrics for troubleshooting by January 1 prior to state finals.

Rules

The contest is made up of the following areas:

I. IDENTIFICATION (Time: 30 minutes-50 points Maximum-50 items)
   A. Identification of engine parts, tools, electrical components, hydraulic components, and machine parts. 50 items at 1 point each (50 points). Names of parts will be based on the current year's troubleshooting machines manufacturer.

II. THEORY (Time: 30 minutes-100 points Maximum-50 questions)
   A. Test questions will be derived from the following Reference Materials:
      1. Diesel Engine Technology by Mack, Daniels, Dehart, Norman G-W Publisher
      2. Heavy Equipment Power Trains & Systems by Timothy Dell G-W Publisher
      3. Hydraulic Systems for Mobile Equipment by Timothy Dell G-W Publisher
   B. The questions on this test will be theoretical in nature and will not include any references to exact equipment specifications that should be looked up in technical manual.
   C. A copy of the current year's written test will be provided to coaches at the conclusion of the State Finals Contest.

III. PRE-DELIVERY INSPECTION (PDI): (Time: 60 minutes) (100 points)
   A. Pre-Delivery Inspection tests the contestants' ability to inspect Tractors, Implements, or Machinery and determine maintenance needs, adjustment problems, and visible faults and safety hazards. Common and visible faults are to be used. Implements may be set on the ground, in transport position, or in working field position.
   B. The host institution will select four of the following pieces of equipment to be used on the day of the contest:
      1. Skid Steer Loader
      2. Agricultural Tractor
      3. Wheel Loader
      4. Swather (Windrower)
      5. Harvest Equipment (Forage, Grapes, Cotton, Nuts)

6. Combine
7. Excavator
8. Backhoe Loader
9. Tree Shaker
10. Track Type Tractor/Bulldozer
11. Telehandler
12. Lift Truck (Forklift)
13. Motor Grader

C. A sample PDI form will be provided in Appendix II.
D. The PDI exam forms may be True/False or Multiple Choice.
- Please note that PDI test forms will be equipment specific.

IV. TECHNICAL SKILLS: (Time: 60 minutes) (200 points)
A. Technical Skills shall be made up with a minimum of 5 and no more than 20 "hands-on" skill Stations.
B. **Competitors will need ~~to be equipped with~~ the following items below:**
1. Digital Multimeter
2. Clear Safety Glasses
3. Tape Measure
4. Outside Micrometer set from 0-3"
5. 6" Dial Caliper

C. Each station will be equipped with the following:
1. The specific components needed for the exercise.
2. Tools needed to perform the specific task at the station ~~except a digital multimeter (Individual contestants must provide their own)~~
3. Technical manual pages and reference sheets.
4. A list of all specifications needed to complete the exercise.

D. Examples of "hands-on" exercises for Technical Skills are, but not limited to:
1. Using a micrometer.
2. Using a hole gauge and micrometer--measure valve guides, connecting rod journals, piston pin journals.
3. Using a Dial Bore Gauge
4. Using a dial indicator
5. Using a feeler gauge.
6. Using a Battery Load Tester
7. From displays of tools select those items needed for: removing and installing bearings; testing hydraulic pumps, disassembling electrical connectors, etc.
8. From displays of engine components: identify correctly assembled connecting rods and caps, Turbos, emission system components, etc.
9. Use of a billing statement and the calculations involved for parts and labor.
10. Use of a digital multimeter to measure voltage, voltage drops, & resistance
11. Interpreting Schematics (Hydraulic & Electrical)
12. Use of specialty diagnostic tools such as a flowmeter, pressure gauges, tachometer

V. TROUBLESHOOTING (500 points possible awarded to the team and no individual points to be awarded).
A. Top 10 teams from Theory Test, Identification, Pre-Delivery Inspection, and Technical Skills will be allowed to move onto the team Troubleshooting portion of the contest.

B. Teams will then have a 30 minute "Diagnostic Period" as a group to analyze and ~~review~~ complete the Repair Request form ~~on~~ for the equipment in need of repair. Students will have access to all technical materials needed to plan a path to repair.
    1. Teams will submit the Repair Request form at the end of the diagnostic period for scoring.
        a) A copy will be provided to students to use during their 1 hour repair period.
C. The equipment used for troubleshooting will be announced by January 1st prior to the contest each year.
D. Designated watch area may be provided to guest (Industry Partners)
E. Competitors may change out of uniform to appropriate repair clothes (Coveralls, Work shirts)
F. At the conclusion of the diagnostic period, students will have 1 hour to make repairs and complete reports. All documents must be submitted within the 1-hour time limit.
G. Once repairs are made, teams are to operate equipment on the "equipment operation course" within the 1-hour repair period. See equipment operation scoring in Appendix II. Failure to operate equipment within 1 hour time limit will result in a zero scored in the equipment operation section of the judges scored card. Equipment operation course layout will be presented to teams prior to the start of troubleshooting.
H. Scoring for troubleshooting will be based on the following:
    1. Repair Request Sheet
    2. Safety
    3. Tools and Parts
    4. Pre-Operational Inspection
    5. Repair Methods
    6. Equipment Operation
    7. Completed Work order to be turned into the judge.

VI. TOOLS – Each team's toolbox should include tools commonly used in the repair and maintenance of Heavy Equipment - NO BATTERY OR AIR POWERED TOOLS. Teams must have at least one laptop available to use for accessing technical publications. Laptops must be capable of viewing PDF documents.

A. Suggested Tools: (refer to current year's Equipment)
    1. 3/8" socket set Metric M8-M24
    2. 3/8" socket set SAE 1/4 to 1 ¼"
    3. 1/2" socket set Metric M8-M24
    4. 1/2" socket set SAE 1/4" to 1 ¼"
    5. ¼" Drive Socket Set – SAE and Metric
    6. ~~2~~ SAE wrench sets – 1/4 to 1 ¼"
    7. ~~2~~ Metric wrench sets –M8-M24
    8. Tubing wrenches
    9. Flex handle ratchet- 1/2" drive
    10. Extensions
    11. Ratchet - 3/8" & ½" drive
    12. Allen wrench socket set – Metric and SAE
    13. Ball Peen Hammer
    14. Drift and Pin punch set
    15. Brass Drift Punch
    16. Calculator
    17. Container to drain fuel and/or oil into
    18. Flashlight
    19. Flat feeler gauge set

20. 3/8” & ½” Torque wrenches – Foot-lb and Inch-lb
21. Pliers set
22. Pencil
23. Clear Safety Glasses (1 pair per member)
24. Soft faced mallet or dead blow hammer
25. Oil Filter Wrench
26. Sockets, Torx – 3/8" drive - T-15, T-20 and T-30
27. Wire Stripper
28. Wire Crimper
29. Rags
30. Diagonal Cutter
31. Funnels
32. ~~Liquid-filled 0-5,000 psi / 0-35,000 kPa dual-scale dial gauges Flow Meter~~
33. O-ring Pick Set
34. Pry Bars – Angled and Rolling Head
35. Cut Level 2 Gloves (1 per team member)

APPENDIX I-Repair Request, Work Order, Troubleshooting Score Card

Equipment Technician Contest
Repair Request

Team:	**Customer Name:**	**Serial:**
Type of Equipment:	**Equipment Brand:**	**Equipment Model:**

Customer Comments/Reason for Service

The following is a sample scenario of an example repair request that could be used in a contest:

The customer brought in his Massey Ferguson 4710 tractor, explaining that he couldn't get it to start. He mentioned that he tried turning the key multiple times, but the engine wouldn't even crank, almost like there was no power getting through. He said, "It just doesn't want to turn over at all. I checked the battery and fuses, and they seem fine, but it still won't start." He also noted that this issue came out of nowhere and left him stranded in the field.

In addition, the customer reported that the PTO was constantly running, even when the switch was turned off. He expressed concern, saying, "The PTO just stays on, and I'm worried it could cause more damage if I keep using it." Lastly, he mentioned that the 3-point hitch wasn't responding, stating, "It's like it's stuck or something. I can't lift or lower it, no matter how much I mess with the controls." He emphasized that these issues had made the tractor completely unusable and needed fixing urgently.

Identification of Repairs Needed Based Upon Customer Comments/Reason for Service: (25 points possible)

1. _____

2. _____

3. _____

4. _____

5. _____

List all Suspected Faulty Components from your Identification of Repairs ~~List Error Codes Below~~: (125 Points Possible)

1. _____

2. _____

3. _____

4. _____

5. _____

California Equipment Technician Contest Work Order

(Must be turned into the judge within the one-hour time limit.)

Team Name _____ **Judge's Name** _____

			Judges Use Only!	
Machine Make	Machine Number	Machine Model	Possible	Awarded
Serial #	Hour Meter	Machine Type	10 pts	

Pre-Operation Checks: Circle one (2 pts ea.) ALL ITEMS MUST BE ADDRESSED AND CORRECTED BEFORE STARTING EQUIPMENT				
1. Oil Level	**OK**	**Needs Attention**		
2. Fuel Level	**OK**	**Needs Attention**		
3. Coolant Level	**OK**	**Needs Attention**		
4. Hydraulic Level	**OK**	**Needs Attention**		
5. Safety Equipment/ROPS	**OK**	**Needs Attention**		
6. Tires/Tracks	**OK**	**Needs Attention**	12 pts	

Work Performed: List each task performed				
Labor Description				
			50pts	

Part #	Description	Qty.	Unit Price	Total Price		
					20 pts	

Parts Total & Tax calculated from actual Parts Ordered	**Parts Total**		Math Check Only	
	Tax (8%)			
Labor Charge is ~~$125.00~~ $250.00 per hour~~/technician~~ for work performed.	**Labor Total**			
	Grand Total		8 pts	
If any portion is not legible, no points will be awarded.				
Judge's Signature:	**Total Team Points Awarded**		100 pts	

Equipment Technician Troubleshooting Score Sheet			
Team Name:	Judge's Name:	Possible	Earned
Points in these categories are variable			
Safety – Deduct 1 point for each infraction up to the maximum points in each line item.			
Wipes up oil and fuel spills as they occur		0 to 5	
Maintains safe work practices		0 to 5	
Each member wears safety glasses at all times		0 to 5	
	Total	**15**	
Tools and Parts – Deduct 1 point for each infraction up to the maximum points in each line item.			
a. Uses proper tool for the job		5	
b. Mishandling parts – (Parts kept clean, organized, emphasis on contamination control, etc.)		5	
c. Parts and Hardware installed correctly		5	
d. Uses proper torque specifications and patterns		5	
	Total	**20**	
Pre-Operational Inspection (Points are all or nothing in this category. NOTE: Steps "a" through "f" can be done in any order.)			
a. Checks for proper oil level		5	
b. Checks Fuel Level		5	
c. Checks Coolant Level		5	
d. Checks Hydraulic Oil Level		5	
e. Inspects R.O.P.S and Safety Equipment ~~(Guards and Shields)~~		5	
f. Checks Tires/Tracks		5	
	Total	**30**	
Repair Method: Each fault, service work order/ owner operator statement & recommended service shall be communicated to judge. Please see "Repair Method Rubric" for judges scoring details.		**Circle Pts**	
Fault #1: _____ **Repair Request/Customer Statement:** _____ _____ **Recommended Service Procedure:** _____ _____ **Judges' Comments:** _____ _____		**30** **20** **10** **0** **NA**	
Fault #2: _____ **Repair Request/Customer Statement:** _____ _____ **Recommended Service Procedure:** _____ _____ **Judges' Comments:** _____ _____		**30** **20** **10** **0** **NA**	
Fault #3: _____ **Repair Request/Customer Statement:** _____ _____ **Recommended Service Procedure:** _____ _____ **Judges' Comments:** _____ _____		**30** **20** **10** **0** **NA**	
Fault #4: _____ **Repair Request/Customer Statement:** _____ _____ **Recommended Service Procedure:** _____ _____ **Judges' Comments:** _____ _____		**30** **20** **10** **0** **NA**	

Equipment Technician Troubleshooting Score Sheet			
Team Name:	Judge's Name:	Possible	Earned
Fault #5: _____ **Repair Request/Customer Statement:** _____ _____ **Recommended Service Procedure:** _____ _____ **Judges' Comments:** _____ _____		**30** **20** **10** **0** **NA**	
Equipment Operation: Equipment must be moving within repair time limit. Please see "Tractor Operation Rubric" for scoring details.		**Circle**	
Noted Equipment Operating/Safety Infractions **1.** _____ **2.** _____ **3.** _____		**35** **25** **15** **0**	
	Troubleshooting Repair Total		

Troubleshooting Total Score

Repair Request: ___/150

Troubleshooting Repair Scoresheet: ___/250

Team Work Order: ___/100

Troubleshooting Grand Total: ___/500

APPENDIX II-Sample Rubrics/PDI

I. The Rubrics for scoring the team portion of the contest will be sent out to teams on January prior to state finals of that year.
   a. Below is a sample of how the rubrics will be set up for judging of Troubleshooting/Team Events.
   b. A Sample PDI is provided below.

II. Repair Method Scoring
   a. 30 pts- Used appropriate tools/equipment, systematic procedure, good workmanship, and malfunction is corrected.
   b. 20 pts- Used inappropriate tools/equipment, did not follow systematic procedure (skipping steps or troubleshooting procedures), or malfunction partially corrected.
   c. 10 pts- Used inappropriate tools/equipment, trial and error approach used, and malfunction is partially corrected.
   d. 0 pts- Malfunction was not located and/or not corrected.
   e. Faults marked "NA" (no fault) will receive full credit for each fault

III. Equipment Operation Scoring
   a. 35 pts- No safety or operation errors noted
   b. 25 pts- One safety error is noted
   c. 15 pts- Two safety errors are noted
   d. 0 pts- 3 or more safety errors noted or does not operate
      i. Errors and safety guidelines shall arise from the following operation procedures.
         1. The operator shall be in the seat of the tractor/equipment when attempting to start the engine.
         2. The transmission controller shall be placed in neutral or park and the clutch disengaged before attempting to start the engine.
         3. The operator shall assure that all team members are in a clear, safe position prior to engaging the starter motor or attempting to start the engine.
         4. The starter motor shall not be engaged for over 30 seconds at a time. If the starter motor is engaged for over 30 seconds, a minimum of 1 minute cool down period shall be allowed before it is engaged again.
         5. All actions taken during testing, adjusting, repair, and operation of the tractor/equipment shall be completed in a prudent manner and in compliance with the manufacturer's recommendations.
         6. All guards, shields, cowlings, etc. removed from the tractor for repair must be reinstalled before tractor can be driven.
         7. The operator shall wear the seat belt during the test drive.
         8. Flashers and running lights shall be on when the tractor/equipment is being driven on test course.
         9. Tractor motion shall be started smoothly by releasing the clutch in a slow, smooth manner.
         10. The appropriate gear and r.p.m. for driving the test course will be announced and the tractor shall be operated in or below the designated gear and at or below the designated r.p.m.
         11. The operator shall not enter the test course unless a safe distance is available ahead of an approaching tractor. Tractors on the test course have right-of-way.

12. The tractor shall be driven in a safe manner, and a safe following distance of at least three (3) tractor lengths shall be maintained if following a tractor on the test course.
13. The operator shall not pass another tractor on test course, unless instructed to do so by the event traffic director. If a tractor is operating poorly and/or not maintaining appropriate speed, the event traffic director may permit faster traveling tractors to pass the slow-moving tractor.
14. Upon completion of the test drive, the tractor shall be stopped in a smooth manner, gearshift placed in neutral or park position, brakes set, tractor key turned off, and the operator shall dismount in a safe manner.

Pre-Delivery Inspection

Equipment	Skid Steer Loader
Model	246C

Answer (A) for true, (B) for false

1. All lights are in operable order
2. Bucket blade bolts are loose, damaged, or missing.
3. Hydraulic fluid is in operable level and condition
4. No warning lights are present
5. Insufficient amount of DEF
6. Tires and/or tracks are in operable condition
7. Battery terminals show signs of corrosion
8. Battery disconnect is in the off position
9. Undercarriage is free of debris
10. All covers and guards are in place
11. Radiator is free and clear of debris
12. Condenser is free and clear of debris
13. Tilt cylinders show signs of hydraulic leakage
14. Lift cylinders show no signs of hydraulic leakage
15. All grease zerks are clean and free of dirt and debris
16. Oil leaks present within engine compartment
17. Safety decals are present and legible
18. Engine oil within operable levels
19. Attachments are correctly attached
20. High side and Low Side AC service caps installed
21. Air filter is missing
22. Safety bar is in operable order
23. Lift arm support is not present on the machine
24. Hydraulic hoses are free of damage
25. Lift cylinder controls are in proper operation