Agricultural Power and Technology Scope and Sequence – Hybrid

Virtual

Day	Time	Discussion/Demonstration Items	Activity and Deliverables **Check-Off Item*
Day 1 (Virtual)	9:00 – 11:00 Synchronous	• Introductions • CASE Participant Expectations • AoE: Navigating CASE • Lesson 1.1 Mechanical World • Activity 1.1.4 Digging with Deere • Lesson 1.2 Mechanical Basics	• CASE Curriculum Access (MyCASE) • Google Classroom Access • Activity 1.1.3 Efficient Design • Project 1.1.5 Toxic Beans (Anchor assessment)
	11:00 – 1:00 Asynchronous	• Lunch	• Project 1.2.2 Harness the Wind* (Build and collect data)
	1:00 – 3:00 Synchronous	• Tool Manual	• Activity 1.2.3 Force to Work • Activity 1.2.4 Do You Have Power?
	3:00-4:00 Asynchronous		• Project 1.2.2 Harness the Wind* (APT Engineering Report) • Project 1.2.5 Let's Get Technical* (Review expectations and anchor assessment)
	Homework	• Pre-read Teacher Notes for the following day (Lessons 2.1-2.3)	
Day 2 (Virtual)	9:00 – 11:00 Synchronous	• AoE: Concepts and Performance Objectives • Lesson 2.1 Safety Setting • Lesson 2.2 Tool Operation	• Project 2.1.2 Setting the Standard • Project 2.1.3 All Clear*
	11:00 – 1:00 Asynchronous	• Lunch	• Activity 2.2.2 Safe to Use • Activity 2.2.3 Safe Operation
	1:00 – 3:00 Synchronous	• Lesson 2.3 Tools of Measurement • Reading a dial caliper • Technical Skill • Estimation (Activity 2.3.3 Walk it Off) • Squaring a project (Activity 2.3.4 Square Corner) • Measuring Area (Activity 2.3.5 Area Math)	• Activity 2.3.1 Precise Measurement* • Activity 2.3.2 Fraction or Decimal
	3:00-4:00 Asynchronous		• Fluke Digital Multimeter Basics Online Course (Lessons 1-2)*
	Homework	• Pre-read Teacher Notes for the following day (Lessons 3.1 – 3.3) • Evaluate the *PPE* and *Tool Safety and Operation* sections of the *Tool Manual* using the *Project 1.2.5 Evaluation Rubric*	

In-Person

Day	Time	Discussion/Demonstration Items	Activity and Deliverables **Check-Off Item*
Day 3 (In Person)	8:00 – 12:00	• Welcome • Facility layout • AoE: Teacher Notes • Activity 1.1.1 Agriscience Notebooks • Lesson 3.1 Heavy Metal • Activity 3.1.3 One Metal to Another • Activity 3.1.4 Strength of Steel	• Activity 3.1.1 Mystery Metal • Activity 3.1.2 Highly Reactive • Activity 3.1.5 Hot Metal
	12:00 – 12:45	Lunch and Host Logistics	
	12:45 – 5:00	• Lesson 3.2 Woods and Plastics • Lesson 3.3 Fluid Materials	• Activity 3.1.6 Heat Treatment* • Activity 3.2.1 Stronger Species • Activity 3.2.4 Modeling Plastic • Activity 3.3.1 Force and Friction*
	Homework:	• Pre-read Teacher Notes for the following day (Lessons 3.4-4.1) • Evaluate the *Material Selection* section of the *Tool Manual* using *Project 1.2.5 Evaluation Rubric*	
Day 4 (In Person)	8:00 – 12:00	• Activity 3.3.4 Atomizing Air	• Activity 3.3.2 Keeping Cool • Activity 3.3.3 Oil Flow • Project 3.3.5 Bernoulli's Blades*
	12:00 – 1:00	Lunch	
	1:00 – 5:00	• Lesson 3.4 Material Management • Set up and use surveying equipment and read an engineer's rod • Lesson 4.1 Making a Plan	• Activity 3.4.2 Land Slide • Project 3.4.3 Concrete Mix* • Activity 4.1.2 Scale and Detail*
	Homework:	• Pre-read Teacher Notes for the following day (Lessons 4.2-5.1) • Evaluate the *Fluids* section of the *Tool Manual* using *Project 1.2.5 Evaluation Rubric*	

Day	Time	Discussion/Demonstration Items	Activity and Deliverables **Check-Off Item*
Day 5 (In Person)	8:00 – 12:00	• Lesson 4.2 Making the Cut • Activity 4.2.3 Threading (Demonstration) • Drill Press Safety • Lesson 4.3 Fasten and Fuse • Review the use of a torque wrench • AoE: APP Modalities • Lesson 5.1 Chemical Energy	• Activity 4.2.2 Kerf Cut* • Activity 4.3.1 Bolt Torque • Problem 4.3.5 Doorstop Design (Anchor assessment)
	12:00 – 1:00	Lunch	
	1:00 – 5:00		• Project 5.1.2 Build a Better Battery • Activity 5.1.3 Hero's Engine • Activity 5.1.4 Ethanol in a Bag* • Activity 5.1.5 Chemical Combustion
	Homework:	• Pre-read Teacher Notes for the following day (Lessons 5.2-6.1) • Evaluate the *Cutting Attachments and Fasteners* section of the *Tool Manual* using *Project 1.2.5 Evaluation Rubric*	
Day 6 (In Person)	8:00 – 12:00	• Digital multimeter (DMM) warm-up activity • Lesson 5.2 Electrical Energy • Vernier Circuit Board 2	• Activity 5.2.1 Complete Circuit • Activity 5.2.2 Amped Up • Activity 5.2.3 Follow the Flow • Activity 5.2.4 Resistance is Futile* • Project 5.2.5 Designing a Circuit
	12:00 – 1:00	Lunch	
	1:00 – 5:00	• Lesson 5.3 Mechanical Energy • Project 5.3.4 Hydraulic Lift • Lesson 6.1 Machine Design	• Activity 5.3.1 Magnetic Power • Activity 5.3.2 Electrical Generation* • Activity 5.3.3 Fluid Pressure • Activity 6.1.2 Lever Lift • Activity 6.1.3 Pulley Work
	Homework:	• Pre-read Teacher Notes for the following day (Lessons 6.2-7.1) • Construct Truss for *Activity 6.3.3 Structural Strength* • Evaluate the *Energy, Simple Machines, Maintenance Plan*, and *Troubleshooting Guide* sections of the *Tool Manual*	
Day 7 (In Person)	8:00 – 12:00	• AoE: Materials • Lesson 6.2 Machine Management • Project 6.2.1 Maintenance Plan • Activity 6.2.3 Water Calibration	• Activity 6.1.4 Gear Speed* • Activity 6.2.2 Troubleshooting • Problem 6.2.4 Power Production
	12:00 – 1:00	Lunch	
	1:00 – 3:00	• Lesson 6.3 Structural Design • Lesson 7.1 Mechanical Applications • Activity 7.1.1 Technical Applications • Problem 7.1.2 Precision Planting • AoE: Navigating CASE • SAE For All Foundational Checksheet	• Activity 6.3.2 Keep the Heat • Activity 6.3.3 Structural Strength • Project 1.2.5 Let's Get Technical* • End of Institute Survey • APT Certification