

Agricultural Power and Technology Scope and Sequence – Hybrid

Virtual

Day	Time	Discussion Items	Activity and Deliverables <i>*Check-Off Item</i>
Day 1 (Virtual)	9:00 – 11:00 Synchronous	<ul style="list-style-type: none"> • Introductions • CASE Participant Expectations • AoE: Navigating CASE • Lesson 1.1 Mechanical World • Activity 1.1.4 Digging with Deere • Lesson 1.2 Mechanical Basics 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Lunch 	<ul style="list-style-type: none"> • Project 1.2.2 Harness the Wind* (Build and collect data)
	1:00 – 3:00 Synchronous	<ul style="list-style-type: none"> • Tool Manual 	<ul style="list-style-type: none"> • Activity 1.2.3 Force to Work • Activity 1.2.4 Do You Have Power?
	3:00-4:00 Asynchronous		<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • AoE: Concepts and Performance Objectives • Lesson 2.1 Safety Setting • Project 2.1.2 Setting the Standard • Lesson 2.2 Tool Operation 	<ul style="list-style-type: none"> • Project 2.1.3 All Clear*
	11:00 – 1:00 Asynchronous	<ul style="list-style-type: none"> • Lunch 	<ul style="list-style-type: none"> • Activity 2.2.2 Safe to Use • Activity 2.2.3 Safe Operation
	1:00 – 3:00 Synchronous	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • Activity 2.3.1 Precise Measurement* • Activity 2.3.2 Fraction or Decimal
	3:00-4:00 Asynchronous		<ul style="list-style-type: none"> • Fluke Digital Multimeter Basics Online Course (Lessons 1-2)*
	Homework	Pre-read Teacher Notes for the following day (Lessons 3.1 – 3.3)	

In-Person

Day	Time	Discussion Items	Activity and Deliverables <i>*Check-Off Item</i>
Day 3 (In Person)	8:00 – 12:00	<ul style="list-style-type: none"> • Welcome • Facility layout • 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 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • AoE: Teacher Notes • Lesson 3.2 Woods and Plastics • Lesson 3.3 Fluid Materials 	<ul style="list-style-type: none"> • 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)	
Day 4 (In Person)	8:00 – 12:00	<ul style="list-style-type: none"> • Activity 3.3.4 Atomizing Air 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Lesson 3.4 Material Management • Set up and use surveying equipment and read an engineer's rod • Lesson 4.1 Making a Plan • Project 4.1.1 Scaled Shop 	<ul style="list-style-type: none"> • 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)	

Day	Time	Discussion Items	Activity and Deliverables <i>*Check-Off Item</i>
Day 5 (In Person)	8:00 – 12:00	<ul style="list-style-type: none"> • Lesson 4.2 Making the Cut • Activity 4.2.3 Threading • Lesson 4.3 Fasten and Fuse • Review the use of a torque wrench • AoE: APP Modalities 	<ul style="list-style-type: none"> • Activity 4.2.2 Kerf Cut* • Activity 4.3.1 Bolt Torque • Activity 5.1.1 Heating Up • Project 5.1.2 Build a Better Battery • Problem 4.3.5 Doorstop Design (Anchor assessment)
	12:00 – 1:00	Lunch	
	1:00 – 5:00	<ul style="list-style-type: none"> • Activity 5.1.6 Energy Output • 	<ul style="list-style-type: none"> • 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)	
Day 6 (In Person)	8:00 – 12:00	<ul style="list-style-type: none"> • Digital multimeter (DMM) warm-up activity • Lesson 5.2 Electrical Energy • Vernier Circuit Board 2 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Lesson 5.3 Mechanical Energy • Project 5.3.4 Hydraulic Lift • Lesson 6.1 Machine Design 	<ul style="list-style-type: none"> • 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	
Day 7 (In Person)	8:00 – 12:00	<ul style="list-style-type: none"> • AoE: Materials • Lesson 6.2 Machine Management • Project 6.2.1 Maintenance Plan • Activity 6.2.3 Water Calibration • Problem 6.2.4 Power Production 	<ul style="list-style-type: none"> • Activity 6.1.4 Gear Speed* • Activity 6.2.2 Troubleshooting
	12:00 – 1:00	Lunch	
	1:00 – 3:00	<ul style="list-style-type: none"> • 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 • End of Institute Reflections 	<ul style="list-style-type: none"> • Activity 6.3.2 Keep the Heat • Activity 6.3.3 Structural Strength • Project 1.2.5 Let's Get Technical* • End of CI Survey • APT Certification