

Course Blueprint for Electrical

	Total Course Weight	100%	
A	BATTERIES, STARTING, AND CHARGING	25%	A
E101.00	Understanding Batteries	4%	
	<ul style="list-style-type: none"> 1.01 Electrical Fundamentals 1.02 Battery and Starting/Charging System Test Equipment 1.03 Automotive Batteries/Function 1.04 Electrolyte and Specific Gravity 1.05 Battery Safety 1.06 Battery Temperature and Efficiency 1.07 Battery Ratings 1.08 How Batteries Lose Power 1.09 Phantom Drains 1.10 Self-Discharging 1.11 Inoperative or Missing Hold-Down 1.12 Corrosion 		
E102.00	Understanding Battery Testing	9%	
	<ul style="list-style-type: none"> 2.01 Battery Testing and Service 2.02 Hydrometer Testing 2.03 Load Testing 2.04 Useful Quick-Checks 2.05 Using Battery Chargers 2.06 Jump-Starting 2.07 Torque Specifications 		
E103.00	Understanding the Starting System	5%	
	<ul style="list-style-type: none"> 3.01 Starting System 3.02 Reduction Starters 3.03 Starting Circuit 3.04 Current Draw and Torque 3.05 Starting System Diagnosis 3.06 Current Draw Testing 3.07 Voltage Drop Testing 3.08 Wires and Cables 3.09 Abnormal Noises 3.10 Clearance and Shims 3.11 No-Load Test 3.12 Starter Replacement and Repair 		
E104.00	Understanding the Charging System	7%	
	<ul style="list-style-type: none"> 4.01 Charging System 4.02 Charging System Modes of Operation 4.03 Generator Voltage Output 4.04 Generator Components 4.05 Voltage Regulator 4.06 Methods of Regulating Voltage 4.07 Charging System Diagnosis and Service 4.08 Charging System Output Test 4.09 Circuit Resistance Tests 4.10 Generator Repair 		

B	ELECTRICAL CIRCUITS AND METERS I	25%	B
E105.00	Understanding Atoms	3%	
	5.01 Atomic Structure 5.02 Electrical Energy 5.03 Magnetism/Electrostatics		
E106.00	Understanding Voltage	6%	
	6.01 Current 6.02 DC and AC 6.03 Resistance 6.04 Source Voltage 6.05 Voltage Drop		
E107.00	Understanding Ohm's Law	6%	
	7.01 Formula 7.02 Calculations 7.03 Relationships 7.04 Solving Circle 7.05 Exercise		
E108.00	Understanding Digital Multimeters and Measurements	10%	
	8.01 Digital Multi-meters 8.02 Voltage 8.03 Current 8.04 Resistance 8.05 Converting Values		

C	ELECTRICAL CIRCUITS AND METERS II	27%	C
E109.00	Understanding Electrical Symbols and Wiring Diagrams	9%	
	9.01 Batteries 9.02 Circuit Breakers 9.03 Fuses 9.04 Fusible Links 9.05 Grounds 9.06 Switches 9.07 Lamps/Bulbs 9.08 Basic Circuit 9.09 Relays 9.10 Wiring Diagrams 9.11 Wiring Diagrams continued 9.12 More Symbols 9.13 Symbols continued		
E110.00	Understanding Power	8%	
	10.01 Power Formula 10.02 Power Exercise		
E111.00	Understanding Magnetism	10%	
	11.01 Magnets 11.02 Magnetic Fields 11.03 Magnetic Force 11.04 Relays / Solenoids 11.05 Motors 11.06 Motors continued 11.07 Electromagnetic Induction 11.08 Transformers 11.09 Transformers continued 11.10 Magnetism at Work		

D	ELECTRICAL CIRCUITS AND METERS III	23%	D
E112.00	Understanding Series Circuits	5%	
	12.01 Circuit Elements 12.02 Series Circuit		
E113.00	Understanding Parallel Circuits	9%	
	13.01 Parallel Circuit 13.02 Parallel Circuit Resistance 13.03 Parallel Circuit Current 13.04 Series-Parallel Circuits		
E114.00	Understanding Circuit Components	9%	
	14.01 Protectors 14.02 Circuit Breakers 14.03 Fusible Links 14.04 Switches 14.05 Resistors 14.06 Variable Resistors 14.07 Relays 14.08 Wires and Wire Repair 14.09 Shielding 14.10 Wire Sizes 14.11 Length vs. Resistance 14.12 Wire Repair 14.13 Splice Sleeves 14.14 Splice Sleeve Installation 14.15 Terminal Crimping 14.16 Soldering 14.17 Releasing Terminals		