Course Parameters for Electro-Technologies

Facilities

Electro-Technologies programs require specialized equipment and facilities for most courses although simulation software packages can reduce this need somewhat. In planning a facility for Electro-Technologies, ensure to include:

- adequate ventilation for soldering
- adequate space for a resource centre
- water and sinks
- whiteboards/bulletin boards and an overhead screen
- work stations with electrical power outlets and equipment storage
- telephone and cable service.

Courses that require access to facilities in addition to those present in a typical classroom setting are identified in the Course Parameters. For more information, see the corresponding course in Sections D, E and F of the *Guide to Standards and Implementation*.

Equipment

An equipment list is provided in the Course Parameters chart. Though not exhaustive, the list identifies recommended and optional equipment necessary to meet the course outcomes. The number, make and model of equipment would be determined locally depending on instructional strategies; e.g., use of simulation programs.

Equipment for courses in Electro-Technologies can be accessed through a combination of purchasing, borrowing, renting, improvising and constructing. When choosing a suitable option for obtaining equipment, give consideration to:

- adequacy of budgets for purchase
- capabilities regarding in-school maintenance and storage
- the logistics and cost of renting
- potential for loan from industry, government or post-secondary agencies
- joint purchases with other organizations in the community
- opportunities for improvising or constructing.

Teachers may find it desirable to develop a list of additional materials and supplies required for specific learning activities planned within each course.

Safety and Security Considerations

Maintaining a safe and secure environment is essential when delivering an Electro-Technologies program. The following issues need to be addressed:

- safe laboratory/shop equipment layout
- procedures for laboratory/shop management
- provision for electrical power lockout
- procedures for power use of tools and equipment
- procedures to follow when an accident occurs
- preventative accident/equipment maintenance program.

Instructional Qualifications

Effective planning and delivery of Electro-Technologies courses is contingent on teachers having content expertise. Industry training and experience are assets, particularly at the intermediate and advanced levels. Courses that are considered for advanced standing in an apprenticeship trade require a teacher/instructor possessing a Journeyman Certificate in that trade. In courses where customer work and high current and voltages exist, the teacher must also possess a Journeyman Certificate.

Courses requiring additional instructor credentials are identified in the Course Parameters chart. For more information regarding each instructor credential, see the corresponding course in Sections D, E and F of the *Guide to Standards and Implementation*.

Credentialling Opportunities

While this strand provides students with opportunities to demonstrate competencies recognized by industry and post-secondary institutions, there are no credentialling opportunities identified at this time.

Course Parameters

LEVEL
1 – Introductory
2 – Intermediate
3 – Advanced

THEME
A. Fabrication and Service Principles
B. Power Systems
C. Computer Logic Systems
D. Communication Systems
E. Robotic and Control Systems

EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
THEME	A	B	B	C	C	D	D	D	E	A	A	B	B	C	C	C	D	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS												*											*
INSTRUCTIONAL FACILITIES	*	*		*	*	*	*	*	*	*	*	*					*	*	*	*	*	*	*
CREDENTIALLING OPPORTUNITIES																							
EQUIPMENT	Electro-assembly 1	Conversion & Distribution	Electronic Power Supply 1	Digital Technology 1	Control Systems 1	Analog Communication 1	Electronic Communication	Security Systems 1	Robotics 1	Electro-assembly 2	Electrical Servicing	Branch Circuit Wiring	Electronic Power Supply 2	Digital Technology 2	Computer Technology	Control Systems 2	Analog Communication 2	Radio Communication	Security Systems 2	Electro-optics	Magnetic Control Devices	Robotics 2	Electronic Controls
	1010	1030	1050	1060	1080	1090	1100	1110	1130	2010	2020	2030	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
Ammeter, clamp-on	✓	✓				✓	✓				✓	✓									✓		✓
Analog V.O.M.	✓									✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Bread board holder	✓		✓					✓	✓														
Capacitance meter	✓		✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Coaxial cable stripper	✓																						
Computer/printer/modem	O	O	O	O	O	O	O	O	O	O	O	O	✓	✓	✓	✓	✓	✓	✓	O	O	✓	✓
Conduit bender		✓									✓												
Desoldering bulb	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
wick	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Digital logic trainer														✓					✓				✓

* Refer to specific 1-credit courses listed in Sections D, E and F of the corresponding *Guide to Standards and Implementation* for additional information.

LEVEL
1 – Introductory
2 – Intermediate
3 – Advanced

THEME
A. Fabrication and Service Principles
B. Power Systems
C. Computer Logic Systems
D. Communication Systems
E. Robotic and Control Systems

EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME	A	A	B	B	C	C	C	C	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS			*	*								*		*
INSTRUCTIONAL FACILITIES	*	*	*	*	*	*	*	*			*	*	*	*
CREDENTIALLING OPPORTUNITIES														
EQUIPMENT	Electro-assembly 3	Electronic Servicing	Power Systems & Services	Generation/Transformation	Digital Technology 3	Digital Applications	Microprocessors	Microprocessor Interface	Analog Communication 3	Amplifiers	Data/Telemetry Systems	Motors	Robotics 3	Control Applications
	3010	3020	3030	3040	3060	3070	3080	3090	3100	3110	3130	3140	3150	3160
Ammeter, clamp-on		✓	✓	✓								✓		
Analog V.O.M.														
Bread board holder	✓													
Capacitance meter	✓	✓			✓	✓			✓	✓			✓	
Coaxial cable stripper		✓												
Computer/printer/modem	O	✓	O	O	✓	✓	✓	✓	✓	O	✓	O	✓	O
Conduit bender														
Desoldering bulb	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
wick	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Digital logic trainer					✓	✓	✓	✓			✓		✓	

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LEVEL
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2 – Intermediate
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THEME
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E. Robotic and Control Systems

EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
THEME	A	B	B	C	C	D	D	D	E	A	A	B	B	C	C	C	D	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS												*											*
INSTRUCTIONAL FACILITIES	*	*		*	*	*	*	*	*	*	*	*					*	*	*	*	*	*	*
CREDENTIALLING OPPORTUNITIES																							
EQUIPMENT	Electro-assembly 1	Conversion & Distribution	Electronic Power Supply 1	Digital Technology 1	Control Systems 1	Analog Communication 1	Electronic Communication	Security Systems 1	Robotics 1	Electro-assembly 2	Electrical Servicing	Branch Circuit Wiring	Electronic Power Supply 2	Digital Technology 2	Computer Technology	Control Systems 2	Analog Communication 2	Radio Communication	Security Systems 2	Electro-optics	Magnetic Control Devices	Robotics 2	Electronic Controls
	1010	1030	1050	1060	1080	1090	1100	1110	1130	2010	2020	2030	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
Digital multimeter	O		✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drill press	✓							✓	✓	✓	✓								✓			✓	✓
Fibre optics training kit																				✓			
Frequency counter														✓			✓	✓					
Function generator						✓	✓				✓			✓			✓	✓					
Heat sinks	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heavy duty utility pliers (channel lock)		✓								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
High voltage probe											✓												
I/E insertion/removal tool	✓		✓	✓				✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓		✓	
Inductance meter	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Isolation transformer										✓			✓				✓	✓					✓

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LEVEL
1 – Introductory
2 – Intermediate
3 – Advanced

THEME
A. Fabrication and Service Principles
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C. Computer Logic Systems
D. Communication Systems
E. Robotic and Control Systems

EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME	A	A	B	B	C	C	C	C	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS			*	*								*		*
INSTRUCTIONAL FACILITIES	*	*	*	*	*	*	*	*			*	*	*	*
CREDENTIALLING OPPORTUNITIES														
EQUIPMENT	Electro-assembly 3	Electronic Servicing	Power Systems & Services	Generation/Transformation	Digital Technology 3	Digital Applications	Microprocessors	Microprocessor Interface	Analog Communication 3	Amplifiers	Data/Telemetry Systems	Motors	Robotics 3	Control Applications
	3010	3020	3030	3040	3060	3070	3080	3090	3100	3110	3130	3140	3150	3160
Digital multimeter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drill press	✓	✓										✓	✓	✓
Fibre optics training kit														
Frequency counter	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓			
Function generator	✓	✓			✓	✓			✓	✓			✓	
Heat sinks	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heavy duty utility pliers (channel lock)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
High voltage probe		✓										✓		
I/E insertion/removal tool	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	
Inductance meter	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Isolation transformer	✓	✓	✓	✓						✓		✓	✓	✓

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LEVEL
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2 – Intermediate
3 – Advanced

THEME
A. Fabrication and Service Principles
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EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
THEME	A	B	B	C	C	D	D	D	E	A	A	B	B	C	C	C	D	D	D	D	E	E	E	
INSTRUCTIONAL QUALIFICATIONS												*											*	
INSTRUCTIONAL FACILITIES	*	*		*	*	*	*	*	*	*	*	*					*	*	*	*	*	*	*	
CREDENTIALLING OPPORTUNITIES																								
EQUIPMENT	Electro-assembly 1	Conversion & Distribution	Electronic Power Supply 1	Digital Technology 1	Control Systems 1	Analog Communication 1	Electronic Communication	Security Systems 1	Robotics 1	Electro-assembly 2	Electrical Servicing	Branch Circuit Wiring	Electronic Power Supply 2	Digital Technology 2	Computer Technology	Control Systems 2	Analog Communication 2	Radio Communication	Security Systems 2	Electro-optics	Magnetic Control Devices	Robotics 2	Electronic Controls	
	1010	1030	1050	1060	1080	1090	1100	1110	1130	2010	2020	2030	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150	
Jeweler screwdriver	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Laser training kit																				✓				
Lead bender and crimper	✓		✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Lineman's pliers	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Logic probe	O		✓	✓				✓	✓					✓	✓				✓			✓		
Microprocessor trainer																					✓			
Modular crimping tool	✓																							
Multipurpose tool	✓	✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Needle nose pliers	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Nonmetallic sheath cable strippers		✓										✓												

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LEVEL
1 – Introductory
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THEME
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E. Robotic and Control Systems

EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME	A	A	B	B	C	C	C	C	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS			*	*								*		*
INSTRUCTIONAL FACILITIES	*	*	*	*	*	*	*	*			*	*	*	*
CREDENTIALLING OPPORTUNITIES														
EQUIPMENT	Electro-assembly 3	Electronic Servicing	Power Systems & Services	Generation/Transformation	Digital Technology 3	Digital Applications	Microprocessors	Microprocessor Interface	Analog Communication 3	Amplifiers	Data/Telemetry Systems	Motors	Robotics 3	Control Applications
	3010	3020	3030	3040	3060	3070	3080	3090	3100	3110	3130	3140	3150	3160
Jeweler screwdriver	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laser training kit													✓	
Lead bender and crimper	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lineman's pliers			✓	✓								✓		
Logic probe	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓
Microprocessor trainer					✓	✓	✓						✓	✓
Modular crimping tool		✓						✓			✓			
Multipurpose tool	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Needle nose pliers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nonmetallic sheath cable strippers			✓	✓										

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Course Parameters

LEVEL
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2 – Intermediate
3 – Advanced

THEME
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EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
THEME	A	B	B	C	C	D	D	D	E	A	A	B	B	C	C	C	D	D	D	D	E	E	E	
INSTRUCTIONAL QUALIFICATIONS												*											*	
INSTRUCTIONAL FACILITIES	*	*		*	*	*	*	*	*	*	*	*					*	*	*	*	*	*	*	
CREDENTIALLING OPPORTUNITIES																								
EQUIPMENT	Electro-assembly 1	Conversion & Distribution	Electronic Power Supply 1	Digital Technology 1	Control Systems 1	Analog Communication 1	Electronic Communication	Security Systems 1	Robotics 1	Electro-assembly 2	Electrical Servicing	Branch Circuit Wiring	Electronic Power Supply 2	Digital Technology 2	Computer Technology	Control Systems 2	Analog Communication 2	Radio Communication	Security Systems 2	Electro-optics	Magnetic Control Devices	Robotics 2	Electronic Control	
	1010	1030	1050	1060	1080	1090	1100	1110	1130	2010	2020	2030	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150	
Nut drivers, 1/4 inch and 1/2 inch	✓		✓					✓	✓	✓									✓			✓		
Oscilloscope						✓	✓				✓		✓				✓	✓				✓		
Programmable logic controller								✓											✓				✓	
Printed circuit fabrication kit	O		O	O	O	O	O	O	O	✓	O		O	O	O	O	O	O	O	O	O	O	O	
R.F. generator																	✓	✓			✓	✓	✓	
Regulated power supply		✓	✓			✓	✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Screwdrivers, assorted	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

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EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME	A	A	B	B	C	C	C	C	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS			*	*								*		*
INSTRUCTIONAL FACILITIES	*	*	*	*	*	*	*	*			*	*	*	*
CREDENTIALLING OPPORTUNITIES														
EQUIPMENT	Electro-assembly 3	Electronic Servicing	Power Systems & Services	Generation/Transformation	Digital Technology 3	Digital Applications	Microprocessors	Microprocessor Interface	Analog Communication 3	Amplifiers	Data/Telemetry Systems	Motors	Robotics 3	Control Applications
	3010	3020	3030	3040	3060	3070	3080	3090	3100	3110	3130	3140	3150	3160
Nut drivers, 1/4 inch and 1/2 inch	✓	✓										✓	✓	✓
Oscilloscope	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓
Programmable logic controller								✓					✓	✓
Printed circuit fabrication kit	✓	O			O	O			O	O			O	O
R.F. generator	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓
Regulated power supply	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Screwdrivers, assorted	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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LEVEL	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
THEME	A	B	B	C	C	D	D	D	E	A	A	B	B	C	C	C	D	D	D	D	E	E	E	
INSTRUCTIONAL QUALIFICATIONS												*											*	
INSTRUCTIONAL FACILITIES	*	*		*	*	*	*	*	*	*	*	*					*	*	*	*	*	*	*	
CREDENTIALLING OPPORTUNITIES																								
EQUIPMENT	Electro-assembly 1	Conversion & Distribution	Electronic Power Supply 1	Digital Technology 1	Control Systems 1	Analog Communication 1	Electronic Communication	Security Systems 1	Robotics 1	Electro-assembly 2	Electrical Servicing	Branch Circuit Wiring	Electronic Power Supply 2	Digital Technology 2	Computer Technology	Control Systems 2	Analog Communication 2	Radio Communication	Security Systems 2	Electro-optics	Magnetic Control Devices	Robotics 2	Electronic Controls	
	1010	1030	1050	1060	1080	1090	1100	1110	1130	2010	2020	2030	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150	
Soldering gun/pencil/station	✓	✓	✓	✓	✓	O	O	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Sound meter dB						✓	✓										✓	✓	✓					
Standard swivel head	✓	✓						✓	✓															
Tape measure	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Test light	✓	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Torx screwdriver	✓	✓					✓		✓	✓	✓								✓			✓		
Transistor tester			✓					✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓		✓		
TV dot bar generator																								
Utility knife	✓	✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Vacuum-based vise	✓		✓					✓	✓	✓	✓		✓	✓		✓	✓	✓	✓			✓		
Wattmeter													✓				✓							

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THEME
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O Optional in providing access to supportive learning environments

LEVEL	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME	A	A	B	B	C	C	C	C	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS			*	*								*		*
INSTRUCTIONAL FACILITIES	*	*	*	*	*	*	*				*	*	*	*
CREDENTIALLING OPPORTUNITIES														
EQUIPMENT	Electro-assembly 3	Electronic Servicing	Power Systems & Services	Generation/Transformation	Digital Technology 3	Digital Applications	Microprocessors	Microprocessor Interface	Analog Communication 3	Amplifiers	Data/Telemetry Systems	Motors	Robotics 3	Control Applications
	3010	3020	3030	3040	3060	3070	3080	3090	3100	3110	3130	3140	3150	3160
Soldering gun/pencil/station	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sound meter dB		✓							✓	✓				
Standard swivel head														
Tape measure	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Test light	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Torx screwdriver	✓	✓											✓	✓
Transistor tester	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
TV dot bar generator		✓												
Utility knife	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vacuum-based vise	✓	✓							✓				✓	
Wattmeter			✓	✓					✓	✓		✓		

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Course Parameters

LEVEL
1 – Introductory
2 – Intermediate
3 – Advanced

THEME
A. Fabrication and Service Principles
B. Power Systems
C. Computer Logic Systems
D. Communication Systems
E. Robotic and Control Systems

EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
THEME	A	B	B	C	C	D	D	D	E	A	A	B	B	C	C	C	D	D	D	D	E	E	E	
INSTRUCTIONAL QUALIFICATIONS												*											*	
INSTRUCTIONAL FACILITIES	*	*		*	*	*	*	*	*	*	*	*					*	*	*	*	*	*	*	
CREDENTIALLING OPPORTUNITIES																								
EQUIPMENT	Electro-assembly 1	Conversion & Distribution	Electronic Power Supply 1	Digital Technology 1	Control Systems 1	Analog Communication 1	Electronic Communication	Security Systems 1	Robotics 1	Electro-assembly 2	Electrical Servicing	Branch Circuit Wiring	Electronic Power Supply 2	Digital Technology 2	Computer Technology	Control Systems 2	Analog Communication 2	Radio Communication	Security Systems 2	Electro-optics	Magnetic Control Devices	Robotics 2	Electronic Controls	
	1010	1030	1050	1060	1080	1090	1100	1110	1130	2010	2020	2030	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150	
Wire gauge	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wire stripper	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wirecutters, 100 mm	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
200 mm	✓	✓								✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Course Parameters

LEVEL
1 – Introductory
2 – Intermediate
3 – Advanced

THEME
A. Fabrication and Service Principles
B. Power Systems
C. Computer Logic Systems
D. Communication Systems
E. Robotic and Control Systems

EQUIPMENT
✓ Recommended in order to meet course outcomes
O Optional in providing access to supportive learning environments

LEVEL	3	3	3	3	3	3	3	3	3	3	3	3	3	3
THEME	A	A	B	B	C	C	C	C	D	D	D	E	E	E
INSTRUCTIONAL QUALIFICATIONS			*	*								*		*
INSTRUCTIONAL FACILITIES	*	*	*	*	*	*	*	*			*	*	*	*
CREDENTIALLING OPPORTUNITIES														
EQUIPMENT	Electro-assembly 3	Electronic Servicing	Power Systems & Services	Generation/Transformation	Digital Technology 3	Digital Applications	Microprocessors	Microprocessor Interface	Analog Communication 3	Amplifiers	Data/Telemetry Systems	Motors	Robotics 3	Control Applications
	3010	3020	3030	3040	3060	3070	3080	3090	3100	3110	3130	3140	3150	3160
Wire gauge	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wire stripper	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wirecutters, 100 mm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
200 mm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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