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Ministry of Higher Education  
Higher Institute of Engineering in Shrouk  
Power & Electrical Engineering Program



Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
4th year	Single phase half-wave control rectifier	1	Diode rectification board WST-2301	55	404	Power Electronics lab.
4th year	Single phase full-wave control rectifier	1	Single phase control rectification WST-2302			
4th year	Three phase full-wave control rectifier	1	Three phase control rectification WST-2303			
4th year	AC control circuit by means of only SCR	1	Single phase AC control WST-2304			
4th year	AC control circuit by means of SCR and Diode	1	Three phase AC control WST-2305			
4th year	Three Phase AC Control	1	Switching by means of SCR WST-2306			
4th year	DC power Control (DC chopper circuits	1	DC power control WST-2307			
4th year	Single Phase Inverter circuit	1	Single phase inverter WST-2308			
4th year	Three Phase Inverter Circuit	1	Three phase inverter WST-2309			
4th year	Single Phase Cyclo Converter Circuit	1	Single phase cyclo converter WST-2310			

Laboratory Keeper

Ahmed Fathy

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Eng.\ Nermeen Hassan

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2nd year	cs of a DC meter movement	9	DC Voltmeter 250V	55	406	Measurement
2nd year	current meter shunt	10	AC Voltmeter500V			
2nd year	voltmeter multipliers	6	3PH Wattmeter			
2nd year	balanced bridge circuit	2	Wattmeter			
2nd year	loading effect of the voltmeter	3	AVO meter Pleas- AC/PC600V - ABO -5MiT - 1965R			
2nd year	oscilloscope operation	1	Wattmeter 150W			
2nd year	the series RC circuit	1	Resistance 8\100			
2nd year	the series RL circuit	10	Voltmeter 130/260V			
2nd year	parallel resonance	2	Voltmeter 600V			
2nd year	series resonance	3	Ammeter 2.5/5A			
3rd year	direct coupled DC voltmeter	1	Function Generator			
3rd year	signal generator	4	Test board			
		6	Regulator Resistor			

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3rd year	Generation Protection:	2	3-phase power supply (DL1013T1)	55	305	Protectiont
3rd year	Over current protection	2	Variable DC power supply (DL1013T2)			
3rd year	Earth fault protection	5	Resistive load (DL1017R)			
3rd year	Unbalanced protection	2	Inductive load (DL1017L)			
3rd year	over\under voltage protection	2	Capacitive load (DL1017C)			
3rd year	Frequency protection	3	3-phase transformer (DL1080TT)			
3rd year	Differential protection	2	3-phase Synchronous machine (DL1026A)			
		2	Direct current motor (DL1023PS)			
		2	Variable DC power supply (DL2108T01)			
		8	Power circuit breaker (DL2108T02)			
3rd year	Transmission Protection:	3	Line Capacitor (DL2108T03)			
3rd year	Over current Protection	1	Petersen Coil (DL2108T04)			
3rd year	Unbalanced load protection	5	3-Phase power supply (DL2108TAL)			

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Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
3rd year	Distance Protection	1	Differential transformer relay (DL2108T21)	55	305	Protectiont
3rd year	Differential Protection	6	Distance relay protection (DL2108T22)			
3rd year	Transformer Protection:	2	Feeder manager relay (DL2108T23)			
3rd year	Over current protection	1	Percentage biased generator differential relay (DL2108T24)			
3rd year	Unbalanced load protection	6	3-Phase current transformer (DL2109T22)			
3rd year	Differential Protection	4	Transmission line (DL7901TT)			
3rd year		4	Moving iron ammeter (1000 mA)(DL2109T1A)			
		6	Moving iron ammeter (2.5 A)(DL2109T2A5)			
		7	Moving iron voltmeter (125-250-500V) (DL2109T3PV)			

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		2	Double voltmeter (DL2109T17/2)	55	305	Protectiont
		2	Tachometer (DL2025DT)			
		3	Moving iron voltmeter (600v) (DL2109T1PV)			
3rd year		3	Power meter (DL2109T26)			
		2	Power factor meter (DL2109T27)			

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Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
2nd year	Two wdg. Transformer	1	SO3212-6B (Starter for DC motors)	55	304	Electrical Machines
2nd year	Auto transformer	1	SO3212-1P (Motor protection switch 3-pole)			
2nd year	Three phase transformer	3	SO3212-1W (Cut out switch 4-pole)			
2nd year	DC motor:	2	SO3212-2B (Rotation reversing switch)			
2nd year	Starting using starting resistance	1	SO3212-2H (Pole switch dahlander)			
2nd year	Rotational reverse	1	SO3212-2K (Pole reverse for 2 sep. wdg.)			
2nd year	speed control	1	SO3212-6E (Compensation unit 0.1/1 Kw)			
2nd year	loading	1	SO3212-5C (Stator for slip-ring motor)			
2nd year	DC generator:	2	SO3212-6T (Synchronizing panel)			
2nd year	Loading of dc generator	6	SO3636-6R (Digital control unit for servo motor)			
3rd year	Single phase two wdg. Transformer	1	SE2662-3D (DC multi-ct., compound wound mach.)			
3rd year	DC shunt motor	1	SE2662-3E (Universal motor 0.3kw)			
3rd year	Transmission Line tests	1	SE2662-3F (Repulsion motor 0.3kw)			

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3rd year	Power circuit tests	1	SE2662-3N (AC-motor bifilar winding 0.3kw)	55	304	Electrical Machines
3rd year	3-phase induction motor	1	SE2662-3P (AC-motor with starting & operating capacitor 0.3kw)			
3rd year	3-phase synchronous generator	1	SE2662-3K (3ph asynchronous motor, pole changing, dahlander 0.3 kw)			
3rd year	1-phase induction cap. Start	1	SE2662-3G (3ph asynchronous motor, 0.3kw)			
3rd year	1-phase induction bifilar	1	SE2662-3L (3ph asynchronous motor, pole changing, two separate wdg, 0.3 kw)			
		1	SE2662-3V (two phase stepping motor )			
		1	SE2662-3U (Reluctance Motor 0.3kw)			
		2	SE2662-3W (3ph multi function machine 0.3kw)			
		1	SE2662-4S (300VA Auto transformer)			
		1	SE2662-4U (300VA Toroidal Transformer)			
		1	SE2662-4Q (300VA Test Transformer)			

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Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
		2	SE2662-8B (Inductive load)	55	304	Electrical Machines
		2	SE2662-8G (Capacitive load)			
		1	SE2662-9D (Fault simulator)			
		1	SE2662-9L (Isolating Transformer)			
		1	SE2662-9M (Control unit)			
		6	SE2663-6A (Servo motor)			
		1	Long Transmission line			
		10	Medium & Short transmission line			
		2	SO3212-7D zero voltage meter			
		2	SO3212-7B Synchronoscope			
		2	SO3212-7H Double frequency meter			
		2	SO3212-7F RMS - meter			

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Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
		5	SO5127-1M Electronic wattmeter	55	304	Electrical Machines
		6	SO5127-1R Moving coil multimeter			
		4	SO5127-1H R.P.M. Indicator			
		1	LM5401(TOE7401 Pulse generator			
		1	SO3212-5F(field regulator for generators 0.1/0.3kw)			
		2	SO3212-6M(load resistor for DC generators 0.3kw)			
		1	SO3212-2D(star-delta switch)			
		1	SO3212-6R(load resistor for synchronous generator 0.3kw)			
		1	SO3212-1J(motor protection switch 0.4-0.63A)			
		2	SE2662-2W (Gear block 0.3kw)			
		1	SE2662-4J (load resistance for DC generator 0.3kw)			
		1	SE2662-6L (Rotor position indicator 0.1/0.3kw)			

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Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
		1	SE2662-4R (300VA Test transformer)	55	304	Electrical Machines
		1	SE2662-8N (Resistive load			
		3	SO5127-1L Phase angle meter			
		1	SE2662-9K (linear motor)			
		1	SE2662-9N(set of distance gauges)			

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4th year	The two position controller in the temperature process	4	DL2613 (DC power supply)	55	403	Control
4th year	The two position controller with delayed feedback in the temperature process	4	DL2614 (Voltage reference generator)			
4th year	The two position controller with elastic feedback in the temperature process	4	DL2622 (PID controller)			
4th year	P, PI and PID controls of the temperature process using the CHR method	3	DL2670 (Proportional controller)			
4th year	P, PI e PID light controls using the CHR method	1	DL2682 (Load switch)			
4th year	Level control with a two position adjuster	4	DL2684 (Power amplifier)			
4th year	Level control with PI adjuster	2	DLPP MOD (Single pole pushbutton)			
4th year	Level control with adjuster P	2	DL 1893 (computerized data acquisition system via USB)			
4th year	Control of a Generator	2	DL2674 (Summing point, 5 inputs)			

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4th year	P, PI and PID controls of the speed of a DC motor using the CHR method	2	DL2678 (Manual / Automatic switch)	55	403	Control
4th year	light controls using the CHR method	2	DL2679 (Two position controller)			
		2	DLPS-MOD (Single pole switch)			
		2	DL2671 (Integral action element			
		2	DL2673 (Summing point, 2 inputs)			
		2	DL2689 (Filling tank)			
4th year		1	DL2690 (Differential pressure transducer)			
4th year		1	DL2672 (Derivative-action element)			
4th year		1	DL2691 (Turbine flow meter)			

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4th year		1	DL2692 (Solenoid valve)	55	403	Control
4th year		1	DL2675 (Simulated controlled system)			
		1	DL2685 (Tempreture control system)			
		1	SO3713-2H (Basic unit for SIMATIC S7-300with CPU)			
		1	SO3713-3C Digital input, 16-channel at 4mmsafety sockets with simulation switches			
		1	SO3713-3D Digital output, 16 channel at 4mm safety sockets			
		1	SO3713-3E Analog input/output, 4/2-channel at 4mm safety sockets with LC display			

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Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
	PLC applications:		SO3713-3F Word input/output with coding switch and LED display	55	403	Control
	Traffic lights		SO3713-3A system connector for basic unit			
	Star-Delta circuit Dahlander circuit		SO3713-3Z Blank panel for basic unit			
	Starter control		SO3715-1B set of overlay masks for PLC universal application simulator			

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Courses	List of experiments performed in the lab.	Num.	List of Aparatuses	Area of lab.	Place of lab,	Name of lab.
	installation of PV systems		Solar module simulation model,3-fold,23v/2A	55	405	Renewable Energy
	testing the optimum alignmentof solar module		Solar module with solar altitude emulator			
	design and testing of a standalone pv system		load unit 1kOhm,500W			
	calculate the generated power of a pv system		solar charge controller 12/24V,6A			
	measure the efficiency of the grid-connected inverter		solar accumulator 12V,7AH			
	recording the characteristics of solar modules		off-grid inverter 230V,275VA			
			industrial photovoltaic inverter			
			single phase power supply with switch ,circuit breaker and earth-contact socket			
			energy monitor			
			load board 12V			
	Understanding the design and operation of small, modern wind power plants		Charge controller for small wind generator 12 v			
	Exploring physical fundamentals from wind to shaft		Synchronous generator 12v for small wind power plant with permanent magnets			

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	Learning about different wind power plant concepts		Lamp board 12v	55	405	Renewable Energy
	Setting up and operating a small wind power generator		Load unit 1k Ohm, 500w			
	Operation at varying wind forces in storage mode		Off-grid inverter 230v , 275VA			
	Energy storage		Lamp board 230v			
	System optimization		Rubber coupling sleeve, 0.3 kw			
	Setting up an off-grid system for generating 230v alternating voltage		Coupling guard 0.3 kw with LED lighting			
	Investigating hybrid systems for autonomous power supply using wind power and photovoltaic systems		Three phase power quality meter			
			5-port Ethernet switch			
			Small wind power plants			

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