

The Public Autho	rity for Ap	plied Education	and Training	
The Higher Institute of Ener	gy	HIE- T	D - QP03 – F621	
Department		Electrical Power		
Major: Electrical Generator Operation	Awardeo Training	l Certificate: Diploma	Program Duration: Two years (4 Semesters)	للتعليم التظبيق والتديب

FIRST TRAINING SEMESTER

		Electrical Circuits (1))		
Course Code		EG 101		Credits	4
Course Descriptio	4 n	Practical Hours	0	Total Hours	4
This course gives	the train	er the basic principle	s of Dire	ect Current Circui	ts. He
connection of res	tion of v	oitage, current and reserves, parallel, series	unparal	e. Then he studie leled and the star	-delta
connection. He stu	udies the	concepts of power end	ergy.		
		General Workshop			
Course Code		EG 103		Credits	3
Lecture Hours	0	Practical Hours	6	Total Hours	6
Course Descriptio	n Irse provi	ides the trainee the has	ic skills	on handling mech	anical
and electrical tools	s. Such as	measuring and planni	ng tools	, iron saw, flat file,	etc.
n addition to peel	ing and ty	ing electrical wires to	build ba	sic electrical circu	uits.
Course Title		Electrical Materials			
Course Code		EG 102		Credits	2
Lecture Hours	2 n	Practical Hours	0	Total Hours	2
t explains the nati	ure of ma	terials and their classi	fications	in terms of being	
conductive and ins	sulating r	naterials for electricity	and ser	niconductors. It al	so
deals with the use	s of differ	ent materials and example tricity	nples of	them, their prope	rties
		anony.			
Course Title		Engineering Drawing	1		
course Code	0	EG 104 Practical Hours	4	Credits Total Hours	2
Course Descriptio	n	uotiour nouro	-		-
This course prese	nts the ba	sic drawing skills of e	ngineeri	ng shapes and me	thods
underlines the iso	such as metric pla	anes by applying exerc	ises.	anu compass. A	150, IT
Course Title		Computer (1)		Credits	1
Lecture Hours	0	Practical Hours	2	Total Hours	2
n this course the s	students	will learn about compu	iter histo stical na	ory and its compoint of the course. The	nents hon
hev will learn how	/ to use N	licrosoft Windows and	Microso	oft Word, which is	the
practical part of th					
practical part of th	e course.				
	e course.	M-(h((4)			
Course Title		Mathematics (1)		Credits	4
Course Title Course Code Lecture Hours	4	Mathematics (1) MA110 Practical Hours	0	Credits Total Hours	4
Course Title Course Code Lecture Hours	4	Mathematics (1) MA110 Practical Hours	0	Credits Total Hours	4
Course Title Course Code Lecture Hours This course intr polynomials opera	4 oduces	Mathematics (1) MA110 Practical Hours arithmetic skills, inc ordinate system, and s	0 Iuding	Credits Total Hours polynomials fact	4 4 oring,
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Course Title Course Code Lecture Hours This course intr polynomials opera Course Title Course Code Lecture Hours This course introd Unctions and liste of teaching such c n a simple way ; pobbles and home	4 oduces titions, co 2 uces a do ening/spe ourse is c and to c aland in a	Mathematics (1) MA110 Practical Hours arithmetic skills, inc ordinate system, and s English Language (1 EN 126 Practical Hours main of vocabulary ite aking /writing as well enabling the trainees to reate short sentences sound comprehended	0 luding ttatistics) 2 ms, stru as evalu o expres s about language	Credits Total Hours polynomials fact i. Credits Total Hours ctural themes, lang ation. The ultimat s themselves in Et their relatives, fri ae.	4 oring, 3 4 guage e goal nglish iends,
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		Electrical Circuit (2)	Credits	5
Lecture Hours	4	Practical Hours	2	Total Hours	6
Course Description	1	1 Idolloui Houro	_	Total Houro	Ŭ
ntroduction to AC	current.	Resistance, inductive	e reactand	e, capacitive reac	tance,
mpedance. Impeda	ance cor	nnection in series, pa	rallel, and	combined. Admi	ittance
connection in ser	ies, par	allel, and combined	. Star an	d delta connecti	ion of
mpedance. Electro	omagnet	ic inductance. Active	power, re	eactive power, ap	parent
power, and power	factor.	Operations of single	e-phase 1	ransformers. Res	sonant
circuit.					
		Electrical Decederation			
Course Litie		Electrical Drawing		Cradita	2
ecture Hours	0	Practical Hours	4	Total Hours	4
Course Description	n v	Theorem in the second	-	Total Hours	-
Electrical symbols	for pov	ver station. Single lin	e diagrar	n for Power gene	eration
station (Doha We	st or E	ast or alzoor Powe	Station	, generator, gen	erator
ransformer, unit	transfor	mer, excitation trans	former, r	ectifier circuit, ir	verter
circuit, cross secti	on for s	ynchronous generate	or, (11KV	& 132KV), high v	oltage
notors (11KV, 6.6k	(V, & 3.3	KV).			
Course Title		Electrical Power Pla	ants (1)	Creatite	
ecture Hours	0	EG 153 Practical Hours	6	Total Hours	3
Course Description	0	Tactical Hours	U	Total Hours	0
ntroduction on ele	ctrical n	ower station. Internal	visit to D	oha West power s	station
is a model to view	therma	stations (steam), sea	awater sta	tion, cooling svs	tem of
eawater station, fe	eeding v	vater system, simple	circuit for	boiler structure,	boiler,
he scheme of feed	ling wate	er system, steam, cor	nbustion,	burners, fuels, se	ecurity
and measuring equ	ipment,	boiler operation from	control r	oom. Drawing for	all the
above showing the	links be	etween systems.			
		Power Electronics	(1)		
Course Title		Power Electronics	1)	Credits	3
Course Title Course Code .ecture Hours Course Description This course covers heir applications i DC motors. In addi	2 s the set n creatin tion, it c	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and 3 overs voltage regulat	1) 2 such as 3-phase re ors to driv	Credits Total Hours diode and thyriste cetifying circuits to re AC motors.	3 4 or and o drive
Course Title Course Code Lecture Hours Course Description This course covers heir applications in DC motors. In addi	2 s the set n creatin tion, it c	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and 2 overs voltage regulat	1) 2 such as 3-phase re bors to driv	Credits Total Hours diode and thyristo ectifying circuits to re AC motors.	3 4 or and o drive
Course Title Course Code Lecture Hours Course Description This course covers heir applications in DC motors. In addi Course Title	2 s the set n creatin tion, it c	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and 2 overs voltage regulate Mathematics (2)	1) 2 such as 3-phase re ors to driv	Credits Total Hours diode and thyriste cetifying circuits to re AC motors.	3 4 or and o drive
Course Title Course Code Lecture Hours Course Description This course cover heir applications in OC motors. In addi Course Title Course Title	2 s the set n creatin tion, it c	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and i overs voltage regulat Mathematics (2) MA158	2 such as 3-phase re bors to driv	Credits Total Hours diode and thyrist ctifying circuits to re AC motors. Credits	3 4 or and o drive
Course Title Course Code Lecture Hours Course Description This course cover: heir applications in DC motors. In addi Course Title Course Code Lecture Hours	2 s the sen n creatin tion, it c	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and 2 overs voltage regulat Mathematics (2) MA158 Practical Hours	2 such as B-phase re pors to driv	Credits Total Hours diode and thyrist ctifying circuits to re AC motors. Credits Total Hours	3 4 or and o drive
Course Title Course Code ecture Hours Course Description This course covers heir applications in DC motors. In addi Course Title Course Title Course Code ecture Hours This course introdu	2 s the sen creatin tion, it c 3 uces arit atives a	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and 3 overs voltage regulate Mathematics (2) MA158 Practical Hours hmetic skills, includin nd integration.	1) 2 such as 3-phase re ors to driv 0 g trigono	Credits Total Hours diode and thyrist ectifying circuits to re AC motors. Credits Total Hours metry, vectors, co	3 4 or and o drive 3 3 3 5 mplex
Course Title Course Code ecture Hours Course Description This course covers heir applications in Course Title Course Title Course Code ecture Hours This course introdu numbers and deriv	2 s the sen n creatin tion, it c 3 uces arit	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and 3 overs voltage regulate Mathematics (2) MA158 Practical Hours hmetic skills, includin nd integration.	1) 2 such as 3-phase re- fors to driv 0 g trigono	Credits Total Hours diode and thyrist ectifying circuits to re AC motors. Credits Total Hours metry, vectors, co	3 or and o drive
Course Title Course Code .ecture Hours Course Description This course covers heir applications in DC motors. In addi Course Title Course Code .ecture Hours This course introdu numbers and deriv	2 s the sen creatin tion, it c 3 uces arit atives an	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and : overs voltage regulate Mathematics (2) MA158 Practical Hours hmetic skills, includin nd integration. English Language EN 166	1) 2 such as 3-phase re ors to driv 0 g trigono (2)	Credits Total Hours diode and thyrist ectifying circuits to re AC motors. Credits Total Hours metry, vectors, co Credits	3 or and o drive
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Course Title Course Code .ecture Hours Course Description This course course course Description their applications in DC motors. In addi Course Title Course Code .ecture Hours Course Title Course Title Course Title Course Code .ecture Hours	2 s the see n creatin tion, it c 3 uces arit atives au	Power Electronics (EG 155 Practical Hours miconductor devices g 1-single phase and 3 overs voltage regulate Mathematics (2) MA158 Practical Hours hmetic skills, includin nd integration. English Language EN 166 Practical Hours	1) 2 such as 3-phase re- pors to driv 0 g trigono (2) 0	Credits Total Hours diode and thyrist actifying circuits to re AC motors. Credits Total Hours metry, vectors, co Credits Total Hours	3 4 or and o drive 3 3 3 3 5 mplex 2 3
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THIRD TRAINING SEMESTER

SECOND TRAINING SEMESTER



The Public Autho	rity for Ap	plied Education	and Training	
The Higher Institute of Ene	The Higher Institute of Energy HIE- TD - QP03 – F621			
Department		Ele	ctrical Power	تر المشالحامة
Major: Electrical Generator Operation	Awarded Training	l Certificate: Diploma	Program Duration: Two years (4 Semesters)	

Course Title		Electrical Machines (1	1)				
Course Code		EG 201		Credits	4		
Lecture Hours	2	Practical Hours	4	Total Hours	6		
Course Description							
This course examines the basic theory, characteristics, construction operation and application of rotating electrical machines. It includes the study of direct DC							
machine with separated excitation DC Machine with series parallel and combined							
long, short, and combined DC Machine. Applications on DC generators and motors							
of power plants.				5			
Course Title Electrical Power Plants (2)							
Course Code		EG 203		Credits	3		
Lecture Hours	0	Practical Hours	6	Total Hours	6		
Course Description							
Field visit to Doha	Vest Po	wer Station to review: P	ower S	imulator, steam tur	bine,		
steam turbine auxil	aries', o	chlorine station, ECR ele	ectrical	control room, Elect	rical		
mimic boards (swite	hing ro	oom), circuit breakers ar	nd trans	sformers.			
Course Title		English Language (3)				
Course Code		EN 222		Credits	2		
Lecture Hours	1	Practical Hours	2	Total Hours	3		
Course Title		Protection (1)					
Course Code		EG 211		Credits	4		
Lecture Hours	3	Practical Hours	2	Total Hours	5		
Introduction to the	e con	cepts of power syste	em pro	otection that incl	udes		
understanding the	orincipl	e of operation of protec	tion sy	stem components	such		
as fuses, relays,	circuit	breakers, and measu	iring t	ransformers and	their		
applications and de	signing	j protection systems to	or trans	mission lines, read	tors,		
transformers, and d	Istribut	ion rails.					
Course Title		High Voltage					
Course Title		EC 206		Crodite			
Looture Houre	14	Brootical Hours		Total Hours	4		
Course Description	4	Flactical fiburs	U	Total Hours	4		
Course Description		on notwork Dotontia	l árona	formers and Cu			
bearing with high	tensi	on network, Potential	f Dete	ntial transformers	rrent		
Current transforme	re Ine	ulator material proper	tios (o	il as riaid mate	anu rial)		
Collanse limits Cur	ront cire	cuit breakers Closing ar	nd oner	ing the circuit brea	kore		
timing of closing, a	nd oper	hing the circuit breakers	, Isolate	ors and earth switcl	nes.		
Course Title		Power Electronics (2)					
Course Code		EG 205		Credits	4		
Lecture Hours	1	Practical Hours	2	Total Hours	3		
Course Description							
This course covers	voltag	e regulators, single pha	ase and	three phase inver	ters.		
DC-DC choppers an	d the c	vcloconverter.		-			
· · · · · · · · · · · · · · · · · · ·		-					

FOURTH TRAINING SEMESTER

Course Title		Electrical Machines (2)			
Course Code		EG 251		Credits	4
Lecture Hours	2	Practical Hours	4	Total Hours	6
Course Description					

This course covers single and three phase transformers, single phase motors.3phase induction motor and 3-phase synchronous machine.

Course Title		Electrical Power Plants	(3)		
Course Code		EG 253		Credits	3
Lecture Hours	0	Practical Hours	6	Total Hours	6
This course covers train load experiment, genera properties experiment, loading. Study the elect simulator, the relation b and turbine load. Visit I in the ECR electrical co	ning ator sync trical betwo Doha ontro	on the power simulator s with short circuit experin chronizing generator with I protection equipment av een the voltage, active ar a West Power Station to v I room.	such nent, the g vailab nd rea iew E	as generator with n generator with load grid experiment and ole in the power active power, load a Electrical mimic boa	o- ngle rds
Course Title		Diesel Generator		One dite	
Locture Hours	2	EG 257 Practical Hours	4	Credits Total Hours	4
Course Description	2	Flactical Hours	4	Total Hours	
Main use of electrical ge disadvantages. Main me to type of cycles and sy MW injection. Time bas	ener echa ysten ed in	rators, applications, and lance with the fundament anical components of elec ns. Fuel, oil lubrication, in njection.	ocatio crica njecti	ons. Advantages an I generator. In addit ion systems. PE and	d ion
Course Title		Power System Stability			
Course Code		EG 263		Credits	3
Lecture Hours	3	Practical Hours	0	Total Hours	3
ngular motion (angula nd moment of inertia, <i>I</i>	ar ve	elocity, angular accelerati	5.00		y,
equation, Transfer rea synchronous generator and its relation to stabil	Angu actan r con lity, l	ular momentum, Kinetic en nce, Power relations, S nected to infinite bus, Syn Effect of excitation and it	on, r hergy teady hchro s rela	otational angle), To v, Inertia constant, S v state stability of pnizing power coeffi- ntion to stability.	rque wing the cient
equation, Transfer rea synchronous generator and its relation to stabil Course Title	Angu actan r con lity, l	Ilar momentum, Kinetic el rce, Power relations, S nected to infinite bus, Syr Effect of excitation and it Protection (2)	ion, r nergy teady nchro s rela	otational angle), To v, Inertia constant, S v state stability of nizing power coeffi- tion to stability.	rque wing the cient
quation, Transfer rea ynchronous generator nd its relation to stabil ourse Title ourse Code acture Hours ourse Description ocus on designing tra	Angu actan r con lity, l 2 ansm	Ilar momentum, Kinetic el ice, Power relations, S nected to infinite bus, Syn Effect of excitation and it Protection (2) EG 261 Practical Hours hission and distribution p	on, r hergy teady hchro s rela	viational angle), To v, Inertia constant, S v state stability of nizing power coeffi- tion to stability. Credits Total Hours Ction schemes. This	rque wing the cient
equation, Transfer rea synchronous generator and its relation to stabil Course Title Course Code Lecture Hours Course Description Focus on designing tra- include protection ba transmission lines, tran- settings of the feeder a metering transformers f Course Title	Angu actan r con lity, I 2 2 ansm asics nsfor and t for c	Ilar momentum, Kinetic er noe, Power relations, Sy Effect of excitation and it Protection (2) EG 261 Practical Hours hission and distribution p s, relay design, protec rmers, and distribution ra ransformer protection s surrent and voltage for the Safety Regulation	on, r hergy teady hchro s rela 2 orotection ills. In chem	orational angle), To r, Inertia constant, S r state stability of nizing power coeffi- tition to stability. Credits Total Hours Ction schemes. This plans for generan n addition, Focus oo les, and the selectior rotection schemes.	a will a will a will tors, a the on of
equation, Transfer rea synchronous generator and its relation to stabil Course Title Course Code Lecture Hours Course Description Focus on designing tra include protection ba reansmission lines, trans settings of the feeder a metering transformers f Course Title Course Code	Angu actan r con lity, I 2 ansm asics sfor and t for c	Ilar momentum, Kinetic er noe, Power relations, S nected to infnite bus, Syn Effect of excitation and it Protection (2) EG 261 Practical Hours hission and distribution p s, relay design, protec mers, and distribution ra transformer protection s turrent and voltage for the Safety Regulation EG 265	on, r, r nergy teady nchro s rela 2 oroteo tion tils. Ir chem ese p	Credits Credits Credits Credits Credits Credits Credits Credits Credits Credits Credits Credits Credits Credits Credits Credits	rque the cient 3 3 4 4 : will tors, n the on of
uation, Transfer ree machronous generator dits relation to stabiliourse Title ourse Code acture Hours ourse Description ourse Description ansmission lines, tran strings of the feeder a etering transformers f ourse Title ourse Code ourse Code ourse Description	Anguactan r con lity, I 2 ansm asics shofor and t for c 2 2	Ilar momentum, Kinetic el ce, Power relations, S nected to infinite bus, Syn Effect of excitation and it Protection (2) EG 261 Practical Hours nission and distribution pa transformer protection so turnent and voltage for the Safety Regulation EG 265 Practical Hours	on, r, r hergy teady hchro s rela 2 0 rotec tion iils. Ir chem ese p 0	Credits Credits Credits Credits Addition, Focus of Solution, Schemes. Credits	s will
equation, Transfer rea synchronous generator and its relation to stabil Course Title Course Code Lecture Hours Course Description Focus on designing tra- transmission lines, tran- settings of the feeder a metering transformers f Course Title Course Code Lecture Hours Course Description Safety and security regi to work site, Installatio Following correct rules materials damping the work between control discharge and evacuat Using safety clothes. Id site; identify the colures air pipes.	Anguactan c con lity, I 2 ansmasics nsfor and t for c 2 ulatii on ar i n el spa I teo tion dentif	Ilar momentum, Kinetic er ce, Power relations, Sy nected to infinite bus, Syr Effect of excitation and it Protection (2) EG 261 Practical Hours nission and distribution p c, relay design, protec mers, and distribution ra transformer protection so urrent and voltage for the Safety Regulation EG 265 Practical Hours Ons, training on using sa d detaching for control lectrically and mechanica rks when dealing with ga pipes from dangerous g fy the different places for different lines as gas, air,	on, r, r mergy teady nchro s rela 2 oroteo tion 2 oroteo tion ills. In chem ese p 0 fety t and allly is as. D fety t r mea chlor r mea chlor	Credits Credit	atted atted
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Course Description Site Training in the field of Training program.



The Public Autho	The Public Authority for Applied Education and Training					
The Higher Institute of Ener	rgy	HIE- T	D - QP03 – F621			
Department		Ele	ctrical Power			
Major: Electrical Generator Operation	Awarded Training	l Certificate: Diploma	Program Duration: Two years (4 Semesters)			

