UNDERGRADUATE PROGRAM

EDUCATION PROGRAM: Industrial Electricity
MAJOR: Electrical and Electronics Engineering Technology
ENGLISH NAME: Electrical Electronics Engineering Technology
MAJORCODE: 52510301
EDUCATION LEVEL: Undergraduate
TYPE OF EDUCATION: Full time

YEAR 2015

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UNDERGRADUATE PROGRAM

Education Program: IndustrialElectricity

Education Level: Undergraduate

Major: Electrical and Electronics Engineering Technology

Type of Education: Full time

(Decision No……date….on………)

1. Duration of Study: 4 years

2. Enrollment Subject: High-school Graduates

3. Grading System, Curriculum and Graduation Requirements

Grading System: 10

Curriculum: Based on regualtions of Decision No 43/2007/BGDDT

Graduation Requirements:

*General condition***:** Based on regualtions of Decision No 43/2007/BGDDT

*Condition of speciality***:** None

4. The objectives and Expected Learning Outcomes

Goals

Training human resources, improving intelectual standards of the people, fostering talents; researching science and technology for new knowledge & product creation to meet the requirements of development of economics& society,to ensure national defense, security and international integration.

Training learners havepolitical quality, morality, knowledge, professional practice skills, research capacity, development of scientific applications and technologies that are commensurate with the level of training. They have a healthy body,creative capability and professional responsibility, adaptability to the work environment; spirit of serving the people.

Training Engineers of Electrical and Electronics Engineering Technology (EEET) major have basic scientific knowledge, fundamental knowledge, specialised knowledge of electricaland electronics major, analysis capability, solve problem skills andsolutions assessment, ability contribution, design, operation of electrical and electronics systems, communication skillsandwork in a team, professional attitudes, meet the development requirements of major and society. After graduation, the graduates are able to work in companies, factories, industrial manufactories or operation of electrical and electronics systems andEEET education organizations.

Objectives

PO1: form a stable foundation of general knowledge, foundation and core knowledge and specialised/ major knowledge of Electrical and Electronics Engineering Technology.

PO2: use proficiently self-studying skillsmajor, problem solving skills and professional skills in the major of Electrical and Electronics Engineering Technology.

PO3: communicate effectively, organize, lead and conduct teamwork.

PO4: apply well competences of brainstorming, designing, deploying, and operating the systems of Power Supply System, Power saving, Electric Drive, to improvement or creation of electrical and electronic products.

PO5: be able to grasp society's needs, carry out social responsibilities, respect work ethics and be aware of life-long learning

Program outcomes

A. General knowledge, fundamental and specialised knowledge of electrical and electronics major:
ELO 1. Apply fundamental knowledge of mathematics, natural science and social science; achieve more specialized knowledge and study further at higher levels.
ELO 2. Construct the basis of core technological knowledge about Power System and Automatic Electric Drive.
ELO 3. Create the combination of advanced specialized knowledge in the fields of Power System, Power Saving and Automatic Electric Drive.

B. Specialised and professional skills in electrical and electronics major:
ELO 4. Analyze and argue for technical matters; brainstorm systematically, and solve electrical and electronic matters.
ELO 5. Examine and experiment electrical and electronic matters.
ELO 6. Implement proficiently professional skills in the electrical and electronics field.

C. Communication skills and ability to work in multidiscipline areas:
ELO 7. Work independently; lead and work in a team.
ELO 8. Communicate effectively in various methods: written communication, electronics communication, graphics and presentation.
ELO 9. Use English in communication.
ELO 10. Realize the roles and responsibility of engineers and social circumstance which has impacts on the technical activities of electrical and electronic industry.
ELO 11. Comprehend business culture, work ethics principles, and working style of industrial organizations.
ELO 12. Be aware of life-long learning.

D. Skills to take shape of ideas, design, deploying and operate industrial electrical system
ELO 13. Take shapes of ideas, set up requirements, determine functions and elements of the Power System, Power Supply System, Renewable Energy, Power Saving, Electric Machines, and Automatic Electric Drive.
ELO 14. Design required elements of the Power System, Power Supply System, Renewable Energy, Power Saving, Electric Machines, and Automatic Electric Drive.
ELO 15. Deploy hardware and software for elements of small Power System, Power Supply System integrated with recycled power with consideration to Power Saving and Automatic Electric Drive.
ELO 16. Operate Power System, Power Supply System, and Automatic Electric Drive systems; manage the operation of the electrical and electronic systems.

5. Blocks of knowledge in the whole program:150 credits(without Physical Educationand National Defense Education knowledge)

6. Block of knowledge

Name	Credits		
	Total	Compulsion	Elective
General knowledge	**56**	**56**	
Political Education	12	12	0
Social Science	6	0	6
English	9	9	0
Mathematics and Natural Sciences	23	18	5
Informatic	3	3	0

Introduction to Electrical & Electronics Engineering Technology	3	3	0	
Professional knowledge	**94**			
Broad knowledge for the group of majors and deep knowledge for the major	39	39	0	
Specialised knowledge	25	19	6	
Practice and experiment	20	20	0	
Industrical practice courses				
Graduation Thesis	**10**	**10**	**0**	

7. Programcontent(*Name andCredits of compulsory courses*)

A – Compulsory courses

7.1. General knowledge: **56**

No.	Code	Course name	Credits	Note
I.		**Political Education andGeneral Laws**	**12**	
1.1	LLCT150105	Principles of Marxist-Leninism	5	
1.2	LLCT120314	Ho Chi Minh's Ideology	2	
1.3	LLCT230214	Vietnamese Communist Party Policy of Revolution	3	
1.4	GELA220405	General Laws	2	
II.		**Introduction to Electrical & Electronics Engineering Technology**	**3**	
2.1	IEET130145	Introduction to Electrical & Electronics Engineering Technology	2+1	1 Practice
III.		**Informatic**	**3**	
3.1	VBPR131085	Visual basic program	2+1	1 lab
IV.		**Foreign Language**	**9**	
4.1	ENGL130137	English 1	3	
4.2	ENGL230237	English2	3	
4.3	ENGL330337	English 3	3	
V.		**Mathematics and Natural Sciences**	**23**	
5.1	MATH130101	Advanced Mathematics1	3	
5.2	MATH130201	Advanced Mathematics2	3	
5.3	MATH130301	Advanced Mathematics3	3	
5.4	MATH130401	Applied Probability	3	
5.5	PHYS120102	General Physics A1	3	
5.6	PHYS120202	General PhysicsA2	2+1	1 lab
5.7	MATH121201	Complex Functions and Laplace Transforms	2	
5.8	GCHE130103	General Chemistry A1	3	
VI.		**Social Science (choose 03 among the 06 courses)**	**6**	
6.1	GEEC220105	General Economics	2	
6.2		Creativity Methodologies	2	
6.3	PLSK320605	Planning Skill	2	
6.4	INMA220305	Introduction to Management	2	
6.5	INSO321005	Introduction to Sociology	2	
6.6	IQMA220205	Introduction to Quality Management	2	

6.7	INLO220405	Introduction to Logics	2	
6.8	PRSK320705	Presentation skills	2	
6.9	SYTH220505	Systems Thinking	2	
6.10	ULTE121105	University learning methods	2	
6.11	IVNC320905	Vietnamese culture	2	
6.12	TDTS320805	Writing Scientific and Technical Documents	2	
VII.		**Physical Education**	**5**	
	PHED110513	1. Physical Education 1	1	
	PHED110613	2. Physical Education 2	1	
	PHED130715	3. Physical Education 3 (compulsory)	3	
VIII.		**National Defense Education**	165 Period	

7.2. *Professional education knowledge*

7.2.1. Broad knowledge for the group of majorsand deep knowledge for the major: 39

No.	Code	Course name	Credits	Note
I		**Broad knowledge for the group of majors**	**25**	
1.	ELCI140144	Electrical Circuits	4	
2.	BAEL340662	Basic Electronics	4	
3.	DIGI330163	Digital System	3	
4.	EMIN330244	Electrical Measurement and Instruments	3	
5.	POEL330262	Power Electronics	3	
6.	ACSY330346	Automatic Control Systems	3	
7.	MICR330363	Microprocessor	3	
8.	ELSA320245	Electrical Safety	2	
II		**Deep knowledge for the major**	**14**	
1.	ELMA240344	Electric Machines	4	
2.	ELIN320444	Electricity Instrument	2	
3.	ELPS330345	Power Supply System	3	
4.	ELDR320545	Automatic Electric Drive	3	
5.	EEMA220544	Electronic and Electrical Materials	2	

7.2.2.aSpecialized Courses: 25(theory and experiment courses)

No.	Code	Course name	Credits	Note
I		**Specialised knowledge - Compulsory**	**19**	
1.	PLCS 330846	Programmable Logic Controller	3	
2.	ECAD320645	CAD for Electrical Engineering	2	
3.	POSY330445	Power System	3	
4.	SCDA 420946	Data Acquisition System and SCADA	2	
5.	REPR320745	Relay Protection and Automation	2	
6.	PSAS430845	Power System Analysis and Simulation	3	
7.	PRTO412445	Professional Development Training	1	
8.	PRED410945	Project on Electric Drive	1	
9.	PRES411045	Project on Power Supply System	1	
10.	PLCR 311146	Project on Programmable Logic Controller	1	
II		**Specialised knowledge - Elective**	**6**	
		Application Software		
1.	MSET321145	MATLAB/SIMULINK for Power	2	

No.	Code	Course name	Credits	Note
		System		
2.	ACAD321245	Advanced CAD for Electrical Engineering	2	
		Calculation, Selection and Control of Electrical Devices		
3.	LTRI321345	Lighting Techniques in Residential and Industrial	2	
4.	SSSY321445	Building Access Control and Security System	2	
5.	ELCD321545	Electrical Control Devices	2	
6.	SPMA32CD44	Special Electrical Machine	2	
7.	EMCE321744	Calculation of Electrical Machine	2	
8.	PLSUE40445	Power Station and Power Plant	2	
		New Energy Resource and Power Saving		
9.	RENE321745	Renewable Energy	2	
10.	ENAE321845	Energy Audit and Efficiency	2	
11.	PQE320755	Power Quality in Power System	2	
12.	BMSY322045	Building Management System	2	
13.	SSAS322045	ATS and Power Backup System	2	
		Technical management	**2**	
14.	IDMA322245	Industrial Management	2	
15.	PJMA 322345	Project Management	2	
		Others course		

7.2.2.b Specialized Courses: 20 (courses in workshop, industrial internship)

No.	Code	Course name	Credits	Note
1.	ELPR320762	Electronics in Practice	2	
2.	ELPR210644	Electricity in Practice	1	
3.	PMEM310844	Electrical Measurement in Practice	1	
4.	PRDI320263	Digital System in Practice	2	
5.	PRMI 320463	Microprocessor in Practice	2	
6.	PREM221244	Electric Machine in Practice	2	
7.	POEP320262	Power Electronics in Practice	2	
8.	PPLC321346	Programmable Logic Controller in Practice	2	
9.	PRES322545	Power Supply System in Practice	2	
10.	ELEC322645	Electric Drive in Practice	2	
11.	ININ422745	Industrial Internship	2	

7.2.3. Graduation Thesis (*orgraduation examination):* 10

No.	Code	Course name	Credits	Note
1	FIPR 402845	**Graduation Thesis**	10	

8. Curriculum Distribution (*Expectation, andonlymain semesters: 1, 2, ..., 8/9*)

Semester 1: (Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	IEET130145	Introduction to Electrical & Electronics Engineering Technology	2+1	
2	MATH130101	Advanced Mathematics 1	3	
3	ENGL130137	English 1	3	Pass theentrance examination
4	VBPR131085	Visual basic program	2+1	
5	GCHE130103	General Chemistry A1	3	
6	PHYS120102	General Physics A1	3	
7	PHED110513	Physical Education 1	1	
8		National Defense Education	165 Period	
	Total		**18**	

Semester 2: (Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	ENGL230237	English 2	3	ENGL130137
2	MATH130201	Advanced Mathematics 2	3	
3	MATH121201	Complex Functions and Laplace Transforms	2	
4	MATH130401	Applied Probability	3	
5	PHYS120202	General Physics A2	2	
6	PHYS110203	General Physicsin Practice	1	
7	PHED110613	Physical Education 2	1	
8	EEMA220544	Electronic and Electrical Materials	2	
9	ELCI140144	Electrical Circuits	4	
	Total		**20**	

Semester 3: (Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	LLCT150105	Principles of Marxist-Leninism	5	
2	MATH130301	Advanced Mathematics 3	3	
3	ENGL330337	English 3	3	ENGL230237
4	ELMA 240344	Electric Machines	4	IEET130145
5	ELIN320444	Electricity Instrument	2	IEET130145
6	ELPR210644	Electricity in Practice	1	IEET130145
7	ELSA320245	Electrical Safety	2	ELCI140144
8	PHED130715	Physical Education 3	3	
	Total		**20**	

Semester 4: (Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	BAEL340662	Basic Electronics	4	ELCI140144
2	ELPS330345	Power Supply System	3	ELSA320245
3	PREM221244	Electric Machine in Practice	2	ELMA340344
4	ACSY330346	Automatic Control Systems	3	
5	EMIN330244	Electrical Measurement and Instruments	3	ELCI140144
6	GELA220405	General Laws	2	
7	LLCT230214	Vietnamese Communist Party Policy of Revolution	3	
	Total		**20**	

Semester 5:(Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	DIGI330163	Digital System	3	ELCI140144
2	MICR330363	Microprocessor	3	BAEL340662
3	LLCT120314	Ho Chi Minh's Ideology	2	
4	POEL330262	Power Electronics	3	BAEL340662
5	ELDR320545	Automatic Electric Drive	3	PREM320744
6	POSY330445	Power System	3	ELCI140144
7	PRES411045	Project on Power Supply System	1	ELPS330345
8	ELPR320762	Electronics in Practice	2	BAEL340662
9	PMEN310844	Electrical Measurement in Practice	1	EMIN330244
	Total		**21**	

Semester 6: (Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	PLCS330846	Programmable Logic Controller	3	ACSY330346
2	PRDI320263	Digital System in Practice	2	DIGI330163
3	POEP320262	Power Electronics in Practice	2	POEL330262
4	PRES322545	Power Supply System in Practice	2	ELPS330345
5	PSAS430845	Power System Analysis and Simulation	3	POSY330445
6	PRED410945	Project on Electric Drive	1	ELDR320545
7	ECAD320645	CAD for Electrical Engineering	2	ELPS330345 POSY330445
		Choose 06 among the elective coursesSocial Science	6	
8	*INMA220305*	Introduction to Management	*2*	
9	*INSO321005*	Introduction to Sociology	*2*	
10	*IQMA220205*	Introduction to Quality Management	*2*	
11	*GEEC220105*	General Economics	*2*	
12		Creativity Methodologies	*2*	
13	*PLSK320605*	Planning Skill	*2*	
14	*INLO220405*	Introduction to Logics	*2*	
15	*IVNC320905*	Vietnamese culture	*2*	
16	*PRSK320705*	Presentation skills	*2*	
17	*SYTH220505*	Systems Thinking	*2*	
18	*TDTS320805*	Writing Scientific and Technical	*2*	

No.	Code	Course name	Credits	Compulsory code(if any)
		Documents		
19	*ULTE121105*	*University learning methods*	*2*	
	Total		**21**	

Semester 7: (Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	SCDA420946	Data Acquisition System and SCADA	2	PMEM310844 PLCS 330846
2	REPR320745	Relay Protection and Automation	2	POSY330445
3	ELEC322645	Electric Drive in Practice	2	ELDR320545
4	PLCR311146	Project on Programmable Logic	1	PLCS 330846
5	PRMI 320463	Microprocessor in Practice	2	MICR330363
6	PPLC321346	Programmable Logic Controller in Practice	2	PLCS 330846
		Choose 06 among the courses	6	…
		Application Software		
1.	MSET321145	MATLAB/SIMULINK for Power System	2	ECAD320645
2.	ACAD321245	Advanced CAD for Electrical Engineering	2	ECAD320645
		Calculation, Selection and Control of Electrical Devices		
3.	LTRI321345	Lighting Techniques in Residential and Industrial	2	ELPS330345
4.	SSSY321445	Building Access Control and Security System	2	ELPS330345
5.	ELCD321545	Electrical Control Devices	2	ELIN320444
6.	EMCE321744	Calculation of Electrical Machine	2	ELMA340344
7.	SPMA32CD44	Special Electrical Machine		ELMA340344
8.	PLSUE40445	Power Station and Power Plant	2	POSY330445
		New Energy Resource and Power Saving		
9.	RENE321745	Renewable Energy	2	ELPS330345
10.	ENAE321845	Energy Audit and Efficiency	2	ELPS330345
11.	PQE320755	Power Quality in Power System	2	ELPS330345
12.	BMSY322045	Building Management System	2	ELPS330345
13.	SSAS322045	ATS and Power Backup System	2	ELPS330345
		Technical management	**2**	
14.	INMA322245	Industrial Management	2	
15.	PJMA322345	Project Management	2	
		Others course		
	Total		**17**	

Semester 8: (Record both the mandatory and elective courses)

No.	Code	Course name	Credits	Compulsory code(if any)
1	PRTO412445	Professional Development Training	1	Attain more than 110 credits
2	ININ422745	Industrial Internship	2	Attain more than 110

				credits
3	FIPR 4102845	**Graduation Thesis**	10	Attain more than 110 credits and cumulative grade point is published on each course
	Total		**13**	

9. Brief description of contents andblock of knowledge

1. **Advanced Mathematics 1**   **Credits: 3**

Distribution of learning time: 3 (3/0/6)
Prerequisites: None
Former subjects of condition: None

Summaries of course: This course helps students review the general and advanced mathematical knowledge: Cardinality of a set: rational numbers, real numbers, complex numbers. Limit: function, limit of a function, continuous function. Differential calculus: derivative, differential, Taylor-Maclaurin expansion, the survey on function, curve in polar coordinates. Calculus of single variable: volume fraction uncertainty, definite integrals, generalized integrals. Chain: Chain number, string functions, power series, Taylor-Maclaurin sequence, Fourier series, Fourier expansion, trigonometric series.

2. **Advanced Mathematics 2**   **Credit: 3**
Distribution of learning time: 3 (3/0/6)
Prerequisites: None
Former subjects of condition: **Advanced Mathematics 1**

Summaries of course: This course provides the learnerwith contents: Matrix-determinant: the matrix, the form of matrix, inverse matrix, determinants, matrix classes. System of Linear Equations: linear systems, Cramer rule, Gauss method, homogeneous system. Space Vector: Space Vector, subspace, linear independence, linear dependence, basis, dimension, Euclidean space. Diagonal matrix-quadratic form: eigenvalues, eigenvectors, private space, diagonal matrix, quadratic form, canonical form, the surface level 2. Differential calculus of function of several variables: function of several variables, derivative, differential, extreme of function of several variables, calculus applications in geometry in space.

3. **Advanced Mathematics 3**   **Credit: 3**
Distribution of learning time: 3 (3/0/6)
Prerequisites: None
Former subjects of condition: **Advanced Mathematics 1**

Summaries of course: This course provides the learner with contents: multiple integral: double integral, application for calculated area of flat domain, calculate the surface area, object volume, tripleintegrals, applications for the object volume. Line integral: lineintegral type one and applications,line integral type one and applications, Green formula, condition of line integral does not depend on integrating line. Surface integral: Integral surface type one, type two, the Ostrogratski formula, vector field, flux and divergence, vectorformat of Ostrogratski formula, Stokes formula, circulation and vortex vector, vector format of Stokes formula.

4. **Applied Probability**   **Credit: 3**
Distribution of learning time: 3 (3/0/6)
Prerequisites: None

Former subjects of condition: **Advanced Mathematics 1 +2**

Summaries of course: This course provides the learner with contents: the basic concepts of probability theory: Cam count, consortium, conformable, permutations, Newton's binomial, trials, events , probability, conditional probability. Random variables: random variables, probability distribution laws of random variables, characteristics of random variables: expectation, variance, Mod, Med. The probability distributions areusual to use: binomial distribution, Poisson distribution, normal distribution, Student distribution. Sample theory: crowd concept, random sample, statistics in sample, sampling method, sample characteristics, distribution of sample characteristics, how to calculate the pattern characteristic. Estimation theory: estimation concept, estimation of point, estimation of space. Statistical hypothesis testing: the fallacy of type I and II, the significance of accreditation, accreditation on average, the rate of testing, testing on the equality of 2 medium, 2 ratio, tests of independence. Correlation and regression: 2-dimensional random variables, correlation coefficient, correlation coefficient of samples, experimental correlation tables, experimental regression line.

5. **Complex Functions and Laplace Transforms**   **Credit: 2**
   Distribution of learning time: 2 (2/0/4)
   Prerequisites: None
   Former subjects of condition: Advanced Mathematics 1 +2

   Summaries of course: This course provides the learnerwith contents: Complex numbers: a complex number, the form of representation of complex numbers, complex number calculations, complex plane, the concept of closegroup, open group, blocked group, ...in complex plane. ComplexFunction: The complexfunction, real and imaginary parts of a complex function, image transformationsby the complex function, limit, continuity, theprimarybasicfunction. The derivative complex function: derivative complex function, geometric mean, Cauchy–Riemann conditions, functional analysis,the relationship betweenanalyticfunctionsandharmonicfunctions. Integral of complexfunction: line integral of complex function, Cauchyintegral, higher order derivative of analytic function. Serie ofcomplex function: complexpower series, Taylor series, Maclaurinseries, chainLaurent series, unusualpoint ofanalytic function.Surplustheoryandapplications: definitionandcalculationof surplus, the surplusapplication to calculate line integral of complex function, the surplusapplicationto integratetrigonometric functions, applicationssurplus to calculate generalizedintegrals. Laplace transformandapplications: the originalfunction, imagefunction andLaplacetransform, inverseLaplacetransform, properties of theLaplacetransform, apply the Laplacetransformto solvedifferential equations, differentialequations,someof integral equations.

6. **General Physics A1**   **Credit: 3**
   Distribution of learning time: 3(2/1/4)
   Prerequisites: None
   Former subjects of condition: None

   *Summaries of course:*This course provides the learnerwith contents:the mechanics: point dynamics, thelaw of conservation, solidmotion. Thermodynamics: kineticmoleculartheory, principles of ThermodynamicsI, principles of ThermodynamicsII. Electricity and magnetism: electric field, magnetic, variability of electrical magnetic field.

7. **General Physics A2**   **Credit: 3**
   Distribution of learning time: 3(2/1/4)
   Prerequisites: None
   Former subjects of condition: None

*Summaries of course:*This course provides the learner with knowledge: Einstein's theory of relativity: special theory of relativity, general theory of relativity. Optics:waveoptics and interference, diffractionof light, quantum opticsand the photovoltaicphenomena, Compton. Quantum physics: deBroglieandHeisenberg hypothesis, Schrödinger equationandthe motion of theparticles, thequantizationofphysical quantities.

The courseis basedonpracticesto help learnershavea more intuitiveviewofthe phenomenahas been learnedintheoryincludeexercises: theory ofcalculationerrors, determinemoment of inertia of thewheelandthebearingfriction, determineacceleration of gravity bythe physicalpendulum, determinethe ratio ofthe heat capacityof the gasmolecules, survey RLC resonant circuit – measure RLC by electronic oscilloscope, survey diodeandtransistorcharacteristics, determineown electric charge bymagnetronmethod, survey Laserdiffractionthroughthe flat gratings, determinewavelengths of laser, surveyradiationheat-phenomenonStefan-Boltzmanlawexperience, surveythe phenomenon ofthermal radiation -root ofStefan- Boltzman law, surveyexternalphotoelectricphenomenon - determinePlanckconstant.

8. **English 1**   **Credit: 3**
Distribution of learning time: 3(3:0:6)
Prerequisites: Passing entrance exam

Summaries of course: This course is designed for semester I of the first academic year, to review all knowledge and language skills which students learned at the high schools. In addition, it also tends to raise students' communicative ability in English. The course's goal helps students improve listening skill & speaking skill which aren't appreciated highly at high schools. The course makes students be aware of the role of English for their future jobs and society. And, It creates the sense of initialtive in self-education & building strategy to learn English well.

9. **English 2**   **Credit: 3**
Distribution of learning time: 3(3:0:6)
Prerequisites: English 1

Summaries of course: This course is designed for semester II of the first academic year, to upgrade English skills for students who completed Advanced English 1. After cousrse, the students can apply their language knowledge to read, to listen & to speak about simple contents in general communication such as family, univerisy, friend, hobby, study.... Moreover, through instructing students how to use the learning documents and English teaching websites; tests and teacher's evaluations in a class, the student's self education raises appreciatively.

10. **English 3**   **Credit: 3**
Distribution of learning time: 3(3:0:6)
Prerequisites: English 2

Summaries of course: This course is designed for semester I of the second academic year, to upgrade English competence for students who completed Advanced English 2. After course, students can read, listen to and speak in general situations well. They can represents something before class or give questions and argue about life, family, study... Besides, students are equipped knowledge & basic skills about TOEIC test to prepare the final test with the form as same as TOEIC. Ihe students are expected to get about TOEIC 400 atfer this course.

11. **Introduction to Electrical & Electronics Engineering Technology**   **Credit: 3**
Distribution of learning time: 2/1/4.6
Prerequisites: None

*Summaries of course:*This course provides the learnerwith knowledgeofexpected learning outcomes forElectrical & Electronics Engineering Technology, framework program andeducation programofElectrical & Electronics Engineering Technology, roles, positionsandmissionsof engineer in Electrical & Electronics Engineering Technologyandtrainingfields and technology have been and will be appliedElectrical & Electronics Engineering Technology.

12. Electrical Circuits   Credit: 4
Distribution of learning time: 4/0/8
Prerequisites: None
Former subjects of condition: Advanced Mathematics & General Physics

*Summaries of course:*This course provides the learnerwith basic contentsaboutcircuit analysis, establishedcircuitunderimpactsine, circuit analysismethods, circuittheorems, two port network, circuit analysis in time-domain, circuit analysisin the frequency domain, drawthefrequencycharacteristicsofthe transfer function.

13. Basic Electronics   Credit: 4
Distribution of learning time: 4/0/8
Prerequisites: Advanced Mathematics 3 & General Physics
Former subjects of condition: Electrical Circuits& General Physics

Summaries of course: This course provides the learnerwith knowledgeof electronic components, presentethe structureandprinciplesof operation oftheelectronic components, analyzeandexplain theprinciple of operation of simple electronic circuits, analyzethe frequency responseofthe amplifiercircuit, analyzeanddesigntheaudiopower amplifier circuits, distinguish thetype offeedback, analyzeanddesign applicationcircuitsused op_amp, analyzethe principleof operation oftheoscillator circuits, analyzeanddesign the simple DCsources provide electronic circuits.

14. Digital System   Credit: 3
Distribution of learning time: 3/0/6
Prerequisites: Basic Electronics
Former subjects of condition: Electrical Circuits& General Physics

Summaries of course: This course provides the learnerwith knowledge of digital systems, thebasiclogicgate, thefundamental theorem of Boolean algebra, thecombinational circuits, sequential circuit, operationalstructures of the basics of digital integrated circuits TTLandCMOS, characteristicparametersofdigital integrated circuits, classifyintegrated circuits, the principle of changing betweenanaloganddigital signals, operationalstructure and application ofthe memory, the principlesofthedigital oscillator circuit.

15. Electrical Measurement and Instruments   Credit: 3
Distribution of learning time: 3/0/6
Prerequisites: Electrical Circuits
*Former subjects of condition:*Electrical Circuits, Basic Electronics

Summaries of course: This course provides the learnerwith knowledge of concept of measurement and electrical measure, understand the principles of structure and operations of the directive devices, known about measurement of electrical quantities structure, the method of measuring the electrical quantities such as current, voltage, resistance, capacitance, inductance, frequency, phase angle, power, analyse and estimate measurement errors, understand the principles and operation of the electrical measurement system in industry.

16. Power Electronics   Credit: 3
Distribution of learning time: 3/0/6

Prerequisites: None
Former subjects of condition: Electrical Circuits; Basic Electronics; Electric Machines, Electricity Instrument; Electrical Measurement and Instruments.

*Summaries of course:*This course provides the learnerwith knowledgeofbasic power electronic accessories, specialized. The structure, operating principles, waveform andparameters:the uncontrolled and controller rectifiercircuits; modified circuit, switchingvoltageAC, transformDC voltage, inverte andselect theDC powersupply.

17. **Automatic Control Systems**   **Credit: 3**
Distribution of learning time: 3/0/6
Prerequisites: None
Former subjects of condition: Electrical Circuits, Electrical Measurement and Instruments, Complex Functions and Laplace Transforms, Basic Electronics

Summaries of course: This course provides the learnerwith knowledge ofthecomponentsofanautomatic controlsystem, themethod of building mathematical modelsofthe automatic controlsystemincluding: transfer function, signalgraphandequation of state, the problem of controlandobservation, thestable survey methodsofautomatic controlsystems: surveymethodsofquality ofcontrolsystem: accuracy, time domain,frequency domainandthedesign methodsof automatic controlsystemso that the stable systemandachieve quality targets.

18. **Microprocessor**   **Credit: 3**
Distribution of learning time: 3/0/6
Prerequisites: Digital System
*Former subjects of condition:*Digital System, Basic Electronics.

Summaries of course: This course provides the learnerwith knowledgeof the roleandfunctions of theprocessor, the processorsystem;historicaldevelopment ofprocessor generations, thebasic parameterstoassessthe abilityofthe processor; the structureandroleof the components inthe block diagramof8-bit microprocessors, principlesof operation of8-bit microprocessors; historicaldevelopment ofmicrocontrollers, advantages and disadvantageswhen usingmicrocontrollers, internal andexternalstructure of 8-bit microcontroller; function of peripheral devices: timer/counter, interrupts, data transfer ofmicrocontroller, Assemblylanguage, C language toprogram themicrocontroller.

19. **Electrical Safety**   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: None
Former subjects of condition: Electrical Circuits, Electrical Measurement and Instruments.

Summaries of course: This course provides the learnerwith knowledgeof basicconceptsof electrical safety, operatingmethodsfor electrical equipmentandelectricalnetworks are safety, measures topreventdangerouselectric shock, measures to avoiddirectandspreadlightning,grounding measures, help peoplewhenelectrical accident.

20. **Electric Machines**   **Credit: 4**
Distribution of learning time: 4/0/8
Prerequisites: Electrical Circuits
*Former subjects of condition:*Advanced Mathematics 3, General Physics, Electronic and Electrical Materials, Electrical Circuits, Electrical Measurement and Instruments.

Summaries of course: This course provides the learner with knowledge of basic structure, working principle, meaning of the electromagnetic relations of DC machine, transformers, asynchronous machines, synchronous machines, special machines and electrical instruments.

Methods for calculating variables, technical parameters of electrical machines and electrical instruments, work characteristics (rule) of electrical machines and electrical instruments, the method of implementation, control modes of electrical machines and electrical instruments.

21. Electricity Instrument   Credit: 2
Distribution of learning time: 3/0/6
Prerequisites: Electrical Circuits
*Former subjects of condition:*Mathematics 3, Physics, Electrical–Electronics Materials, Circuitry

Summaries of course: Provides students with the basic knowledge about the structure, principles, working characteristics, applications, calculation options, check the electronic instruments in industrial electrical systems and some related physical phenomena such as electromotive force, and his anger, arc, magnetic forces.

22. MATLAB/SIMULINK for Power System   Credit: 3
Distribution of learning time: 3/0/6
Prerequisites: Circuit 1 & 2, Power Supply, Electrical System.
*Former subjects of condition:*Basic Subjects Circuits, Electrical Measurement and Instrumentation

Summaries of course: This course equips students the basic content of the software Matlab, Matlab programming language and the basic toolbox related to electrical engineering.

23. Electrical Measurement in Practice   Credit: 1
Distribution of learning time: 1/0/2
Prerequisites: None
*Former subjects of condition:*Circuits, Electronic Measurement and instrumentation

Summaries of course: This course helps students recognize the meter, the actual observed structure of the machine, perform commissioning, testing and adjustment of the machine. Perform measuring electrical quantities such as current, voltage, R - L - C, capacity, power, frequency and phase angle.

24. Electric Drive in Practice   Credit: 3
Distribution of learning time: 3/0/6
Prerequisites: Advanced Mathematics, Computer Science Basic, Electric, Electric tools, basic electronics, power electronics
*Former subjects of condition:*Electric - Electric tools, power electronics

Summaries of course: This course equips learners content on the characteristics of the electric drive system, method of adjusting the motor speed direct current and alternating current, the calculation method features engines in the different working state, characteristic construction methods and choose equipment for power transmission and working principles of the new powertrain..

25. Electronic and Electrical Materials   Credit: 2
Distribution of learning time: 2/0/4
Prerequisites: None
*Former subjects of condition:*Chemistry, Physics and Mathematics Foundation executive

Summaries of course: This course equips students to structure the content, technology type manufacturing electrical materials, electronic materials feature electrical com in the electricity sector , electronic; The nature electrical, mechanical, chemical, electronics,... of material: conductive, insulating, superconductors, semiconductors, power flow control, ...

26. Programmable Logic Controller   Credit: 3
Distribution of learning time: 3/0/6
Prerequisites: None
*Former subjects of condition:*Introduction to Computer, Digital, automatic control systems, Electric-electronic instruments, automatic control system, automatic Drive Technologies
Summaries of course: Module Summaries: This course equips learner's contents of the method for determining the output of the sensors, how to calculate the value of output as required, the type of sensor connection and actuators with controllers PLC, functional and operational principles of PLC and application scripts.

27. CAD for Electrical Engineering   Credit: 2
Distribution of learning time: 2/0/3
Prerequisites: None
*Former subjects of condition:*Circuits, Electrical Machines, Electrical Measurements and measurement equipment, power supply

Summaries of course: This course equips learner's contents of the basic principles of design and simulation, CAD applications, the method of solving problems of specialized techniques in design as well as drawing Electrical Technical drawings, symbols and principles of drawing power.

28. Power System   Credit: 3
Distribution of learning time: 3/0/6
Prerequisites: None
*Former subjects of condition:*Circuits, electric-electronic instruments; Electronic measurement and instrumentation; electrical safety.

Summaries of course: This course equips learners contents of the load forecasting method, the method of calculating voltage loss, power loss, short circuit calculations on high-voltage network , methods for selecting the number and capacity of transformers, substations diagram of voltage from 110 kV or more; Function and operating principle of the switchgear, high-voltage protection, methods selected conductors, cables, switchgear, equipment limits the short circuit current to high-voltage network and power control methods pressure, reducing energy losses in power system.

29. Power Supply System   Credit: 3
Distribution of learning time: 3/0/6
Prerequisites: None
*Former subjects of condition:*Circuits, electric-electronic instruments; Electronic measurement and instrumentation; electrical safety.

Summaries of course: This course equips learner's contents of the method for determining the load calculation, calculate voltage loss, power loss, and short circuit calculations, select the number and transformer capacity, diagrams distribution substations and redundant power. Function and operating principle of the switchgear, medium and low voltage protection, the method selected conductors, cables, switchgear protect- sectioning measurement, distribution cabinet low and medium voltage, offset low voltage network power plant and industrial lighting calculations.

30. Power System Analysis and Simulation   **Credit: 3**
Distribution of learning time: 3/0/6
Prerequisites: None
Former subjects of condition: : Subject Previous: circuit, power-electronic instruments;
Electronic *measurement* and instrumentation; electrical safety, electrical systems, power supply

Summaries of course: This course equips learners for content on mathematical models of the elements in the power system, the electric network analysis methods and simulation procedures for the establishment and status transition of power systems, calculate accurate state established a complex power system using computer software to simulate the transition state of the power system.

31. Relay Protection and Automation   **Credit: 3**
Distribution of learning time: 3/0/6
Prerequisites: circuit, power plant; electronic instruments; Electronic measurement and instrumentation; power supplies, power systems, applications matlab in Electrical Engineering.
*Former subjects of condition:*Advanced Mathematics 1-3, General Physics 1-3

Summaries of course: This course equips learners content in function, principles of operation, the specifications, the technical specifications of the installed equipment and automatic protection; operation of automated systems in electrical systems and industrial power network..

32. Professional Development Training   **Credit: 1**
Distribution of learning time: 1/0/3
Prerequisites: None
*Former subjects of condition:*the circuit, power-electronic instruments; Electronic measurement and instrumentation; power supplies, power systems, programmable controller.

Summaries of course: This module updated practical knowledge to learners form thematic reports from enterprises and learner harvest report to be evaluated.

33. Project on Electric Drive   **Credit: 1**
Distribution of learning time: 1/0/2
Prerequisites: Advanced Mathematics, Computer Science Basic, Electric, Electric tools, basic electronics, power electronics, electrical drives automation, electrical control equipment
Former subjects of condition:: the circuit, power-electronic instruments; Electronic measurement and instrumentation; automatic electric drive

Summaries of course: The course contain about solving a real problem in the field of automatic electric drives involving DC motors and AC motors as: characteristics of speed, mechanical properties Natural and artificial mechanical characteristics, parameters affecting the mechanical properties form, drawing mechanical properties, the method boot and motor control in the different working modes as lifting load requirements and the state of the electric motor brake.

34. Project on Power Supply System   **Credit: 1**
Distribution of learning time: 1/0/2
Prerequisites: Power Supply
*Former subjects of condition:*the circuit, power-electronic instruments; Electronic measurement and instrumentation; power supply, power system.

Summaries of course: This course equips learners method electricity distribution network design workshop includes content about features workshops, data load, load grouping, bar wiring diagram, determine the load calculation at each level, choose the number and capacity MBA, choose backup power generators, power offset selected and offset schemes, choose the wire /

cable, select switchgear / protect / measurement, power distribution cabinets select, calculate lightning, grounding calculations and estimates made.

35. Project on Programmable Logic Controller   **Credit: 1**
Distribution of learning time: 1/0/2
Prerequisites: Control Programming
*Former subjects of condition:*circuit, power-electronic instruments; Electronic measurement and instrumentation; power supplies, power systems, and programmable controller

Summaries of course: This course content for solving some practical problems in the field of automation including design, PLC and itor the process as automated packaging systems , traffic light systems, conveyor systems, heat oven system, conveyor control systems, drive systems, and systems related to temperature, pressure, flow, level, volume.

36. Electric Control Devices   **Credit: 2**
Distribution of learning time: 2/0/4
 Prerequisites: advanced mathematics, informatics, electrical machine, electric drive, electric instrument.
*Former subjects of condition:*electrical circuit, electrical machine-instrument ; electrical measurement and instruments; power supply system, power system, programmable logic controller

Summaries of course: This courseequips learners for contents inelectric control device and electrical circuitapplicationin the automatic industry.

37. Renewable energy   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: electrical measurement and instrument; power supply system;power system
*Former subjects of condition:*Electrical circuit;electrical machine-instrument;electrical measurement and instrument; power supply system;power system.

Summaries of course: This courseequips learners for meaning of exploring and using renewable energy, theory fundamental of renewable energyforms, technologies to explore renewable energyforms.

38. Electric auditand efficiency   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: power system, power supply system
Former subjects of condition: electrical circuit;electrical machine-instrument; electrical measurement and instrument; power supply system;power system.

Summaries of course: This courseequips learners for meaningand purpose of electric audit and efficiency, procedures of electric audit and efficiency, technologies to save energy, the problems need to be researched and developed in future.

39. Power quality   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: electrical circuit, electrical machine; electricity instrument; electrical measurement and instrument; power supply system;power system; MATLAB/Simulink for power system.
*Former subjects of condition:*electrical circuit;electrical machine; electricity instrument; electrical measurement and instrument; power supply system;power system.

Summaries of course: This course introduces to power quality problemsunder consideration of power supply system as well as residental or industrial loads. This mentions problems such as:

general power quality; electromagnetic interference; harmonics of power grid; harmonic limits for loads.

40. Lighting Techniques in Resident and Industry   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: Electrical circuit, electrical machine; electrical instrument; electrical measurement and instrument; electrical safety, power supply system.
Former subjects of condition: electrical circuit, electrical machine-instrument; electrical measurement and instrument; power supply system,power system.

Summaries of course: this course equips learners for contents in light types, lighting methods, applicated standards; specifications, requirements, procedures for design and evaluationof indoor/outdoor lighting system, square, street, industrial, sport facilities lighting.

41. Data Acquisition System and SCADA   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: None
Former subjects of condition: electrical circuit, electrical machine-instrument; electrical measurement and instrument; power supply system,power system.

Summaries of course: the course content provides knowledge of: components of SCADAin automatic system; actuator system; input/output remote terminal units RTU orProgrammale Logic ControllersPLC, center monitor and control station; communication system; Human - Machine Interface HMI; hardware and software integrated method tobuild a SCADA system in practice.

42. Building Access Control and Security System   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: electrical measurement and instrument; power supply system,power system.
Former subjects of condition: electrical circuit, electrical measurement and instrument; power supply system,power system.

Summaries of course: This course equipslearners contents of fire alert system, automatic fire fighting system, CCTV system, security system, computer network system, communication system; Inbuilding system; Intercom system.

43. Power plant & Power station   **Credit: 3**
Distribution of learning time: 3/0/6
Prerequisites: None
*Former subjects of condition:*electrical circuit, electrical machine, electrical measurement and instrument; power supply system,power system.

Summaries of course: this course equips learners contents of constitution, specification, operating principle of types of power plant; distributed diagram of transformer stations, selection and rating of transformer, protection and measurement diagram of transformer station, economic operation of power station.

44. Calculation of Electrical Machine   **Credit: 3**
Distribution of learning time: 3/0/6
Prerequisites: electrical circuit; electrical machine 1 and electrical machine 2
Former subjects of condition: electrical circuit, electrical machine-instrument, electrical measurement and instrument, power supply system, power system.

Summaries of course: This course provides learners contents of calculation methods for rewinding of common electrical machines such as single-phase transformer, three-phase transformer, single-phase and three-phase induction motors.

45. Special electrical machine   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: electrical machine-instrument
*Former subjects of condition:*electrical circuit, electrical machine-instrument, electrical measurement and instrument.

Summaries of course: this course provides learners contents of synchronous machine, DC brushless motor, stepper motor, servo motor, self-syn machine, encoder: constitution; operating principle; electromagnetic relationship and their applications in resident and industry.

46. Advanced computer aided design CAD   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: CAD
*Former subjects of condition:*electrical circuit, electrical machine-instrument, electrical measurement and instrument, CAD.

Summaries of course: this course equips learners for contents in professional design software of dynamic circuit, functions and specifications of dynamic circuit components, professional design software of lighting system, techniques and requirements of lighting system design for indoor/outdoor and street lights.

47. Building management system BMS   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: None
*Former subjects of condition:*electrical circuit, electrical measurement and instrument.

Summaries of course: this course equips learners for contents in overview of BMS, specification, hardware, andsoftware of BMS, design of BMS.

48. ATS and Power Backup System   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: None
*Former subjects of condition:*electrical circuit, electrical measurement and instrument, power supply system, power system.

Summaries of course: this course equips learners for contents inconstitution, operating principle, functions, and specifications of power backup system; selection of configuration and power rating of backup system; constitution, operating principle, functions, and specifications ofATS; selection of ATS.

49. Industrial Management   **Credit: 2**
Distribution of learning time: 2/0/4
Prerequisites: Advanced mathematics, basic informatics, general economics, project management.
*Former subjects of condition:*general economics, power supply system, power system.

Summaries of course: this course equips learners for contents inrisk management, logistics management, planning skills of long-term and mid-term, planning and strategic management of company's production from earlier supply-demand and revenues.

50. Project management   **Credit: 2**
Distribution of learning time: 2/0/4

Prerequisites: Advanced mathematics, basic informatics, general economics
*Former subjects of condition:*general economics, power supply system, power system.

Summaries of course: this course equips learners for contents intypes of project investment, project management, capitals for project, value of money over time, financial performance indicators of project; contents of pre-feasibility and feasibility projects; selection of iterms for project, specific and technical analysis of project, project management and organization, financial analysis, economic, social, and environmental analysis; procedures of planning a project;legal fundamentals, techniques, and methods of project evaluation.

51. Electronics in Practice   Credit: 2
Distribution of learning time: 0/2/1.3
Prerequisites: Basic electronics
*Former subjects of condition:*electrical circuit, electrical and electronic materials, basic electronics, electricity in practice, electrical measurement and instrument in practice, electrical safety.

Summaries of course: in this course, learners perform contents inusageof instruments in electronics; regconization of basic electronic components such as R, L, C, diode, BJT, FET, Opam; verification of basic application circuits of the electronic components between theory and reality, from which analysis of circuit operation in practice; Applying the practical application circuits, analyzingof operation of basic electronic circuit in practice.

52. Electricity in practice   Credit: 1
Distribution of learning time: 0/1/0.6
*Prerequisites:*electrical safety, electrical circuit
*Former subjects of condition:*electrical circuit, electrical and electronic materials, basic eletronics, electricalmeasurement and instrument in practice, electrical safety.

Summaries of course: learners perform contents in basic electrical installation technology, calculation method for constructing and installing; quality inspection, electrical machine installation technology and operating common electrical machines.

53. Electrical machine in practice   Credit: 2
Distribution of learning time: 0/2/1.3
*Prerequisites:*electrical machine
*Former subjects of condition:*electrical circuit, electrical and electronic materials, basic electronics, electricity in practice, electrical measurement and instrument in practice, electrical safety.

Summaries of course: learners perform contents in installation technology of basic electricity,calculation method for constructingand installing;quality inspection, repairing, installing technology of electrical machine;manufacturing technology of winding in details, assembling and operating common electrical machines.

54. Power electrinics in Practice   Credit: 2
Distribution of learning time: 0/2/1.3
*Prerequisites:*Basic Electronics, Electronic and Electrical Materials,
*Former subjects of condition:*Electrical Circuits,Electrical Circuits, Electrical Measurement in Practice, Electronics in Practice,Electrical Safety.

Summaries of course: This course provides learners knowledgeaboutinstallation of circuits, operatiion of circuits, waveforms of circuits, DC-DC converter, DC-AC converter, AC-DC converter, IGBT. The learners are able to regconise and to repair faults in power electronics system, and to design PWM circuits,...

55. Programmable Logic Controller in Practice   Credit: 2
Distribution of learning time: 0/2/1.3
*Prerequisites:*Programmable Logic Controller
Former subjects of condition: basic computer, Digital System, Automatic Control Systems, Programmable Logic Controller.
Summaries of course: This course provides learnerswide knowlegde about sensors conecting to controllers; the learners are able to design, choose programmable equiment and program for demanding industrial systems.

56. Power Supply System in Practice   Credit: 2
Distribution of learning time: 0/2/1.3
*Prerequisites:*Power Supply System, Electric Machines, Electrical Circuits, Electricity Instrument, Electricity in Practice, Electric Machine in Practice.
*Former subjects of condition:*Power Supply System, Electric Machines, Electrical Circuits, Electricity Instrument, Electricity in Practice, Electric Machine in Practice.
Summaries of course: This course provides the learner to work in Power Supply System such as: power transmission line model, power substation model, capacitor control system model, power plant model, power relay protection model; Learners are able to regconise supply power sytem drawings and to investigate low and medium voltage distribution systems.

57. Electric Drive in Practice   Credit: 1
Distribution of learning time: 0/2/1.3
*Prerequisites:*Electric Machines, Electricity Instrument, Automatic Electric Drive, Power Electronics.
*Former subjects of condition:*Electric Machines, Electricity Instrument, Automatic Electric Drive.
Summaries of course: This course provides the learner to work about drawings and mechanic characteristics of AC and DC of asynchronous machines; speed adjusting of asynchronous machines.

58. Professional Development Training   Credit: 2
Distribution of learning time: 0/2/6
*Prerequisites:*None
*Former subjects of condition:*Attain more than 110 credits
*Summaries of course:*This course provides the learnerimportant tasks for professional training engineers to work in companies, factories, industrial manufactories or operation of electricity and electronic systems andEEET education organizations.

10. Facilities for learning:
1. Workshops, Laboratories and inportant training and testing systems
– Electricity in Practice Laboratory
– Electronics in Practice Laboratory
– Instrument in Practice Laboratory
– Electrical machine in Practice Laboratory
– Electrical Drive in Practice Laboratory
– Programmable Logic Controller in PracticeLaboratory
– Power Supply System in PracticeLaboratory
– GE-UTE Training Center
2. Library and website
HCMUTE Library and documents from the Internets
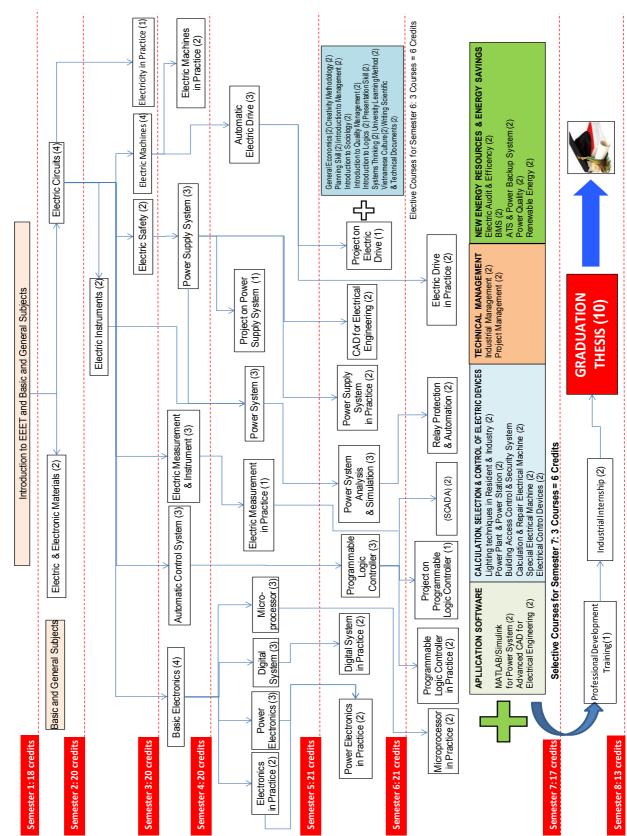
11. Guiding Implemeting program

SKILL MATRIX FOR THE CONTRIBUTION OF COURSES FOR UNDERGRADUATE PROGRAM
ELECTRICAL AND ELECTRONICS ENGINEERING TECHNOLOGY

H: Highly Supportive, S: Supportive, N: Non Supportive

Matrix courses vs. learning outcomes

H: Highly Supportive   S: Supportive   N: Non Supportive

No	Group of courses	Code	Course	# credit	A 1	2	3	B 4	5	6	C 7	8	9	10	11	12	D 13	14	15	16
1	Introduction	IEET130145	Introduction to Electrical & Electronics Engineering Technology	3	N	N	N	S	S	S	H	S	S	H	H	S	N	N	N	N
2	Political Education	LLCT150105	Principles of Marxist-Leninism	5	S	N	N	N	N	N	N	N	N	N	S	N	N	N	N	N
3		LLCT120314	Ho Chi Minh's Ideology	2	S	N	N	N	N	N	N	N	N	N	S	N	N	N	N	N
4		LLCT230214	Revolutionary Lines of VCP	3	S	N	N	N	N	N	N	N	N	S	N	N	N	N	N	N
5		GELA220405	General Laws	2	S	N	N	N	N	N	N	S	N	S	S	S	N	N	N	N
6	IT	VBPR131085	Visual basic program	3	H	N	N	N	N	N	N	N	S	S	N	H	N	N	N	N
7	Foreign Languages	ENGL130137	English 1	3	S	N	N	N	N	N	S	S	H	N	N	H	N	N	N	N
8		ENGL230237	English2	3	S	N	N	N	N	N	S	S	H	N	N	H	N	N	N	N
9		ENGL330337	English 3	3	S	N	N	N	N	N	S	S	H	N	N	H	N	N	N	N
10	Mathematics and Natural Sciences	MATH130101	Advanced Mathematics1	3	H	S	N	N	N	N	N	N	N	S	N	H	N	N	N	N
11		MATH130201	Advanced Mathematics2	3	H	S	N	N	N	N	N	N	N	S	N	H	N	N	N	N
12		MATH130301	Advanced Mathematics3	3	H	S	N	N	N	N	N	N	N	S	N	H	N	N	N	N
13		MATH130401	Applied Probability	3	H	S	N	N	N	N	N	N	N	S	N	H	N	N	N	N
14		PHYS120102	General Physics A1	3	H	S	N	N	N	N	N	N	N	S	N	H	N	N	N	N
15		PHYS120202	General PhysicsA2	3	H	S	N	N	N	N	N	N	N	S	N	H	N	N	N	N
16		MATH12120	Complex Functions and Laplace Transforms	2	H	S	N	N	N	N	N	N	N	S	N	H	N	N	N	N
17		GCHE130103	General Chemistry A1	3	S	S	N	N	N	N	N	N	N	S	N	S	N	N	N	N
18	Physical Education	GEEC220105	1. Physical Education 1		N	N	N	N	N	N	S	N	N	N	S	N	N	N	N	N
19			2. Physical Education 2		N	N	N	N	N	N	S	N	N	N	S	N	N	N	N	N
20		PLSK320605	3. Physical Education 3 (compulsory)		N	N	N	N	N	N	S	N	N	N	S	N	N	N	N	N
21	Social Science (choose 03 among the 06 courses)	GEEC220105	General Economics	2	S	N	N	N	N	N	N	S	N	S	S	S	N	N	N	N
22			Creativity Methodologies	2	S	N	N	N	N	N	N	S	N	S	S	S	N	N	N	N
23		PLSK320605	Planning Skill	2	S	N	N	N	N	N	N	S	S	N	S	S	N	N	N	N
24		INMA220305	Introduction to Management	2	S	N	N	N	N	N	N	S	S	N	S	S	N	N	N	N
25		INSO321005	Introduction to Sociology	2	S	N	N	N	N	N	N	S	S	N	S	S	N	N	N	N
26		IQMA220205	Introduction to Quality Management	2	S	N	N	N	N	N	N	S	S	N	S	S	N	N	N	N
27	Social Science (choose 03 among the 06 courses)	INLO220405	Introduction to Logics	2	S	N	N	N	N	N	N	N	S	N	S	S	N	N	N	N
28		PRSK320705	Presentation skills	2	S	N	N	N	N	N	N	S	H	N	S	S	N	N	N	N
29		SYTH220505	Systems Thinking	2	S	N	N	N	N	N	N	S	N	N	S	S	N	N	N	N
30		ULTE121105	University learning methods	2	S	N	N	N	N	N	N	S	S	N	S	S	N	N	N	N
31		IVNC320905	Vietnamese culture	2	S	N	N	N	N	N	N	S	N	N	S	S	N	N	N	N
32		TDTS320805	Writing Scientific and Technical Documents	2	S	N	N	N	N	N	N	S	N	N	S	S	N	N	N	N
33	Broad knowledge for the group of majors	ELCI140144	Electrical Circuits	4	H	S	N	S	N	N	N	N	N	S	N	H	N	N	N	N
34		BAEL340662	Basic Electronics	4	H	S	N	S	N	N	N	N	N	S	N	H	N	N	N	N
35		DIGI330163	Digital System	3	N	S	N	S	N	N	N	N	N	S	N	H	N	N	N	N
36		EMIN330244	Electrical Measurement and Instruments	3	S	H	N	S	N	H	N	N	N	S	N	S	N	N	N	N
37		POEL330262	Power Electronics	3	S	H	N	S	N	N	N	N	N	N	N	H	N	N	N	N
38		ACSY330346	Automatic Control Systems	3	H	S	N	S	N	N	N	N	N	N	N	H	N	N	N	N
39		MICR330363	Microprocessor	3	S	H	N	N	N	N	N	N	N	N	N	H	N	N	N	N
40		ELSA320245	Electrical Safety	2	H	S	N	S	N	N	N	N	N	N	N	H	N	N	N	N
41	Deep knowledge for the major	ELMA240344	Electric Machines	2	S	S	N	S	N	N	N	N	N	N	S	N	N	N	N	N
42		ELIN320444	Electricity Instrument	4	H	S	N	S	N	N	N	N	N	N	N	H	N	N	N	N
43		ELPS330345	Power Supply System	3	N	N	S	H	H	N	N	N	S	S	S	H	N	N	N	N
44		ELDR320545	Automatic Electric Drive	3	S	H	N	H	S	N	N	N	N	S	N	H	N	N	N	N
45		EEMA220544	Electronic and Electrical Materials	2	S	S	S	S	S	N	N	N	N	S	N	H	N	N	N	N
46	Compulsory	PLCS 330846	Programmable Logic Controller	3	N	H	S	H	S	N	N	N	N	N	S	N	N	N	N	N
47		ECAD320645	CAD for Electrical Engineering	2	N	H	S	S	S	N	N	N	N	N	S	N	N	N	N	N
48		POSY330445	Power System	3	S	H	N	S	N	N	N	N	N	S	N	H	H	S	S	S
49		SCDA420946	Data Acquisition System and SCADA	3	S	H	N	S	N	N	N	N	N	S	S	H	H	S	S	S
50		REPR320745	Relay Protection and Automation	2	S	H	N	H	S	N	N	N	N	S	N	H	H	S	S	S
51		PSAS430845	Power System Analysis and Simulation	2	S	H	S	H	S	N	N	S	N	S	S	S	H	S	S	S
52	Compulsory	PRTO412445	Professional Development Training	1	S	S	S	S	S	S	H	H	S	H	H	S	H	S	S	S
53		PRED410945	Project on Electric Drive	1	S	S	H	H	H	H	H	H	S	H	H	S	H	H	H	S
54		PRES411045	Project on Power Supply System	1	S	S	H	H	H	H	H	H	S	H	H	S	H	H	H	S
55		PLCR 311146	Project on Programmable Logic Controller	1	S	S	H	H	H	H	H	H	S	H	H	S	H	H	H	S
56	Elective (06 credits)	ELCD321545	Electrical Control Devices	2	N	S	H	H	S	S	S	S	S	H	S	S	S	S	H	H
57		RENE321745	Renewable Energy	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
58		ENAE321845	Energy Audit and Efficiency	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
59		PQE320755	Power Quality in Power System	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
60		LTRI321345	Lighting Techniques in Residential and Industrial	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
61		SCDA 420946	Data Acquisition System and SCADA	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
62		SSSY321445	Building Access Control and Security System	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
63		PLSUE40445	Power Station and Power Plant	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
64		EMCE321744	Calculation of Electrical Machine	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
65		SPMA32CD44	Special Electrical Machine	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
66		ACAD321245	Advanced CAD for Electrical Engineering	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	H	H
67		MSET321145	MATLAB/Simulink for Power System	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	H	H
68		BMSY322045	Building Management System	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
69		SSAS322045	ATS and Power Backup System	2	N	S	H	H	S	S	S	S	S	H	S	S	H	H	S	H
70		PJMA 322345	Project Management	2	N	S	H	H	S	S	S	S	S	H			S	H	H	S	N
71		IDMA322245	Industrial Management	2	N	S	H	H	S	S	S	S	S	H			S	H	H	S	N
72	Specialized knowledge (courses in workshop, industrial internship)	ELPR320762	Electronics in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	S	S
73		ELPR210644	Electricity in Practice	1	S	H	H	S	H	S	S	S	S	H	S	S	H	S	S	S
74		PMEM31084	Electrical Measurement in Practice	1	S	H	H	S	H	S	S	S	S	H	S	S	H	S	S	S
75		PRDI320263	Digital System in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	S	S
76		PRMI 320463	Microprocessor in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	S	S
77		PREM221244	Electric Machine in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	S	S
78		POEP320262	Power Electronics in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	S	S
79		PPLC321346	Programmable Logic Controller in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	H	H
80		PRES322545	Power Supply System in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	H	H
81		ELEC322645	Electric Drive in Practice	2	S	H	H	S	H	S	S	S	S	H	S	S	H	S	H	H
82		ININ422745	Industrial Internship	2	S	H	H	H	H	H	H	S	S	H	S	H	S	H	S	H
83	Grad. Thesis	FIPR 402845	Graduation Thesis	10	H	H	H	H	H	H	H	H	S	H	S	H	H	H	H	H

FLOWCHART OF THE RELATIONSHIPS OF COURSES

Semester 1: 18 credits

Semester 2: 20 credits

Semester 3: 20 credits

Semester 4: 20 credits

Semester 5: 21 credits

Semester 6: 21 credits

Semester 7: 17 credits

Semester 8: 13 credits

Introduction to EEET and Basic and General Subjects

Basic and General Subjects

Electric & Electronic Materials (2)

Electric Circuits (4)

Electric Instruments (2)

Electricity in Practice (1)

Electric Machines in Practice (2)

Electric Machines (4)

Automatic Electric Drive (3)

Electric Safety (2)

Power Supply System (3)

Project on Power Supply System (1)

Project on Electric Drive (1)

Electric Drive in Practice (2)

CAD for Electrical Engineering (2)

Power System (3)

Power Supply System in Practice (2)

Electric Measurement & Instrument (3)

Electric Measurement in Practice (1)

Automatic Control System (3)

Power System Analysis & Simulation (3)

Relay Protection & Automation (2)

Programmable Logic Controller (3)

(SCADA) (2)

Project on Programmable Logic Controller (1)

Micro-processor (3)

Digital System (3)

Digital System in Practice (2)

Basic Electronics (4)

Power Electronics (3)

Programmable Logic Controller in Practice (2)

Electronics in Practice (2)

Power Electronics in Practice (2)

Microprocessor in Practice (2)

Elective Courses for Semester 6: 3 Courses = 6 Credits
General Economics (2) Creativity Methodology (2)
Planning Skill (2) Introduction to Management (2)
Introduction to Sociology (2)
Introduction to Quality Management (2)
Introduction to Logics (2) Presentation Skill (2)
Systems Thinking (2) University Learning Method (2)
Vietnamese Culture (2) Writing Scientific & Technical Documents (2)

NEW ENERGY RESOURCES & ENERGY SAVINGS
Electric Audit & Efficency (2)
BMS (2)
ATS & Power Backup System (2)
Power Quality (2)
Renewable Energy (2)

TECHNICAL MANAGEMENT
Industrial Management (2)
Project Management (2)

CALCULATION, SELECTION & CONTROL OF ELECTRIC DEVICES
Lighting techniques in Resident & Industry (2)
Power Plant & Power Station (2)
Building Access Control & Security System
Calculation & Repair Electrical Machine (2)
Special Electrical Machine (2)
Electrical Control Devices (2)

APPLICATION SOFTWARE
MATLAB/Simulink for Power System (2)
Advanced CAD for Electrical Engineering (2)

Selective Courses for Semester 7: 3 Courses = 6 Credits

Professional Development Training (1)

Industrial Internship (2)

GRADUATION THESIS (10)