MINISTRY OF EDUCATION & TRAINING
HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY & EDUCATION

UNDERGRADUATE PROGRAM

Major of
MECHATRONIC ENGINEERING TECHNOLOGY

2018

THE MINISTRY OF EDUCATION & TRAINING
HO CHI MINH CITY UNIVERSITY OF TECHNOLOGY & EDUCATION

SOCIALIST REPUBLIC OF VIETNAM
Independence – Liberty - Happiness

****

UNDERGRADUATE PROGRAM

Education Program: MECHATRONIC ENGINEERING TECHNOLOGY

Level: Undergraduate

Major: **MECHATRONIC ENGINEERING TECHNOLOGY**

Type of Program: Full time

(Decision No……date….on……)

1. Duration of Study: 4 years

2. Student Enrollment: 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,toensure national defense, security and international integration.

Training learner 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 **Mechatronic Engineering Technology**major have basic scientific knowledge, fundamental knowledge, specialised knowledge of ,mechanical, electricaland electronics major, analysis capability, solve problem skills andsolutions assessment, ability contribution, design, operation of mechanical 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.

Objectives

PO1: Form a stable foundation of general knowledge, foundation and core knowledge and specialised/ major knowledge of **Mechatronic Engineering Technology**.

PO2: Use proficiently self-studying skillsmajor, problem solving skills and professional skills in the major of **Mechatronic Engineering Technology**.

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

PO4: Apply well competences of brainstorming, designing, deploying, and operating the **Mechatronic systems**

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 **Mechatronic Engineering Technology**.

ELO 3. Create the combination of advanced specialized knowledge in the fields of **Mechatronic Engineering Technology**.

B. Specialised and professional skills in electrical and electronics major:

ELO 4. Analyze and argue for technical matters; brainstorm systematically, and solve mechanical matters.

ELO 5. Examine and experiment mechanical matters.

ELO 6. Implement proficiently professional skills in the mechanical 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, mechanicaldrawing 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 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 system of Mechatronic Engineering Technology

ELO 13. Take shapes of ideas, set up requirements, determine functions and elements of the Mechanical System, Electrical and Electronic System, Programming for Industrial Systems, Renewable Energy, Mechatronic, and Automatic Control System.

ELO 14. Design required elements of the Mechanical System, Electrical and Electronic System, Programming for Industrial Systems, Renewable Energy, Mechatronic, and Automatic Control System.

5. Blocks of knowledge in the whole program: 130credits (without Physical Education, Military Education, and Supplementary Courses)

6. Allocation of credits

Groups of Courses	Credits		
	Total	**Compulsory**	**Optional**
Foundation science courses	**45**	**41**	**4**
General Politics + Laws	10	10	
Social Sciences and Humanities	4		4
Mathematics and Natural Sciences	25	22	
Technical Computer Sciences	3	3	
Introduction to Engineering Technology	3	3	
Mechatronics Engineering Courses	**85**	**79**	**6**
Fundamental Mechatrohics Engineering courses	27	27	
Advanced Mechatrohics Engineering courses	26	22	4
Experiments and Practices	20	18	2
Internship	2	2	
Graduation Thesis	**10**	**10**	

7. CONTENTS OF THE PROGRAM

A. COMPULSORY COURSES

7.1 Foundation science courses (44 credits)

Number	Course's ID	Course Name	Credits	Notes
1	LLCT150105E	Principles of Marxism-Leninism	5	
2	LLCT120314E	Ho Chi Minh's Ideology	2	
3	LLCT230214E	Vietnamese Communist Party Policy of Revolution	3	
4	INME130125E	Introduction to Mechanical Engineering	3	
5	MATH141601E	CalculusI	4	
6	MATH141701E	Calculus II	4	
7	MATH141801E	Calculus III	4	
8	MATH130401E	Mathematical Statistics for Engineers	3	
9	AMME331529E	Applied Mathematics in Mechanical Engineering	3	
10	PHYS 130402E	Principles of Physics 1	3	
11	PHYS110602E	Principles of Physics - Laboratory 1	1	
12	GCHE130603E	General Chemistry for Engineers	3	
13	APEN331329E	Applied Programming in Engineering	3	
14	PHED110513E	Physical Education 1	0	
15	PHED110613E	Physical Education 2	0	
16	PHED130715E	Physical Education 3	0	
17	GDQP008031E	Military Education	0	
18		General Knowledge Option Course 1	2	
19		General Knowledge Option Course 2	2	

Total *(excluding Physical Education and Military courses)*	**45**	

7.2 Mechatronics Engineering Courses (76 Credits)

7.2.1 Fundamental Mechatrohics Engineering courses

Number	Course's ID	Course Name	Credits	Notes
1	EDDG240120E	Descriptive Geometry &Engineering Drawing (3+1)	4	
2	THME230721E	Theoretical Mechanics	3	
3	STMA230521E	Strength of Materials	3	
4	MEMD230323E	Mechanical Design	3	
5	PRMD310523E	Projects of machine design	1	
6	TOMT220225E	Tolerances And Measuring Technology	2	
7	ENMA220130E	Materials Science	2	
8	AUCO230329E	Automatic control	3	
9	MATE230430E	Manufacturing Technology	3	
10	EEEN230129E	Electrical and Electronics Engineering	3	
11	ENMA225959E	Sensors and Actuators	2	
		Total	**29**	

7.2.2.a Advanced Mechatrohics Engineering courses *(Theory and Experiment Courses)*

Number	Course's ID	Course Name	Credits	Notes
1	PNHY230529E	Pneumatic & Hydraulic Technology	3	
2	MPAU320729E	Manufacturing Process Automation	2	
3	DITE226829E	Digital Techniques	2	
4	MICO236929E	Microprocessors	3	
5	SERV324029E	Drive servo systems	2	
6	ROBO331129E	Robotics	3	
7	PRMS415229E	Project of Mechatronic System	1	
8	SEMI325929E	Business Seminar	2	
9		Advanced Mechatrohics Engineering courses 1	3	
10		Advanced Mechatrohics Engineering courses 2	3	
11		Advanced Mechatronics Engineering courses 3	3	
12	MALE337029E	Machine Learning	3	
13	ARIN337629E	Artifical Intelligent	3(2+1)	
		Total	**33**	

7.2.2.b Advanced Mechatrohics Engineering courses *(Practice and Internship Courses)*

Number	Course's ID	Course Name	Credits	Notes
1	METE210321E	Mechanical Experiments	1	
2	EEEE210229E	Experimentsof Electrical and Electronics Engineering	1	
3	MATE210230E	Experiments of Materials Science	1	
4	EWEP210426E	Electric Welding Practice	1	
5	PMPA326629E	Practice of Manufacturing Process Automation	2	
6	MEPR220227E	Mechanical Experiments	2	
7	PACT310429E	Practice of Automatic Control	1	
8	PAPE311429E	Practice ofApplied Programming in Engineering	1	
9	PDTM321029E	Practice of Microprocessors	2	
10	PINR411229E PAPE211429E	Practice of Industrial Robots and Sensors	1	
11	PESD324129E	Practice of Drive Servo systems	2	
12	FAIN432029E	Industry Internship	2	
		Total	**17**	

7.2.3 Graduation thesis (10 Credits)

Number	Course's ID	Course Name	Credits	Notes
1	UGRA475529E	Graduation Thesis (Mechatronics Engineering)	**7**	

B. OPTIONAL COURSES

Foundation science courses (4 Credits)

Number	Course's ID	Course Name	Credits	Notes
1	GEEC220105E	General Economics	2	
2	INMA220305E	Introduction to Management	2	
3	INLO220405E	Introduction to Logics	2	
4	ULTE121105E	Learning Methods in University	2	
5	SYTH220505E	Systematic Thinking	2	
6	PLSK320605E	Planning Skill	2	
7	IVNC320905E	Introduction to Vietnamese Culture	2	
8	INSO321005E	Introduction to Sociology	2	

Notes: Student selects 2 courses with 4 credits

Advanced Mechatrohics Engineering courses (9 Credits)

Number	Course's ID	Course Name	Credits	Notes
1	MAVI332529E	Machine Vision	3(2+1)	
2	SCDA331629E	Industrial Communication Networks	3(2+1)	
3	DIPR337529E	Digital Signal Processing	3(2+1)	
4	PCTR431929E	Process control	3(2+1)	

5	BDES333877E	BigData Essentials	3(2+1)	
6	IOTM337629E	Internet of Things in Mechatronics	3(2+1)	
7	EMSY337329E	Embeded system	3(2+1)	
8	CAED321024E	CAE in Mechanics	3(2+1)	
9	CCCT331725E	Công nghệ CAD/CAM-CNC	3(2+1)	
10	WEPR330479E	WEB Programing	3(2+1)	

Notes: Faculty selects 2expertise courses +2 experiment courses with 6 credits 2x(2+1)

C. SUPPLEMENTARY COURSES

Number	Course's ID	Course Name	Credits	Notes
1	EHQT 130137E	Academic English 1	(3)	
2	EHQT 230237E	Academic English 2	(3)	
3	EHQT 230337E	Academic English 3	(3)	
4	EHQT 230437E	Academic English 4	(3)	
5	TEEN123725E	Technical English 1	(2)	
6	TEEN233825E	Technical English 2	(3)	

8. Plan of Courses

Term 1:

Number	Course's ID	Course Name	Credits	Prerequisite
1	LLCT150105E	Principles of Marxism-Leninism	5	
2	MATH141601E	Calculus I	4	
3	INME130125E	Introduction to Mechanical Engineering	3	
4	GCHE130603E	General Chemistry for Engineers	3	
5	PHED110513E	Physical Education 1	0	
6	GDQP008031E	Military Education	0	
7	EHQT 130137E	Academic English 1	3	
8	EHQT 230237E	Academic English 2	3	
Total *(excluding Physical Education and Military courses)*			**21**	

Term 2:

Number	Course's ID	Course Name	Credits	Prerequisite
1	LLCT120314E	Ho Chi Minh's Ideology	2	
2	MATH141701E	Calculus II	4	
3	MATH130401E	Mathematical Statistics for Engineers	3	
4	PHED110613E	Physical Education 2	0	
5	EDDG240120E	Descriptive Geometry & Engineering Drawing (3+1)	4	

6	PHYS 130402E	Principles of Physics 1	3	
7	ENMA220130E	Materials Science	2	
8		General Knowledge Option Course 1	2	
9	EHQT 230337E	Academic English 3	(3)	
Total *(excluding Physical Education and Military courses)*			**20**	

Term 3:

Number	Course's ID	Course Name	Credits	Prerequisite
1	LLCT230214E	Vietnamese Communist Party Policy of Revolution	3	
2	MATH141801E	Calculus III	4	
3	PHED130715E	Physical Education 3	0	
4	PHYS110602E	Principles of Physics - Laboratory 1	1	
5	APEN331329E	Applied Programming in Engineering	3	
6	THME230721E	Theoretical Mechanics	3	
7	EEEN230129E	Electrical and Electronics Engineering	3	
8	MATE210230E	Experiments in Materials Science	1	
9		General Knowledge Option Course 2	2	
10	TEEN123725E	Technical English 1	2	
Total *(excluding Physical Education and Military courses)*			**22**	

Term 4:

Number	Course's ID	Course Name	Credits	Prerequisite
1	AMME331529E	Applied Mathematics in Mechanical Engineering	3	
2	STMA230521E	Strength of Materials	3	
3	TOMT220225E	Tolerances and Measuring Technology	2	
4	METE210321E	Mechanical Experiments	1	
5	MEMD230323E	Mechanical Design	3	
6	DITE226829E	Digital Techniques	2	
7	MATE230430E	Manufacturing Technology	3	
8	EEEE210229E	Experiments in Electrical and Electronics Engineering	1	
9	PAPE311429E	Practice in Applied Programming in Engineering	1	
10	EHQT 230437E	Academic English 4	(3)	
11	ENMA225959E	Sensors and Actuators	2	
12	TEEN233825E	Technical English 2	3	
Total			**24**	

Term 5:

Number	Course's ID	Course Name	Credits	Prerequisite

1	PRMD310523E	Projects of machine design	1	
2	AUCO230329E	Automatic control	3	
3	PNHY230529E	Pneumatic & Hydraulic Technology	3	
4	MPAU320729E	Manufacturing Process Automation	2	
5	MICO236929E	Microprocessors	3	
6	MEPR220227E	Mechanical Experiments	2	
7	ARIN337629E	Artifical Intelligent	3(2+1)	
		Total	**17**	

Term 6:

Number	Course's ID	Course Name	Credits	Prerequisite
1	ROBO331129E	Robotics	3	
2	PMPA326629E	Practice of Manufacturing Process Automation	2	
3	PACT310429E	Practice of Automatic Control	1	
4	PDTM321029E	Practice of Microprocessors	2	
5	SERV324029E	Drive servo systems	2	
6	MALE337029E	Machine Learning	3	
		Total	**13**	

Term 7:

Number	Course's ID	Course Name	Credits	Prerequisite
1		Advanced Mechatronics Engineering course 1	3	
2		Advanced Mechatronics Engineering course 2	3	
3		Advanced Mechatronics Engineering course 3	3	
4	PRME315129E	Project of Mechatronic System	1	
5	PINR411229E PAPE211429E	Practice of Industrial Robots and Sensors	1	
6	PESD324129E	Practice of Drive Servo systems	2	
7	SEMI325929E	Business seminar (Mechatronics)	2	
8	FAIN432029E	Industry Internship	2	
		Total	**17**	

Term 8:

Number	Course's ID	Course Name	Credits	Prerequisite
1	UGRA475529E	Graduation Thesis (Mechatronics Engineering)	**7**	
		Total	**7**	