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

UNDERGRADUATE PROGRAM

Major of

MACHINE MANUFACTURING TECHNOLOGY

(Issued under Decision No. 3744 /QĐ-ĐHSPKT dated 06 / 10 /2025 by the President of Ho Chi Minh City University of Technology and Education)

Education Name: Machine Manufacturing Technology
Level: Undergraduate
Major: Machine Manufacturing Technology
Major Code: 7510202A

Ho Chi Minh City, 2025

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

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

Education Name: Machine Manufacturing Technology

Level: Undergraduate

Major: Machine Manufacturing Technology

Major Code: 7510202A

Type of Training: FULL-TIME

Graduation Diploma: ENGINEER

(Issued under Decision No. 3744 /QĐ-ĐHSPKT dated 06 / 10 /2025 by the President of Ho Chi Minh City University of Technology and Education)

1. **Training Duration:** 4 years
2. **Admission Requirements:** High School Graduate
3. **Grading Scale, Training Process, and Graduation Requirements**
    - Grading Scale: 10
    - Training Process: According to Decision No. 3116/QD-ĐHSPKT dated 22/08/2025 of Ho Chi Minh City University of Technology and Education on promulgating the university-level training regulations.
    - Graduation Requirements:
        - General Requirements: According to Decision No. 3116/QD-ĐHSPKT dated 22/08/2025 of Ho Chi Minh City University of Technology and Education on promulgating the university-level training regulations.
        - Specialized Requirements: According to the general regulations of Ho Chi Minh City University of Technology and Education.
4. **Training Goals and Learning Outcomes**

Goals

Training human resources, improving intellectual 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 defence, security and international integration.

Training learners have political 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 **Machine Manufacturing Technology** major has basic scientific knowledge, fundamental knowledge, specialized knowledge of electrical and electronics major, analysis capability, solve problem skills and solutions assessment, ability contribution, design, operation of mechanical systems, communication skills and work 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 specialized/ major knowledge of **Machine Manufacturing Technology**.

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

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

PO4: Apply well competences of brainstorming, designing, deploying, and operating the systems of **Machine Manufacturing** System.

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

Program outcomes

Code	Expected Learning Outcomes	Competency Level
ELO1	Able to **identify, calculate, and solve** technical problems in the field of Machine Manufacturing Technology by **applying** natural, scientific, and engineering principles.	4
ELO2	Able to **experiment, analyze, synthesize, and evaluate** data to draw appropriate conclusions in the field of Machine Manufacturing Technology.	4
ELO3	Able to **recognize** the ethical and professional responsibilities of an engineer; **propose reasonable solutions** that consider the impact of these solutions in a global, economic, environmental, and societal context.	4
ELO4	Able to **recognize** the need for and **engage in** lifelong learning.	3
ELO5	Able to **work effectively in a team**, with members leading collaboratively, creating a cooperative and inclusive environment, setting goals, planning tasks, and meeting objectives.	4
ELO6	Able to **communicate effectively** with various audiences and communicate in English.	4
ELO7	Able to **formulate ideas** and **design** technical solutions in the field of Machine Manufacturing Technology that meet societal needs.	5
ELO8	Able to **deploy** technical systems in the field of Machine Manufacturing Technology.	4
ELO9	Able to **operate and manage** technical systems in the field of Machine Manufacturing Technology.	4

Competency Level Scale

Competence level		Short description
0.0 ≤ Level ≤ 1.0	Basic	Remember: Students memorize / recognize / recall knowledge by actions such as definition, repetition, listing, identification, identification, ...
1.0 < Level ≤ 2.0	Satisfaction	Understand: Students create their own knowledge from documents, knowledge by actions such as explanation, classification, illustration, reasoning, ...
2.0 < Level ≤ 3.0		Application: Students implement / apply knowledge to create products such as models, real objects, simulation products, reports, ...
3.0 < Level ≤ 4.0	Proficiency	Analysis: Students analyze materials / knowledge into details / parts and indicate their relationships as a whole by actions such as analysis, classification, comparison, synthesis, ...
4.0 < Level ≤ 5.0		Assessment: Students make judgments, predictions about knowledge / information according to standards, criteria and measurement indicators which have been determined by actions such as comments, criticisms, recommendations, ...
5.0 < Level ≤ 6.0	Excellent	Creation: Students create / organize / organize / design / generalize parts / parts in other / new ways to create new structures / models / products.

5. **Total program credits: 158 credits** (without Physical Education, National Defense Education, and Enterprise Seminar – 01 credit)

Foreign Language Knowledge:

- Students with an IELTS >= 4.5 or equivalent (as per Decisions No. 3239/QĐ-ĐHSPKT dated 03/09/2025) will be exempted from the English placement test. Their scores will be converted for English courses in the program and English proficiency requirement (Outcome).
- English Placement Test for Level Classification: Students without IELTS certificate must participate in an English placement test to determine their proficiency level.
    - If a student achieves Level 1, they will study Communicative English 1,2.
    - If a student achieves Level 2, they will study Academic English 1,2.
- Sequence of English courses: Communicative English 1,2 → Academic English 1, 2→English for Thesis Writing.

Note:

- Communicative English 1 and 2 are supplementary courses designed to enhance English communication skills for students not accumulating credits in the program.
- Academic English 1 and 2 are academic courses that accumulate credits in the program.

6. Allocation of Knowledge Group

Groups of Courses	No. of Credits		
	Total	**Compulsory**	**Elective**
Foundation science courses	**59**	**55**	**2**
General Politics + Laws	14	14	0
Social Sciences and Humanities	2	0	2
English	08	08	0
Mathematics and Natural Sciences	29	29	0
Technical Computer Sciences	3	3	0
Introduction to Mechanical Engineering	3	3	0
Mechanical Engineering Courses	**99**	**85**	**14**
Fundamental Mechanical Engineering courses	35	29	06
Advanced Mechanical Engineering courses	35	27	08
Experiments and Practices	17	17	0
Internship	2	2	0
Graduation thesis	10	10	0
Total	**158**	**142**	**16**

7. Contents of the Program

A. Compulsory Courses

7.1 Foundation science courses (59 credits)

No.	Course's ID	Course Name	Credits	Prerequisite
1	LLCT130105E	Philosophy of Marxism and Leninism	3	
2	LLCT120205E	Political economics of Marxism and Leninism	2	
3	LLCT120405E	Scientific socialism	2	
4	LLCT120314E	Ho Chi Minh's ideology	2	

5	LLCT220514E	History of Vietnamese communist party	2	
6	GELA236939E	General Law	3	
7	MATH132401E	Calculus 1	3	
8	MATH132501E	Calculus 2	3	
9	MATH132601E	Calculus 3	3	
10	INME130125E	Introduction to Mechanical Engineering	3	3(2+1)
11	PHYS130902E	Physics 1	3	
12	PHYS131002E	Physics 2	3	
13	PHYS111202E	Physics - Laboratory 1	1	
14	GCHE130603E	General Chemistry for Engineers	3	
15	ACEN340535E	Academic English 1	4	
16	ACEN340635E	Academic English 2	4	
17	ENTW621038E	English for Thesis Writing	2	
18	AIME135825E	Applied Informatics in Mechanical Engineering	3	3(2+1)
19	FTHE124425E	Foundation of Thermal Engineering	2	
20	MATH132901E	Mathematical Statistics for Engineers	3	
21	APME234625E	Applied Mathematics for Mechanical Engineers	3	3(2+1)
22	PHED110130	Giáo dục thể chất 1 **(***Physical Education1)*	0(1)	
23	**Giáo dục thể chất 2,3 (***Physical Education 2,3)*		**2**	**Choose 2**
24	FOOT112330	Bóng đá (*Football)*	1	Non-accumulation
25	VOLL112330	Bóng chuyền (*Volleyball)*	1	Non-accumulation
26	BASK112330	Bóng rổ (*Basketball)*	1	Non-accumulation
27	BADM112330	Cầu lông (*Badminton)*	1	Non-accumulation
28	TENN112330	Quần vợt (*Tennis)*	1	Non-accumulation

29	KARA112330	Không thủ đạo (*Karate)*	1	Non-accumulation
30	CHES112330	Cờ vua (*Chess)*	1	Non-accumulation
31	CHIN112330	Cờ tướng (Chinese Chess)	1	Non-accumulation
32	YOGA112330	Yoga (Yoga)	1	Non-accumulation
33	PICK112330	Pickleball	1	Non-accumulation
34	GDQP110131	Giáo dục quốc phòng 1 (*National Defence Education 1)*	1	Non-accumulation
35	GDQP110231	Giáo dục quốc phòng 2 (*National Defence Education 2)*	1	Non-accumulation
36	GDQP110331	Giáo dục quốc phòng (*National Defence Education 3)*	1	Non-accumulation
37	GDQP110431	Giáo dục quốc phòng 4 (*National Defence Education 4)*	1	Non-accumulation
38		Option Course - General Knowledge	2	
Total *(excluding Physical Education and Military courses)*			**59**	

7.2 Mechanical Engineering Courses (99 Credits)

7.2.1 Fundamental Mechanical Engineering courses

No.	Course's ID	Course Name	Credits	Prerequisite
1	MEDR141123E	Mechanical Engineering Drawing	4	4(3+1)
2	AMDR221223E	Advanced Mechanical engineering Drawing	2	MEDR141123E
3	ENME142020E	Engineering Mechanics	4	4(3+1) PHYS130902E
4	MEMA230720E	Mechanics of Materials	3	ENME130620E
5	MMCD230323E	Mechanisms and Machine Components Design	3	ENME130620E, MEMA230720E

6	MDPR310423E	Machine Design Project	1	MEDR141123E, ENME130620E, MEMA230720E, MMCD230323E
7	TOMT220225E	Tolerances and Measuring Techniques	2	
8	ENMA220230E	Engineering Materials	2	
9	MATE210330E	Materials Testing	1	
10	EEEI421925E	Electrics and Electronics in Industrial Machines	2	
11	CACC322525E	CAD/CAM-CNC	2	
12	FMMT330825E	Fundamentals of Machine Manufacturing Technology	3	
13		Option Course - Foundation Knowledge	6	
		Total	**35**	

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

No.	Course's ID	Course Name	Credits	Prerequisite
1	MTNC330925E	Machines and Numerical Control Systems	3	
2	METE230130E	Metal Technology	3	3(2+1)
3	MMAT444225E	Machine Manufacturing Technology	4	FMMT330825E
4	PMMT411625E	Project on Machine Manufacturing Technology	1	
5	HYPN221129E	Pneumatic & Hydraulic Technology	2	EEEI421925
6	EPHT310629E	Experiments in Pneumatic & Hydraulic Technology	1	PNHY330529E
7	ACAE331024E	Application of CAE in Mechanical	3	
8	ACCC321325E	Advanced CAD\CAM-CNC	2	CACC322525E
9	NTMP320725E	Nontraditional Machining Process	2	

10	AUMP323525E	Automation of Manufacturing Process	2	EEEI421925E
11	EMPA313625E	Experiments in Automation of Manufacturing Process	1	AUMP323525E
12	IMAS336025E	Maintenance in Industry	3	
13		Option Course - Expertise Knowledge	8	
		Total	**35**	

No.	Course's ID	Course Name	Credits	Prerequisite
1	SEMI310026E	Enterprise Seminar	1	Non-accumulation

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

No.	Course's ID	Course Name	Credits	Prerequisite
1	MHAP110127E	Mechanical Works Practice	1	
2	WEPR210430E	Welding Practice	1	
3	PTMT210325E	Practice of Tolerances and Measuring Techniques	1	
4	PELD315125E	Practice on Electrical – Electronic Equipment in Industrial Machines	1	EEEI421925E
5	MEPR240227E	Mechanical Practice 1	4	
6	MEPR330327E	Mechanical Practice 2	3	
7	PCCC322725E	Practice of CAD\CAM-CNC	2	CACC322525E
8	PACC325025E	Practice of Advanced CAD\CAM-CNC	2	ACCC321325E
9	PAMT311030E	Practice of Advanced Machining Technologies	1	NTMP320725E
10	PMII314925E	Practice Maintenance in Industry	1	
11	FAIN422825E	Industry Internship	2	
		Total	**19**	

7.2.3 Graduation thesis (10 Credits)

No.	Course's ID	Course Name	Credits	Prerequisite
1	GRAT402425E	Graduation Thesis	**10**	MDPR310423E PMMT411625E

B. Elective courses

(*) Foundation science courses (02 Credits)

No.	Course's ID	Course Name	Credits	Prerequisite
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	INSO321005E	Introduction to Sociology	2	
8	REME435325E	Methodology of Scientific Research	3	

Notes: Student selects **1** course with **02** credits

(*) Fundamental Mechanical Engineering Courses (06 Credits)

No.	Course's ID	Course Name	Credits	Prerequisite
1	PRQU223026E	Production and Quality Management	2	
2	OPTE322925E	Optimal Engineering	2	
3	WSIE320425E	Safety and Industry Environment	2	
4	ADMA431530E	Advanced Materials	3(2+1)	
5	MDSO435723E	Mechanics of Deformable Solids	3(2+1)	
6	ENVI435823E	Engineering Vibrations	3(2+1)	
7	AMPR435425E	Advanced Machining Processes	3(2+1)	
8	TDHT435525E	Thermodynamics and Heat Transfer	3(2+1)	

Notes: Student selects **3-4** courses with 0**6** credits

(*) Advanced Mechanical Engineering Courses (08 Credits)

No.	Course's ID	Course Name	Credits	Prerequisite
1	NATE322625E	Nano Technology	2	
2	MAMS333625E	Modeling and Analysis of Dynamic Systems	3	
3	IFEM231020E	Introduction to Finite Element Method	3(2+1)	ENME130620E, MEMA230720E
4	CFDY433624E	Computer Fluid Dynamic - CFD	3	
5	MEDP321125E	Methods of Experimental Data Processing	2	
6	SHET321524E	Sheet Metal Forming Process	2	
7	TEMA531630E	Testing and Evaluation of Materials	3(2+1)	
8	HPMA535625E	Precision Machining Technologies	3(2+1)	
9	STMT531725E	Surface Treatment Technology	3(2+1)	
10	DCME535725E	Diagnostics and Condition Monitoring Engineering	3(2+1)	
11	AMDE535923E	Advanced Mechanical Design Engineering	3(2+1)	

Notes: Student selects **3-4** courses with **08** credits

C. MASSIVE OPEN ONLINE COURSES

Aimed to leverage the students' competency to quickly adapt themselves to higher education of advanced countries, the following courses may be taken in place of aforementioned courses.

No.	Course ID	Course name	Credits	Equivalent MOOC
1.	MATH132401E	Calculus 1	3	Calculus 1B: Integration https://www.edx.org/course/calculus-1bintegration-mitx-18-01-2x-0
2.	GCHE130603E	General Chemistry for Engineers	3	Advanced chemistry https://www.coursera.org/learn/advance d-chemistry
3.	PHYS130902E	Physics 1	3	Introduction to Mechanics, Part 1 https://www.edx.org/course/intro

				duction -mechanics-part-1-ricex-phys-101-1x
4.	INME130125E	Introduction to Mechanical Engineering	3 (2+1)	Introduction to Engineering: Imagine. Design. Engineer! - FSE 100 https://gfa.asu.edu/courses/onlineengineering-course

8. Plan of Courses

1st Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	GCHE130603E	General Chemistry for Engineers	3		2
2	PHYS130902E	Physic 1	3		2
3	LLCT130105E	Philosophy of Marxism and Leninism	3		1
4	ACEN340535E	Academic English 1	4		1
5	ACEN340635E	Academic English 2	4		1
6	MHAP110127E	Mechanical Works Practice	1		2
7	INME130125E	Introduction to Mechanical Engineering (2+1)	3		1
8	MATH132401E	Calculus 1	3		2
9	ENMA220230E	Engineering Materials	2		2
Total			**26**		

2nd Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	MATH132501E	Calculus 2	3		1
2	ENME142020E	Engineering Mechanics	4	4(3+1) PHYS130902E	1
3	MEDR141123E	Mechanical Engineering Drawing	4	4(3+1)	2
4	LLCT120405E	Scientific Socialism	2	LLCT130105E	2
5	PHYS131002E	Physics 2	3		2
6	PHYS111202E	Physics - Laboratory 1	1		1

7	METE230130E	Metal Technology	3	3(2+1)	2
8	MATE210330E	Materials Testing	1		1
9	PHED110130	Giáo dục thể chất 1 (*Physical Education1)*	0(1)		1
Total			**21**		

3rd Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	MATH132601E	Calculus 3	3		1
2	MEMA230720E	Mechanics of Materials	3	ENME130620E	1
3	AMDR221223E	Advanced Mechanical engineering Drawing	2	MEDR141123E	1
4	MATH132901E	Mathematical Statistics for Engineers	3		2
5	TOMT220225E	Tolerances and Measuring Techniques	2		2
6	LLCT120205E	Political Economics of Marxism and Leninism	2	LLCT130105E	2
7	LLCT120314E	Ho Chi Minh's Ideology	2	LLCT130105E	1
8	WEPR210430E	Welding Practice	1		2
9	AIME135825E	Applied Informatics in Mechanical Engineering	3	3(2+1)	2
10		Giáo dục thể chất 2 (tự chọn 1) *Physical Education 2 (Option 1)*	0		1
11		**Elective** - General Knowledge	2		2
Total			**23**		

4th Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	MMCD230323E	Mechanisms and Machine Components Design	3	ENME130620E MEMA230720E	1

2	FMMT330825E	Fundamentals of Machine Manufacturing Technology	3		1
3	MEPR240227E	Mechanical Practice 1	4		2
4	EEEI421925E	Electrics and Electronics in Industrial Machines	2		1
5	LLCT220514E	History of Vietnamese communist party	2	LLCT120405E LLCT120205E LLCT120314E	1
6	PTMT210325E	Practice of Tolerances and Measuring Techniques	1	TOMT220225E	1
7	GELA236939E	General Law	3		2
8	FTHE124425E	Foundation of Thermal Engineering	2		2
9		Giáo dục thể chất 3 (tự chọn 2) *Physical Education 3 (Option 2)*	0		2
10		**Elective** - Foundation Knowledge (1)	3		2
Total			**23**		

5th Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	MDPR310423E	Machine Design Project	1	MEDR141123E ENME130620E MEMA230720E MMCD230323E	1-2
2	MTNC330925E	Machines and Numerical Control Systems	3		1
3	MMAT444225E	Machine Manufacturing Technology	4	FMMT330825E	1
4	CACC322525E	CAD/CAM-CNC	2		1
5	MEPR330327E	Mechanical Practice 2	3		2
6	ACAE331024E	Application of CAE in Mechanical	3		2

7	PELD315125E	Practice on Electrical – Electronic Equipment in Industrial Machines	1	EEEI421925E	1
8	ENTW621038E	English for Thesis Writing	2		2
9	APME234625E	Applied Mathematics for Mechanical Engineers	3	3(2+1) MATH132601	2
10		**Elective** Course - Foundation Knowledge (2)	3		2
Total			**25**		

6th Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	PMMT411625E	Projects on Machine Manufacturing Technology	1	PNHY330529E	1-2
2	HYPN221129E	Pneumatic & Hydraulic Technology	2	EEEI421925E	1
3	AUMP323525E	Automation of Manufacturing Process	2	EEEI421925E	2
4	ACCC321325E	Advance CAD\CAM-CNC	2		2
5	PCCC322725E	Practice of CAD\CAM-CNC	2	CACC322525E	1
6	IMAS336025E	Maintenance in Industry	3		1
7	SEMI310026E	Enterprise Seminar	0		2
8	NTMP320725E	Nontraditional Machining Process	2		1
9	PAMT311030E	Practice of Advanced Machining Technologies	1	NTMP320725E	2
10		**Elective** Course - Expertise Knowledge (1)	4		2
Total			**19**		

7th Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	EMPA313625E	Experiments in Automation of Manufacturing Process	1	AUMP323525E	2
2	EPHT310629E	Experiments in Pneumatic & Hydraulic Technology	1	PNHY330529E	2
3	PMII314925E	Practice Maintenance in Industry	1	IMAS320525E	2
4	PACC325025E	Practice of Advance CAD\CAM-CNC	2	ACCC321325E	2
5	FAIN422825E	Industry Internship	2		2
6		**Elective** - Expertise Knowledge (2)	4		2
Total			**11**		

8th Semester

No.	Course's ID	Course name	Credits	Prerequisite	Term (1/2)
1	GRAT402425E	Graduation Thesis	10	MDPR310423E PMMT411625E	1,2
Total			**10**		

ELECTIVE COURSES

Foundation science courses (Student selects 1 course - **02** credits)

No.	Course's ID	Course Name	Credits	Prerequisite
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	INSO321005E	Introduction to Sociology	2	
8	REME435325E	Methodology of Scientific Research	3	

Notes: Student selects **1** course with **02** credits.

Fundamental Mechanical Engineering Courses (Student selects 2 - 3 courses - **06** Credits)

No.	Course's ID	Course Name	Credits	Prerequisite
1	PRQU223026E	Production and Quality Management	2	
2	OPTE322925E	Optimal Engineering	2	
3	WSIE320425E	Safety and Industry Environment	2	
4	ADMA431530E	Advanced Materials	3(2+1)	
5	MDSO435723E	Mechanics of Deformable Solids	3(2+1)	
6	ENVI435823E	Engineering Vibrations	3(2+1)	
7	AMPR435425E	Advanced Machining Processes	3(2+1)	
8	TDHT435525E	Thermodynamics and Heat Transfer	3(2+1)	

Notes: Student selects **3-4** courses with **06** credits

Advanced Mechanical Engineering Courses (Student selects 3 - 4 courses - **08** credits**)**

No.	Course's ID	Course Name	Credits	Prerequisite
1	NATE322625E	Nano Technology	2	
2	MAMS333625E	Modeling and Analysis of Dynamic Systems	3	
3	IFEM231020E	Introduction to Finite Element Method	3(2+1)	ENME130620E, MEMA230720E
4	CFDY433624E	Computer Fluid Dynamic - CFD	3	
5	MEDP321125E	Methods of Experimental Data Processing	2	
6	SHET321524E	Sheet Metal Forming Process	2	
7	TEMA531630E	Testing and Evaluation of Materials	3(2+1)	
8	HPMA535625E	Precision Machining Technologies	3(2+1)	
9	STMT531725E	Surface Treatment Technology	3(2+1)	
10	DCME535725E	Diagnostics and Condition Monitoring Engineering	3(2+1)	
11	AMDE535923E	Advanced Mechanical Design Engineering	3(2+1)	

Notes: Student selects **3-4** courses with **08** credits

9. COURSE DESCRIPTION AND WORKLOAD

FOUNDATION SCIENCE COURSES

1. Academic English 1 **Credits: 4**

Prerequisite course(s): Communicative English 1
Corequisite course(s): Academic English 2
Previous course(s): N/A
Course Description:

This is the first course of the Academic English series designed for students majoring in the areas other than English to achieve the intermediate level of English language proficiency (equivalent to B2.1 level of CEFR) in Speaking and Listening skills. The series aims to enhance students' English competence to deal with complex matters of everyday life in other countries, to exchange specific information and personal ideas with young people and adults who speak English, and to achieve a wider understanding of thoughts from people of other cultures. This course particularly provides students with the opportunities to understand the main ideas of complex oral English on quite abstract topics, including basic technical discussions in their fields of specialization. Students are asked to orally interact with a degree of fluency that makes regular interactions with native English speakers quite possible with some strain. They are also prepared to orally produce clear, detailed texts on a limited range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of a few options. In addition, this course promotes students' development of presentation skills, teamwork ability, and learner autonomy by engaging them in various interactive activities.

Textbooks:

Kisslinger, E., & Baker, L. (2024). *Skillful 3 Listening and Speaking* (3rd ed.). Macmillan Education.

2. Academic English 2 **Credits: 4**

Prerequisite course(s): Communicative English 2
Corequisite course(s): Academic English 1
Previous course(s): N/A
Course Description:

This is the second course of the Academic English series designed for students majoring in the areas other than English to achieve the intermediate level of English language proficiency (equivalent to B2.1 level of CEFR) in Reading and Writing skills. The series aims to enhance students' English competence to deal with complex matters of everyday life in other countries, to exchange specific information and personal ideas with young people and adults who speak English, and to achieve a wider understanding of thoughts from people of other cultures. This course particularly provides students with the opportunities to understand the main ideas of complex English texts on quite abstract topics, including basic technical discussions in their fields of specialization. Students are asked to interact in written English with a degree of fluency that makes regular interactions with native English speakers quite possible with some strain. They are also prepared to produce clear, detailed written texts on a limited range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of a few options. In addition, this course promotes students' development of presentation skills, teamwork ability, and learner autonomy by engaging them in various interactive activities.

Textbooks:

Rogers, L., & Zemach, D. E. (2024). *Skillful 3 Reading and Writing* (3rd ed.). Macmillan Education.

3. Calculus I **Credits: 3**

*Distribution of learning time: **3 (**3/0/6)*

Prerequisites: None

Former subjects of condition: None

Course Description: 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.

Textbook:

1. K. Smith, M. Strauss and M. Toda –*Calculus* - 6th National Edition–Kendall Hunt.

4. Calculus II **Credit: 3**

*Distribution of learning time: **3 (**3/0/6)*

Prerequisites: None

Former subjects of condition: **Calculus I**

Course Description: This course provides the learner with 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.

Textbook:

1. K. Smith, M. Strauss and M. Toda –*Calculus* - 6th National Edition–Kendall Hunt.

5. Calculus III **Credit: 3**

- *Distribution of learning time: **3 (**3/0/6)*
- *Prerequisites: None*
- *Former subjects of condition:* **Calculus II**
- *Course Description*: This course provides the learner with contents: multiple integral: double integral, application for calculated area of flat domain, calculate the surface area, object volume, triple integrals, and applications for the object volume. Line integral: line integral 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, vector format of Ostrogratski formula, Stokes formula, circulation and vortex vector, vector format of Stokes formula.

Textbook:

1. K. Smith, M. Strauss and M. Toda –*Calculus* - 6th National Edition–Kendall Hunt.

6. Principles of Physics 1 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 contents: the mechanics: point dynamics, the law of conservation, solid motion. Thermodynamics: kinetic molecular theory, principles of Thermodynamics I, principles of Thermodynamics II. Electricity and magnetism: electric field, magnetic, variability of electrical magnetic field.
- *Text book*: R.A. Serway và J.W. Jewett. Physics for Scientists and Engineers with Modern Physics, 8th Edition

7. General Chemistry for Engineers (GCHE130603)
Credits: 3

- *Distribution of learning time: **3(2/1/4)***
- *Prerequisites: None*
- *Former subjects of condition: None*
- *Summaries of course:* This course provides general chemistry necessary for engineering and science. This course covers fundamentals of electronic structures of atoms, relationship of electron and atomic properties, geometric configuration of the molecule, the polarity of the molecules, link of the physical molecules, a preliminary study on the physical and chemical properties of inorganic substances and their structures.
- *Text book:* Lawrence S. Brown, Chemistry for Engineering Students, Brooks/Cole, Cengage Learning, 2nd edition, 2011, 608 papers

FUNDAMENTAL MECHANICAL ENGINEERING COURSES

1. Introduction to Mechanical Engineering Credits: 3

Prerequisite: None

Course Description:

The goal of this course is to provide first-year students with a broad outline of engineering, the skills needed to explore different disciplines of engineering, and help them decide on a career in engineering.

Textbook:

1) Moaveni, Saaed. *Engineering Fundamentals: An Introduction to Engineering*. 3rd ed., CL Engineering, 2007.
2) Wickert J., and Lewis K. *An Introduction to Mechanical Engineering*. 3rd ed., CL Engineering, 2012.

2. Mechanical Engineering Drawing Credits: 4

Prerequisite:None

Course Description:

This course provides students with the fundamental theory of engineering drawing, including the engineering drawing standards, the basic drawing skills and principles, the methods of representation and orthographic projection. It also cultivates the abilities of writing and reading the engineering drawing.

Textbooks:

1) Madsen, David A., and David P. Madsen. *Engineering Drawing and Design*. 6th ed., Cengage Learning, 2016.
2) Narayana, K. L., P. Kannaiah, and K. Venkata Reddy. *Machine Drawing*. 3rd ed., New Age International Publishers, 2008.

3. Engineering Mechanics **Credits: 3**

Prerequisite:Physics 1

Course Description:

This course provides fundamental knowledge of mechanical engineering. In this course, the following topics will be covered: *statics* (statics axioms, force, connection, reaction, system analysis); *kinematics* (study the motion of points, objects, translation and rotation, kinematic analysis); and *dynamics* (physical laws, theorems of dynamics, D'Alambert principles, Lagrange equations).

Textbook:

1) Hibbeler, Russell C. *Engineering Mechanics*. 13th ed., Prentice Hall, 2012.
2) Meriam, J. L., and L. G. Kraige. *Engineering Mechanics*. 7th ed., John Wiley & Sons Inc., 2006.

4. Mechanics of Materials **Credits: 3**

Prerequisite: Engineering Mechanics

Course Description:

This course introduces students to fundamental knowledge of strength of materials, methods of calculating the stress, strain in mechanical components, structural members under loading, load capacity, and deformations.

Textbook:

1) Beer, Ferdinand P., and E. Russell Johnston. *Mechanics of Materials*. McGraw-Hill, 1992
2) Hibbeler, Russell C. *Mechanics of Materials*. 9th ed., Prentice Hall, 2013.

5. Mechanisms and Machine Components Design **Credits: 3**

Prerequisite: Strength of Materials

Course Description:

This course provides students with knowledge relating to structures, working principles and calculating methods of kinematics, dynamic designs of machines and mechanisms, and standard mechanical joints and components. By the end of the course, students will be able to independently solve calculating problems and machine design problems.

Textbooks:

1) Michels, W. J., C. E. Wilson, and A. D. Deutschman. *Machine Design: Theory and Practice.* Macmillan, 1975.

2) Mott, Robert L. *Machine Elements in Mechanical Design*. 5th ed., Pearson, 2013.

6. Machine Design Project **Credits: 1**

Prerequisite: Theory of Machine and Machine Design

Course Description:

In this course, students will apply the knowledge gained in the course "Theory of Machine and Machine Design" for the purposes of designing a machine or a module of a machine. The application of this knowledge includes kinematics, dynamic designs of machines and mechanisms, standard mechanical joints and components. By the end of the course, students will be able to independently solve calculating problems and machine design problems .

Textbooks:

1) Michels, W. J., C. E. Wilson, and A. D. Deutschman. *Machine Design: Theory and Practice.* Macmillan, 1975.
2) Mott, Robert L. *Machine Elements in Mechanical Design*. 5th ed., Pearson, 2013.

7. Tolerances and Measuring Techniques **Credits: 2**

Prerequisite: None

Course Description:

This course provides the learner with fundamental knowledge about tolerance and assembly of common joints in machine manufacturing industry, such as smooth cylindrical joints, key joints, flower joints, threaded joints, methods of solving size sequence problems, and basic principles for recording dimensions on detailed drawings, some types of measuring instruments, and methods of measuring the basic parameters of the parts.

Textbooks:

1) Henzold, Georg. *Geometrical Dimensioning and Tolerancing for Design, Manufacturing and Inspection: A Handbook for Geometrical Product Specification Using ISO and ASME Standards*. 2nd ed., Butterworth-Heinemann, 2006.
2) Narayana, K. L., P. Kannaiah, and K. Venkata Reddy. *Machine Drawing*. 3rd ed., New Age International Publishers, 2008.

8. Materials Science **Credits: 3**

Prerequisite: None

Course Description:

This course introduces the learner with the properties of metal and metallic alloy, metallic materials in manufacturing, heat treating to manipulate mechanical properties of metallic materials, fundamentals of structure, and properties of polymer, composite materials, rubber, etc.

Textbook:

1) Callister, William D. Jr., and David G. Rethwisch. *Materials Science and Engineering: An Introduction*. 8th ed., John Wiley & Sons Inc., 2010.

9. Computer-Aided Design (CAD) **Credits: 3**

Prerequisite: None

Course Description:

This course equips students with foundations of CAD in mechanical engineering, develops the ability to create and read technical drawings, and outlines the first step for students to use computer technology for design.

Textbook:

1) Onwubolu, Godfrey C. *Computer-Aided Engineering Design with SolidWorks*. Imperial College Press, 2013.
2) Planchard, David. *Engineering Graphics with SOLIDWORKS 2015*. SDC Publications, 2014.
3) Shih, H. *Autodesk Inventor 2015 and Engineering Graphics*. SDC Publications, 2014.

10. Foundation of Thermal Engineering **Credits: 2**

Prerequisite: None

Course Description:

This course provides students with some basic concepts of technical thermodynamics, the Laws of 1 and 2, the cycles of labor and consumption, and how to calculate the heat and labor for the cycles. The heat transfer section helps students grasp some related concepts as well as the laws of heat exchange: heat conduction, convection heat transfer, heat radiation. It also introduces students to common thermal instruments such as dryer/dehydrator, steam boiler, or heat exchanger.

Textbook:

1) Moran, Michael J., et al. *Introduction to Thermal Systems Engineering: Thermodynamics, Fluid Mechanics, and Heat Transfer*. 2nd ed., Wiley, 2002.

11. Electrics and Electronics in Industrial Machines **Credits: 2**

Prerequisite: None

Course Description:

This course equips students with knowledge of electrical circuits, circuit design, 1-phase, and 3-phase AC circuits. The students will also be introduced to working principles and calculation methods of current regulator, synchronous motor, asynchronous motor, DC motor, as well as working principles and calculation methods of basic electrical and electronic components such as a diode, transistor BJT, MOSFET, SCR, TRIAC, Opamp.

Textbook:

1) Herman, Stephen. *Industrial Motor Control*. Delmar Cengage Learning, 2014.
2) Theraja, B. L. and A. K. Theraja. *A Textbook of Electrical Technology, Vol 1: Basic Electrical Engineering*. S Chand & Co, 1999.
3) Theraja, B. L. and A. K. Theraja. *A Textbook of Electrical Technology,Vol 4: Electronic Devices and Circuits.* 23rd ed., S Chand & Co, 2006.

12. Practice on Electrical – Electronic Equipment in Industrial Machines **Credits: 1**

Prerequisite: Electrical and Electronic Engineering

Course Description:

This course equips students with knowledge of electrical devices and electronic components while enhancing the ability to use and select electrical devices, install a

residential and industrial electrical system, assemble a circuit, and measure basic electrical parameters.

Textbook:

1) Herman, Stephen. *Industrial Motor Control*. Cengage Learning, 2014.

13. Computer Fluid Dynamic - CFD **Credits: 3**

Prerequisite: None

Course Description:

This course provides fundamental knowledge of fluid statics, kinematics and dynamics, and analysis of ideal fluid motion and its practical applications. It includes the following contents: properties of fluid, equilibrium law of static fluid, calculating hydrostatic pressure, the laws of fluid flow and its characteristic parameters without regard to the force, the force acting in the environment fluid flow, laws of force interaction between fluid flow and solid objects, unidirectional fluid motion that flows through a nozzle hole. The course also provides learners with knowledge and skills in calculating, designing, analyzing, evaluating, and consulting the advantages and disadvantages of hydraulic systems for constructions.

Textbook:

1) Munson, Bruce R., et al. *Fundamentals of Fluid Mechanics*. 7th ed., Wiley, 2012.

14. Mechanical Vibrations **Credits: 2**

Prerequisite: None

Course Description:

This course introduces students to dynamics and vibration of mechanical systems, its calculating methods, and analysis.

Textbook:

1) Inman, Daniel J. *Engineering Vibration*. 4th ed., India, Prentice Hall, 2013.

15. Fundamentals of Machinery Manufacturing Technology **Credits: 3**

Prerequisite: None

Course Description:

This course provides the theoretical basis of metal cutting and machining methods, processing accuracy and surface quality of workpieces, influencing factors and remedial directions, selecting the standard and set when processing, features cutting and machining processes on universal, specialized machines, etc.

Textbooks:

1) El-Hofy, Hassan Abdel-Gawad. *Fundamentals of Machining Processes: Conventional and Nonconventional*. CRC Press, 2013.
2) Juneja, B. L. *Fundamentals of Metal Cutting and Machine Tools*. New Age International, 2003.
3) Knight, Winston A. *Fundamentals of Metal Machining and Machine Tools*. 3rd ed., Taylor and Francis, 2016.

16. Machinery Manufacturing Technology **Credits: 4**

Prerequisite: None

Course Description:

This course provides students with knowledge of technology process procedures and making fixtures for manufacturing machine parts. It introduces typical manufacturing processes, as well as assembly technology.

Textbooks:

1) Krar, Steve. *Machine Tool and Manufacturing Technology*. Willey, 1997.
2) Rao, P. N. *Manufacturing Technology*: *Metal Cutting and Machine Tools*. Tata McGraw-Hill Education, 2000.

17. Projects on Machine Manufacturing Technology **Credits: 1**

Prerequisite: None

Course Description:

In this course, the students will apply the knowledge obtained in the Machinery Manufacturing Technology course, making a manufacturing process with a specific machine part.

Textbooks:

1) Krar, Steve. *Machine Tool and Manufacturing Technology*. Willey, 1997.
2) Rao, P. N. *Manufacturing Technology*: *Metal Cutting and Machine Tools*. Tata McGraw-Hill Education, 2000.

18. Manufacturing Process Automation **Credits: 2**

Prerequisite: Electrical and Electronic Engineering

Course Description:

This course provides knowledge of the structure of an automatic control system, and shows students how to use sensors, actuators, and PLC in building an automated manufacturing process. This course also introduces students to PLC programming and application of PLC in manufacturing process automation.

Textbook:

1) Kalpakjian, Serope, and Steven Schmid. *Manufacturing Engineering and Technology.* 7th ed., Pearson, 2013.

ADVANCED MECHANICAL ENGINEERING COURSES

1. Maintenance in Industry **Credits: 3**

Prerequisite: None

Course Description:

This course provides the learner with an understanding of the following activities: organization and management of industrial maintenance, scheduling maintenance for a specific industrial equipment, planning removable machine parts, adjusting the system of industrial equipment, maintenance of equipment clusters, and maintenance of industrial machinery and equipment, in order to provide students with knowledge and skills needed to carry out maintenance activities in accordance with procedures and safety

Textbook:

1) Tomlingson, Paul. *Maintenance in Transition*. Independent Publisher Services, 2014.

2. Nanotechnology **Credits: 2**

Prerequisite: None

Course Description:

This course provides students with fundamental knowledge of making materials and functional structures at nanoscale, and presents the contemporary and future applications of nanotechnology. Students are equipped with basic knowledge regarding the structure of nanomaterial, as well as their processing procedure. This course provides an understanding of the physical, biochemical and other characteristics of nanostructures when they are examined on a different scale.

Textbook:

1) Natelson , Douglas. *Nanostructures and Nanotechnology*. Cambridge University Press, 2015.

3. CAD/CAM-CNC **Credits: 3**

Prerequisite: None

Course Description:

This course provides the learner with the fundamentals of CAD/CAM solution and basic skills including selection of machining processes order, cutting tool selection, CNC programming, and approaching methods for the utilization of CAD/CAM software.

Textbooks:

1) EMCO WinNC GE Series Fanuc 21 TB.
2) EMCO WinNC GE Series Fanuc 21 MB.
3) EMCO Win Tutorials - Modular Instructor Guide for Industry and Training - PC Turn/Mill 55 GE Fanuc Series 21.

4. Numerical Control Systems **Credits: 3**

Prerequisite:

Course Description:

This course aims to provide students with basic knowledge of:

- General cutting machines such as lathe, drilling, milling, shaping, planning, grinding machines, and their properties according to: basic working principle: types of geometrical shapes of a workpiece, methods of forming surface, tool and work motion; Basic and special configuration; Structural and kinetic schemes, general equations; Adjusting and control.
- Concepts and knowledge about NC and CNC machines according to numerical control, computer numerical control, interpolation, motion systems, and special devices.

Textbook:

1) Seames, Warren. *Computer Numerical Control: Concepts & Programming*. 4th ed., Cengage Learning, 2001.

5. Pneumatic-Hydraulic Technology **Credits: 2**

Prerequisite: None

Course Description:

This course provides the learner with an understanding of operating principles of a pneumatic control system, electro-pneumatics, hydraulics, electro-hydraulics, advantages

and disadvantages of a pneumatic/hydraulic control system compared to electrical control system, the components, basic design principles of the pneumatic/hydraulic control system, fault detection, and maintenance for pneumatic/hydraulic system.

Textbook:

1) Jagadeesha, T. *Hydraulics and Pneumatics*. I K International Publishing House, 2015.

6. Industrial Robots **Credits: 2**

Prerequisite: None

Course Description:

This course provides knowledge of robots and their applications in automated manufacturing, services, and daily life. Based on this knowledge, students can quickly approach and efficiently exploit the advantages of robots in different areas.

Textbook:

1) Niku, Saeed B. *Introduction to Robotics: Analysis, Systems, Applications*. 3rd ed., Wiley, 2011.

7. Introduction to Finite Element Method **Credits: 3**

Prerequisite: None

Course Description:

This course provides knowledge of numerical methods in designing and analysing mechatronic systems. This course will cover the following topics: basic theorems, equations, applications of numerical methods in structural mechanics, heat transfer, kinematics, and fluid mechanics. Advanced approaches will be used to build mathematical models to represent and solve technical problems.

Textbook:

1) Hamming, R. W. *Numerical Methods for Scientists and Engineers*. 2nd ed., Dover Publications, 1987.

8. Optimal Engineering **Credits: 2**

Prerequisite: None

Course Description:

This course equips students with knowledge of optimal engineering, including the skills to model and solve engineering optimization problems, methods to solve linear optimization, non-linear optimization, single-objective optimization, multi-objective optimization, etc.

Textbook:

1) Hiriart-Urruty, Jean-Baptiste, et al., editors. *Advances in Mathematical Modeling, Optimization and Optimal Control.* Springer International Publishing, 2016.

9. Mechanical Works Practice **Credits: 1**

Prerequisite: None

Course Description:

This course provides basic knowledge and skills in metalworking with hand tools and basic equipment such as punchers, chisels, files, drills, and measuring equipment.

Textbooks:

1) El-Hofy, Hassan Abdel-Gawad. *Fundamentals of Machining Processes: Conventional and Nonconventional*. CRC Press, 2013.
2) Juneja, B. L. *Fundamentals of Metal Cutting and Machine Tools*. New Age International, 2003.
3) Knight, Winston A. *Fundamentals of Metal Machining and Machine Tools*. 3rd ed., CRC Mechanical Engineering, Taylor and Francis, 2016.
4) Krar, Steve. *Machine Tool and Manufacturing Technology*. Willey, 1997.
5) Rao, P. N. *Manufacturing Technology: Metal Cutting and Machine Tools*. Tata McGraw-Hill Education, 2000.

10. Welding Practice **Credits: 1**

Prerequisite: None

Course Description:

This course introduces students to concepts and operating principles of arc welding, welding sticks, and operating principles of TIG and MIG systems.

Textbook:

1) Jeffus, Larry. *Welding: Principles and Applications*. 7th ed., *Cengage Learning*, 2011.

11. Mechanical Practice 1 **Credits: 4**

Prerequisite:

Course Description:

This course provides basic knowledge and skills in turning and grinding.

Textbooks:

1) El-Hofy, Hassan Abdel-Gawad. *Fundamentals of Machining Processes: Conventional and Nonconventional*. CRC Press, 2013.
2) Juneja, B. L. *Fundamentals of Metal Cutting and Machine Tools*. New Age International, 2003.
3) Knight, Winston A. *Fundamentals of Metal Machining and Machine Tools*. 3rd ed., CRC Mechanical Engineering, Taylor and Francis, 2016.
4) Krar, Steve. *Machine Tool and Manufacturing Technology*. Willey, 1997.
5) Rao, P. N. *Manufacturing Technology: Metal Cutting and Machine Tools*. Tata McGraw-Hill Education, 2000.

12. Mechanical Practice 2 **Credits: 3**

Prerequisite:

Course Description:

This course provides basic knowledge and skills in milling.

Textbooks:

1) El-Hofy, Hassan Abdel-Gawad. *Fundamentals of Machining Processes: Conventional and Nonconventional*. CRC Press, 2013.

2) Juneja, B. L. *Fundamentals of Metal Cutting and Machine Tools*. New Age International, 2003.
3) Knight, Winston A. *Fundamentals of Metal Machining and Machine Tools*. 3rd ed., CRC Mechanical Engineering, Taylor and Francis, 2016.
4) Krar, Steve. *Machine Tool and Manufacturing Technology*. Willey, 1997.
5) Rao, P. N. *Manufacturing Technology: Metal Cutting and Machine Tools*. Tata McGraw-Hill Education, 2000.

13. Practice of Manufacturing Process Automation **Credits: 1**

Prerequisite: None

Course Description:

This course helps students reinforce their knowledge of manufacturing process automation, and the use of sensors, motors, pneumatic/hydraulic valves in the control system. It also enables the students to apply working principles of elements of automatic control, install and program PLC, and connect PLC with peripheral devices.

Textbooks:

1) El-Hofy, Hassan Abdel-Gawad. *Fundamentals of Machining Processes: Conventional and Nonconventional*. CRC Press, 2013.
2) Juneja, B. L. *Fundamentals of Metal Cutting and Machine Tools*. New Age International, 2003.
3) Knight, Winston A. *Fundamentals of Metal Machining and Machine Tools*. 3rd ed., CRC Mechanical Engineering, Taylor and Francis, 2016.
4) Krar, Steve. *Machine Tool and Manufacturing Technology*. Willey, 1997.
5) Rao, P. N. *Manufacturing Technology: Metal Cutting and Machine Tools*. Tata McGraw-Hill Education, 2000.

14. Internship **Credits: 2**

Prerequisite:

Course Description:

This course helps students to strengthen and improve knowledge gained during their time at university. The aim is to apply specialized knowledge to solve real problems while practicing the skills of an engineer, building styles and working methods of electronic engineers in professional activities. Furthermore, the goal is to train the students' ability in the domain of analysis, synthesis, proposals and problem-solving using soft skills.

15. Graduation Thesis
Credits: 7

The dissertation consists mainly of an industrial or research-based project carried out under the supervision of one or more faculty members. It introduces students to the basic methodology of research in the context of a problem of current research interest.

10. Campus Infrastructure

Follow the Ministry of education and training's regulations

10.1 Workshops and Laboratories:

- Mechanical Measurement Technology Laboratory
- Industrial Electrical Equipment Laboratory
- Equipment Maintenance Laboratory
- Metalworking Workshop
- Gas Welding Workshop
- Electroslag Welding Workshop
- CAD/CAM-CNC Laboratory
- Computer cluster
- Simulation and Automation Laboratory
- PLC Laboratory
- Pneumatic - Hydraulic Laboratory
- Automated Manufacturing Laboratory
- Robotics Laboratory

10.2 Library, Website

- University's Library
- Faculty's Library
- Faculty's Website

11. Program Implementation Guidelines

The training program is implemented in accordance with the current regulations for full-time university-level credit-based training, as stipulated by the Ministry of Education and Training and Ho Chi Minh City University of Technology and Education.

The specified hours are calculated as follows:

- 1 credit = 15 hours of theoretical lectures or in-class discussions
- 1 credit = 30 - 45 hours of laboratory work or practical exercises
- 1 credit = 30 hours of self-study
- 1 credit = 45 - 90 hours of on-site internship
- 1 credit = 45 - 60 hours for project work or graduation thesis

The total hours for a course must be a multiple of 15.

Political Theory Knowledge: Implemented according to the regulations of the Ministry of Education and Training.

Foreign Language Knowledge: The foreign language output standard is determined by the university's Science and Training Council at the beginning of each admission cohort. Throughout their studies, the university will monitor the students' foreign language proficiency development each academic year to decide the number of credits for courses that students are allowed to register for in a semester. Students can self-study or register for the foreign language proficiency development program according to the university's plan.

Physical Education Knowledge: Implemented according to the regulations of the Ministry of Education and Training. For Physical Education 2 and 3, students can select from the course catalog when registering for modules.

National Defense Education Knowledge: Implemented according to the regulations of the Ministry of Education and Training. Students accumulate credits and are granted a certificate after completing the requirements of the module.

Elective Social Sciences and Humanities Knowledge: Students select 2 courses, equivalent to 4 credits, from the course catalog when registering for modules.

Elective Foundational Major Knowledge: Students select 2 courses, equivalent to 6 credits, from the course catalog when registering for modules.

Elective Specialized Major Knowledge: Students select 2 courses, equivalent to 6 credits, from the course catalogue when registering for modules.

The remaining knowledge blocks are arranged into 8 semesters as presented in section 8.

VICE PRESIDENT	DEAN OF FACULTY OF INTERNATIONAL EDUCATION
Dr. Quach Thanh Hai	**Assoc. Prof. Dr. Truong Dinh Nhon**