MINISTRY OF EDUCATION AND TRAINING
QUY NHƠN UNIVERSITY

UNDERGRADUATE PROGRAM

Level of education:	**Undergraduate**
Major:	**Powertrain Mechanical Engineering**
Specicality (if any):	
Code:	**7520116**
Type of education:	**Full-time**

Gia Lai, 2025

MINISTRY OF EDUCATION AND TRAINING
QUY NHON UNIVERSITY

SOCIALIST REPUBLIC OF VIET NAM
Independence - Freedom - Happiness

UNDERGRADUATE PROGRAM

(Issued together with Decision No. 1634/QĐ-ĐHQN dated June 9, 2025 of the Rector of Quy Nhon University)

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Code:	**7520116**
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1. PROGRAM OBJECTIVES (POs)

1.1. General objectives

Powertrain Mechanical Engineering program is designed with an applied focus, aiming to train engineers with fundamental knowledge for professional development in the field of mechanical engineering; possessing strong professional competence, practical skills, and the necessary research and creative abilities to solve problems related to the design, implementation, and operation of mechanical systems; and having good political, ethical, and health qualities to meet the needs of the labor market.

1.2. Specific objectives

+ PO1: Possesses basic knowledge of politics and law, comprehensive knowledge of department of natural sciences and social sciences, and solid professional knowledge in the field of mechanical engineering and interdisciplinary science and technology.

+ PO2: Capable of analyzing, calculating, designing, operating, maintaining, and repairing mechanical power systems to meet practical job requirements.

+ PO3: Possesses communication skills, teamwork skills, critical thinking, and digital literacy to work in a multidisciplinary environment.

+ PO4: Possesses the ability to learn and conduct lifelong research, professional ethics and responsibility towards work, community and society, self-updating knowledge, ability to work independently and creatively; capable of identifying, solving problems and drawing accurate conclusions in the field of mechanical engineering.

2. EMPLOYMENT OPPORTUNITIES AND FURTHER STUDY PROSPECTS

2.1. Job Positions

- Working as a technician or manager in factories manufacturing and assembling power equipment and automobiles; or in companies that trade and provide services related to power equipment or automobiles.
- Working at road vehicle inspection centers, or administrative and professional units related to the automotive engineering industry.
- Taking on roles such as technical team leader, maintenance engineer, or operations officer at companies specializing in the operation, maintenance, and repair of power equipment.
- Responsible for the maintenance and repair of mechanical equipment on the production line.
- Working at vehicle inspection stations or agencies that inspect the quality of motor vehicles.
- Starting a business in the automotive service sector, engine manufacturing, or developing new mechanical products.

2.2. Opportunities for further education and skill development

- Pursue postgraduate programs at home and abroad to specialize in mechanical engineering, automotive engineering, or industrial management.
- Become a lecturer at colleges and universities after completing advanced training programs.
- Participate in professional courses or certifications such as mechanical inspection, modern automotive maintenance, or green energy technology in automotive engineering.

3. LEARNING OUTCOMES

Program Learning Outcomes (PLOs)

PLO1: Able to apply basic knowledge of social sciences, department of natural sciences , and digital technology to communicate, understand, and act correctly in life, in learning, and in research.

PLO2: Possess fundamental technical and industry-specific knowledge to meet the requirements for approaching and researching the field of mechanical engineering.

PLO3: Possesses comprehensive and in-depth specialized knowledge in mechanical engineering and interdisciplinary science and technology to analyze, design, and solve new and complex engineering problems in the field of mechanical engineering and technology.

PLO4: Capable of applying industry knowledge to solve technical problems in practical production within the field of mechanical engineering.

PLO5: Possesses organizational and management skills; has the capacity for in-depth professional critical analysis in the specific field of mechanical engineering; and is adaptable and capable of self-directing a specialized career path.

PLO6: Possesses effective communication and teamwork skills in a multidisciplinary, multicultural environment.

PLO7: Demonstrates creative design thinking capabilities, in-depth research and development of specialized products, and professional ethics and responsibility when providing expert opinions and assessments in the field of mechanical engineering.

Mapping of Program Objectives (POs) and Program Learning Outcomes (PLOs)

Program Objectives (POs)	**Program Learning Outcomes (PLOs)**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
PO1	x	x					
PO2			x	x	x		
PO3			x			x	x
PO4					x	x	x

Performance Indicators (PIs) used to assess the Program Learning Outcomes (PLOs) of the Powertrain Mechanical Engineering Program

Program Learning Outcomes	Performance Indicators
PLO1: Able to apply basic knowledge of social sciences, Department of Natural Sciences , and digital technology to communicate, understand, and act correctly in life, in learning, and in research.	PI 1.1: Applying basic knowledge of social sciences to develop correct understanding and actions in life, studies, and research.
	PI 1.2: Apply basic knowledge of department of natural sciences to model, design, calculate, analyze, and solve engineering problems.

	PI 1.3: Applying basic knowledge about digital technology is used for learning, research, participating in social activities, exercising citizenship rights, and managing one's digital identity and reputation.
PLO2: Possess fundamental technical and industry-specific knowledge to meet the requirements for approaching and researching the field of mechanical engineering.	PI 2.1 : Apply fundamental engineering knowledge to solve dynamic engineering problems; present the design and manufacturing process of components and parts in a dynamic mechanical system.
	PI 2.2: Apply fundamental knowledge of the field to calculate, analyze, design, and evaluate the performance of machinery and drive systems in automobiles, tractors, construction machinery, and electrical and electronic control in mechanical power systems.
PLO3: Possesses comprehensive and in-depth specialized knowledge in mechanical engineering and interdisciplinary science and technology to analyze, design, and solve new and complex engineering	PI 3.1: Application of modern software (such as CAD, CAM, CAE, Siemens NX) for simulation, vibration analysis, design, and high-precision CNC machining in the manufacturing of mechanical power products.

problems in the field of mechanical engineering and technology.	PI 3.2: Apply interdisciplinary and specialized scientific and technical knowledge to analyze, design, and solve complex mechanical, electronic, and automation engineering problems.
PLO4: Capable of applying industry knowledge to solve technical problems in practical production within the field of mechanical engineering.	PI 4.1: Apply industry knowledge to design, manufacture, and improve mechanical power systems in practical production.
	PI 4.2: Apply industry knowledge to analyze, evaluate, maintain, and repair mechanical power systems in factories, enterprises, and transportation vehicles.
PLO5: Possesses organizational and management skills; has the capacity for in-depth professional critical analysis in the specific field of mechanical engineering; and is adaptable and capable of self-directing a specialized career path.	PI 5.1: Possesses comprehensive organizational and managerial skills, as well as in-depth professional critical thinking abilities to manage engineering projects, production management, and system operations; analyze and evaluate new technologies; and solve complex engineering problems in the field of mechanical engineering.
	PI 5.2: Possesses the ability to adapt and self-direct career development in depth to guide career growth and

	adapt to technological changes and the work environment.
PLO6: Possesses effective communication and teamwork skills in a multidisciplinary, multicultural environment.	PI 6.1: Possesses the skills to effectively communicate knowledge, including presenting and explaining specialized expertise; writing technical reports and professional documents; and the ability to mentor and train new employees and technical workers within the company.
	PI 6.2: Possesses effective teamwork skills in a multidisciplinary environment to collaborate in interdisciplinary engineering teams, work in multinational corporations, participate in international projects, and develop a career in the global engineering field.
PLO7: Demonstrates creative design thinking capabilities, in-depth research and development of specialized products, and professional ethics and responsibility when providing expert opinions and assessments in the field of mechanical engineering.	PI 7.1: Possesses creative design thinking and conducts in-depth research and development of specialized products in mechanical engineering to ensure the development of mechanical engineering products that meet international standards.
	PI 7.2: Understand and strictly adhere to personal and professional ethical

	principles in all activities related to the profession, ensuring integrity and transparency.

4. PROGRAM DURATION AND TOTAL CREDITS

4.1. Program Duration: 4.5 years (9 semesters)

4.2. Total credits: 150 credits

Structure of the Power Mechanical Engineering program

No.	Program structure	Credits
1	**General Knowledge**	**24**
2	**Professional Knowledge**	**126**
2.1	Fundamental knowledge	45
2.2	Specialized knowledge	39
2.3	Internship, practice	34
2.4	Graduation thesis	8
	Total	150

5. ADMISSION REQUIREMENTS

Admission criteria are based on the current admission regulations of Quy Nhon University.

6. TRAINING METHOD, GRADUATION REQUIREMENTS

6.1. Training Method

Credit-based training

6.2. Graduation Requirements: (chuyên môn, môn điều kiện, chuẩn ngoại ngữ, tin học)

- Academic requirements: Accumulate sufficient course credits and workload for the training program, with a cumulative GPA of 2.00 or higher for the entire course.
- Physical Education, National Defense and Security: Complete the Physical Education modules and obtain a National Defense and Security Education certificate.
- Standard Foreign Language: Meets the foreign language proficiency standards as prescribed by the School.

Standard Believe learn: Meet the IT proficiency standards as prescribed by the University.

7. TEACHING METHODS AND LEARNING ASSESSMENT

7.1 Teaching Methods

➢ Direct teaching: The majority of theoretical subjects are taught using methods such as lectures, question-and-answer sessions, guided questioning, assigning homework, and assessing students' self-learning abilities through exercises and discussions. The corresponding teaching methods are as follows:

- Lecture
- Suggested questions
- Discuss

➢ Indirect teaching: Some courses are taught indirectly without any explicit lecturer intervention, such as internships and graduation projects. The corresponding teaching methods are as follows:

- Open-ended questions
- Idea generation
- Case study
- Problem solving

7.2 Learning Assessment

In accordance with the Regulations on undergraduate training issued together with Decision No. 1487/QD-DHQN dated July 1, 2021, by the Rector of Quy Nhon University.

8. PROGRAM CONTENT

No	Course code	Course name	Semester	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Managing Faculty	Note
					Theory	Practise	Tests						
I. General Knowledge				**36**									
Compulsor													
I.1. Political Science and Law				***13***									
1	1130299	Marxist-Leninist Philosophy	2	3	40		10			85		Department of political science-Law & State Management	
2	1130049	General Law	2	2	27		6			57		Department of political science-Law & State Management	
3	1130300	Marxist-Leninist Political Economy	3	2	27		6			57	1130299	Department of political science-Law & State Management	
4	1130301	Scientific socialism	4	2	27		6			57	1130300	Department of political science-Law & State Management	
5	1130302	History of the Communist Party of Vietnam	5	2	27		6			57	1130301	Department of political science-Law & State Management	
6	1130091	Ho Chi Minh Thought	6	2	27		6			57	1130302	Department of political science-Law & State Management	
I.2. Physical Education, National Defense and Security Education				***12***									
I.2.1. National Defense and Security Education				***9***									
7	1120168	National Defense and Security Education 1	2	3	37		16			82		National Defense and Security Education Center	
8	1120169	National Defense and Security Education 2	2	2	22		16			52		National Defense and Security Education Center	
9	1120170	National Defense and Security Education 3	2	2	14			32		44		National Defense and Security Education Center	
10	1120171	National Defense and Security Education 4	2	2	4			56		36		National Defense and Security Education Center	
I.2.2. Physical Education: Students choose one of the following eight groups.				***3***									
11	1120172	Physical Education 1 (Football 1)	1	1	4			26		21		Department of Physical Education	
12	1120173	Physical Education 2 (Football 2)	2	1	4			26		21	1120172	Department of Physical Education	

13	1120174	Physical Education 3 (Football 3)	3	1	4			26		21	1120173	Department of Physical Education	
14	1120175	Physical Education 1 (Volleyball 1)	1	1	4			26		21		Department of Physical Education	
15	1120176	Physical Education 2 (Volleyball 2)	2	1	4			26		21	1120175	Department of Physical Education	
16	1120177	Physical Education 3 (Volleyball 3)	3	1	4			26		21	1120176	Department of Physical Education	
17	1120178	Physical Education 1 (Basketball 1)	1	1	4			26		21		Department of Physical Education	
18	1120179	Physical Education 2 (Basketball 2)	2	1	4			26		21	1120178	Department of Physical Education	
19	1120180	Physical Education 3 (Basketball 3)	3	1	4			26		21	1120179	Department of Physical Education	
20	1120181	Physical Education 1 (Badminton 1)	1	1	4			26		21		Department of Physical Education	
21	1120182	Physical Education 2 (Badminton 2)	2	1	4			26		21	1120181	Department of Physical Education	
22	1120183	Physical Education 3 (Badminton 3)	3	1	4			26		21	1120182	Department of Physical Education	
23	1120184	Physical Education 1 (Traditional Vietnamese Martial Arts 1)	1	1	4			26		21		Department of Physical Education	
24	1120185	Physical Education 2 (Traditional Vietnamese Martial Arts 2)	2	1	4			26		21	1120184	Department of Physical Education	
25	1120186	Physical Education 3 (Traditional Vietnamese Martial Arts 3)	3	1	4			26		21	1120185	Department of Physical Education	
26	1120187	Physical Education 1 (Taekwondo 1)	1	1	4			26		21		Department of Physical Education	
27	1120188	Physical Education 2 (Taekwondo 2)	2	1	4			26		21	1120187	Department of Physical Education	
28	1120189	Physical Education 3 (Taekwondo 3)	3	1	4			26		21	1120188	Department of Physical Education	
29	1120190	Physical Education 1 (Karatedo 1)	1	1	4			26		21		Department of Physical Education	
30	1120191	Physical Education 2 (Karatedo 2)	2	1	4			26		21	1120190	Department of Physical Education	
31	1120192	Physical Education 3 (Karatedo 3)	3	1	4			26		21	1120191	Department of Physical Education	
32	1120239	Physical Education 1 (Pickleball 1)	1	1	4			26		21		Department of Physical Education	
33	1120240	Physical Education 2 (Pickleball 2)	2	1	4			26		21	1120239	Department of Physical Education	
34	1120241	Physical Education 3 (Pickleball 3)	3	1	4			26		21	1120240	Department of Physical Education	
I.3. Foreign Languages				***7***									
35	1090061	English 1	1	3	45					90		Department of Foreign Languages	
36	1090166	English 2	2	4	40	20				120	1090061	Department of Foreign Languages	
I.4. Social Sciences				***4***									
37	2030003	Communication skills	1	2	18		4	20		60		Department of Social Sciences and Humanities	

38	1150422	Startup	6	2	20	5	10			60		Department of Finance, Banking & Business Administration	
II. Professional Knowledge				**126**									
II.1. **Fundamental Knowledge**				***45***									
39	1160742	Basic Computer Science (Python)	2	3	30			30		90		Department of Engineering and Technology	
40	1010354	Linear algebra	3	3	30	15				90		Department of Mathematics and Statistice	
41	1010052	Calculus 1	1	3	34	11				90		Department of Mathematics and Statistice	
42	2020466	Chemical fuels	4	2	25		10			60		Department of Department of Natural Sciences	
43	1010059	Calculus 2	2	3	36	9				90	1010052	Department of Mathematics and Statistice	
44	1020162	Physics 1	1	2	28		4			58		Department of Natural Sciences	
45	1020163	Physics 2	2	2	24	4	4			58	1020162	Department of Natural Sciences	
46	1020164	Physics Experiment	2	1				30		15	1020163	Department of Natural Sciences	
47	1160114	Engineering Mathematics	3	2	22	8				60		Department of Engineering and Technology	
48	1160743	Applied fluid mechanics	6	3	45					90		Department of Engineering and Technology	
49	2040002	Safety and environmental engineering	3	2	25	5				60		Department of Engineering and Technology	
50	1160744	Technical drawing	1	2	30					60		Department of Engineering and Technology	
51	2040069	Principles - Machine Details	4	3	30	15				60		Department of Engineering and Technology	
52	2040070	Applied Mechanics	3	3	35	10				90		Department of Engineering and Technology	
53	1160631	Electrical and Electronic Circuit Engineering	4	2	30					60		Department of Engineering and Technology	
54	1160634	Automatic control theory	5	2	30					60		Department of Engineering and Technology	
55	1160500	Microprocessors - Microcontrollers	5	3	30			30		90		Department of Engineering and Technology	
56	2040042	Tolerances and measurement techniques	3	2	30					60		Department of Engineering and Technology	
57	1160745	Engineering materials	3	2	30					60		Department of Engineering and Technology	

II.2. Specialized Knowledge				**39**									
II.2.1. Compulsor				***35***									
58	1090418	English for Specific Purposes	7	2	25	5				60	1090166	Department of Foreign Languages	
59	1160746	Introduction to Mechanical Engineering	1	2	30					60		Department of Engineering and Technology	
60	2040068	Internal combustion engine	4	3	30	15				60		Department of Engineering and Technology	
61	1160747	Automotive powertrain systems using internal combustion engines.	5	2	30					60		Department of Engineering and Technology	
62	1160748	Electric and Hybrid Vehicle Powertrain Systems	5	3	30	15				90		Department of Engineering and Technology	
63	1160749	Electrical equipment in the powertrain system	5	2	30					60		Department of Engineering and Technology	
64	1160750	Special machining techniques	4	2	30					60		Department of Engineering and Technology	
65	1160751	Techniques for diagnosing, maintaining, and repairing power equipment.	7	3	45					90		Department of Engineering and Technology	
66	1160752	Stationary propulsion systems and ships	6	2	30					60		Department of Engineering and Technology	
67	1160753	Mechanical drive system design and calculation project	7	1						60		Department of Engineering and Technology	
68	1160754	Industrial robots	8	2	30					60		Department of Engineering and Technology	
69	1160755	Pneumatic and hydraulic drive	6	2	25		10			60		Department of Engineering and Technology	
70	1160756	Modern machine manufacturing technology	6	2	30					60		Department of Engineering and Technology	
71	1160757	Industrial sensors	7	2	30					60		Department of Engineering and Technology	
72	1160636	Electric drive	4	2	30					60		Department of Engineering and Technology	
73	1160758	Power equipment design project	8	1								Department of Engineering and Technology	
II.2.2. Optional:				***6***									
74	1160759	CAE practice in mechanical structure calculations and automotive safety.	8	2				60		60		Department of Engineering and Technology	

75	1160760	Practice designing and simulating power devices on a computer.	8	2				60		90		Department of Engineering and Technology	
76	1160762	Testing of power equipment	8	2	30					60		Department of Engineering and Technology	
77	1160763	Machine parts restoration technology	8	2	30					60		Department of Engineering and Technology	
78	1160761	Vehicles and specialized machinery	8	2	25	5				60		Department of Engineering and Technology	
79	1140265	Industry economics	8	2	30					60		Department of Economics and Accounting	
80	1150545	Industrial production management	8	2	20	8	2	2		60		Department of Finance, Banking & Business Administration	
81	1140199	Basic Logistics	8	2	30					60		Department of Economics and Accounting	
82	1160764	Automating the production process	8	2	15	15				60		Department of Engineering and Technology	
83	1050387	Application programming	7	2	15			30		60		Department of Imformation Technology	
84	1160635	Embedded systems	7	2	30					60		Department of Engineering and Technology	
85	1160534	Artificial intelligence	7	2	30					60		Department of Engineering and Technology	
86	1160765	New energy in the powertrain system	7	2	30					60		Department of Engineering and Technology	
87	1160766	Humans and the environment	8	2	30					60		Department of Engineering and Technology	
II.3. Internship, practice				***34***									
88	1160767	Practice in hydraulic and pneumatic actuation	7	1				30		30		Department of Engineering and Technology	
89	1160768	Practice in metal cutting and machining.	6	2				60		60		Department of Engineering and Technology	
90	1160769	Computer-aided design practice	3	2				60		60		Department of Engineering and Technology	
91	1160770	Mechanical practice	4	2				60		60		Department of Engineering and Technology	
92	2040076	Internal Combustion Engine Practice	4	3				90		90		Department of Engineering and Technology	
93	1160771	Practical exercises on automotive	6	2				60		60		Department of Engineering and Technology	

		powertrain systems.											
94	1160772	Practical exercises on electrical equipment in power systems.	6	2				60		60		Department of Engineering and Technology	
95	1160773	Practice CAD/CAM/CNC	7	3				90		90		Department of Engineering and Technology	
96	1160774	Practice in maintaining power equipment.	7	2				60		60		Department of Engineering and Technology	
97	1160775	CNC machining practice	8	3				90		90		Department of Engineering and Technology	
98	1160776	Practice PLC programming	8	2				60		60		Department of Engineering and Technology	
99	1160777	Implementing production process automation	8	2				60		60		Department of Engineering and Technology	
100	1160778	Cognitive practice	1	1				90				Department of Engineering and Technology	
101	1160779	Internship	8	2				180				Department of Engineering and Technology	
102	1160780	Graduation internship	9	5				150		300		Department of Engineering and Technology	
II.4. Graduation thesis				***8***									
103	1160781	Graduation project	9	8				360		480		Department of Engineering and Technology	
Total TC				**150**									

9. TENTATIVE TEACHING PLAN

Semester 1

No	**Course code**	**Course name**	**Number of credits**	**Class duration**			**Experimental/ Pratical**	**Others**	**Self-study time**	**Prerequisite course code**	**Managing Faculty**	**Note**
				Theory	**Practise**	**Tests**						
1	1090061	English 1	3	30	15				90		Department of Foreign Languages	
2	1010052	Calculus 1	3	34	11				90		Foreign Languages	
3	1020162	Physics 1	2	28		4			58		Department of Engineering and Technology	
4	1160744	Technical drawing	2	30					90		Social Sciences and Humanities	

5	2030003	Communicatio n skills	2	18		4	20	60			Department of Social Sciences and Humanities	
6	1160746	Introduction to Mechanical Engineering	2	30					60		Department of Natural Sciences	
7	1160778	Cognitive practice	1				90	TT			Department of Engineering and Technology	
Choose one of the following eight physical education modules:												
1	1120172	Physical Education 1 (Football 1)	1	4			26		21		Department of Physical Education	
2	1120175	Physical Education 1 (Volleyball 1)	1	4			26		21		Department of Physical Education	
3	1120178	Physical Education 1 (Basketball 1)	1	4			26		21		Department of Physical Education	
4	1120181	Physical Education 1 (Badminton 1)	1	4			26		21		Department of Physical Education	
5	1120184	Physical Education 1 (Traditional Vietnamese Martial Arts 1)	1	4			26		21		Department of Physical Education	
6	1120187	Physical Education 1 (Taekwondo 1)	1	4			26		21		Department of Physical Education	
7	1120190	Physical Education 1 (Karatedo 1)	1	4			26		21		Department of Physical Education	
8	1120239	Physical Education 1 (Pickleball 1)	1	4			26		21		Department of Physical Education	
Total			**15**									

Semester 2

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1130299	Marxist-Leninist Philosophy	3	40		10			85		Department of political science-Law	

											& State Management	
2	1090166	English 2	4	40	20				120	1090061	Department of Foreign Languages	
3	1160742	Basic Computer Science (Python)	3	30			30		90		Department of Engineering and Technology	
4	1130049	General Law	2	27		6			57	1130299	Department of political science-Law & State Management	
5	1010059	Calculus 2	3	36	9				90	1010052	Department of Mathematics and Statistice	
6	1020163	Physics 2	2	24	4	4			58	1020162	Department of Natural Sciences	
7	1020164	Physics Experiment	1				30		15	1020163	Department of Natural Sciences	
Choose one of the following eight physical education modules:												
1	1120173	Physical Education 2 (Football 2)	1	4			26		21	1120172	Department of Physical Education	
2	1120176	Physical Education 2 (Volleyball 2)	1	4			26		21	1120175	Department of Physical Education	
3	1120179	Physical Education 2 (Basketball 2)	1	4			26		21	1120178	Department of Physical Education	
4	1120182	Physical Education 2 (Badminton 2)	1	4			26		21	1120181	Department of Physical Education	
5	1120185	Physical Education 2 (Traditional Vietnamese Martial Arts 2)	1	4			26		21	1120184	Department of Physical Education	
6	1120188	Physical Education 2 (Taekwondo 2)	1	4			26		21	1120187	Department of Physical Education	
7	1120191	Physical Education 2 (Karatedo 2)	1	4			26		21	1120190	Department of Physical Education	
8	1120240	Physical Education 2 (Pickleball 2)	1	4			26		21	1120239	Department of Physical Education	

Total	18									

Semester 3

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Managing Faculty	Note
				Theory	Practise	Tests						
1	1130300	Marxist-Leninist Political Economy	2	27		6			57	1130299	Department of political science-Law & State Management	
2	1160114	Engineering Mathematics	2	22	8				60		Department of Engineering and Technology	
3	1010354	Linear algebra	3									
4	1160745	Engineering materials	2	30					90		Department of Engineering and Technology	
5	2040002	Safety and environmental engineering	2	25	5				60		Department of Engineering and Technology	
6	2040070	Applied Mechanics	3	35	10				90		Department of Engineering and Technology	
7	2040042	Tolerances and measurement techniques	2	30					60		Department of Engineering and Technology	
8	1160769	Computer-aided design practice	2				60		60		Department of Engineering and Technology	
Choose one of the following eight physical education modules:												

1	1120174	Physical Education 3 (Football 3)	1	4			26		21	1120173	Department of Physical Education	
2	1120177	Physical Education 3 (Volleyball 3)	1	4			26		21	1120176	Department of Physical Education	
3	1120180	Physical Education 3 (Basketball 3)	1	4			26		21	1120179	Department of Physical Education	
4	1120183	Physical Education 3 (Badminton 3)	1	4			26		21	1120182	Department of Physical Education	
5	1120186	Physical Education 3 (Traditional Vietnamese Martial Arts 3)	1	4			26		21	1120185	Department of Physical Education	
6	1120189	Physical Education 3 (Taekwondo 3)	1	4			26		21	1120188	Department of Physical Education	
7	1120192	Physical Education 3 (Karatedo 3)	1	4			26		21	1120191	Department of Physical Education	
8	1120241	Physical Education 3 (Pickleball 3)	1	4			26		21	1120240	Department of Physical Education	
Total			**18**									

Semester 4

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Department of Management course	Note
				Theory	Practise	Tests						
1	1130301	Scientific socialism	2	27		6			57	1130300	Department of political science-Law & State Management	
2	2040069	Principles - Machine Details	3	30	15				60		Department of Engineering and Technology	

3	1160631	Electrical and Electronic Circuit Engineering	2	30					60		Department of Engineering and Technology	
4	2020466	Chemical fuels	2	25		10			60	1010354	Department of Mathematics and Statistice	
5	2040068	Internal combustion engine	3	30	15				90		Department of Engineering and Technology	
6	1160750	Special machining techniques	2	30					60		Department of Engineering and Technology	
7	1160636	Electric drive	2	30					60		Department of Engineering and Technology	
8	1160770	Mechanical practice	2				60		60		Department of Engineering and Technology	
9	1120168	National Defense and Security Education 1	3	37		16			82		National Defense and Security Education Center	
10	1120169	National Defense and Security Education 2	2	22		16			52		National Defense and Security Education Center	
11	1120170	National Defense and Security Education 3	2	14			32		44		National Defense and Security Education Center	
12	1120171	National Defense and Security Education 4	2	4			56		36		National Defense and Security Education Center	
Total			**18**									

Semester 5

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	HP Code learn before	Department of Management course
				Theory	Practise	Tests					

1	1130302	History of the Communist Party of Vietnam	2	27		6			57	1130301	Department of political science-Law & State Management
2	1160634	Automatic control theory	2	30					60		Department of Engineering and Technology
3	1160500	Microprocessors - Microcontrollers	3	30		30			90		Department of Engineering and Technology
4	1160747	Automotive powertrain systems using internal combustion engines.	2	30					60		Department of Engineering and Technology
5	1160748	Electric and Hybrid Vehicle Powertrain Systems	3	30	15				90		Department of Engineering and Technology
6	1160749	Electrical equipment in the powertrain system	2	30					60		Department of Engineering and Technology
7	2040076	Internal Combustion Engine Practice	3				90		90		Department of Engineering and Technology
Total			**17**								

Semester 6

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Department of Management course	Note
				Theory	Practise	Tests						
1	1130091	Ho Chi Minh Thought	2	27		6			57	1130302	Department of political science-Law & State Management	
2	1150422	Startup	2	20	5		10		60		Department of Finance, Banking & Business Administration	
3	1160743	Applied fluid mechanics	3	45					90		Department of Engineering and Technology	
4	1160752	Stationary propulsion systems and ships	2	30					60		Department of Engineering and Technology	

5	1160755	Pneumatic and hydraulic drive	2	25		10			60		Department of Engineering and Technology	
6	1160756	Modern machine manufacturing technology	2	30					60		Department of Engineering and Technology	
7	1160771	Practical exercises on automotive powertrain systems.	2				60		60		Department of Engineering and Technology	
8	1160772	Practical exercises on electrical equipment in power systems.	2				60		60		Department of Engineering and Technology	
9	1160768	Practice in metal cutting and machining.	2				60		60		Department of Engineering and Technology	
Total			**19**									

Semester 7

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Department of Management course	Note
				Theory	Practise	Tests						
1	1090418	English for Specific Purposes	2	25	5				60	1090166	Department of Foreign Languages	
2	1160751	Techniques for diagnosing, maintaining, and repairing power equipment.	3	45					90		Department of Engineering and Technology	
3	1160753	Mechanical drive system design and calculation project	1						60		Department of Engineering and Technology	
4	1160757	Industrial sensors	2	30					60		Department of Engineering and Technology	
5	1160767	Practice in hydraulic and pneumatic actuation	1				30		60		Department of Engineering and Technology	
6	1160773	Practice CAD/CAM/CNC	3				90		90		Department of Engineering and Technology	

7	1160774	Practice in maintaining power equipment.	2				60		60		Department of Engineering and Technology	
8		Choose one of four modules.	2									
8.1	1050387	Application programming	2	15		30			60		Department of Imformation Technology	
8.2	1160635	Embedded systems	2	30					60		Department of Engineering and Technology	
8.3	1160534	Artificial intelligence	2	30					60		Department of Engineering and Technology	
8.4	1160765	New energy in the powertrain system	2	30					60		Department of Engineering and Technology	
Total			**16**									

Semester 8

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Department of Management course	Note
				Theory	Practise	Tests						
1	1160754	Industrial robots	2	30						1090166	Department of Engineering and Technology	
2	1160758	Power equipment design project	1						60		Department of Engineering and Technology	
3	1160775	CNC machining practice	3				90		90		Department of Engineering and Technology	
4	1160776	Practice PLC programming	2				60		60		Department of Engineering and Technology	
5	1160777	Implementing production process automation	2				60		60		Department of Engineering and Technology	
6	1160779	Internship	2				180				Department of Engineering	

											and Technology	
7		Choose one of five modules.	2									
7.1	1140265	Industry economics	2	30					60		Department Of Economics And Accounting	
7.2	1150545	Industrial production management	2	20	8	2	2		60		Department of Finance, Banking & Business Administration	
7.3	1140199	Basic Logistics	2	30					60		Department Of Economics And Accounting	
7.4	1160766	Humans and the environment	2	30					60		Department of Engineering and Technology	
7.5	1160763	Machine parts restoration technology	2	30					60		Department of Engineering and Technology	
8		Choose one of five modules.	2									
8.1	1160759	CAE practice in mechanical structure calculations and automotive safety.	2				60		60		Department of Engineering and Technology	
8.2	1160760	Practice designing and simulating power devices on a computer.	2				60		60		Department of Engineering and Technology	
8.3	1160762	Power equipment testing	2	30					60		Department of Engineering and Technology	
8.4	1160761	Vehicles and specialized machinery	2	30					60		Department of Engineering and Technology	
8.5	1160764	Automating the production process	2	15	15				60		Department of Engineering and Technology	
Total			**16**									

Semester 9

No	Course code	Course name	Number of credits	Class duration			Experimental/ Pratical	Others	Self-study time	Prerequisite course code	Department of Management course	Note
				Theory	Practise	Tests						
1	1160780	Graduation internship	5				150		300	1130302	Department of Engineering and Technology	
2	1160781	Graduation project	8				360		480		Department of Engineering and Technology	
Total			**13**									

10. GUIDELINES FOR PROGRAM IMPLEMENTATION

- This training program will be applied to students majoring in Mechanical Engineering starting from the 2025 admissions period.

- The training process is based on the designed curriculum, training objectives and target audience, human resource requirements, and specific training requirements. For elective courses, depending on the actual situation of development trends and social needs, the Faculty will advise students on choosing appropriate courses.

- The head of department is responsible for organizing and guiding the principles for developing detailed syllabi to ensure that objectives, content, and requirements are met, while also satisfying the needs of learners and society.

- The training program is reviewed and updated at least once every 5 years to meet the development of the mechanical engineering industry and align with socio-economic development needs.

Binh Đinh, June 09, 2025

DEAN OF FACULTY	***HEAD OF TRAINING OFFICE***	***BY THE DELEGATION OF THE RECTOR VICE-RECTOR***
Dr. Tran Thanh Thai	**Dr. Le Xuan Vinh**	**Dr. Đinh Anh Tuan**