MINISTRY OF EDUCATION AND TRAINING
NAM CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIET NAM
Independence – Freedom - Happiness

MASTER'S DEGREE TRAINING PROGRAM
Application-Oriented
Program Name: Master of Automotive Engineering
Program Code: 8520130

1. Introduction to the program

The Master's training program in Automotive Engineering equips candidates with advanced expertise in the field of Automotive Engineering and broad knowledge of related disciplines; the ability to work independently and collaboratively in conducting scientific research within the field; a scientific mindset, with the capability to approach and address industry-specific scientific problems, and skills to analyze scientific issues in the field and propose solutions; and the ability to present scientific content and publish research findings before a panel.

2. General information about the program

1	Name of program	Master of Automotive Engineering
2	Program code	8520130
3	Management Unit	Khoa Cơ khí Động lực
4	Admission Requirements	
4.1	Relevant Disciplines (No Additional Knowledge Required)	Automotive Engineering Technology Automotive Engineering Power Mechanics Engineering
4.2	Relevant Disciplines (Additional Knowledge Required)	Mechanical Engineering Technology Mechatronics Engineering Technology Control and Automation Engineering Machine Manufacturing Technology Thermal Engineering Technology Shipbuilding Engineering Technology Industrial Maintenance Mechanical Engineering Mechatronics Engineering Thermal Engineering Industrial Engineering Industrial Systems Engineering Aerospace Engineering Shipbuilding Engineering
4.3	General Requirements	Bachelor's degree (or equivalent) in a relevant discipline.

		English proficiency at B1 level (Level 3/6) according to the Vietnamese 6-Level Foreign Language Competency Framework or equivalent.
5	Objectives	- General Objective: To train Master's degree holders in Automotive Engineering with strong expertise in the field, comprehensive interdisciplinary knowledge, and the ability to work independently or in research teams in automotive or related fields. Graduates will possess scientific thinking, the ability to approach, analyze, and solve scientific problems in the field, and propose effective solutions. They will be capable of conducting scientific research, presenting research content, and defending research outcomes before a panel. - Specific Objectives: a. Acquire interdisciplinary knowledge related to power mechanics and automotive engineering technology; apply advanced specialized knowledge to address scientific and technological issues in the power mechanics and automotive industries. b. Possess skills in analyzing, synthesizing, evaluating data, organizing, and solving scientific and technological problems in the power mechanics and automotive industries. c. Excel in scientific research roles in training, research, and development (R&D) departments, with the potential to pursue further research at the doctoral level. d. Demonstrate responsibility, confidence, and dynamism in professional activities.
6	Program Outcomes	*Program outcomes are defined in terms of knowledge, skills, level of autonomy and responsibility, and foreign language proficiency.*
6.1	Knowledge	a. General Knowledge: Apply knowledge of Philosophy and Technical English in professional practice. b. Disciplinary Knowledge: - PO1: Apply advanced knowledge of engineering and technology to effectively address issues in automotive engineering and power mechanics. c. Specialized Knowledge: - PO2: Possess interdisciplinary knowledge related to modern automotive engineering, basic knowledge of automotive production management and organization, and apply Industry 4.0 technologies in production and scientific research. d. Scientific Research Knowledge: Ability to develop research proposals and independently conduct scientific research projects.
6.2	Skills	a. Hard Skills: - PO3: Ability to search, synthesize, and self-update new knowledge in automotive engineering and power mechanics. - PO4: Ability to survey, analyze, evaluate, and solve scientific and technological issues in automotive engineering and power mechanics. - PO5: Ability to develop plans, establish projects, organize, manage, and oversee technical operations in automotive engineering and power mechanics production. - PO6: Ability to work independently and collaborate effectively in teams to address issues in the field, conduct research, and propose innovative solutions to practical challenges related to technical and managerial problems in the automotive industry. b. Soft Skills:

		- PO7: Achieve foreign language proficiency equivalent to Level 4/6 of the Vietnamese Foreign Language Competency Framework. Demonstrate active learning skills and strategies for lifelong learning, recognizing the necessity to maintain professional development in automotive engineering. −- PO8: Ability to apply Industry 4.0 achievements and specialized software to solve problems in the field of automotive engineering.
6.3	Attitude/Level of Autonomy and Responsibility	- PO9: Adhere to national regulations and laws, live and work responsibly toward the community and society, and uphold the nation's ethical values. Adapt, self-orient, and guide others in addressing stress and challenges to successfully develop projects and contribute to sustainable business growth. - PO10: Demonstrate honesty in work, study, and scientific research. Exhibit resilience, scientific ethics, professional integrity, and objectivity. Show responsibility, confidence, and dynamism in professional activities.
6.4	Foreign Language Proficiency Before Thesis Defense	Students must achieve self-study certification at B2 level (Level 4/6) according to the Vietnamese 6-Level Foreign Language Competency Framework or equivalent.
7	Program Structure	- General Knowledge: 9 credits - Disciplinary and Specialized Knowledge: 42 credits - Thesis Project: 9 credits
8	Supplementary Knowledge Modules for Disciplines Listed in Section 4.2	Disciplines Requiring Supplementary Knowledge: + Mechanical Engineering Technology + Machine Manufacturing Technology + Mechatronics Engineering Technology + Control and Automation Engineering - Number of Modules: 03; Total Credits: 8 - Module Names (Name, Code, Credits): 1. Automotive Theory – 3 credits 2. Automotive Structure – 2 credits 3. Internal Combustion Engine Principles – 3 credits Other Disciplines in Mechanical Engineering Technology and Related Fields: - Number of Modules: 05; Total Credits: 12 - Module Names (Name, Code, Credits): 1. Introduction to Automotive Engineering Technology – 2 credits 2. Automotive Theory – 3 credits 3. Automotive Structure – 2 credits 4. Internal Combustion Engine Principles – 3 credits 5. Modern Automotive Technology – 2 credits
	Entrance Exam Subjects (If Admission is by Examination)	1. Automotive Theory 2. Internal Combustion Engine Principles
10	Admission Conditions	*- Bachelor's degree in a relevant discipline.* *- English proficiency at Level 3/6 (B1) according to the Vietnamese 6-Level Foreign Language Competency Framework or equivalent.*

E. TEACHING PLAN

Expected Thesis Proposal Defense: Semester 3

Semester 1	Semester 2	Semester 3	Semester 4

No	Module Name	Total Credits	Obligatory	Elective	Theory	Practice	Prerequisites	S
1	Philosophy	3	3		3	0	-	
2	Methodology of scientific research	3	3		2	1	-	
3	Technical English	3	3		3	0		
1	Combustion process in internal combustion engine	3	3		3	0		
2	Multibody system dynamics	3	3		3	0		
3	Advanced automotive dynamics	3	3		3	0		
4	Electric car and smart car	3	3		2	1		
5	Mechatronic for automotive	3	3		2	1		
6	Automotive research and development	3	3		3	0		
7	Numerical methods & modelling for engineering	3	3		3	0		
8	Optimization and Experimental Planning	3	3		3	0		
9	Machine Vision Technology and Applications	3	3		3	0		
1	Automotive and air pollution	3		3	3	0		
2	New energies and alternative fuels in automobile	3		3	3	0		
3	Advanced internal combustion engine	3		3	3	0		
4	Advanced system in modern automobile	3		3	3	0		
5	Vehicle body engineering	3		3	2	1		
6	Automotive simulation engineering	3		3	2	1		
7	Automotive testing method	3		3	2	1		
8	Advanced material in automotive	3		3	2	1		
9	Quality management system in automotive industry	3		3	2	1		
10	4.0 technology application in automotive industry	3		3	2	1		
11	Graduation Internship	6	6			6		
12	Graduation project	9	9					
Total: 15 Credits (Mandatory: 15 Credits)								
	Total	60	60					

Philosophy (3 Credits)		Advanced automotive dynamics (3 Credits)		Automotive research and development (3 Credits)		Graduation Thesis (9 Credits)
Methodology of scientific research (3 Credits)		Electric car and smart car (3 Credits)		Numerical methods & modelling for engineering (3 Credits)		
Technical english (3 Credits)		Mechatronic for automotive (3 Credits)		Machine Vision Technology and Applications (3 Credits)		
Combustion process in internal combustion engine (3 Credits)		Optimization and Experimental Planning (3 Credits)		*Elective courses 03* *(3 Credits)*		
Multibody system dynamics (3 Credits)		*Elective courses 01* *(3 Credits)*		Graduation Internship (6 Credits)		
		Elective courses 02 *(3 Credits)*				