BẢNG TỔNG HỢP CÁC CHƯƠNG TRÌNH ĐÀO TẠO ĐÃ TÌM HIỂU

TT	Trường ĐH	Tên chương trình	Hệ	Số HK	Số HP	Tổng tín chỉ
1	Chulalongkorn University/Chula Int'l School of Engineering - Thailand http://www.ise.eng.chula.ac.th/academics/adme/curriculu	B.E in Automotive Design and Manufacturing Engineering (ADME)	Bachelor of Engineering	8	55	147

2	Universiti Teknikal Malaysia Melaka (UTeM)/ Department of Mechanical Engineering Technology	Bachelor of Mechanical Engineering Technology (Automotive Technology) with Honours	Bachelor	8		143

						Elective
						Elective
						Elective
						Elective
3	Universiti Teknikal Malaysia Melaka (UTeM)/ Faculty of Mechanical Engineering	Bachelor of Mechanical Engineering (Automotive) with Honours	Bachelor	8		129
						Elective
						Elective

						Elective
						Elective
						Elective
4	Universiti Teknologi Malaysia (UTM)/ Faculty of Mechanical Engineering	Bachelor of Engineering (Mechanical-Automotive)	Bachelor of Engineering			
5	Thammasat University/Faculty of	Bachelor of Engineering (Automotive Engineering)	Bachelor of Engineering	8		146

6	Nagoya University/ Department of Electrical and Electronic Engineering and Information Engineering: Automotive Engineering	Bachelor of Engineering (Automotive Engineering)	Bachelor of Engineering	8		

7	Nagoya University/ Department of Mechanical and Aerospace Engineering	Bachelor of Engineering (Automotive Engineering)	Bachelor of Engineering	8		

Reported by VinhTQ

Tên các HP phù hợp với HUST			
Tên HP	**HK**	**Số TC**	**Nội dung**
Manufacturing Process for Automotive Engineering I (Quy trình công nghệ gia công I)(?)	3	3	Introduction to the principles of manufacturing as related to automotive engineering; relationship between manufacturing process, material properties and structure; fundamentals of bulk deformation, sheet metal forming processes; fundamentals of solidification processing; fundamentals of metal joining; principles of heat treatment and surface modification.
Thermodynamics (Nhiệt động học)	3	3	Basic concepts; thermodynamic state and process; properties of pure substances and ideal gases; energy; the first law of thermodynamics and the first law analysis for isolated, closed, and open systems; entropy; the second law of thermodynamics and the second law analysis for isolated, closed, and opens systems; gas power cycles: Carnot, Otto, and Brayton cycles; refrigeration cycle; introduction to gas mixtures; introduction to combustion.
Automotive Engineering Workshop I (Thực tập kỹ thuật I) (?)	3	1	Hand-on study of automotive systems and components; names and functions of components and parts; basic mechanical parts; engine; electronic systems; power train; brake systems; steering mechanism; basic diagnosis.
Introduction to Automotive Engineering (Nhập môn Kỹ thuật ô tô)	3	3	Basic principles of automotive systems, components, and design; internal combustion engine; transmission; chassis; suspension; steering; brake; body; vehicle aerodynamics and automotive electronics; basic vehicle dynamics; performance and handling.
Probability and Statistics in Automotive Engineering (Xác suất thống kê trong kỹ thuật ô tô)	3	3	Engineering basis in statistics and probability; discrete and continuous probability distribution; joint probability distribution; parameter estimation: estimator, bias, consistency; point estimation; interval estimation; automotive engineering applications in measurement and uncertainty, linear regression, introduction to random process; integration of statistics in automotive engineering applications; case studies.

Manufacturing Process for Automotive Engineering II (Quy trình công nghệ gia công II)(?)	4	3	Metal removal and machining processes; processes of non-metallic materials: glass, polymers, and ceramics; surface and tribological characteristics; application of automation and computer-integrated manufacturing systems in automotive part manufacturing; fundamentals of automotive part designs and technology management; supply chains and structure of automotive part
Electronics and Instrumentation for Automobile (Trang thiết bị điện tử trên ô tô) (?)	5	3	Introduction to digital circuits; introduction to microprocessors and microprocessors based systems; basic instrumentation; application of different types of instrumentations to automotive systems
Automotive Instrument Laboratory (Thí nghiệm động cơ, ô tô)	5	1	Basic electronics; electronic systems in automobiles; engine performance testing; basic automotive diagnosis.
Vehicle Dynamics (Động lực học ô tô/phương tiện)	6	3	Dynamics of motor vehicles; properties of pneumatic tire; suspension and steering mechanism; vehicle longitudinal dynamics; linear bicycle models; stability; linear engine models; pleasure in driving.
Internal Combustion Engine (Động cơ đốt trong)	8	3	Internal combustion engines; basic principles; fluid flow; thermodynamics; fuels and combustion; ideal fuel air cycle; heat transfer; friction and lubrication; efficiency and emission; different types of engines: spark-ignition and compression-ignition; ignition systems; supercharging and scavenging;
Motor Vehicle Design (Thiết kế ô tô)	8	3	Systematic approach to automotive design; space defining components; ergonomics; automotive safety and legal regulations.
Automotive Engineering Project (Đồ án kỹ thuật ô tô)	9	3	Group or individual project on a subject related to automotive engineering and manufacturing.
Thermodynamics (Nhiệt động học)	3	3	This course covers the basic concepts and definitions of engineering thermodynamics, energy, work and heat, properties of pure substances (relationships of P-v, T-v, P-T and T-s diagrams), First Law of Thermodynamics, Second Law of thermodynamics and Entropy.

Engine Technology (Động cơ đốt trong)	5	4	This module aims to expose students to the operation of the internal combustion engine technology. The course also discusses how the service, repair, maintenance, design and test the performance of conventional internal combustion engines. In addition, students have to solve engineering problems in real time by leveraging their knowledge and learn new information to solve problems of related engines.
Vehicle Powertrain Management System (Hệ thống truyền lực phương tiện) (?)	5	3	This course focuses on theory, operation and application of the engine and transmission management system. Topics covered include electronic fuel injection system (EFI), diesel engine management systems, electronic control unit (ECU), OBD system, electronic transmission control systems, sensors and actuators in the powertrain management system.
Vehicle Dynamics (Động lực học ô tô/phương tiện)	5	3	To discuss an introduction to basic concepts of vehicle dynamics, general and specialized knowledge to design a theoretical model of vehicle dynamics and simulation, knowing the response based on various input drive vehicles, the environment, the burden of road and tire properties. Understand the relationship between the 'ride and handling', steering and suspension system on the performance of a vehicle.
Vehicle Brake System (Hệ thống phanh)	5	3	This subject provides an introduction of basic knowledge of hydraulic brake system comprising the existing system and a combination of regenerative braking control. This subject will assist students to understand the basic theory of operation of brakes, diagnosis, identify problems and repair procedures. This subject will also touch on the phenomenon of vibration and noise on the brakes in practice and theory and also identify ways to repair that necessary. Physical tests using the ''Dynamometer & Modal Testing'' and verification tools, ''Finite Element Simulation" will be used to increase the practical understanding of the subject. Among the topics to be enclosed are: Basic braking system and operations, maintenance of brake system, mechanical brake, hydraulic brake control, anti-lock brake system with electronic brake distribution, control of regenerative braking, brake noise and vibration issues.

HVAC for Automotive (Hệ thống điều hòa không khí trên ô tô) (?)	5	3	The objective of this course is to provide students with comprehensive knowledge in the field of automotive heating, ventilating and air conditioning (HVAC) system. Topics include: automotive heating and cooling system, basic air-conditioning system, air conditioning and control components and type of cooling agents. Apart from that, regulations set by Department of Environment (DOE) is also exposed to the students. Hands on training in servicing heating and cooling system, test and repair of cooling system and computerized control
Vehicle Engine (Tính toán thiết kế động cơ) (?)	6	4	History of vehicle engines and transmissions. Engine geometry. Performance parameters of gas exchange for 4- stroke and two stroke. Spark ignition engine combustion. The market situation for the development of vehicles, gearboxes and components. The selection of the transmission ratio of the vehicle. Basic approach to the performance of automotive engines, power conversion, adjustment of the engine and transmission, transmission system design
Vehicle Transmission System (Hộp số ô tô)	6	3	Vehicle transmission design engineering has been enriched with many variations, such as automatic transmissions, continuously variable transmissions (CVT), the torque converter clutch transmission, dual clutch transmission, four wheel drive transmission. The purpose of this subject is to explain the development of a motor vehicle transmission as part of the development of vehicle systems. The aim is to explain the basic relationship between the drive unit, motor and transmission system and transmission system functions such as selecting the appropriate gear, the right gear, power profile, fuel consumption, life
Automotive Ergonomic	6	3	This course provides an introduction to students about the nature and importance of ergonomics in the automotive design technology. Ergonomic aspects of the relevant international standards in automotive design also introduced. Students will be exposed to the vehicle design process especially in ergonomic aspects such as using human antopometric and the student also learn to analyze vehicle design performance related to ergonomic by using Catia V5 software.
Vehicle Suspension System (Hệ thống treo)	7	3	Introduction to chassis load and tire contact forces. Modelling of chassis dynamics in vertical, lateral and longitudal directions. Performance criteria in suspension design. The use of suspension test machine for investigating the suspension characteristics. Effects of suspension parameters to the chassis dynamics. Semi- active and active suspension system.

Automotive Electric & Electronic System (Hệ thống điện và điện tử trên ô tô)	8	3	This course focuses on theory, operation and application of electrical and electronic automotive system. Topics covered include vehicle electrical wiring system, sensors and actuators, battery charging system, starter system, lighting system, chassis electrical system, additional system, mechatronics, automotive network and the CAN-bus system.
Vehicle Design and Simulation (Mô phỏng và thiết kế ô tô) (?)	7	3	This module is intended to study the modeling, simulation and analysis of vehicle systems by using multi body system (MBS). It cover general study of kinematic and dynamic from simple kinematic system for vehicle sub-system such as engine components, suspension system, anti-roll bars mechanism and also learn about the nature of vehicle by using full vehicle model. This module also cover basic theory used in MBS and comparison with computer simulation. Hyperwork is used as teaching tool accordance to it widely uses in worldwide industry and higher learning institution.
Automative Safety & Comfort System (Thiết bị an toàn và tiện nghi trên xe)	7	3	This course will focus on theory, operation and application for electrical and electronic system in modern vehicle and comfort system. Topics discussed include antilock braking system, traction control system, electronic stability program, adaptive cruise control, passenger protection system, driving assistance system, and X-by wire system.
Oil & Wear Debris Analysis (Dầu mỡ bôi trơn) (?)	7	3	Analysis of oil in terms of density, oil pollution, temperature, viscosity, and changes during the machine operation. Collecting samples at rates of regular oil. See the shape, number, and colour, surface debris resulting from the bearing or gear to fix the machine. Determine the onset of failure and make the maintenance of machinery components that are appropriate.
Thermodynamics I (Nhiệt động học I)	3	3	
Thermodynamics II (Nhiệt động học II)	5	3	
Vehicle Dynamics (Động lực học ô tô/phương tiện)	7/8	3	
Automotive Technology (Kỹ thuật ô tô)	7/8	3	

Vehicle Powertrain Systems (Các hệ thống	7/8	3	
Internal Combustion Engine (Động cơ đốt trong)	7/8	3	
Vehicle System Modeling and Simulation (Tính toán mô phỏng ô tô)	7/8	3	
			Areas: Internal Combustion, Automotive Engineering System, Automotive Structure, Automotive Design, Vehicle Dynamics, Automotive Production.
Automotive Engineering I (Kỹ thuật ô tô I)	4	2	
Thermodynamics (Nhiệt động học)	4	3	
Automotive Engineering II (Kỹ thuật ô tô II)	5	2	
Vehicle Dynamics (Động lực học ô tô/phương tiện)	5	3	
Internal Combustion Engine (Động cơ đốt trong)	5	3	
Sensor Technology in Automotive Engineering (Cảm biến trên ô tô) (?)	6	2	
Computer Aided Automotive Engineering (Thiết kế ô tô trên máy tính) (?)	6	3	
Management of Automotive Manufacturing Process (Quy trình sản xuất ô tô)	6	3	
Automotive Design (Thiết kế tính toán ô tô)	7	3	

Automotive Control (Điều khiển ô tô)	7	3	
Automobile Chemical Systems I	3	2	Fundamental chemistry for automobiles: 1. Manufacturing, properties and applications about carbon fiber, CFRP and hard coatings on plastics 2. Surface chemistry and tribology for engine friction 3. Basic statistics for life time prediction of engine parts 4. Spontaneous chemical reactions and the response of equilibria to the conditions
Introduction to Automotive Engineering	3	2	1. History of vehicle development 2. Basic vehicle physics 3. Basic vehicle structure 4. Practice of disassembly and assembly of a car
Vehicle Structures	3	2	1. Design and Body: Product Planning, Body, Equipment 2. Chassis: Suspension, Steering, Brake 3. Power Train: Engine, Electric Propulsion, Drive Train
Introduction to Electrical/ Electronic and Information Engineering for Automobiles	3	2	1. Electrical Engineering, 2. Electronic Engineering, 3. Infromation and Communication Engineering,
Automobile Engineering Laboratory I	5	2	The purpose of this course is to experience the fundamental and important principles relating auto mobile, and to observe and understand the expected physical phenomena from them through various themes from mechanical, electrical, aerospace, and information engineering areas. About 10 themes are provided, and the experiment for each theme is performed for the group with 5-6 members. After the each experiment, student analyses obtained experimental data, and writes a report.

Automobile Engineering Laboratory II	6	2	The purpose of this course is to experience the fundamental and important principles relating auto mobile, and to observe and understand the expected physical phenomena from them through various themes from mechanical, electrical, aerospace, and information engineering areas. About 10 themes are provided, and the experiment for each theme is performed for the group with 5-6 members. After the each experiment, student analyses obtained experimental data, and writes a report.
Automobile Chemical Systems II	6	2	This course discusses current topics in chemical systems used in the automobile, such as fuels and combustion, energy management, fuel cell system, and exhaust gas handling. 1. Automotive fuel processing 2. Chemistry of fuel cell system 3. Chemical heat pump for heat management 4. Exhaust catalytic converter
Intelligent Transportation Systems	6	2	- Introduction - Background of ITS Development in Japan - ITS for Traffic Demand Management Automobile Use Restriction Measures Public Transportation Promotion Measures - ITS applications in Japan - Fundamentals of traffic flow characteristics - Car-following theory and traffic simulation - Four Step Forecasting Method of Traffic Demand - Development of Surveying Technique of Transportation - Traffic Accident Analysis and Prevention - Evacuation management - Probe Vehicle System - Route Guidance System - ITS in Logistics

Electronic Devices in Automobiles	6	2	1.Electronic Control Systems in Automobiles and Vehicle dynamics control systems 2.Sensing Technologies mainly by image sensor and image processing being deployed for ADAS and automated driving 3.Vehicle as a sensor from IoT point of view. 4.Car electronics technologies for safety application 5.General overview on imaging devices 6.Wireless Technologies in ITS (Intelligent Transport Systems) toward Automated Driving Systems and Connected Car. 7.Intellectual Property activity in the automotive parts industry 8.Summary of Electronic Devices from application point of view.
Vehicle Engines and New Propulsion Systems	6	2	1. Otto-cycle engine 2. Diesel engine 3. Supercharging 4. Fundamental of vehicle propulsion 5. Combustion engines 6. Electric vehicles 7. Hybrid electric vehicles 8. Design principle of series and parallel hybrids 9. Fuel cell vehicles
Vehicle Dynamics and Control	6	2	1. Introduction of vehicle dynamics and control systems 2. Acceleration and Braking performance 3. Road loads changes of vehicle dynamics 4. Braking actuations and performances 5. Type dynamics 6. Vehicle Handling Performance (4-1)Steady state cornering (4-2)Frequency Response 7. Basic theory of vehicle control 8. Active Suspension System

Vehicle Safety	7	2	1. Accident analysis 2. Recent technologies for pre-crash and crash safety 3. Modeling and analysis of human driving behavior 4. Design of personalized assistance system 5. Design of fault tolerant controller 6. Biomechanics 7. Vehicle crashworthiness 8. Occupant protection 9. Pedestrian protection 10. Mathematical simulation
Vehicle Design	7	2	1 Vehicle dynamics performance from suspension design point of view 2 Passive safety performaance from body design point of view 3 Active safety performance from body design point of view 5 Human factor design from safety and usability point of view 6 Strength and reliability experiment 7 Standard and regulation issues 8 HV car design from energy consumption and power train performance point of view
Thermodynamics and Tutorial	3	2,5	1. Thermal Equilibrium and Temperature 2. State Equations, Partial Differentials, Units and Dimensions 3. The First Law of Thermodynamics 4. The Second Law of Thermodynamics 5. Entropy 6. Thermodynamic Functions 7. Phase Equilibrium and Chemical Equilibrium 8. Kinetic Theory and Statistical Mechanics
Automobile Chemical Systems I	3	2	This course discusses the fundamentals of chemical systems used in automobiles, such as material properties, engine friction, and fuel cell systems.
Introduction to Automotive Engineering	3	2	The purpose of the course is to develop an understanding of the basic structure and physics of vehicles through practice of car disassembly and assembly.

Vehicle Structures	4	2	In this course, students will learn about vehicle structures. The purpose of the course is to develop an understanding of the structure and mechanism of vehicle body, chassis, and power train.
Automobile Engineering Laboratory I	5	2	The purpose of this course is to experience the fundamental and important principles relating auto mobile, and to observe and understand the expected physical phenomena from them through various themes from mechanical, electrical, aerospace, and information engineering areas.
Automobile Chemical Systems II	5	2	This course discusses current topics in chemical systems used in the automobile, such as fuels and combustion, energy management, fuel cell system, and exhaust gas handling.
Intelligent Transportation Systems	6	2	The purpose of this course is to review state of the art Intelligent Transport Systems (ITS) and to learn the fundamentals of traffic flow theory, traffic accident analysis and traffic and transportation management using ITS technologies.
Electronic Devices in Automobiles	6	2	This lecture will introduce students up to date technologies with respect to Electronic Devices which are used for developing vehicle control and information systems including ITS (Intelligent Transport Systems). You can learn the requirements for vehicle control and information systems including ITS and understand the reason why such specifications of electronic devices must have. Each course of lectures is delivered by the experts invited from leading companies related to vehicle control and information systems who have matured experiences to plan, design and launch such systems in the market.
Vehicle Engines and New Propulsion Systems	6	2	In this course, students will learn about the combustion engine and advanced propulsion systems. Course objectives include (1)developing an understanding of the design and mechanics of the combustion engine (Otto-cycle engine and Diesel engine) and, (2)reviewing revolutionary vehicles with new propulsion system (electric vehicles, hybrids and fuel cell vehicles).

Vehicle Dynamics and Control	7	2	In this course students will study fundamentals of vehicle dynamics and control systems. The course also covers classical topics and progress in recent topics of vehicle control such as tire dynamics, braking and steering dynamics and control, and active suspension systems. By the end of the course, students should understand how to model the maneuvering of surface vehicles and how to design control systems to augment these maneuvering characteristics with respect to 3 dimensional movement.
Automobile Engineering Laboratory II	7	2	The purpose of this course is to experience the fundamental and important principles relating auto mobile, and to observe and understand the expected physical phenomena from them through various themes from mechanical, electrical, aerospace, and information engineering areas.
Vehicle Safety	7	2	Safety is a key issue in vehicle development. This course examines both active safety (prevention of accidents) and passive safety (injury mitigation). Through the course, students will develop an understanding of vehicle safety development and engineering based on mechanical and human factors.
Vehicle Design	7	2	This lecture will introduce students how to design each performance of vehicles which sometime faces trade-off situations. You can learn the requirements for vehicle systems and the mothod for designing the vehicle to improve their performances at higher level.