Course Structure for Undergraduate Program
Undergraduate Program of Vehicle and Energy Engineering
National Taiwan Normal University

Adaptive to Class of	Common Courses Credit(s)	Required Credit(s)	Elective Credit(s)	Free Elective Credit(s)	Minimum Total Credits for Graduation
108	28.0	47.0	28.0	25.0	128.0

I. General Course: 28.0 credits are required

Course Name	Credit(s)
1 Chinese 4.0 credits are required	
1-1 Chinese(I)	2.0
1-2 Chinese(II)	2.0
2 English 6.0 credits are required, Students who major in Department of English must take the course which course code are ENU0168 and ENU0169 with a passing score for instead	
2-1 English(I)	2.0
2-2 English(II)	2.0
2-3 English(III)	2.0
3 General Education Courses 18.0 credits are required	
3-1 Language and Literature 2.0 credits are required	
3-2 Art and Aesthetics 2.0 credits are required	
3-3 Philosophical Thinking and Moral Reasoning 2.0 credits are required	
3-4 Citizenship and Social Inquiry 2.0 credits are required	
3-5 History and Culture 2.0 credits are required	
3-6 Mathematical and Logical Thinking 2.0 credits are required	
3-7 Science and Life 2.0 credits are required	
3-8 Second Foreign Language	
3-9 Life Skills	
3-10 Self-Directed Learning	
4 Physical Education (1.The credits will not be counted in for graduation. 2.Students who major in Department of Physical Education or Athletic Performance are exempted from the courses.) 6.0 credits are required, 6 courses are least required	
5 Service-Learning 1 course is least required	
5-1 Service-Learning(II)	0.0
5-2 Basic Service-Learning	0.0

Note: The first alphabet "E" on the course name refers to the course in English as a medium of instruction

II. Required Courses: 47.0 credits are required

Course Code	Course Name	Credit(s)	Lecture Hour	Lab/Practice Hour	Note
VEU0003	1 Electric Circuits (I)	3.0	3.0	0.0	
VEU0002	2 Introduction to Energy Technology	2.0	2.0	0.0	
VEU0004	3 Electrical Circuits Experiment	2.0	0.0	4.0	
VEU0005	4 Introduction to Energy Technology	2.0	0.0	4.0	
VEU0006	5 Introduction to Power Mechanics	2.0	2.0	0.0	
VEU0007	6 Electronics (I)	3.0	3.0	0.0	
VEU0008	7 Electronics Laboratory	2.0	0.0	4.0	
VEU0009	8 Vehicle Basic Technology	2.0	0.0	4.0	
VEU0011	9 Thermo-Dynamics (I)	3.0	3.0	0.0	
VEU0012	10 Internal Combustion Engine	3.0	3.0	0.0	
VEU0013	11 Applied Mechanics	3.0	3.0	0.0	
VEU0014	12 Automatic Control Engineering	3.0	3.0	0.0	
VEU0072	13 Automotive Chassis Repair	2.0	0.0	4.0	
VEU0016	14 Electric Vehicle	3.0	3.0	0.0	
MAU0180	15 Calculus B (I)	3.0	3.0	0.0	
MAU0181	16 Calculus B (II)	3.0	3.0	0.0	
PHU0253	17 Fundamental Physics	3.0	3.0	0.0	
VEU0010	18 Engineering Mathematics (I)	3.0	3.0	0.0	

III. Elective Courses: 28.0 credits are required

Course Code	Course Name	Credit(s)	Lecture Hour	Lab/Practice Hour	Note
VEU0017	1 Computer Programming	3.0	3.0	0.0	
VEU0019	2 Engineering Graphics and Computer-Aided Design	3.0	3.0	0.0	
VEU0021	3 Automotive Electronics	3.0	3.0	0.0	
VEU0073	4 Basic Refrigeration and Air Conditioning Technology	2.0	0.0	4.0	
VEU0024	5 Artificial Intelligence and Applications	3.0	3.0	0.0	
VEU0025	6 Principles and Applications of Sensors	3.0	3.0	0.0	
VEU0020	7 Introduction to Vehicle Engineering	3.0	3.0	0.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
VEU0023	8 Gasoline Engine Diagnosis	3.0	3.0	0.0	
VEU0047	9 Smart Grid	3.0	3.0	0.0	
VEU0039	10 Heat Transfer	3.0	3.0	0.0	
VEU0029	11 Microprocessor	3.0	3.0	0.0	
VEU0036	12 Vehicle Design	3.0	3.0	0.0	
VEU0045	13 Fluid Mechanics	3.0	3.0	0.0	
VEU0064	14 Engine Rebuilding	2.0	0.0	4.0	
VEU0051	15 Food Refrigeration	3.0	3.0	0.0	
VEU0060	16 Hybrid Vehicles	2.0	2.0	0.0	
VEU0054	17 Indoor Air Quality	3.0	3.0	0.0	
VEU0030	18 Circuit Theory (II)	3.0	3.0	0.0	
VEU0033	19 Thermodynamics (II)	3.0	3.0	0.0	
VEU0059	20 Diesel Engine Repair	2.0	0.0	4.0	
VEU0069	21 Special Topics (I)	2.0	2.0	0.0	
VEU0034	22 Solar Photovoltaic Systems	3.0	3.0	0.0	
VEU0070	23 Special Topics (II)	2.0	2.0	0.0	
VEU0049	24 Vehicle Alternative Fuels	3.0	3.0	0.0	
VEU0062	25 Renewable Energy Practices	2.0	0.0	4.0	
VEU0056	26 Microprocessors Experiments	2.0	0.0	4.0	
VEU0058	27 Energy Application Practice	2.0	0.0	4.0	
VEU0038	28 Technology of Energy Saving	3.0	3.0	0.0	
VEU0050	29 Image Recognition Technology	3.0	3.0	0.0	
VEU0053	30 Building Energy Conservation	3.0	3.0	0.0	
VEU0044	31 Internet of Vehicle Technology	3.0	3.0	0.0	
VEU0032	32 Engineering Mathematics (II)	3.0	3.0	0.0	
VEU0035	33 Wireless Communications System	3.0	3.0	0.0	
VEU0057	34 Internal Combustion Engine Test	2.0	0.0	4.0	
VEU0061	35 Automotive Electric System Repair	2.0	0.0	4.0	
VEU0063	36 Vehicle Performance Testing	2.0	2.0	0.0	
VEU0042	37 Design of the Vehicle Controller	3.0	3.0	0.0	
VEU0071	38 Automotive Chassis Repair (II)	2.0	0.0	4.0	
VEU0040	39 Refrigeration Engineering and Design	3.0	3.0	0.0	
VEU0037	40 Engineering Material Applications	3.0	3.0	0.0	
VEU0048	41 Air Conditioning Engineering and Design	3.0	3.0	0.0	
VEU0043	42 Autonomous Vehicle Theory and Practice	3.0	3.0	0.0	
VEU0066	43 Ethics Engineering and Legal Practice	2.0	2.0	0.0	
VEU0065	44 Vehicle and Energy Evaluation Exercise	2.0	2.0	0.0	
VEU0067	45 Training for Professional Techniques (I)	3.0	3.0	0.0	
VEU0031	46 Maintenance and Repair of Electric Vehicle	3.0	3.0	0.0	
VEU0068	47 Training for Professional Techniques (II)	3.0	3.0	0.0	
VEU0052	48 Transportation Refrigeration and Air Conditioning	3.0	3.0	0.0	
VEU0055	49 Industry Business, Management and Marketing	3.0	3.0	0.0	
VEU0041	50 Vehicle System Modeling and Dynamic Analysis	3.0	3.0	0.0	
VEU0046	51 Design and Application of Thermal Energy Storage System	3.0	3.0	0.0	
VEU0026	52 Renewable Energy	3.0	3.0	0.0	
VEU0027	53 Refrigeration and Air Conditioning Principle	3.0	3.0	0.0	
VEU0028	54 Vehicle Energy Storage Systems	3.0	3.0	0.0	
VEU0077	55 Vehicle Identification Technology	3.0	3.0	0.0	

IV. Free Elective Credits: 25.0 credits are required