

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
109	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 Reading and Thinking	2.0
1-2 Chinese Writing and Expression	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 Liberal Arts Course 8.0 credits are required	
3-1-1 Humanities and Arts 2.0 credits are required	
3-1-2 Social Sciences 2.0 credits are required	
3-1-3 Natural Sciences 2.0 credits are required	
3-1-4 Logic and Computing 2.0 credits are required	
3-2 Cross-domain Exploration 4.0 credits are required	
3-2-1 College Common Course	
3-2-2 Cross-domain Professional Discovery Course	
3-2-3 Introduction to University Studies	
3-3 Self-Directed Learning maximum credits are 4.0	
3-3-1 Inquiry Study	
3-3-2 MOOCs	
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 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)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
VEU0002	1 Introduction to Energy Technology	2.0	2.0	0.0	
VEU0003	2 Electric Circuits (I)	3.0	3.0	0.0	
VEU0004	3 Electrical Circuits Experiment	2.0	0.0	4.0	
VEU0075	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	
VEU0076	8 Vehicle Basic Technology	2.0	0.0	4.0	
VEU0010	9 Engineering Mathematics (I)	3.0	3.0	0.0	
VEU0011	10 Thermo-Dynamics (I)	3.0	3.0	0.0	
VEU0012	11 Internal Combustion Engine	3.0	3.0	0.0	
VEU0013	12 Applied Mechanics	3.0	3.0	0.0	
VEU0014	13 Automatic Control Engineering	3.0	3.0	0.0	
VEU0072	14 Automotive Chassis Repair	2.0	0.0	4.0	
VEU0016	15 Electric Vehicle	3.0	3.0	0.0	
MAU0180	16 Calculus B (I)	3.0	3.0	0.0	
MAU0181	17 Calculus B (II)	3.0	3.0	0.0	
PHU0253	18 Fundamental Physics	3.0	3.0	0.0	

III. Elective Courses: 28.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
VEU0047	1 Smart Grid	3.0	3.0	0.0	
VEU0039	2 Heat Transfer	3.0	3.0	0.0	
VEU0029	3 Microprocessor	3.0	3.0	0.0	
VEU0036	4 Vehicle Design	3.0	3.0	0.0	
VEU0045	5 Fluid Mechanics	3.0	3.0	0.0	
VEU0064	6 Engine Rebuilding	2.0	0.0	4.0	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
VEU0051	7 Food Refrigeration	3.0	3.0	0.0	
VEU0060	8 Hybrid Vehicles	2.0	2.0	0.0	
VEU0054	9 Indoor Air Quality	3.0	3.0	0.0	
VEU0030	10 Circuit Theory (II)	3.0	3.0	0.0	
VEU0033	11 Thermodynamics (II)	3.0	3.0	0.0	
VEU0059	12 Diesel Engine Repair	2.0	0.0	4.0	
VEU0069	13 Special Topics (I)	2.0	2.0	0.0	
VEU0034	14 Solar Photovoltaic Systems	3.0	3.0	0.0	
VEU0070	15 Special Topics (II)	2.0	2.0	0.0	
VEU0049	16 Vehicle Alternative Fuels	3.0	3.0	0.0	
VEU0062	17 Renewable Energy Practices	2.0	0.0	4.0	
VEU0056	18 Microprocessors Experiments	2.0	0.0	4.0	
VEU0058	19 Energy Application Practice	2.0	0.0	4.0	
VEU0038	20 Technology of Energy Saving	3.0	3.0	0.0	
VEU0050	21 Image Recognition Technology	3.0	3.0	0.0	
VEU0053	22 Building Energy Conservation	3.0	3.0	0.0	
VEU0044	23 Internet of Vehicle Technology	3.0	3.0	0.0	
VEU0032	24 Engineering Mathematics (II)	3.0	3.0	0.0	
VEU0035	25 Wireless Communications System	3.0	3.0	0.0	
VEU0057	26 Internal Combustion Engine Test	2.0	0.0	4.0	
VEU0061	27 Automotive Electric System Repair	2.0	0.0	4.0	
VEU0063	28 Vehicle Performance Testing	2.0	2.0	0.0	
VEU0042	29 Design of the Vehicle Controller	3.0	3.0	0.0	
VEU0071	30 Automotive Chassis Repair (II)	2.0	0.0	4.0	
VEU0040	31 Refrigeration Engineering and Design	3.0	3.0	0.0	
VEU0037	32 Engineering Material Applications	3.0	3.0	0.0	
VEU0048	33 Air Conditioning Engineering and Design	3.0	3.0	0.0	
VEU0043	34 Autonomous Vehicle Theory and Practice	3.0	3.0	0.0	
VEU0066	35 Ethics Engineering and Legal Practice	2.0	2.0	0.0	
VEU0065	36 Vehicle and Energy Evaluation Exercise	2.0	2.0	0.0	
VEU0067	37 Training for Professional Techniques (I)	3.0	3.0	0.0	
VEU0031	38 Maintenance and Repair of Electric Vehicle	3.0	3.0	0.0	
VEU0068	39 Training for Professional Techniques (II)	3.0	3.0	0.0	
VEU0052	40 Transportation Refrigeration and Air Conditioning	3.0	3.0	0.0	
VEU0055	41 Industry Business, Management and Marketing	3.0	3.0	0.0	
VEU0041	42 Vehicle System Modeling and Dynamic Analysis	3.0	3.0	0.0	
VEU0046	43 Design and Application of Thermal Energy Storage System	3.0	3.0	0.0	
VEU0017	44 Computer Programming	3.0	3.0	0.0	
VEU0019	45 Engineering Graphics and Computer-Aided Design	3.0	3.0	0.0	
VEU0020	46 Introduction to Vehicle Engineering	3.0	3.0	0.0	
VEU0021	47 Automotive Electronics	3.0	3.0	0.0	
VEU0073	48 Basic Refrigeration and Air Conditioning Technology	2.0	0.0	4.0	
VEU0074	49 Gasoline Engine Diagnosis	2.0	0.0	4.0	
VEU0024	50 Artificial Intelligence and Applications	3.0	3.0	0.0	
VEU0025	51 Principles and Applications of Sensors	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