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
115	32.0	53.0	22.0	21.0	128.0

I. General Course: 32.0 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 4.0 credits are required, 4 courses are least required	

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

II. Required Courses: 53.0 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 E Electrical Circuits Experiment	3.0	2.0	2.0	
VEU0006	4 Introduction to Power Mechanics	3.0	3.0	0.0	
VEU0007	5 Electronics (I)	3.0	3.0	0.0	
VEU0008	6 E Electronics Laboratory	3.0	2.0	2.0	
VEU0010	7 Engineering Mathematics (I)	3.0	3.0	0.0	
VEU0011	8 E Thermo-Dynamics (I)	3.0	3.0	0.0	
VEU0012	9 Internal Combustion Engine	3.0	3.0	0.0	
VEU0013	10 E Applied Mechanics	3.0	3.0	0.0	
VEU0014	11 Automatic Control Engineering	3.0	3.0	0.0	
VEU0016	12 Electric Vehicle	3.0	3.0	0.0	
VEU0072	13 Automotive Chassis Repair	3.0	2.0	2.0	
VEU0075	14 Introduction to Energy Technology	3.0	2.0	2.0	
VEU0076	15 Vehicle Basic Technology	3.0	2.0	2.0	
MAU0180	16 E Calculus B (I)	3.0	3.0	0.0	
MAU0181	17 E Calculus B (II)	3.0	3.0	0.0	
PHU0253	18 Fundamental Physics	3.0	3.0	0.0	

III. Elective Courses: 22.0 credits are required

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
VEU0017	1 Computer Programming	3.0	3.0	0.0	
VEU0019	2 Engineering Graphics and Computer-Aided Design	3.0	3.0	0.0	
VEU0020	3 Introduction to Vehicle Engineering	3.0	3.0	0.0	
VEU0021	4 Automotive Electronics	3.0	3.0	0.0	
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	

Course Code	Course Name	Credit(s)	Credit Unit		Note
			Lecture Hour	Lab/Practice Hour	
VEC9001	7 Renewable Energy	3.0	3.0	0.0	
VEU0027	8 Refrigeration and Air Conditioning Principle	3.0	3.0	0.0	
VEC9004	9 Vehicle Energy Storage Systems	3.0	3.0	0.0	
VEU0029	10 Microprocessor	3.0	3.0	0.0	
VEU0030	11 Circuit Theory (II)	3.0	3.0	0.0	
VEC9011	12 Maintenance and Repair of Electric Vehicle	3.0	3.0	0.0	
VEU0032	13 Engineering Mathematics (II)	3.0	3.0	0.0	
VEU0033	14 Thermodynamics (II)	3.0	3.0	0.0	
VEC9002	15 Solar Photovoltaic Systems	3.0	3.0	0.0	
VEU0035	16 Wireless Communications System	3.0	3.0	0.0	
VEU0036	17 Vehicle Design	3.0	3.0	0.0	
VEU0037	18 Engineering Material Applications	3.0	3.0	0.0	
VEC9003	19 Technology of Energy Saving	3.0	3.0	0.0	
VEU0039	20 Heat Transfer	3.0	3.0	0.0	
VEC9005	21 Refrigeration Engineering and Design	3.0	3.0	0.0	
VEC9008	22 Vehicle System Modeling and Dynamic Analysis	3.0	3.0	0.0	
VEU0042	23 Design of the Vehicle Controller	3.0	3.0	0.0	
VEC9009	24 Autonomous Vehicle Theory and Practice	3.0	3.0	0.0	
VEU0044	25 Internet of Vehicle Technology	3.0	3.0	0.0	
VEU0045	26 Fluid Mechanics	3.0	3.0	0.0	
VEU0046	27 Design and Application of Thermal Energy Storage System	3.0	3.0	0.0	
VEC9018	28 Smart Grid	3.0	3.0	0.0	
VEC9006	29 Air Conditioning Engineering and Design	3.0	3.0	0.0	
VEC9007	30 Vehicle Alternative Fuels	3.0	3.0	0.0	
VEU0050	31 Image Recognition Technology	3.0	3.0	0.0	
VEU0051	32 Food Refrigeration	3.0	3.0	0.0	
VEU0052	33 Transportation Refrigeration and Air Conditioning	3.0	3.0	0.0	
VEC9010	34 E Building Energy Conservation	3.0	3.0	0.0	
VEU0054	35 Indoor Air Quality	3.0	3.0	0.0	
VEU0055	36 Industry Business, Management and Marketing	3.0	3.0	0.0	
VEU0056	37 Microprocessors Experiments	3.0	2.0	2.0	
VEU0057	38 Internal Combustion Engine Test	3.0	2.0	2.0	
VEU0058	39 Energy Application Practice	3.0	2.0	2.0	
VEU0059	40 Diesel Engine Repair	3.0	2.0	2.0	
VEC9012	41 E Hybrid Vehicles	3.0	3.0	0.0	
VEU0061	42 Automotive Electric System Repair	3.0	2.0	2.0	
VEU0062	43 Renewable Energy Practices	3.0	2.0	2.0	
VEC9017	44 Vehicle Performance Testing	3.0	3.0	0.0	
VEU0064	45 Engine Rebuilding	3.0	2.0	2.0	
VEU0065	46 Vehicle and Energy Evaluation Exercise	2.0	2.0	0.0	
VEU0066	47 Ethics Engineering and Legal Practice	2.0	2.0	0.0	
VEU0067	48 Training for Professional Techniques (I)	3.0	3.0	0.0	
VEU0068	49 Training for Professional Techniques (II)	3.0	3.0	0.0	
VEU0078	50 Training for Professional Techniques (III)	3.0	3.0	0.0	
VEU0079	51 Training for Professional Techniques (IV)	3.0	3.0	0.0	
VEU0071	52 Automotive Chassis Repair (II)	3.0	2.0	2.0	
VEU0073	53 Basic Refrigeration and Air Conditioning Technology	3.0	2.0	2.0	
VEU0074	54 Gasoline Engine Diagnosis	3.0	2.0	2.0	
VEU0077	55 Vehicle Identification Technology	3.0	3.0	0.0	
VEU0069	56 E Special Topics (I)	2.0	2.0	0.0	
VEU0070	57 E Special Topics (II)	2.0	2.0	0.0	

IV. Free Elective Credits: 21.0 credits are required