

# Reverse Engineering 1

## Basic Course Information

Course Number	03005078	Subject Category	Compulsory (E)
Class Format	Lecture	Credit Type and Number of Credits	1
Department	Electrical and Electronics	Student Category	Year 1
Period of Study	Semester 2	Classes per Week	1
Required Materials			
Instructor	Kashine Kenji	Papon Ngamprasert	

## Course Objective

Reverse engineering, also known as "Back engineering", is the process to reveal its manufacturing, principles, functions, and designs or to extract knowledge from the man-made objects/products by observation, disassembling and analysing. The course provides students with a basic idea and knowledge of the reverse engineering and hand-on activities to examine real products. These activities are designed to help the student learn the principles and concept behind the the product as well as her/his abilities to design and/or to improve the performance of the products.

Evaluation(Rubric)	Ideal Level of Achievement (Very Good)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
Understanding Reverse Engineering Concept	Demonstrates very good understanding of Reverse Engineering Concept with knowledge of related technology in details	Demonstrates good understanding of Reverse Engineering Concept with knowledge of related technology	Lacks the appropriate knowledge and understanding of Reverse Engineering Concept
Executing Analysis and Procedure	Demonstrates very good analysis procedures to find principles, function and design of products. Application of obtained knowledge for improvement.	Demonstrates very good analysis procedures to find principles, function and design of products.	Lacks the appropriate knowledge or analysis procedures to find principles, function and design of products
Observation and Analysis	Observation and analysis are both accurate and precise. Logically organize the obtained information to find principles, function and design of products.	Observation and analysis are enough to obtain information to find principles, function and design of products.	Observation and analysis are incomplete, inaccurate and imprecise
Presentation	Presentation slides are well organised. Effectively presents ideas and information in logical.	Presentation slides are organised. Presents ideas and information in logical sequence which audience can follow	Presentation slides are not well organised. Presents ideas and information, but the audience feel difficulty to follow the sequence or .
Group work	Almost always listens to and support others. Shares ideas with others positively, and help the team to solve the problem.	Usually or try to listen to others. Shares ideas with, and positively supports others.	Rarely listens to others. Do not share with, and supports others. Often is not a good team player.
<b>Relationship with Learning Outcomes</b>			
E(1) Ability to design, propose and develop electrical and electronic systems to solve specific problems.			
E(2) Ability to design, propose and develop smart electrical power systems for sustainable development.			
E(3) Ability to design, propose and develop software to operate electrical and electronic systems.			

## Teaching Method

Outline:	Students will study the concept and methodology of Reverse Engineering. Student will apply their skills, knowledge and learnings through case study.
Class Format:	Lecture and group work
Please Note :	Hands-on activities will be provided. Safety rules will be applied.

Course Plan	Contents and Method of Course	Goals	Related MCC
Semester 2			
1st week	Introduction to Reverse Engineering	Understanding of the concept of Reverse Engineering	
2nd week	Product Manufacturing, Design, and Functions	Understanding of manufacturing, design, and functions of products and their relations to reverse engineering	V-A 1 5
3rd week	Analysis techniques and methods	Understanding of analysis techniques and methods for the reverse engineering	VI-C 1 3
4th week	Hand-on activities 1: Variable Resistor (study & observation)	Understanding the principle, functions, and design concept of Variable Resistor	
5th week	Holiday		

5th week			
6th week	Disassembling and Analysis	Examine the real products to ensure or to find how it is designed to work	II-D 1 6
7th week	Hand-on activities 2: Inductor and capacitor (study & observation)	Understanding the principle, functions, and design concept of Inductor and Capacitor	
8th week	Disassembling and Analysis	Examine the real products to ensure or to find how it is designed to work	
9th week	Holiday		
10th week	Midterm Exam		
11th week	Reporting results 1&2	Report the information obtained. Explain the product from the veiw point of R.E.	
12th week	Hand-on activities 3: DC motor (study & observation)	Understanding the principle, functions, and design concept of DC motor	
13th week	Disassembling and Analysis	Examine the real products to ensure or to find how it is designed to work	
14th week	DC Motor Analysis	Analysis and Improvement DC Motor	
15th week	Reporting results 3	Report the information obtained. Explain the product from the veiw point of R.E.	
16th week	Hand-on activities 4: Miniature electric vehicle (study & observation)	Understanding the principle, functions, and design concept of Electric vehicle	
17th week	Disassembling and Analysis	Examine the real products to ensure or to find how it is designed to work	
18th week	Reporting results 4	Report the information obtained. Explain the product from the veiw point of R.E.	
19th week	Final exam		
20th week	Wrap-up of the semester (Review)	Reflection of the previous study	

Do not r

	Perfomance	Presentation	Mutual Evaluations between students	Report	Portfolio	Other
Basic Ability	20			50		
Technical Ability						

