

## Subject Description Form

<b>Subject Code</b>	EE1D01
<b>Subject Title</b>	Electrical Science for Everyone
<b>Credit Value</b>	3
<b>Level</b>	1
<b>Pre-requisite/ Co-requisite/ Exclusion</b>	Nil
<b>Objectives</b>	As electrical technology becomes increasingly embedded in everyday life, it is necessary to know more about it in order to live more happily, practice energy-efficiency and safely in everyday life. This subject is to provide a well-grounded understanding of selected fundamental concepts in electricity and helps non-science students to understand the electrical science and apply scientific principles to the world around them. It provides an overview of key electrical technologies that are useful in everyday life and introduce to students how various electrical and electronic devices work. The science knowledge involved in the operation of these devices, as well as, the science related to safety is also presented.
<b>Intended Learning Outcomes</b>	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> <li>a. understand basic operation principles of some electrical devices;</li> <li>b. know ways to avoid electrical accidents at home and in workplace;</li> <li>c. use electricity in a more energy efficient way;</li> <li>d. recognize the need for life-long learning.</li> </ol>
<b>Subject Synopsis/ Indicative Syllabus</b>	<ol style="list-style-type: none"> <li>1. <u>Basic electricity</u> Forms of electricity, batteries and generators, science in the electrical conversion processes, use of electricity, electricity tariffs.</li> <li>2. <u>Electrical and electronic appliances</u> A number of electrical and electronic appliances and consumer products and their working principles and related science will be discussed, using easy-to-understand approach. These include large appliances found in the household; consumer and entertainment products; equipment found in the office; and other electronic devices used in everyday life. Devices discussed in this course include a selection of some of the followings: <ul style="list-style-type: none"> <li>▪ Lifts and escalators</li> <li>▪ Lighting: fluorescent tubes and LED</li> <li>▪ Microwave oven, electric cooker, induction cooker</li> <li>▪ Radio and television</li> </ul> </li> <li>3. <u>Electrical safety</u> Safety rules when using electrical and electronic appliances; proper wiring and earthing practice; meaning of electric shocks, how to avoid electric shocks; meaning of lightning, what to do during lightning; how to prevent electrical accidents; what to do when a circuit breaker tripped.</li> </ol>

	<p>4. <u>Energy efficiency</u></p> <p>Ways to reduce energy consumption in daily life, various type of energy saving devices, and the related scientific principles.</p>																																														
<b>Teaching/Learning Methodology</b>	<p>Easy to understand approach will be used throughout on explaining the scientific concepts and principles, no complicated equation will be involved. The fundamental concepts will be presented through lectures. Tutorials will provide students with the opportunity to practice the theories discussed in class. Students will be given problem sets to solve and they could also practice the writing skills for the short essays component. Students will be required to form groups to work through a mini-project. They will learn through active participation in the presentation of their project works and discussion among students</p>																																														
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<b>Reading List and References</b>	<ol style="list-style-type: none"> <li>Stephen L. Herman, "Delmar's standard textbook of electricity", Cengage Learning, Seventh edition, 2019</li> <li>Louis A. Bloomfield, "How things work: the physics of everyday life", Wiley, Sixth edition, 2016</li> <li>Peter E. Sutherland, "Principles of electrical safety", IEEE Press, 2015</li> <li>Moncef Krarti, "Energy-efficient electrical systems for buildings", Taylor &amp; Francis Group, Second edition, 2023</li> </ol>																																														