

Subject Description Form

Subject Code	ABCT5035
Subject Title	Quantitation and Reporting of Greenhouse Gases (GHGs) and Carbon Footprint (CFP)
Credit Value	3
Level	5
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	This subject aims at building students' capability in quantitation and reporting of GHG inventory and carbon footprint (CFP) of a product. It also aims to enable students to apply life cycle assessment to quantify CFP of a product.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) appreciate the international agreements relating to climate actions to achieve carbon neutrality (b) apply the theoretical principle and concept of life cycle of a product and its assessment methodologies, (c) master carbon auditing and the CFP quantification methodologies, (d) implement the procedure for quantitation and reporting of GHG emissions, (e) adopt relevant accounting protocol/guidance in GHG quantification and reporting
Subject Synopsis/ Indicative Syllabus	<p>Topics to be included in this course:</p> <ol style="list-style-type: none"> 1. International agreements relating to climate change such as The United Nations Framework Convention for Climate Change (UNFCCC), the Kyoto Protocol, the Paris Agreement, United Nations Sustainable Development Goal on Climate Actions, etc 2. The basic science of climate change due to GHG 3. Life cycle assessment (LCA) including life cycle inventory analysis, impact assessment, interpretation, and reporting 4. Principles and techniques for quantitation of CFP

	<ol style="list-style-type: none"> 5. Development of CFP per functional unit or partial CFP per declared unit, and issuance of the CFP report and GHG statement 6. Principles and requirements for designing, developing, managing and reporting organization-level GHG inventories including requirements for inventory quality management, reporting, internal audit, etc 7. Principles and requirements for determining baselines, and monitoring, quantifying and reporting of project emissions 8. Quantification, monitoring, and reporting of GHG emission reductions or removal enhancement 9. Accounting protocols/guidance for quantification and reporting of GHG inventory 10. Environmental labelling and declaration
<p>Teaching/Learning Methodology</p>	<p>Interactive lectures and tutorials with discussion in class and illustration of real cases will be used. This approach emphasizes student-centered learning.</p> <p>Lectures supplemented with reading will be used to introduce the key concepts of the topics. Homework or assignments would be given to enhance students' learning. Students should complete the required readings before each class. Students should be prepared for briefing or discussing the guided reading in the class. Supplementary readings would be recommended to provide additional background and depth on specific areas of focus.</p> <p>Students will be engaged in experiential learning by working on assignments consisting of technical analysis projects. Students are expected to have basic experience using Microsoft Excel and basic quantitative skills. However, full Excel proficiency is not required.</p> <p>Guest speakers would be invited to give lectures on specific issues relating to greenhouse gas and climate action. Students would gain better understanding on how the learned knowledge and skills be applied for addressing real-life scenarios.</p>

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						
			a	b	c	d	e		
	1. Continuous assessment	50%	√	√	√	√	√		
	3. Group project presentation	50%		√	√	√	√		
	Total	100%							
	<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>All assessment methods are used to assess the students' understanding of the subject materials, while group project is also used to assess teamwork, presentation and communication skills.</p>								
Student Study Effort Expected	Class contact:								
	1. Lectures							36 Hrs.	
	2. Tutorials							3 Hrs.	
	Other student study effort:								
	3. Self-study							60 Hrs.	
	4. Homework assignment							30 Hrs.	
	5. Project preparation and presentation							30 Hrs	
	Total student study effort							120 Hrs.	
Reading List and References	<ul style="list-style-type: none"> ISO 14026, <i>Environmental labels and declarations – Principles, requirements and guidelines for communication of footprint information</i> 								

	<ul style="list-style-type: none">• ISO 14027, <i>Environmental labels and declarations – Development of product category rules</i>• ISO 14040, <i>Environmental management – Life cycle assessment – Principles and framework</i>• ISO 14044, <i>Environmental management – Life cycle assessment – Requirements and guidelines</i>• ISO/TS 14071, <i>Environmental management – Life cycle assessment – Critical review processes and reviewer competencies: Additional requirements and guidance to ISO 14044:2006</i>• ISO 14064-1, <i>Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals</i>• ISO 14064-2, <i>Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements</i>• ISO 14067, <i>Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantitation</i>•
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