

Subject Description Form

Subject Code	ABCT4631
Subject Title	Test Method and Measurement Uncertainty
Credit Value	3
Level	4
Pre-requisite	Metrology and Calibration
Objectives	This subject aims at providing the students with the principles of selection and validation of test methods for ensuring traceability, reliability and adequacy in performance of the methods, and the quality control measures for ensuring quality of test data. It also introduces the concept and the approaches for the estimation of measurement uncertainty which is an important factor for consideration during interpretation of test results.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ol style="list-style-type: none"> appreciate the criteria approach in selecting test method that is fit for the intended purpose; understand the basis and practices of test method validation as well as quality control plan and its role; demonstrate understanding on the basis and approaches to estimate measurement uncertainty of a test/calibration procedure as well as the role of measurement uncertainty and how to estimate it.
Subject Synopsis/ Indicative Syllabus	<p><u>Test Methods</u></p> <ul style="list-style-type: none"> Types and roles of test methods Criteria approach for selection of test methods Validation/verification of test methods Quality control practices <p><u>Measurement Uncertainty</u></p> <ul style="list-style-type: none"> Statistical tools for treatment of data from analysis and measurement Estimation of measurement uncertainty based on relevant international practices Reporting and interpretation of test results taking into consideration of measurement uncertainty
Teaching/Learning Methodology	<p>Lectures are used to introduce the principles and practices of test methods and measurement uncertainty.</p> <p>During tutorial case studies will be discussed to illustrate the requirements of test method validation and how to estimate measurement uncertainty.</p> <p>Assessment will include assignments, tests as well as project.</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			
	1. Assignment	20	✓	✓	✓			
	2. Test	50	✓	✓	✓			
	3. Project	30	✓	✓	✓			
	Total	100 %						
Student Study Effort Expected	Class contact:							
	▪ Lecture					33 Hrs.		
	▪ Tutorial					6 Hrs.		
	Other student study effort:							
	▪ Assignment					20 Hrs.		
	▪ Self-study					48 Hrs.		
	Total student study effort					107 Hrs.		
Reading List and References	<p>ISO 17025:2017 General requirements for the competence of testing and calibration laboratories, 2017 ISO</p> <p>Regulation for HKAS accreditation (HKAS 002), latest version, HKSAR</p> <p>HKAS Supplementary Criteria (SC 01 – SC 06), latest version, HKSAR</p> <p>HOKLAS General Document (HOKLAS 003:2015) and Supplementary criteria (HOKLAS SC-01, SC-05, SC-06, SC-08, SC-09, SC-20)</p> <p>ISO/IEC Guide 98-1,-3,-4,6 Guide to the expression of uncertainty in measurement, ISO.</p> <p>EURACHEM / CITAC Guide CG 4: Quantifying Uncertainty in Analytical Measurement, latest version.</p> <p><i>**Latest version of the above references will be adopted whether appropriate</i></p>							