Subject Description Form

Subject Code	ABCT3260
Subject Title	APPLIED CHEMISTRY LABORATORY
Credit Value	2
Level	3
Pre-requisite	NONE
Co-requisite	APPLIED CHEMISTRY - ENVIRONMENTAL CHEMISTRY AND APPLIED CHEMISTRY - POLYMER
Objectives	This subject aims to enhance the understanding of principles and theories and to provide practical experience in two applied chemistry areas - Environmental Chemistry and Polymer.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. apply different analytical techniques to determine the basic parameters for assessing the quality of drinking and waste water; b. evaluate polymer samples by different characterization techniques; c. know how to synthesize and characterize a polymer using free radical polymerization technique d. work effectively as a member of a team and write technical reports.
Subject Synopsis/ Indicative Syllabus	Measurement of Water Quality Parameters Hardness and Nitrate COD Preparation of poly(methyl methacryalate) (PMMA) into a sheet via a free radical polymerization of methyl methacrylate and evaluation of the polymer properties. Characterization of polymers using differential scanning calorimetry (DSC) Measurement of polymer molecular weight with dilute-solution viscosity method

<table>
<tr><td>Teaching/Learning Methodology</td><td>Students will work in teams. Laboratory manual containing general background and procedures of the experiments will be provided to students. They will submit comprehensive written reports after the experiments. Students will be assessed based on their written reports, performance during the practical session, and a test to assess their understanding of the underlying and operation principles of the experiments.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td></td><td></td><td></td></tr>
<tr><td>1. Continuous Assessment</td><td>100%</td><td>√</td><td>√</td><td>√</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="6"></td></tr>
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<u>Student’s performance will be assessed by two components: 1) Written test on different experimental skills and characterization techniques; 2) Group report to assess their ability to summarize and discuss results and work as a team.</u>
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<tr><td>Student Study Effort Expected</td><td>
<table>
<tr><td>Class contact:</td><td></td></tr>
<tr><td>▪ Laboratory</td><td>24 Hrs.</td></tr>
<tr><td>Other student study effort:</td><td></td></tr>
<tr><td>▪ Laboratory reports</td><td>32 Hrs.</td></tr>
<tr><td>▪ Self study</td><td>8 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>64 Hrs.</td></tr>
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Reading List and References		Standard Methods for the Examination of Water and Waste Water, 20th ed.	American Public Health Assoc., American Water Works Assoc. and Water Pollution Control Fed. 1998
	McCarty, P et al.	Chemistry for Environmental Engineering, 5th ed.	McGraw-Hill 2003
	Carraher, C E Jr	Seymour/Carraher's Polymer Chemistry, 6th ed.	Marcel Dekker 2003
	Sorenson, W R et al.	Preparative Methods of Polymer Chemistry	Wiley 2001