UNIVERSITI TEKNOLOGI MARA
CMT515: APPLICATIONS OF COMPUTER AND CHEMISTRY

Course Name (English)	APPLICATIONS OF COMPUTER AND CHEMISTRY `APPROVED`
Course Code	CMT515

MQF Credit	2

Course Description	This course is aimed at providing students with knowledge on the use and applications of computer in chemistry. The topics in this course include introduction to computers, use of spreadsheet in chemistry, chemical structure drawing application by ChemSketch, chemical information searching using ChemSpider website and the use of visual basic for applications (VBA) in chemistry.

Transferable Skills	Knowledge, Practical Skills, Communication Skills

Teaching Methodologies	Lectures, Practical Classes, Presentation

CLO	CLO1	Explain concepts related to computers including types of computers, operating systems and the application of computer (ChemSpider, ChemSketch and VBA) in chemistry in written.
	CLO2	Perform the assigned task for the given hands on exercises and assignments.
	CLO3	Demonstrate the scientific idea in oral related to visual basic application.

Pre-Requisite Courses	No course recommendations

Topics
1. Introduction to Computer 1.1) 1.1 Components of Computer 1.2) 1.2 Types of Computers 1.3) 1.3 System and application software 1.4) 1.4 Operating systems and Utility programs 1.5) 1.5 Examples of computer applications in society and chemistry
2. Spreadsheet Applications in Chemistry 2.1) 2.1 Explore basic features of Excel 2.2) 2.2 Perform simple calculation: add, multiplication, etc. 2.3) 2.3 Perform calculations using functions: math and trig 2.4) 2.4 Use some built-in functions available in EXCEL a logical operator: IF, V-LOOKUP 2.5) 2.5 Perform statistical analysis from given data: average, std deviation, max, min, etc 2.6) 2.6 Plot and fitting of data:Linear, exponential, higher order functions 2.7) 2.7 Construct interactive worksheet
3. Chemical Drawing Applications (ChemSketch) 3.1) 3.1 Drawing 2D and 3D simple molecules structure. 3.2) 3.2 Drawing 2D and 3D complex molecules structure using template 3.3) 3.3 Draw simple chemical reactions 3.4) 3.4 Draw simple reaction mechanisms 3.5) 3.5 Draw lab kits 3.6) 3.6 Find bond lengths, bond angles and dihedral angles of molecules
4. Chemical Information Searching 4.1) 4.1 ChemSpider

5. Visual Basic Applications
5.1) 5.1 The arithmetic program
5.2) 5.2 pH calculator for strong acid
5.3) 5.3 The molecular weight program
5.4) 5.4 The quadratic solver (using worksheet)
5.5) 5.5 The quadratic solver (using UserForm)

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	One Assignment (Chapter 2, 3, 4 and 5)	60%	CLO2
	Lab Exercise	Hands on Exercises (Chapter 2, 3, and 5)	10%	CLO2
	Presentation	Individual Video Presentation	10%	CLO3
	Test	One Test (Chapter 1, 2, 3, 4 and 5)	20%	CLO1

Reading List	This Course does not have any book resources
Article/Paper List	This Course does not have any article/paper resources
Other References	This Course does not have any other resources